

100 Software Robots for Tomorrow's Education

Revolutionizing the learning experience with bots technologies
Results from the 2017 Edition of TDT4140 Course on Software Engineering



Edited by Anh Nguyen-Duc & Pekka Abrahamsson



NTNU – Trondheim
Norwegian University of
Science and Technology



Software Startups
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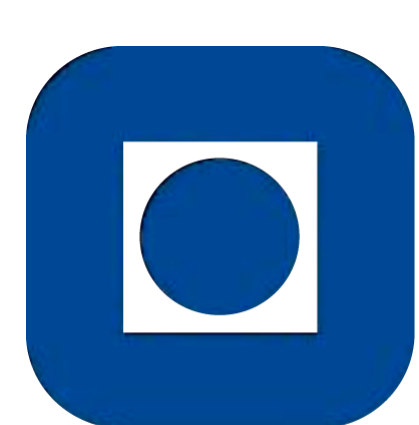
Department of
Computer and Information Science



Excited
Centre for Excellent IT Education

100 Software Robots for Tomorrow's Education

edited by
Anh Nguyen-Duc
Pekka Abrahamsson



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Trondheim, April 2017

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Foreword

I have been studying software engineering since the 80's when I was a computer science student at the university of Pisa. Software engineering was the first project course I experienced. I still remember my two friends and I, laughing, quarreling, screaming of joy when something was functioning, while trying to design and program a spreadsheet in C language. We did not have excel, or at least I have never seen the excel that is so familiar to us now. But we were imagining and implementing something like excel.

I get soon fascinated by software engineering as it resembled the real life more than the other theoretical courses, like mathematics, logic or Artificial Intelligence. I have been teaching software engineering at various Levels since 1994. I prefer project level courses, as software engineering, is not something that can be read and memorized, it has to be experienced. Some of my courses have been very good and some less good. Now I think that it is all about interesting problems and attention. Attention to the problem, the cooperation, and the code. It is also about being able to be patient and aware that in the middle of many frustrations, sometimes you will scream of joy and satisfaction for overcoming challenges. I admit that I still scream, cry, and laugh when things are going up and down in the up and downs of research, development, and learning.

Dear students, I do not know each of you personally but I can visualize an auditorium full of software engineering students attending the fourth semester. I know how creative, demanding and clever, the students of IDI (both datateknologi and informatikk) are. You who attend the second year, are especially full of expectations and ambitions and ready to enter the main computer science stream of your studies, when you will choose your specialization. I know that you care about learning, creativity, software, and leadership.

You could not have experienced a better teacher than professor Pekka Abrahamsson. Since Pekka was employed at IDI in 2015, when I travel to conferences and meetings, people meet me with the question: "Are you really the boss of Pekka?"



Professor Maria Letizia Jaccheri
Head of Department of Computer Science
(IDI), NTNU



Professor Pekka Abrahamsson
Department of Computer Science (IDI), NTNU

... Foreword

Pekka is one of the most famous software engineering professors in the world (yes in the world). He is famous for the many papers he has written that have been cited thousands of times by authors all around the world. Most important to me and to you, Pekka is a change actor. Pekka has implemented more changes to the software engineering course than many teachers (including me).

It is very to be able to change and innovate. Change is about creativity of being able to imagine better solutions. Change is also about strength of being able to take leadership, even when you experience that other people do not believe in your ideas.

To be motivated is important to work on meaningful problems. The students of last year worked on the Internet of cars project (bit.do/internet-of-cars). While that project and the related book are very interesting I have even higher ambitions for the project of this year. The challenge of making university education alive and improving it, is a challenge that intrigues me and all us who work with high level education. It is a challenge that interests you, as you have chosen to spend many important years of your life to learn in an academic setting.

You are the users of your own solutions. I wish Pekka and all the students success with this project. A special wish to all the brave, smart girls in the class from The Little Doormaid - Tappetina – Letizia Jaccheri
<https://letiziajaccheri.org/>

Letizia Jaccheri
Head of Computer and
Information Science Department
Trondheim, April, 2017

Excellence in Education

Excited is a Center for Excellence in Education, funded by NOKUT for 5 years (2016-21), possibly with a continuation further on to 2026. It is hosted by NTNU / IDI, in a partnership with Nord University. At NTNU, all campuses are involved in the centre, not only Gløshaugen, and all in all it spans 19 different study programs in the two partner universities.

Our vision is to make IT an attractive study choice and put Norway in the forefront of innovative IT education. Most concretely, it is about improving the learning and student engagement in the studies we offer, but it also deals with issues such as improved recruitment and retention of students, collaboration across campuses, and with industry. In more detail, it consists of 5 subprojects:

P1 Informed Decision - making young people better aware of various IT studies and job opportunities, so that nobody disregards IT as a possible choice due to prejudice. A challenge today is that many young know little about IT studies, or thinking that IT jobs (and studies) are lonely and nerdy, which in reality there is a wide range of jobs, focusing to a varying extent on technical and social skills.

P2 Projects of Becoming - helping first-year students to manage two important projects: (i) the transition from high school to university, and (ii) the transition from being a novice in the field towards becoming a professional. It is important to raise engagement and achieve good working habits from Day One, as well as taking care of the social dimension.

P3 Learning through Construction - learning activities where students, individually or in teams - develop technological artifacts. Giving the satisfaction of having made something that works, something that can be shown to friends and family. The objective of this project is to have more of such activities, and to evaluate more systematically what learning outcomes they address.

P4 Sharing and Diversity - facilitating cross-campus collaboration, both among teachers and students. NTNU's (and IDI's) new situation with overlapping courses at several campuses could give opportunities for collaboration, delivering the same teaching at less cost, or delivering higher quality for the same cost.

P5 Career Readiness - improving the collaboration between education and work-life. There is already a lot of collaboration, industry contributing as guest lecturers, customers in projects, and alumni surveys. However, there can be even more efforts in this direction. One observation is that it is not only interesting to find out what our candidates need to know when they graduate, but also what they need to know to get relevant summer jobs.



... Excellence in Education

Excited is proud to be a sponsor of the 2017 ZAB event. In TDT4140 course, students work creatively in teams to come up with ideas for new software products. This is not unusual at the NTNU and elsewhere. However, it is uncommon to have such an approach in a large class of 400+ students. This particular year, the focus of the project was innovative applications to revolutionize university education.



A classroom at IDI, NTNU

Excited, as a Center for Excellence in Education, is dependent on input from students to succeed in improving learning. It is therefore particularly interesting to see proposals from the students themselves for what they think is most important to improve in education, and how IT tools might help achieve such an improvement. We are eager to analyze further the ideas that the students have come up with. Who knows, maybe some of them will eventually turn into products that are successfully used in higher education? Even for those projects where this does not happen, they can still be important inspiration that is refined by someone else into working products.

We are also eager to have further collaboration with this class of students, beyond ZAB. There are several possibilities for students to contribute to Excited, for instance by being a Teaching Assistant at Excited, by being member of a reference group, and some years forward by taking a Master thesis (and maybe even a PhD) in connection with Excited. Even if you do not have such a formal connection, you are always welcome to provide feedback on what Excited does, and suggestions to what we should do.

Prof. Guttorm Sindre
Centre Leader of Excited
Trondheim, April, 2017

Introduction

SEMAT's Essence Kernel is the way!

Whether we like it or not, software industry is a fashion business where the most recent fads come and go every few years. I was awoken for this fact in 2009 when listening to Ivar Jacobsen's keynote in XP 2009 conference in Sardinia. Today's fad is DevOps in its multitude of formats including DevBiz, DevSec or even BizDevSecOps. Every company is claiming to do at least a bit of it. Yesterday everyone was claiming to be Agile. The whole DevOps business is about company-wide collaboration between all departments and technically this means that a change in software is visible to a user within minutes rather than weeks or months. The question is evident: What should the student of 2017 learn in his/her software engineering class?

Back in 2010 an initiative was launched to develop Software Engineering Method and Theory (SEMAT) as a backbone for our field. The initiative was led by Ivar Jacobsen, Bertrand Meyer and Richard Soley. I signed up for the initiative as I saw its' value and ambition. It is ambitious since it attempts to unify the field, providing a vocabulary to describe how a software organization works and executes its mission. New methods can be now incorporated to the software house's daily practice because there is a systematic way of doing it. Companies get out from the method prison, gain control of their software projects and can freely and professionally mix elements from one method with another one, which is evidently what is being done today already but in an ad-hoc way.

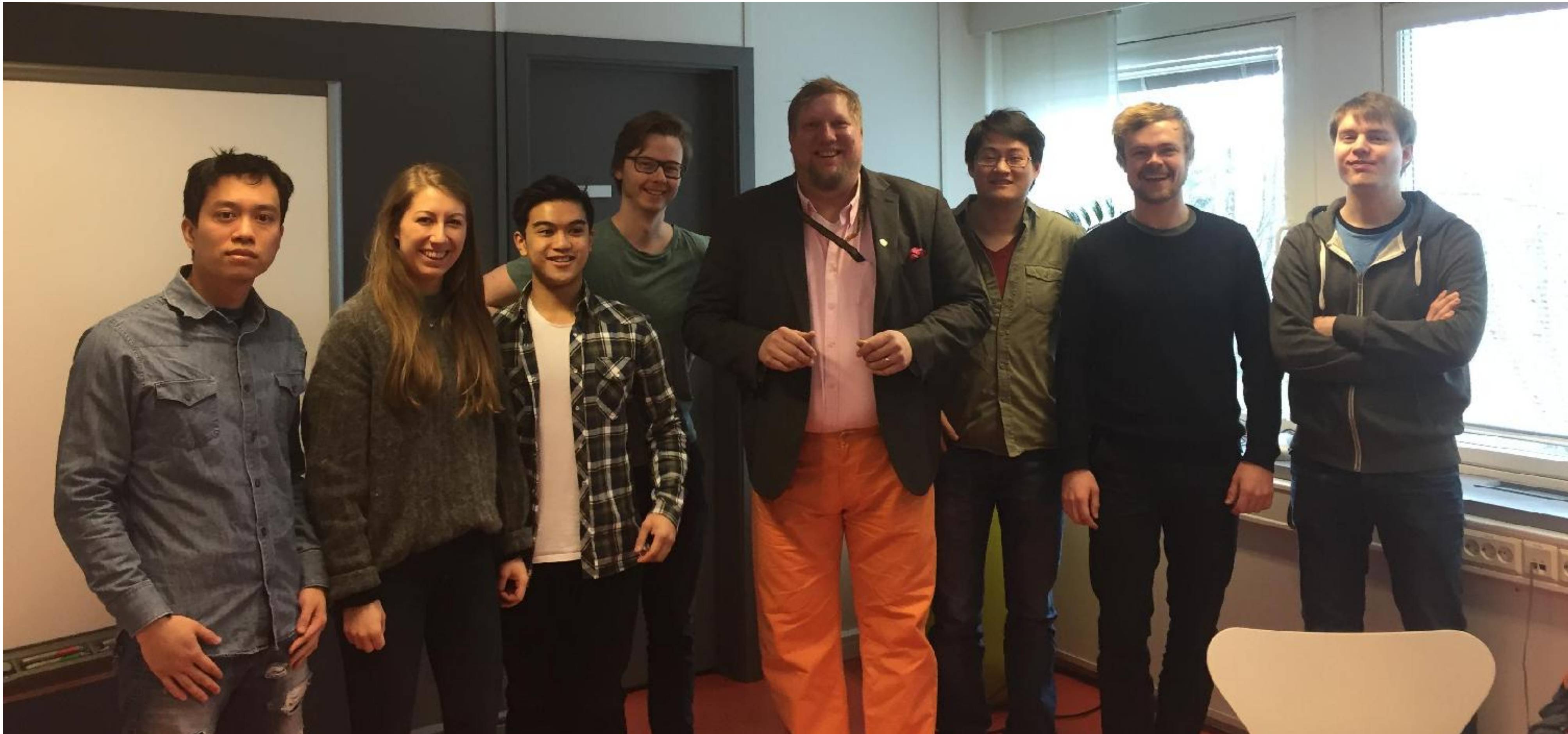
The 100+ software teams in the Software Engineering course executed their projects using SEMAT Essence Kernel as their backbone. The students have learned to present their way of working using practice cards and can thus systematically improve their performance in the future. Kernel's alphas, states and practices are now part of the new Software Engineering vocabulary that these students will take up to their companies upon graduation.

I am very proud to present the results of the software engineering projects where students attempted to revolutionize the university education by introducing software robots into their daily learning environment. All the concepts are made freely available for anyone to use, and we have also made the source code available as an open source for others to benefit.

Lastly, I would like to thank you Excellence in IT Education, Excited research center for its generous support for organizing the ZAB 2017 celebration of project outcomes as well as the Department of Computer Science led by Professor Letizia Jaccheri for inspiring to develop the courses to new directions. I could not be handling 100+ projects and 450+ students if I would not have a superb team helping me. Thank you to Dr. Anh Nguyen Duc, Audun Liberg, Håvard Anda Estensen, Evelyn Saxegaard, Henry Skorpe Sjøen, Hung Thieu, Ji Lei and Kari Eline Strandjord.

Pekka Abrahamsson
TDT4140 responsible teacher
Trondheim, April, 2017

Coaching Team



Coaches from left: Anh Nguyen Duc, Evelyn Saxegaard, Hung Quang Thieu, Henry S. Sjøen, Pekka Abrahamsson, Jie Li, Håvard Anda Estensen, and Audun Liberg

Anh Nguyen Duc is a post doctoral researcher at NTNU/ IDI. Coming from Hanoi, Vietnam, Anh has spent seven years in Europe and USA. His research interests and expertise is Global Software development, Data mining and Software startup. His favorite quote is “Give me six hours to chop down a tree and I will spend the first four sharpening the axe!”

Evelyn Saxegaard is a third year informatics student. She joined the TA’s work force and gave exercise lectures about concepting and user testing.

Hung Quang Thieu is a third year informatics student. After taking Pekka's course last year, he gained an interest for software engineering, and he wanted to join the course as a TA to help make the course better.

Henry S. Sjøen is a third year informatics student. To his students, even though it has been challenging overseeing 15 teams, Henry enjoyed his TA role. He thinks that many students have shown great progress. Best of luck with creating solutions, building cities and inventing the impossible. Here's to a better future!

Jie Li a mediocre student that likes to dabble with many different things. Currently arranging an awesomely tiring Korea trip for his mates.

Håvard Anda Estensen is a third-year student of Computer Science and previously sergeant in the Army. Specializing in databases and search he thinks decisions should be more data-driven. When he is not busy coaching his teams he enjoys cooking, traveling and skiing.

Audun Liberg is a fifth-year student of Computer Science, currently writing his master's thesis on semantic comparison of documents using natural language processing. With a burning passion for delivering high-quality software, Audun will start working in the consulting industry when he graduates.

Kari Eline Strandjord is a graduate student of Computer Science, specializing in digital enterprise development. She also has a degree in performing arts. Kari's passionate about the intersection between software development, interaction design and business, developing the right product for the real customers.

Pekka Abrahamsson is a Software Engineering professor at NTNU/ IDI. Originating from Finnish Lapland, he has held professorships in Finland and Italy. He pushes Software startup research to the edges and believes that the next revolutionizing ideas are in the hands of our students. Pekka’s motto is “Think big, and then think bigger!”

Voice of Critique

We asked Juhani Risku, an ex-innovation director from Nokia to study the concept posters produced by TDT4140 students to see whether a Revolution took place as a result of the 100+ student projects. He hand-picked a few examples, analyzed them and wrote the following.

Revolution or comfort zone – the Academia has to choose:

Software Engineering course TDT4140 has set the bar of creativity and disruptive thinking very high when trying to revolutionize learning and education. Revolution turns around everything. Revolution is action against the current ways of learning and teaching. In the curricula, methods and goals revolution can dethrone present professors, lecturers and staff members. Revolution in education stems from frustration, from dissatisfaction to practices, quality, outcomes and results.

Revolution in Aristotelian minimum, in modifications, is like incremental changes in genetic code – it's a revolution. The small step from candybar mobile phone to touch screen smartphone killed the old Nokia. Changes are always systemic and go deep down to the structures, which means that fine-tuning and developing something makes an abstraction shift to technologies, business models, ecosystems and human behavior. Revolution is a strong word and message, it's groundbreaking.

The theme of NTNU Software Engineering course TDT4140 year 2017 was “**Revolutionizing Education**”, to develop application to revolutionize Learning and Teaching in academia. The course would revolutionize lectures, teaching, curricula, classrooms, auditoriums, their bad ergonomics, lighting, acoustics and visibility to the screens. The course would create solutions to get rid of bad lectures, poorly organized semesters, out-of-date textbooks and constant need for reading and studying alone.

Altogether 450 students realized 100+ project works in given time. They ideated, conceptualized, developed and built applications to revolutionize learning and teaching in academia, as it was required. The applications are structured and coded according to SEMAT practices. The projects can be structured into three categories: communication between lecturers and students, context management, and actions during the lecture. Communication meant knowledge of information, content, progress and feedback. Context management was knowledge of time and space of the lectures, optimizing or minimizing own participation at lectures, getting notifications when it's time to study. Actions during the lecture referred to asking questions, voting and comparing posed questions, accessing simultaneous information, watching short videos...



Juhani Risku
architect SAFA, designer
Inari, Lapland – Finland

*Riding Segway i2 and
sketching with Staedtler
Mars. Sept. 2010*

Photo: Pekka Antikainen 2010

... Voice of Critique

Overall, however, proposed solutions seem somehow too cosmetic to represent the type of revolution needed in university education. From some projects one can find a common trend: Months of hard work but no revolution yet.

- **Commune**, Interactive classroom experience: the persona Elise says, that the lecturer should be in the same physical space with students for better communication and meet more often. One problem is too large groups of students, lecturers and assistants. The right solution would be get rid of mass lectures, have more assistants, and interact face-to-face. How will the app make a contribution in this direction?
- **Crowbot**, Intelligence by asking: Professor Stein-Erik was tired of answering the same questions over and over again. He needs a junior lecturer to replace him and begin to act as a professor with transformational research results to be presented. The students should read weekly 20 hours more and watch MIT videos. We got now a system which delivers automated answers to simple questions. The Poster is elegant in its reduced red-gray-black color-set.
- **Parry**, Facebook Messenger bot that keeps track on schedule, assignments, exams... Parry is a clever system built on top of Facebook with a clear and well-structured concept, graphics and poster. Considering from the poster perspective Parry is a usable and viable solution.
- **ClassMate**, Robot teacher, has higher goals and a concept embracing the future. The poster shows central defining principles with clear graphics. This concept could be a base for learning applications at larger corporation offering AI and machine learning systems.
- **ToDoMe**, Web-based task manager, with beautiful page-poster composition and color-set required a closer look. The composition is attracting with its elegant lay-out and colors. If the system would be highly automated and data coming over the air based on sensors, near field communication, indoor positioning system, social media data and gamification, it could be acquired by larger actors. Beautiful pages in the book.
- **EDITF2704**, Make students better prepared, is a clever concept for a crucial problem: students don't prepare well enough for classes. This concept has an important role with some extensions: The scraper tool should fetch material from best sources like YouTube, Google Scholar, libraries, TED talks and push the material in advance by the curriculum and calendar. Artificial Intelligence could prioritize topics and vote test titles. Student profiles could work as well.
- **BotLer**, Educational butler, is a well-organized presentation with User Interface drafts of Use Cases. Despite that calendars are good organizers, BotLer offers statistics and some interaction, which makes it nice when using a smartphone. Automation of different data from various sources would make the application more useful.
- **Thoth**, Connects students and lecturers using real-time feedback, has a huge lock-in effect by its visual power of the page-poster set. With the ingenious graphics and colors you sell the product easily. Thoth makes the same as some of its rivals but according to the graphic design Thoth could have one of the best User Interfaces.

... Voice of Critique

Let's be truly revolutionary:

Really radical would have been to restructure of Itslearning to be a mobile and all-inclusive platform. Also building an application or layer on Facebook, creating a platform on Twitter for NTNU to communicate about lectures and just-in-time details, use of WhatsApp in a clever way, would have been revolutionary. A video ranking system for YouTube would separate the best global "MIT and TED videos" from home-made videos encrypted in local languages, you could choose either or, depending on your international footprint. If to be really revolutionary, students could create their own content, booklets, videos and rap-lectures to mesmerize, let's say, 5000 universities. There would be the NTNU-Einstein, NTNU-Lady Gaga and even NTNU-Nansen in charge. Other excellent platforms for proper revolutions would be e.g. WhatsApp, LinkedIn, collaborative writing and Survey Monkey. What about Pair-Programming-Tinder for hard-core coders? Building on top of existing and solid systems would be properly funded and later real moneymakers for the innovators.

Concepting should start with questions in right order as follows: who – why – when – how often – where – what should – what if – what now – then what? Now, after some rounds of ideating and planning the teams have settled with weak ideas and easy execution. If the learning and education is revolutionized, it is something which shocks and surprises the *status quo*. In the case university, there are several indicators showing the present status in quality, footprint and impact in academia and global brilliance.

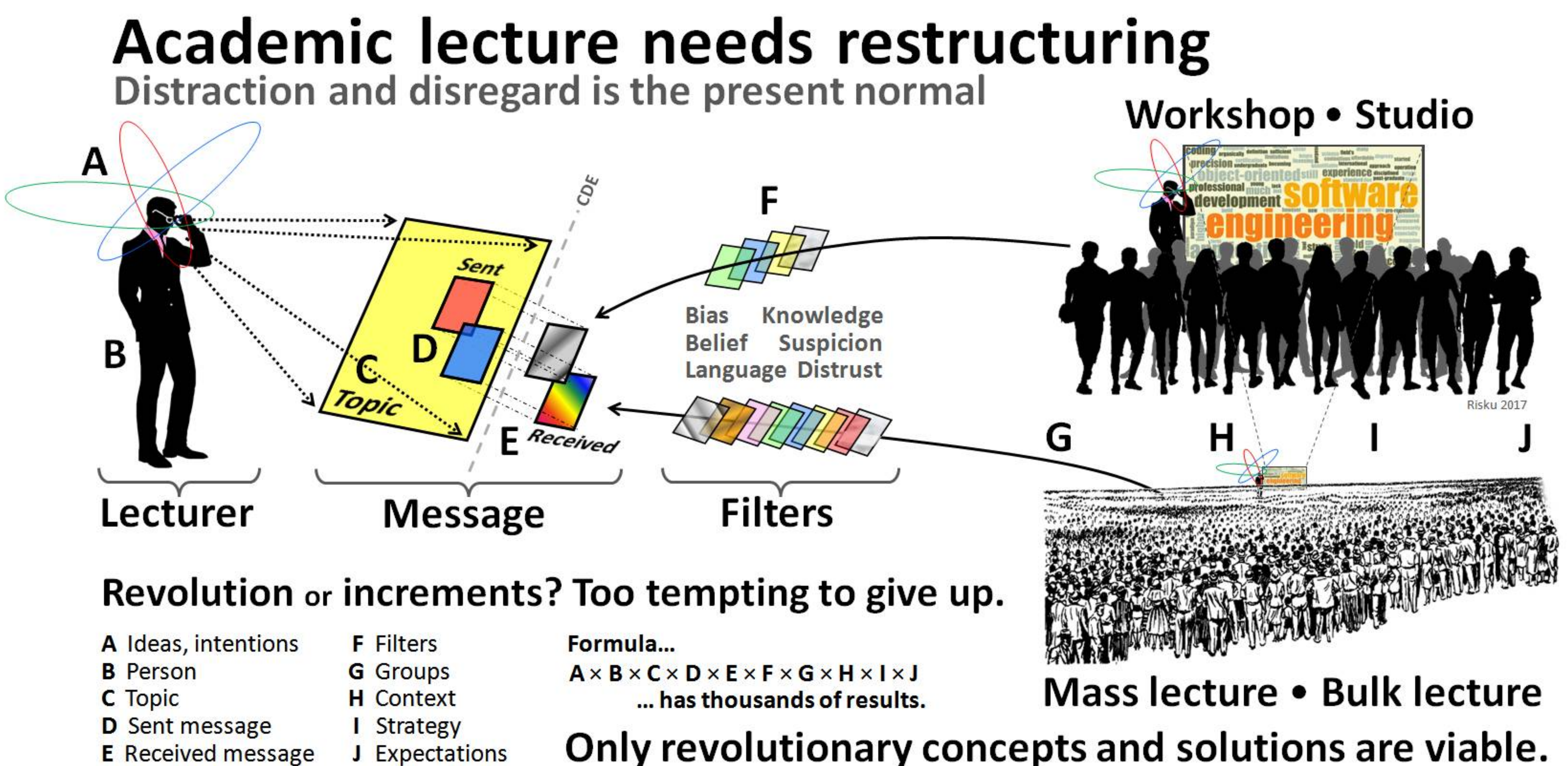


Image 1: The lecturer has a message for an ideal audience. The topic is sent to the receivers where the thin line CDE disturbs the communication. How much important information is lost? Why, does it matter, who cares? 95 % of the student projects handled bits of the formula $A \times B \times C \times D \times E \times F \times G \times H \times I \times J$ but with no revolutionary ideas, visions and solutions. Revolution is certainly needed, but it is never achieved in a conservative, dull and mentally lazy manner. Rather a brilliant concept than bugless code.

... Voice of Critique

Conclusions

Revolutionary concepts during this project would have been like “How to activate un-motivated students”, “How to stick to MIT et al. videos rather than ours”, “How to get rid of mass lectures”, “Is the motivation vacuum a cultural problem or *everybody-gets-in* problem”. Or problem setting could have been like “This way students prepare themselves shinningly”, “The professor becomes a celebrity scientist”, ... These concepts may also give revolutionary solutions like “Get rid of *everybody-gets-in* problem – diminish admissions to university 90 %”, “Change 85 % of professors to better ones”, “Teach the students to ideate, plan, concept , design and make”.

There are some common factors of ideas, problems and reality which direct the solutions. Communication doesn't work because of absence, silence or passivity of the students at lectures. Students seemingly don't know where and when the lectures are. Asking questions is a big problem, and answering even bigger. Solution: if questions appear, reading books and making homework in advance is the answer. The conceptual solutions should always tackle the problems starting from the most crucial ones ending with the insignificant ones, just like cleaning your hard disk: start with the biggest files. It is obvious that the students can use SEMAT as a framework and they know processes and organization of software development project, but the bar could be higher if working with revolutions.

Student's projects of Software Engineering TDT4140 year 2017 present gradual and incremental steps in learning and education. Or, not in learning and education, but in communication, time management and whether to access the lecture or not. An academic assessment of the “*lecture room problems*” should be immediately done by the R&D center of the rector's office. All created solutions would easily scale to 17000 universities globally.

Students were offered a brilliant possibility to make a difference in academic learning and education and as a result we got several cozy apps. The solutions of the project Revolutionizing Education only defined the status quo of a standard quality level of present education-learning interaction, where only small and prettified improvements were shown. Revolutionizing was misunderstood as gradual, incremental, nice and polite. Revolution rocks the boat; something has to be forgotten.

Revolution is indeed needed in academic circumstances and student commitment, but we have to wait another year or university.

Juhani **Risku**

NTNU ex-researcher, architect,
acoustician, designer and
Creator of Student's Workstation
TDT4140 2016
Finland, April, 2017

Concept Posters

(from Team 1 to Team 104)

CONCEPT POSTERS

ChiliPrepper

Assessing and Encouraging Student Preparation for Lectures

The Team



Ingeborg Helen Langli

Design Manager and Document Manager

Christer Hølestøl

Database Manager and Meeting Secretary

Andreas Norby

Project Leader

Dag Kirstihagen

Test Manager

The Problem



Guttorm Sindre

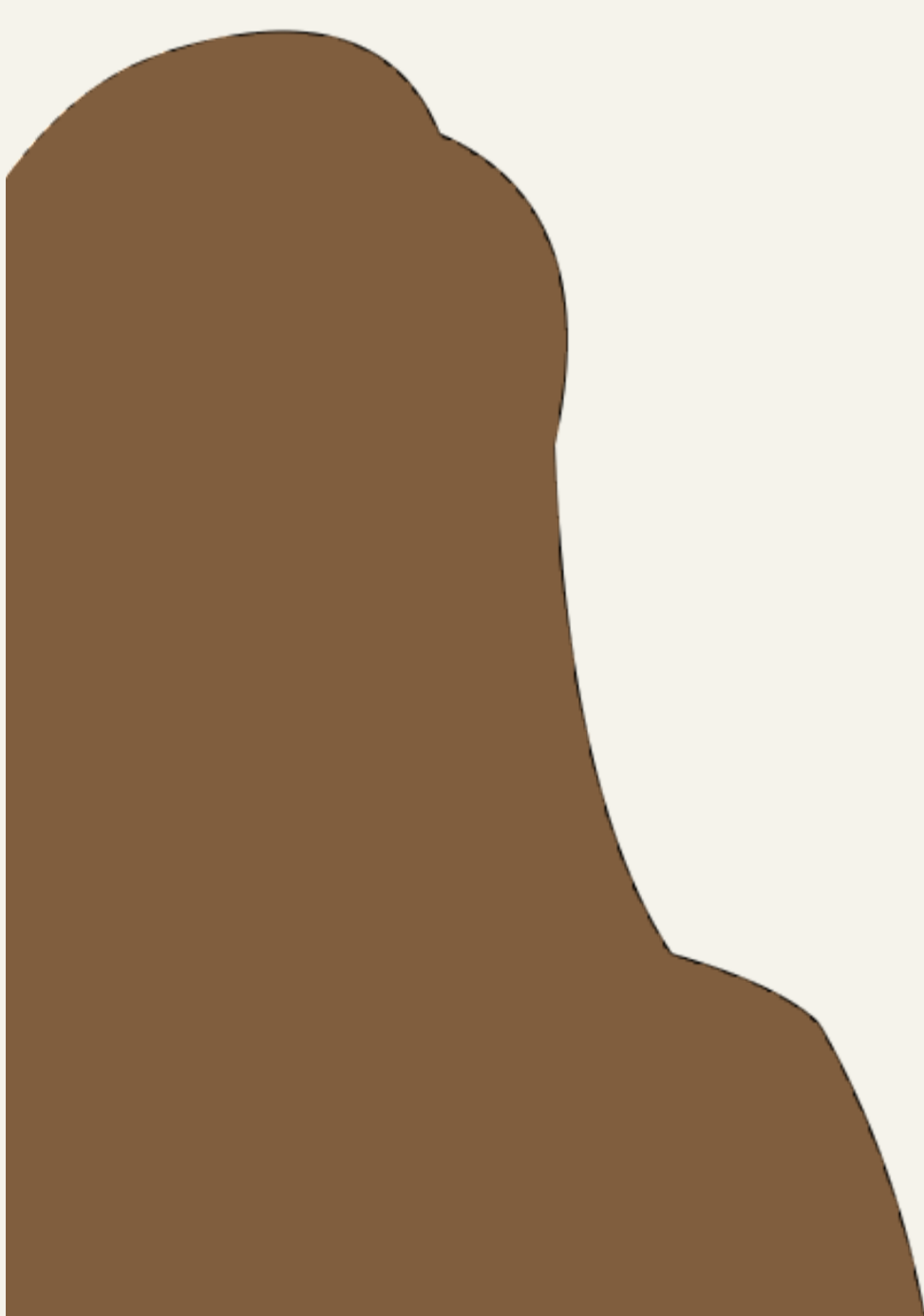
Professor

Department of
Computer Science

NTNU

Photo: Kai T. Dragland (NTNU)

«Lectures could be made more interesting and educational if all the students were prepared [for the lectures], but it is difficult for the lecturer to know how many have prepared and what level one then should set the lecture to.»



Anonymous

Master student

Energy and
Environmental
Engineering

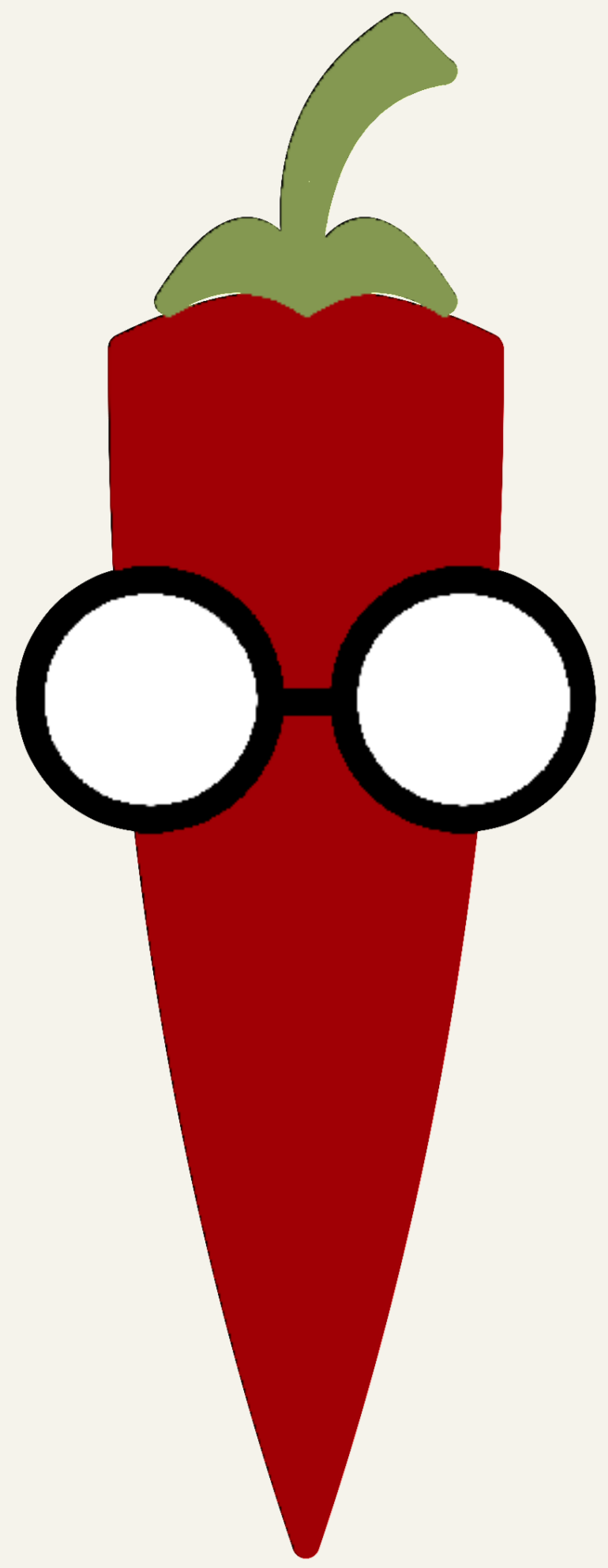
NTNU

«I rarely prepare for lectures because I then often feel that the first part is too easy and I don't pay attention since I feel that I already know it. That makes it hard to see when the lecture becomes more difficult and I don't understand what we are doing.»

Lecturers have no way to assess how prepared the students are, forcing them to choose an arbitrary speed and difficulty level for the lectures. This, in turn, frustrates students, who feel that there is no benefit to preparing for lectures.

How can we help?

The Solution



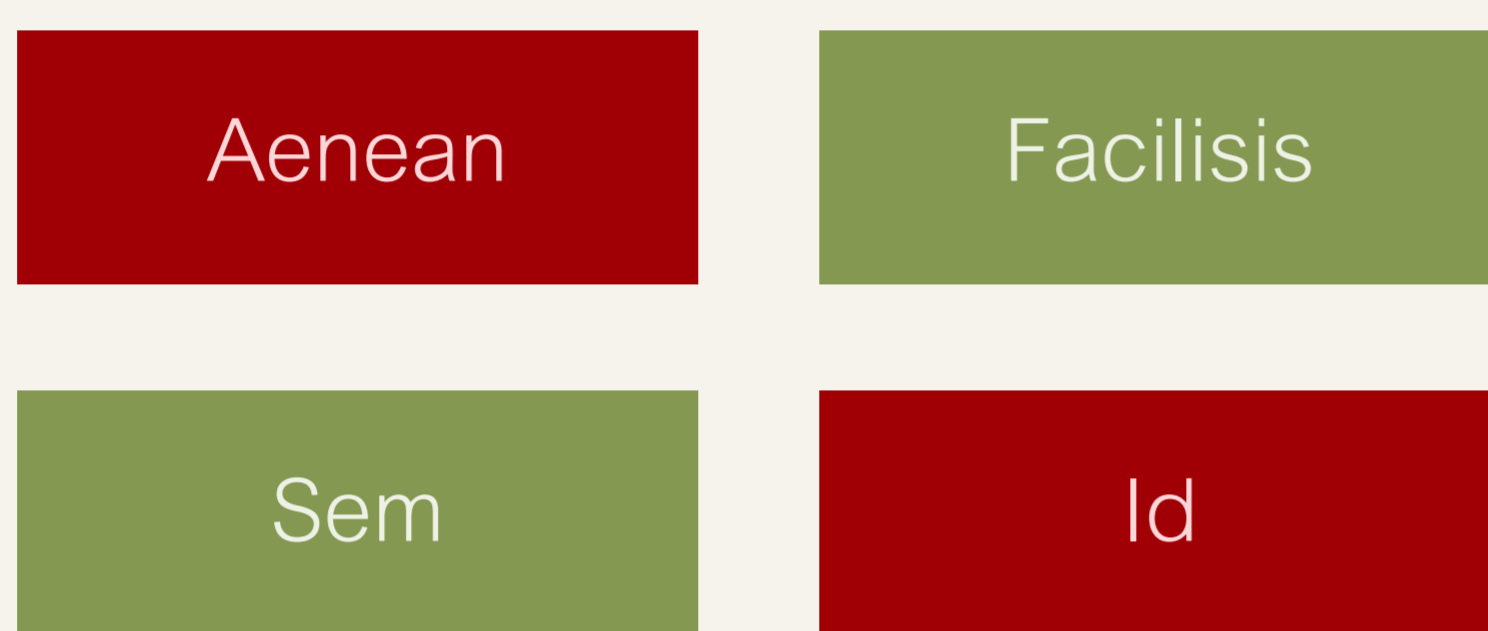
Chili Prepper

...is a Java-based web application that will help lecturers adjust each lecture, as well as the lecture plan overall, to the students' level of knowledge. It will also motivate students to prepare for and attend lectures.

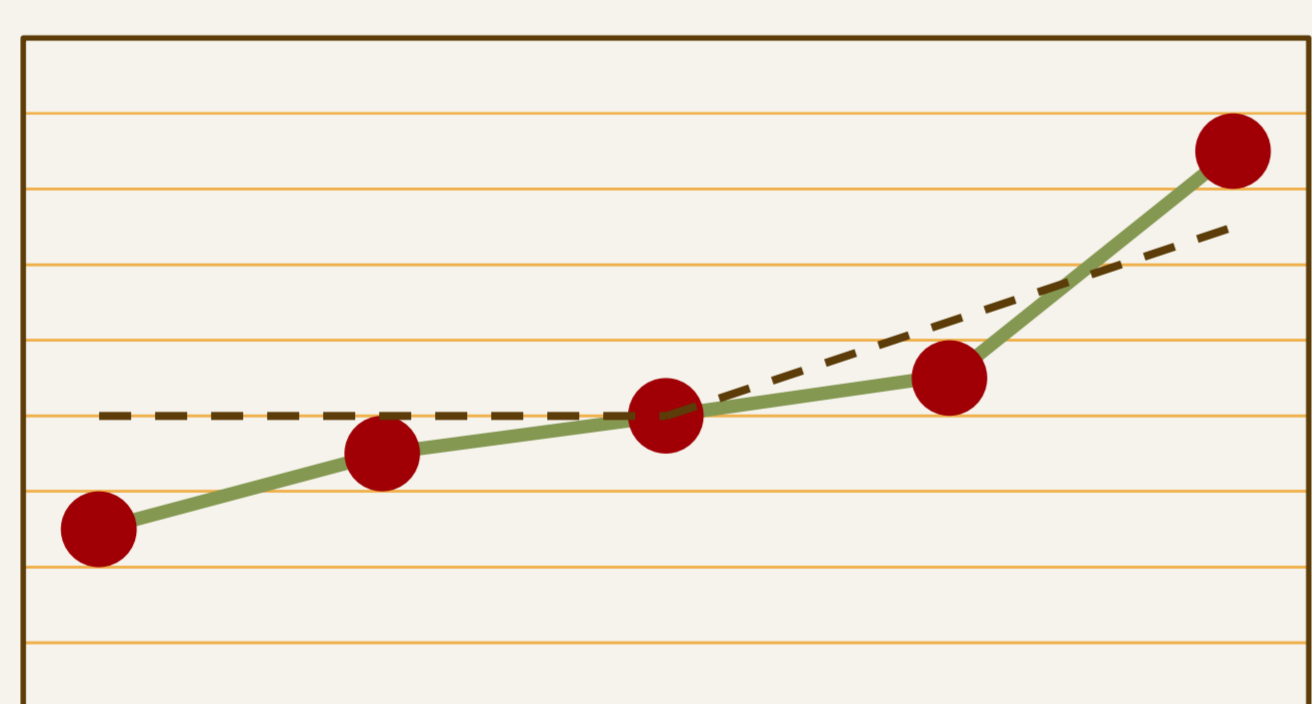
Disclaimer: The below illustrations are concept sketches and may not resemble the finished product.

The lecturer...

Lorem ipsum dolor sit amet?



...can create quizzes to check how prepared the students are, adjusting the lecture accordingly.



Day 1 Day 2 Day 3 Day 4 Day 5

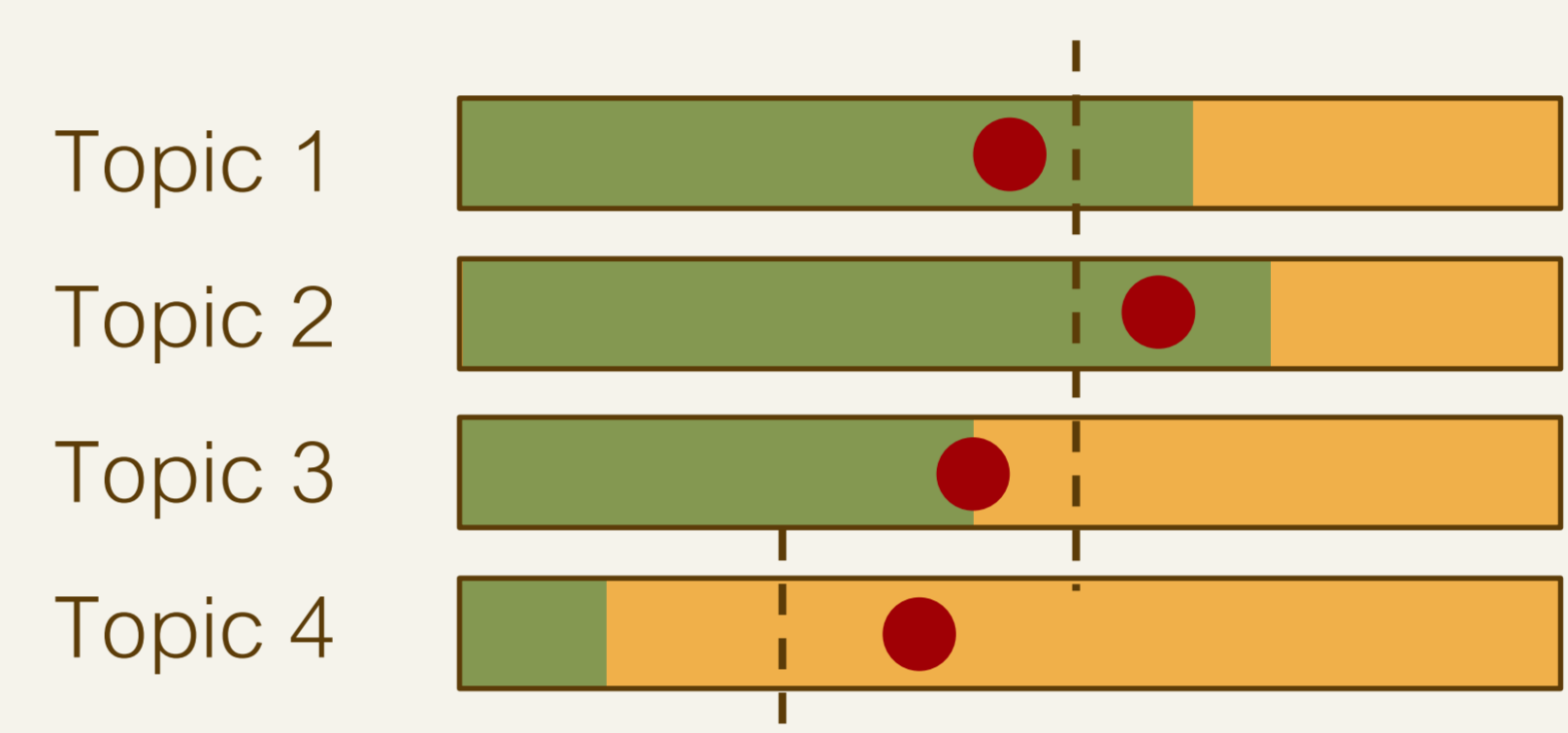
...can see the class progress over the course of the semester so they know when to move on from a topic.

Point Store

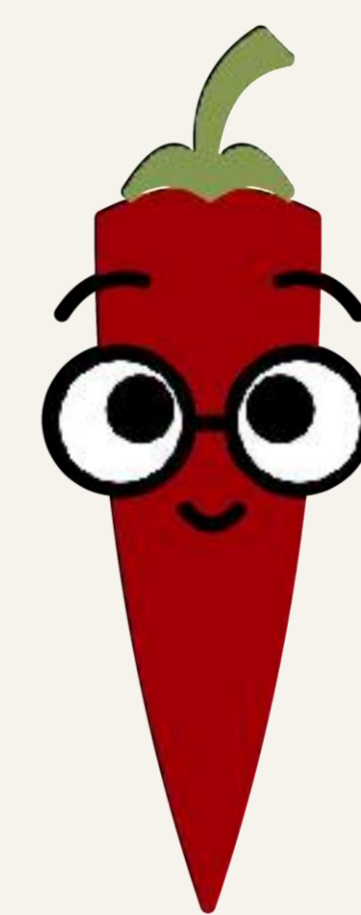
- 1 exercise approval 200 points
- 50 kr cantina gift card 200 points

The student can receive points for participation and for correct quiz answers. As extra incentive to prepare for and attend lectures, the lecturer may allow the students to spend these points on rewards of the lecturer's choosing.

The student...



...can compare their quiz results to the lecturer's expectation and the class average so see their relative level of knowledge.



Good job! But you seem to be struggling with Topic 1... Here are some resources that could help!

...can receive automatic updates on how they are doing on different topics, and resources that can help them improve.

Results

Quiz	Score	Points	
Test 1	-/10	0	Details
Test 2	5/10	15	Details
Test 3	8/10	18	Details
Total	13/30	33	Details

AlarMe



The Four consists of Amalie Haug Amundsen (20), Amina Ettayebi (20), Heidi Finsberg (23) and Ingrid Støen (24). All members are studying Industrial economics and technological management with a specialization in computers and communication technology.

“How to keep track of which exercises I should do before another is a struggle.”

“It’s so difficult to know when every exercise is due.”

“There are several learning platforms to keep track of, which is a challenge.”



Emma Erstad is a 23 year old student at NTNU. She studies counseling and is also active in extra curricular activities.

User story

“My struggle as a busy student that participates in many student activities, is to get a good overview of all the tasks I have to do. I find it difficult to keep track of all my assignments, and when every exercise is due. I need a tool to make it easier to remember what school stuff I need to do, and when I have finished all my mandatory work.”

Solution

By implementing the app AlarMe in students’ everyday routine, they never have to worry about missing a deadline. The app will make sure that Emma gets all her deadlines in one place, that she will be reminded of due dates and keep track of when she has done all her mandatory work.



Top five product backlog items

- As an administrator, I want an app to remind students of upcoming assignment due dates or exams to study for, so that they can better plan their studies.
- As a user, I want to gather all my assignments and deadlines from different electronic learning platforms in one place.
- As a user, I want to be able to track my progress in the different subjects, to see how much I have completed of my mandatory tasks.
- As an administrator, I want to be able to add and remove assignments.
- As a user, I want the program to be easy to use and understand.

AlarMe

Deliver on time!

About the product

As a student, your main priority should be studying, not worrying about deadlines. AlarMe is a smartphone application that gathers all of your deadlines in one place, and reminds you every day what needs to be done. AlarmMe also has the ability to tell you if you have delivered the required number of assignments to take the course's final exam.

The app connects to all your online learning platforms, and automatically notifies you of deadlines and exams. AlarMe will also help you plan long-term projects. Divide your project into separate tasks, and check them off to monitor your progress. You decide the pace, AlarMe keeps you on track.

How does it work?

The application gives the user the ability to gather all of his or her due dates in one app. The application will connect to all the wanted learning platforms and gather the needed information and load that into the app.

The software is written in Java, and will use different API's to connect with existing online learning platforms.

eduBack

Influence your learning



Team bits please

Nina Marie Wahl:
Scrum Master, Product Developer

Anne Pernille Wullf Wold:
Product Developer, Test Writer
Mari Elida Tuhus:

Product Developer, Quality Assurance Leader

Anna Bellika Kjæmpenes:
Team Leader, Product Developer
(from left to right)

Persona

This is Wenche Kjæmpenes, Dean of Faculty for travel, sports and social science at The Arctic University of Norway.

She teaches large classes and it is hard to get to know the students. She wants to know how much the students learn in each class to be able to adjust the teaching.

Kjæmpenes's goal is to get as many students as possible through the semester in the best possible way.



«How do I know if my teaching strategy works for my students? I need a tool to get instant feedback from my students, so I can keep progressing and improving, and hopefully achieve an ideal learning situation for my students».

How we help

eduBack will enable Kjæmpenes to receive information about her students' progress, which parts of the curriculum they understand and which teaching tools are most efficient. This valuable information will help Dean Kjæmpenes improve her teaching methods and maximize learning for her students.

eduBack

Set goals
Give feedback
Stay motivated
View statistics

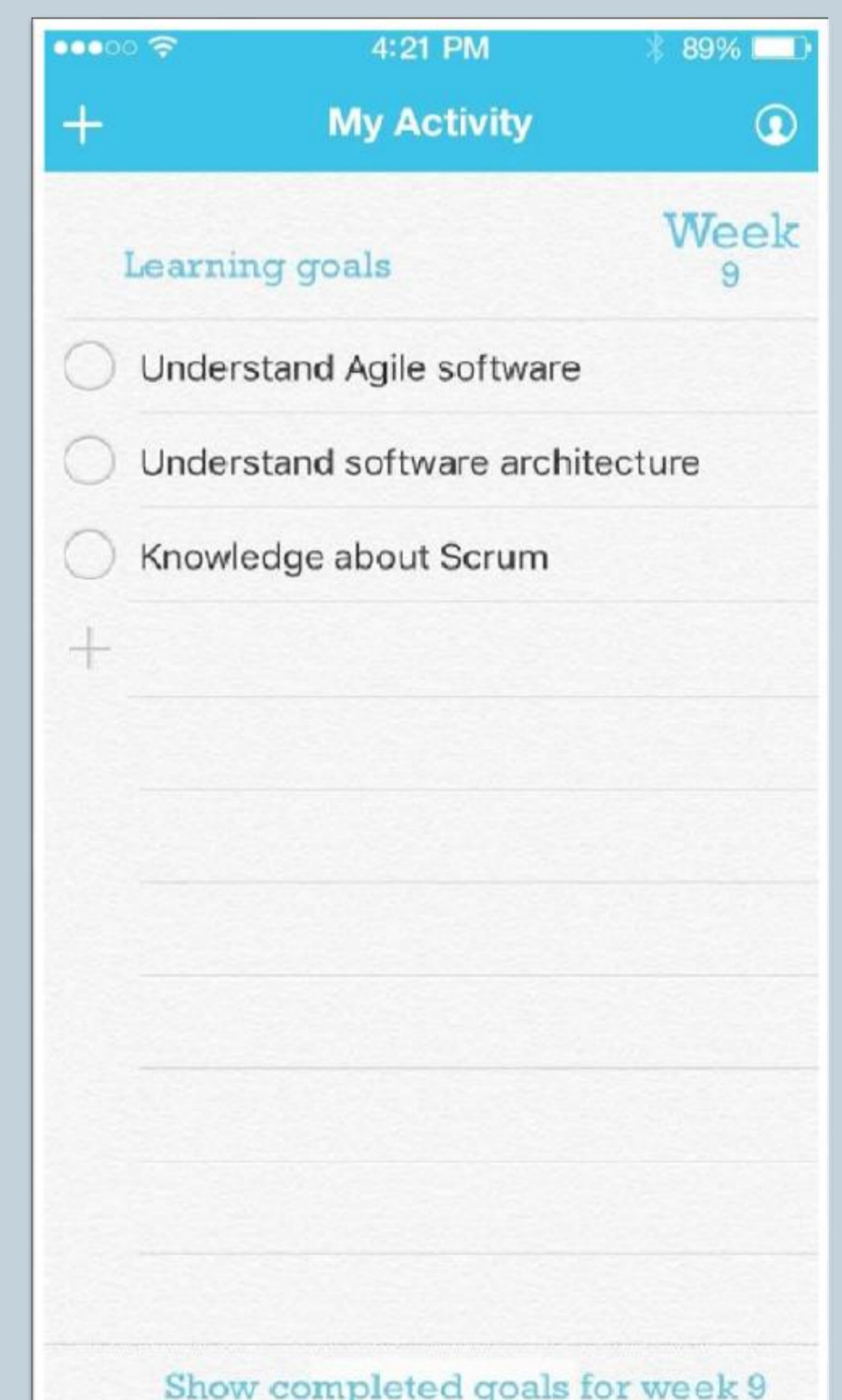
Given to you by BitsPlease

Take care of your **education** and give **feedback!** eduBack is the best solution for both professors and students. Make use of each other and make the education the best it could be!

eduBack will be made with use of different technologies, including Java, Eclipse and Android Studio.

Top 5 backlog items

1. As a professor I want instant feedback from my students after class if they understood the learning goals for the lecture
2. As a professor I want an easy way to share the learning goals for the lecture
3. As a student I want to give my professor instant feedback after class
- telling if I achieved the learning goals or not.
4. As a student I want to make myself goals every week and be able to check them off.
5. As a CTO I want the system to use an existing database, rather than creating a new one.



How does it work?

eduBack is an interaction between teacher and students. The teacher provides course information and learning goals and receives anonymous statistics about students' attendance and studying habits. The students can view their own statistics along with the average of all students.

CHATSIBOT

FAST ANSWERS FOR AN EASY LIFE



Hallvard Stemshaug
Graphical designer

Charles Edvardsen
Team leader

Siren Johansen
Scrum master

Truc Phan
Head of development

"As a professor I would like a program that helps me answer questions. I spend a lot of time answering e-mails from students, and often the same questions more than once."

"I would like a way to access already answered questions asked by other students, I spend a lot of time awaiting answers for questions I'm sure have been answered before."

"I need my answers quickly therefore I would like a program that provides instant answers."

"CHaTSiBot would make me a more efficient student"
- Daniel Zhang

CHaTSiBot is primarily a Q&A Chatbot. It is not public in any way, as the conversation will be between CHaTSiBot and the individuals. Students do not need to be afraid to ask questions anymore!



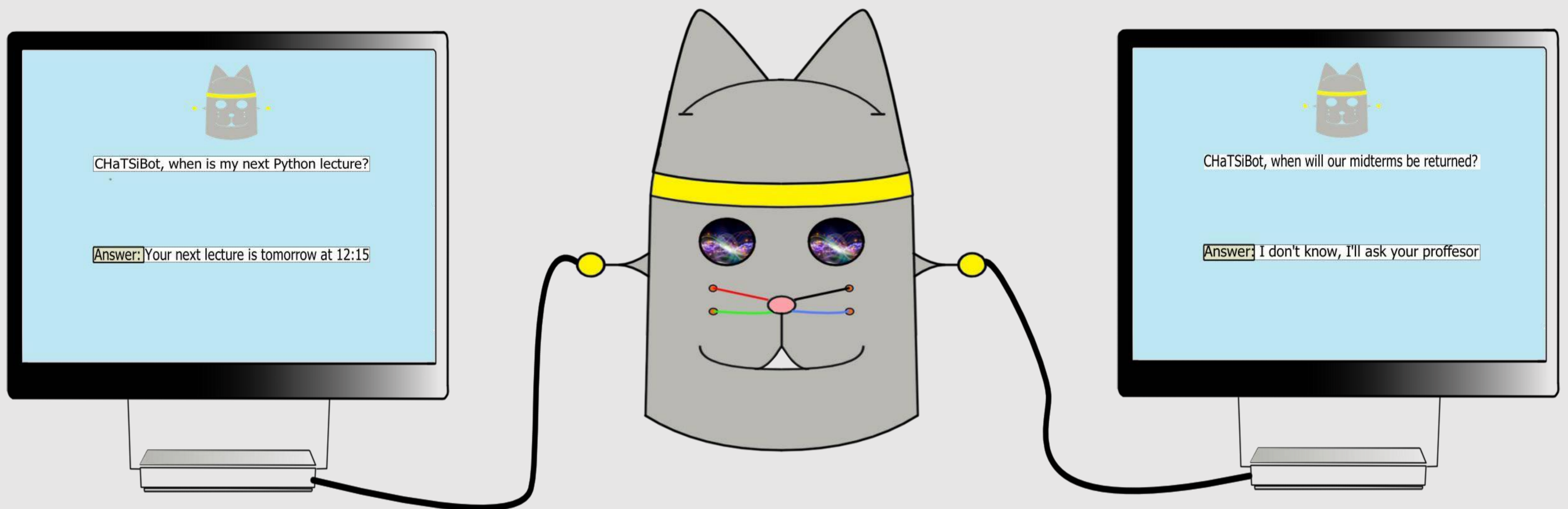
Daniel Zhang is a student at NTNU. He has many hobbies, including piano, working out, drawing, designing, animations, music, self-studying Chinese, and not to mention reading.

He is studying chemical engineering and biotechnology, while at the same time working as a student assistant and is currently taking an extra subject. In his tightly packed schedule, CHaTSiBot will help satisfy his curiosity regarding the courses he is a part of. With this useful tool, not only will he gain more free time, he will also save the effort needed to write proper posts to the teaching team or platforms such as Piazza. Never again does he need to go through hours of browsing in order to gather information about his courses!

CHATSIBOT

Authors: Charles Edvardsen, Hallvard Stemshaug, Truc Phan, Siren Johansen

27.04.2017



Product Goals:

- Giving instant answers to your inquiries so you can move on to the next task faster
- Helping teachers avoid answering the same questions multiple times, letting them spend time on more important work
- Making practical information accessible so that you don't have to waste time looking in multiple locations putting together a jigsaw puzzle of info
- Providing shy students with a means of student-teacher communication using a third party program, so their learning experience will be maximized
- Enabling user feedback on automatic answers, allowing the program to learn and provide more accurate answers in the future

'What does it do?'

Time is irreplaceable. CHaTSiBot is made with the intention of saving as much time as possible. The idea is that students ask questions, if it is a question that has been asked before, the answer will be provided right away. Otherwise, the bot will send it to the teaching team. Students will receive the answer from the bot after it is available.

'How will you do this?'

We use the natural language toolkit to analyze the similarity of each question to already answered questions in our database. If the user does not feel their question has been answered, they have the option to send the question to their professor to receive a better answer. The new answer is then added to our database, allowing it to be used for the future.

'What technologies do you use?'

MYSQL
NLA (natural language toolkit) for JAVA
NTNU IME's Data API



SHOUTOUT

No more reluctance for asking questions in class

- Ask anonymous questions during the lecture
- Teachers get real-time responses from students
- See if other students have the same questions as yourself
- Save time by displaying the questions during lecture
- Collaborate on choosing the most important questions

ShoutOut is an educational webapp which allows students to ask questions on their smartphone during lecture and voting on other student's questions, built in JavaScript.

<I know my students have more questions, so I wish there was a better way to interact with them during lecture.>

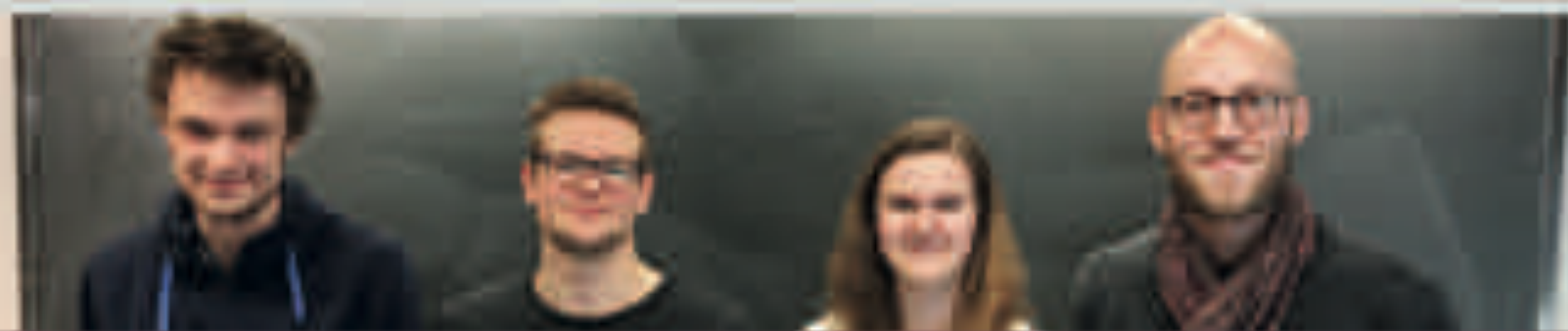


Many students struggle with reluctance when it comes to asking questions in class, and more often than not, several students are wondering about the same issues. Lecturers would save a lot of time if the students could coordinate their questions and collaborate on the most important ones.

ShoutOut offers a solution to this problem, allowing students to immerse themselves to the topics at hand, and never having to feel asking a question again. Professor in mathematics at NTNU Jane Smith is intrigued by the possibilities and paradigm-changing impact new technology could bring to higher education.

By simply writing the questions on your smartphone and voting up other questions you also would like an answer to, students can appreciate lecturers in a new way.

<I believe such a solution would encourage more students to attend my lectures.>



The ShoutOut team consists of enthusiastic students at the Norwegian University of Technology and Science, from left to right:

Hakon Hoff (developer and lead tester), Jørgen Skarnes (developer and feature team leader), Ingrid Hagland (developer and Scrum-master) and Sandra Star (Project leader).



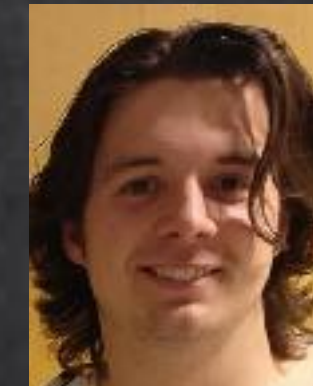
connectED

Whatever you're into, get into connectED

The team



Christine Foss Sjulstad
(Team Leader, Developer)



Henning Herring Sørensen
(Supervisor, Developer)



Camilla Berg Gjennestad
(Client contact, Developer)



Snorre Børtnes
(Architect, Developer)

What is connectED?

A digital, personal assistant platform for students and assistants

connectED will:

Distribute help efficient and flexibly.
Create a community for helping and sharing knowledge



“Everybody got time for chat!”

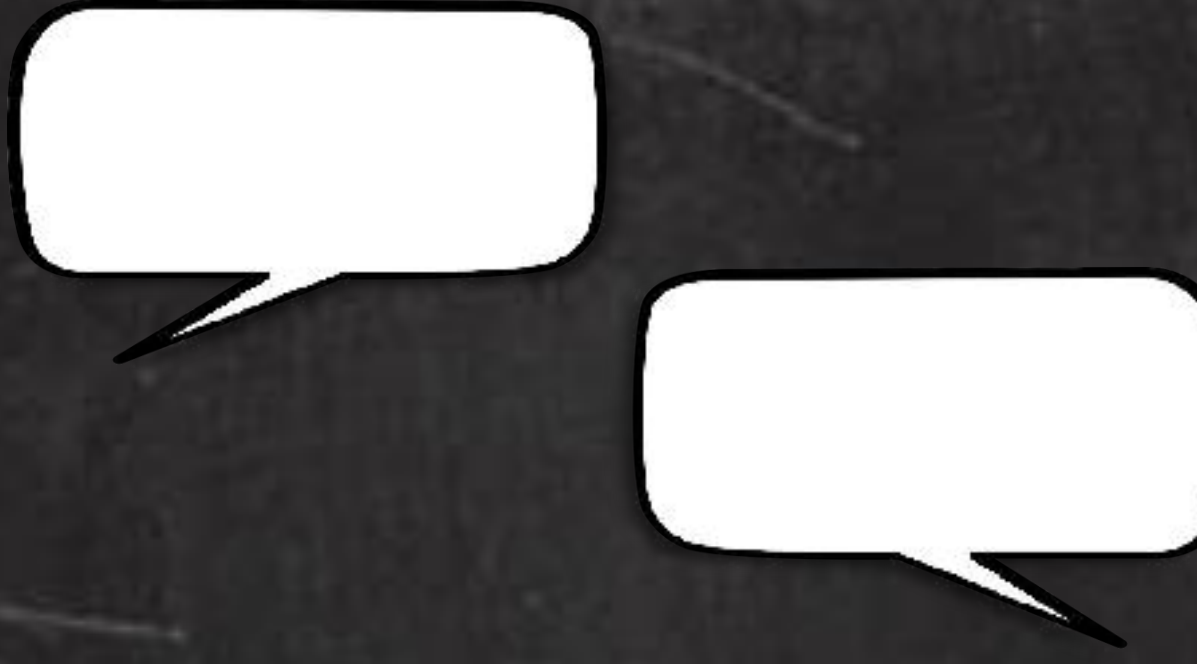
Persona

Philip is a 21 year old busy student and part time real estate agent from Åsgårdstrand that wants to spend his time efficiently. He is tired of planning his schedule around available assistant hours, and spending time in a queue waiting for help.

Pair Programming



Communication



Interactive Tools



```
public int findNthPrime(double n){
    Finds large prime numbers by estimating their bounds
    int upperBound = (int) Math.round(n*(Math.log(n) + Math.log(Math.log(n))))+1;
    int sieveTopNum = (int) Math.sqrt(upperBound);
    boolean[] sieve = new boolean[upperBound];
    int primeNumber = 0;
    int numberPrimePos = 2;

    do{
        while(sieve[numberPrimePos] == true){
            numberPrimePos++;
        }
        primeNumber++;
        for(int i = numberPrimePos; i<upperBound; i+=numberPrimePos){
            sieve[i] = true;
        }
    }while(numberPrimePos < sieveTopNum);

    // Find rest of primes
    for(int i = numberPrimePos; i < upperBound; i+=2){
        if(sieve[i] == false){
            primeNumber++;
        }
        if(primeNumber == n){
            return i;
        }
    }
    return 0;
}
```

Security login



Speech interaction



Voting system



Faster assistance

With connectED, all you need is a computer with an internet connection, and you are ready to connect with a student assistant. There will always be student assistants online, which means you will get help immediately.

Students help other students

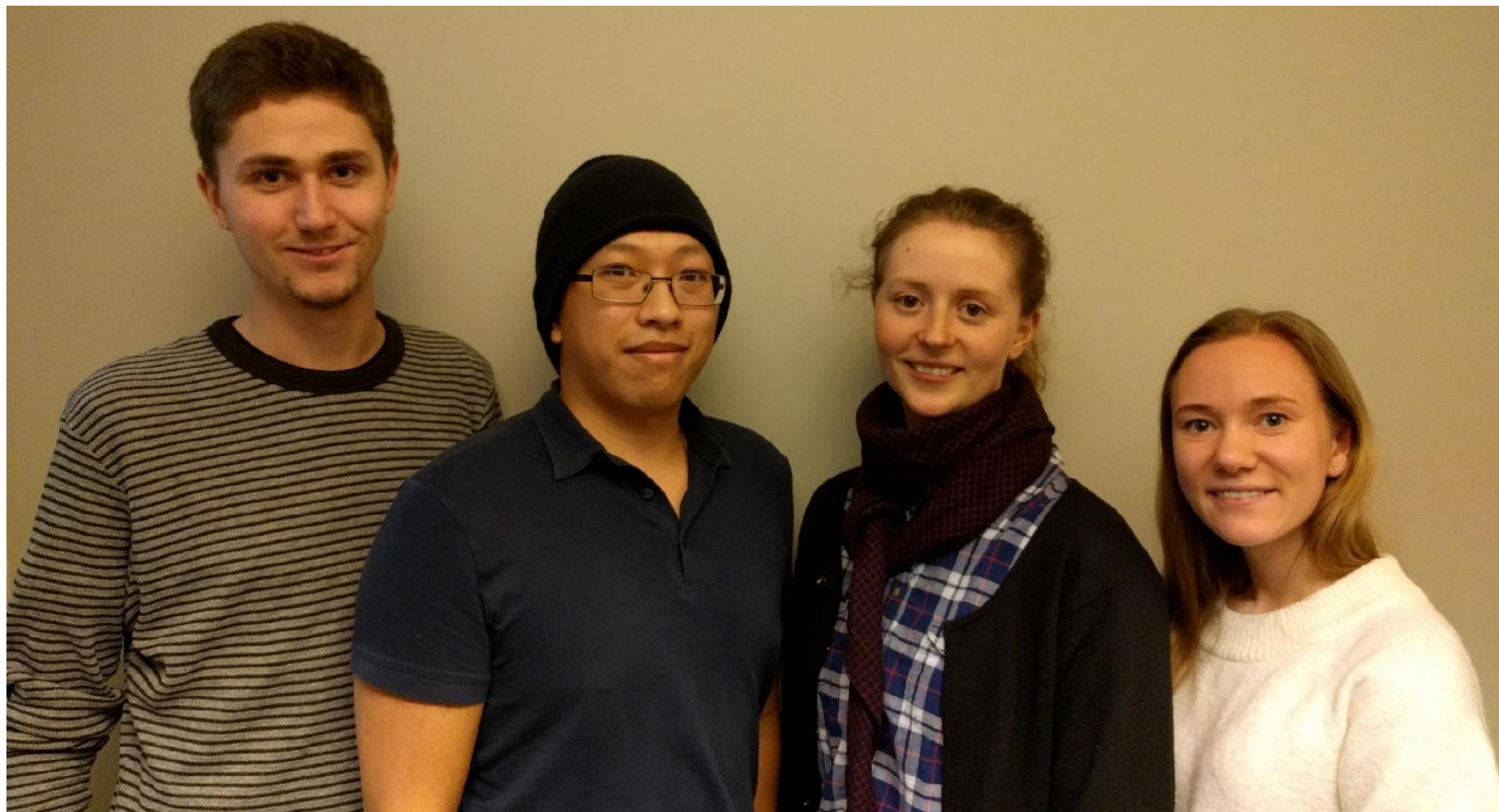
Students will also have the option to log in as help. If there are no student assistants available, students will be connected to a student who logged in as help instead. This way, connectED will greatly reduce waiting times.

Shared editing window

Get help with your assignment in a shared editing window. Choose between windows, including a code editor and text editor. A better means of contextualized learning!

Einstein

Your personal study coach



Group 8:

Simon Nymo (tv):

Software responsible

Truong Tran:

Project team leader

Ditte Heebøll Callesen:

Product owner

Maria Soleim:

Scrum master

All members of the group has the role as software developer

“Students do not work steadily throughout the semester, but more in periods”

Prof. at NTNU

Einstein will help you develop as a student and improve the communication between the student and the teacher.

Gain motivation through your phone.

The students wants:

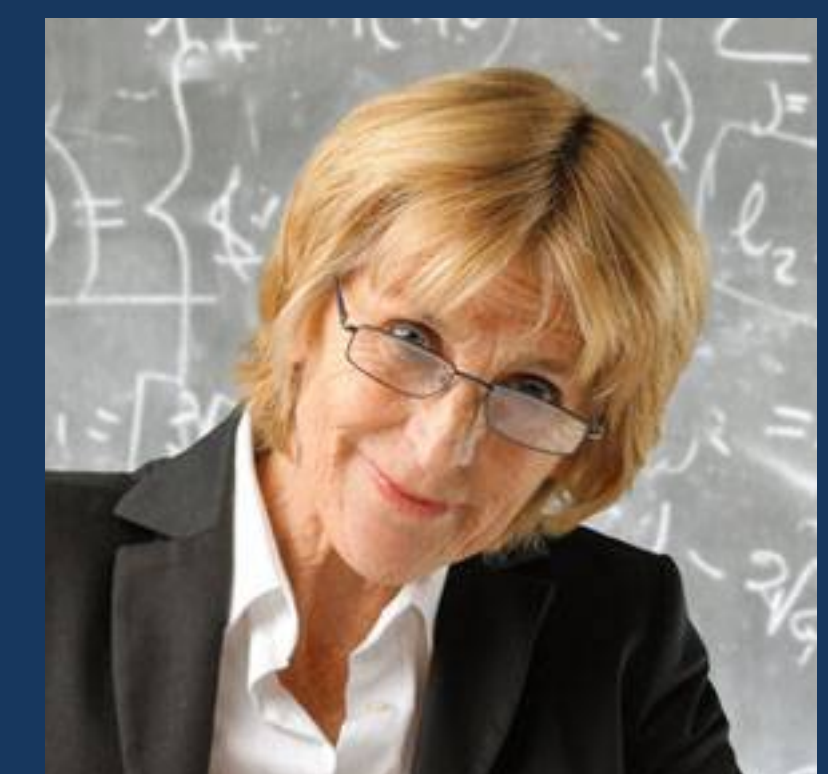
- Guidance and motivation
- Quick feedback on assignments
- To know their learning progress

The teacher wants:

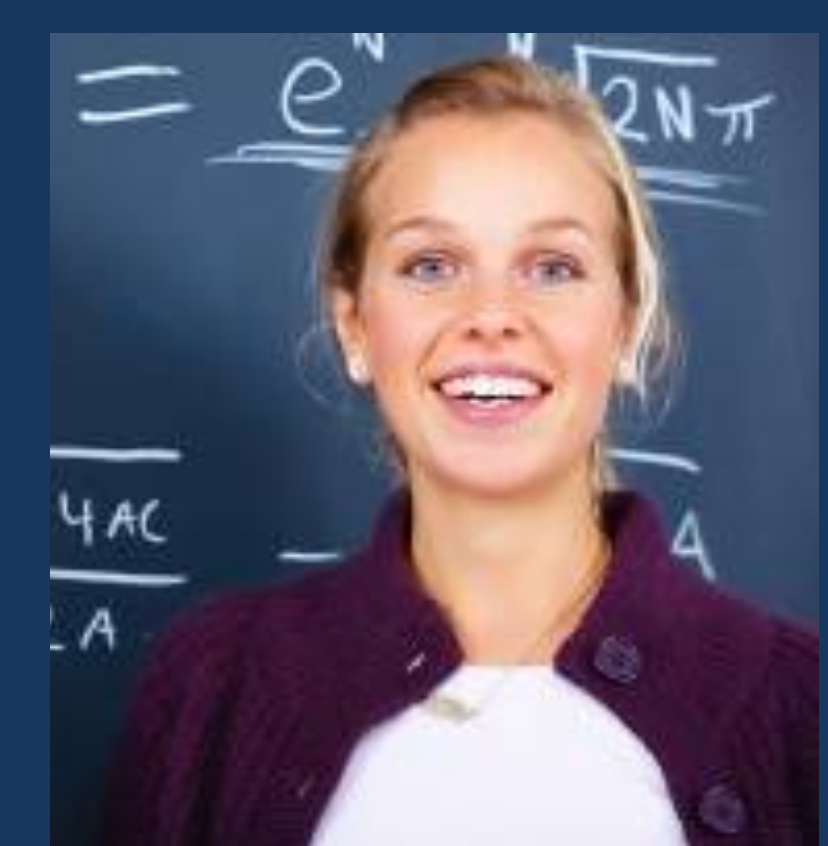
- Better communication with students

User stories:

Trine is a professor at a big university, she sometimes encounter problems regarding that the students works mostly in periods and do not ask questions during lectures.

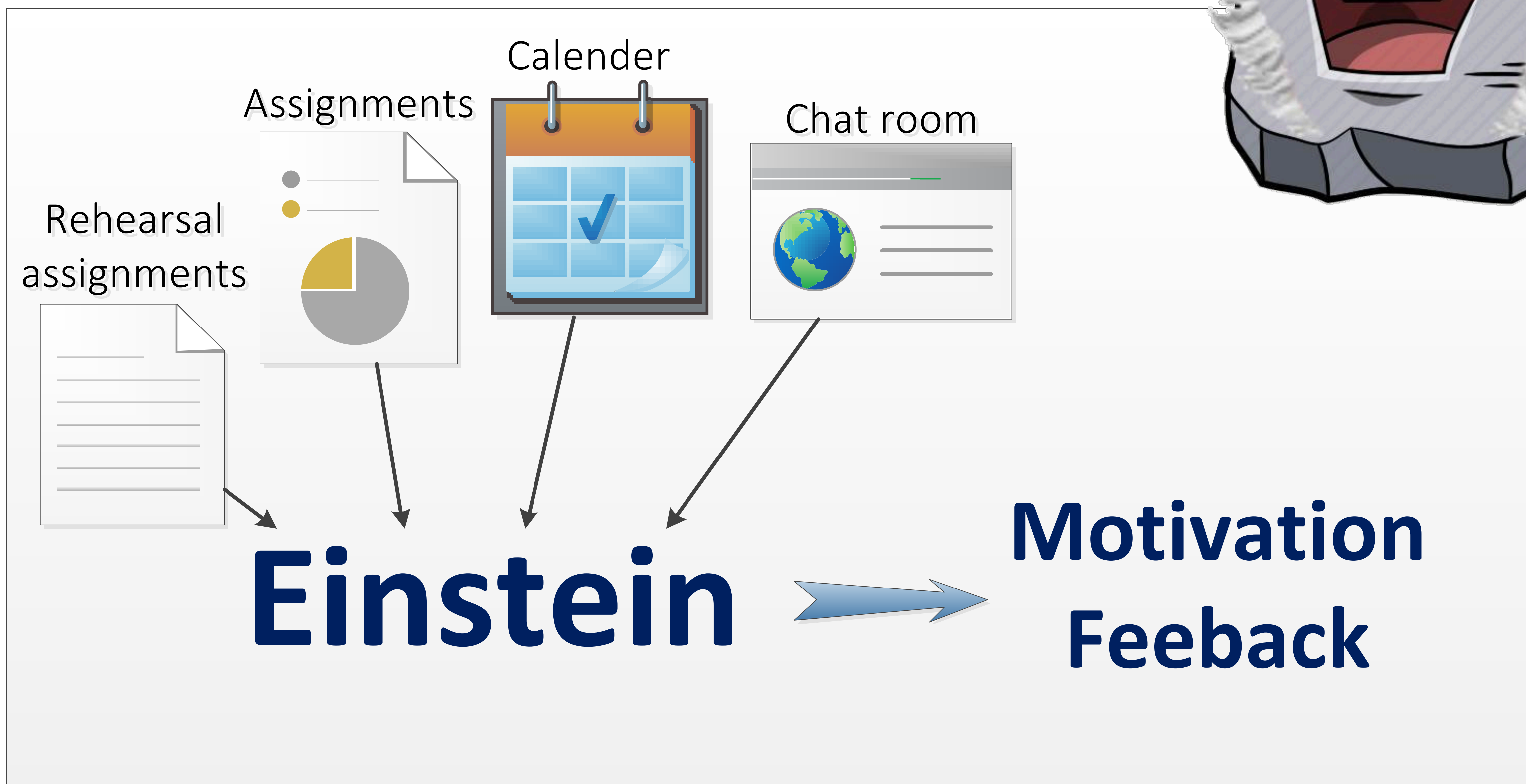


Sofie studies to become an engineer. She feels it is difficult to have the motivation to work steadily throughout a semester. She also wants help with keeping track over assignments, deadlines, and her development.



Einstein

by Simon Nymo, Maria Soleim, Truong Tran, Ditte Heebøll Callesen



1. As a student, I want a **personal coach**
2. As a student, I would love to get **quick feedback** on my work
3. As a student, I want my work to **be appreciated**
4. As a student, I would like to **get rated** on my work
5. As a student, I want to be told what to do on a **daily basis**

Einstein will:

- Give quick feedback on uploaded assignments.
- Provide chat room where students can ask questions.
- Improve communication between teacher and students.
- Guide the student through the semester.

Einstein will be your personal coach and motivator.

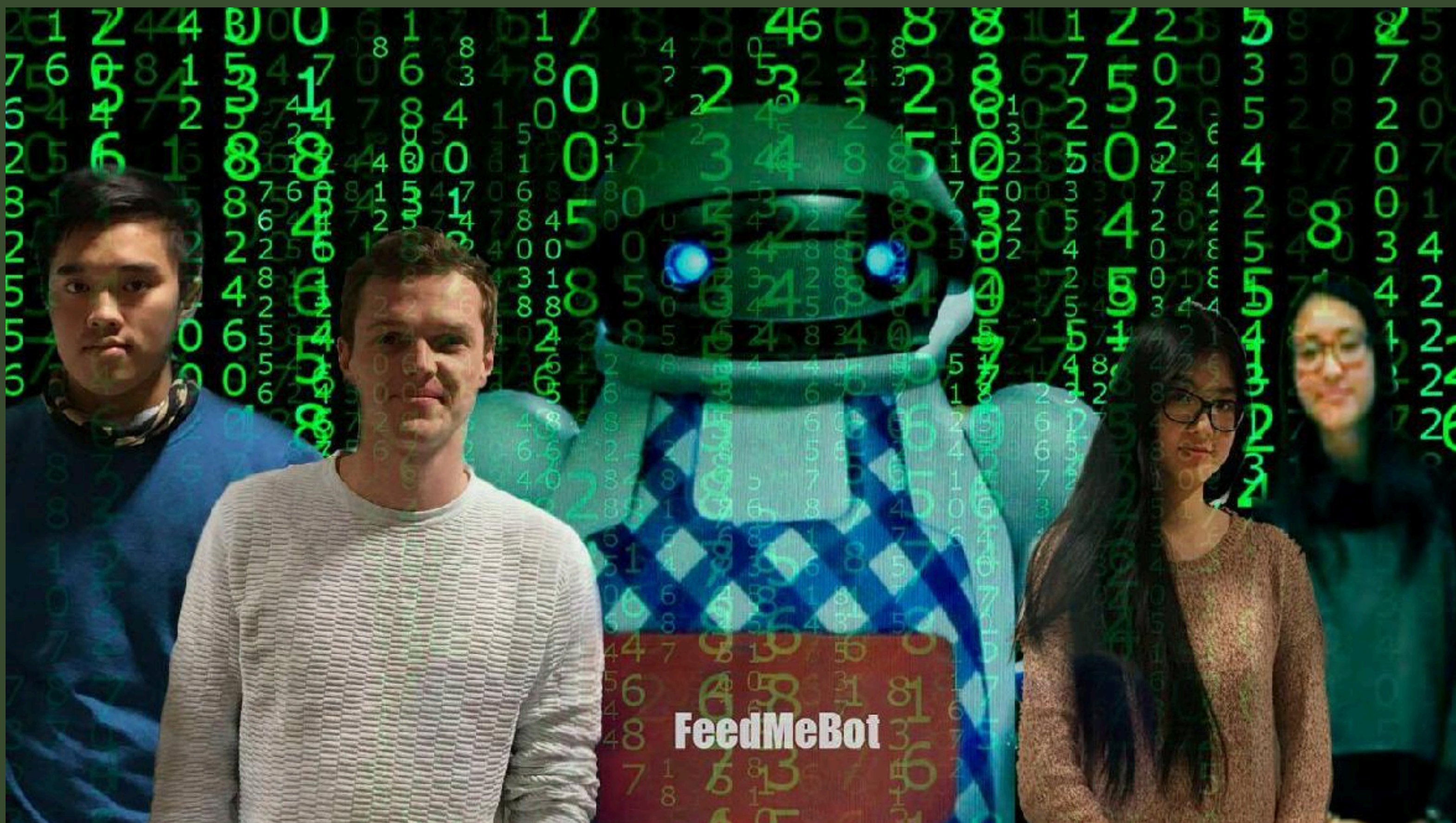
It will improve the relation between teacher and the students.

Einstein will answer questions, and keep track of the students' learning development.

Einstein will be an android app.

It will use SQL for a database and other supporting systems for their functionalities.

FeedMeBot



Team members:

- Kieu Van June Bui - Team Leader
Scrum Master
- Quynh Phan - System Architect
Graphics Designer
- Jakob Sterri - Test Leader
Customer Relationship
Manager
- Quit Phuong Bui - Quality Assurance lead

Persona

Ingrid Tangenes

21 years old, Porsgrunn, Norway

Ingrid is a student at NTNU. Her goal is to have average grade of B, but she is struggling with calculating how much time she needs to put into each subject so that she will achieve this.

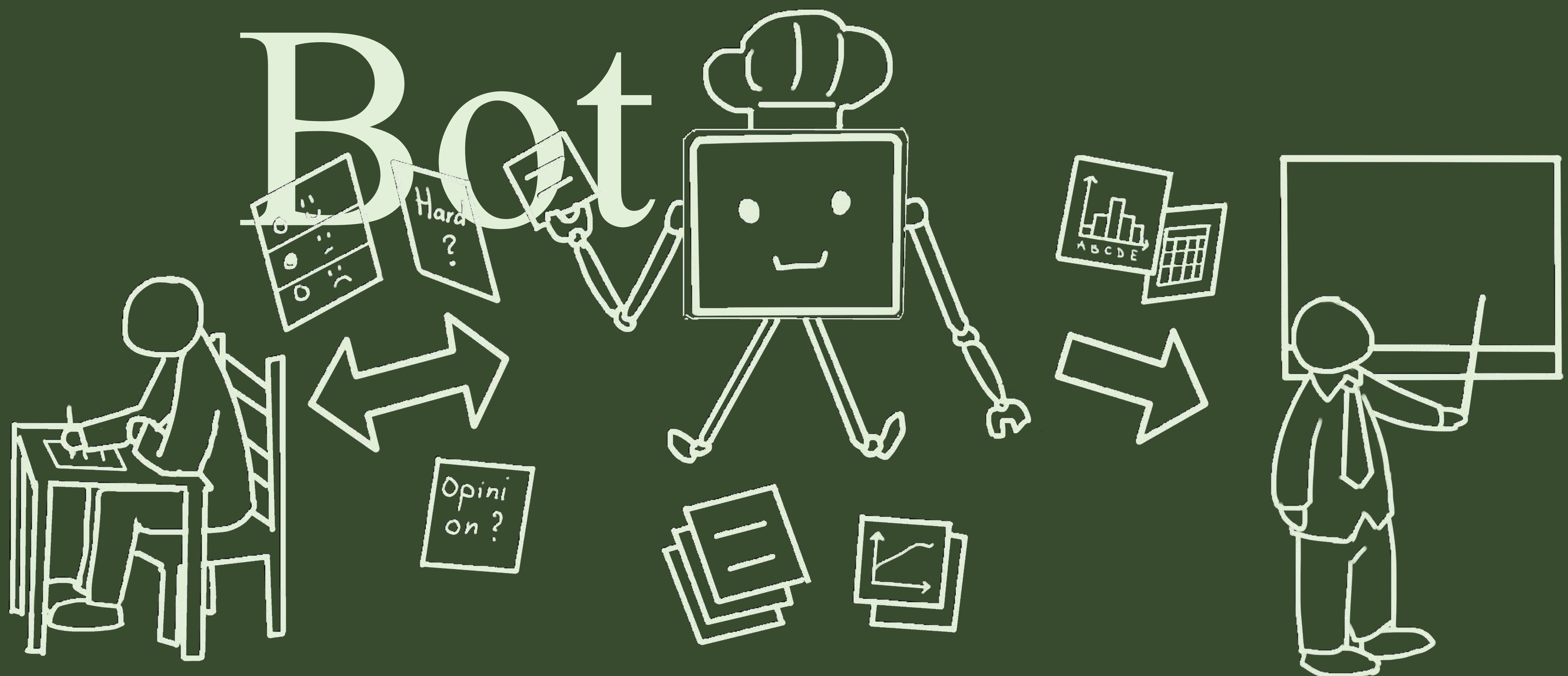
It is very hard to study effectively while not knowing what is expected of me in the different courses, she says.

With FeedMeBot's data gathering and estimation system Ingrid will finally be able to get on top of her time management and make a concrete plan to reach her goals.



FeedMe

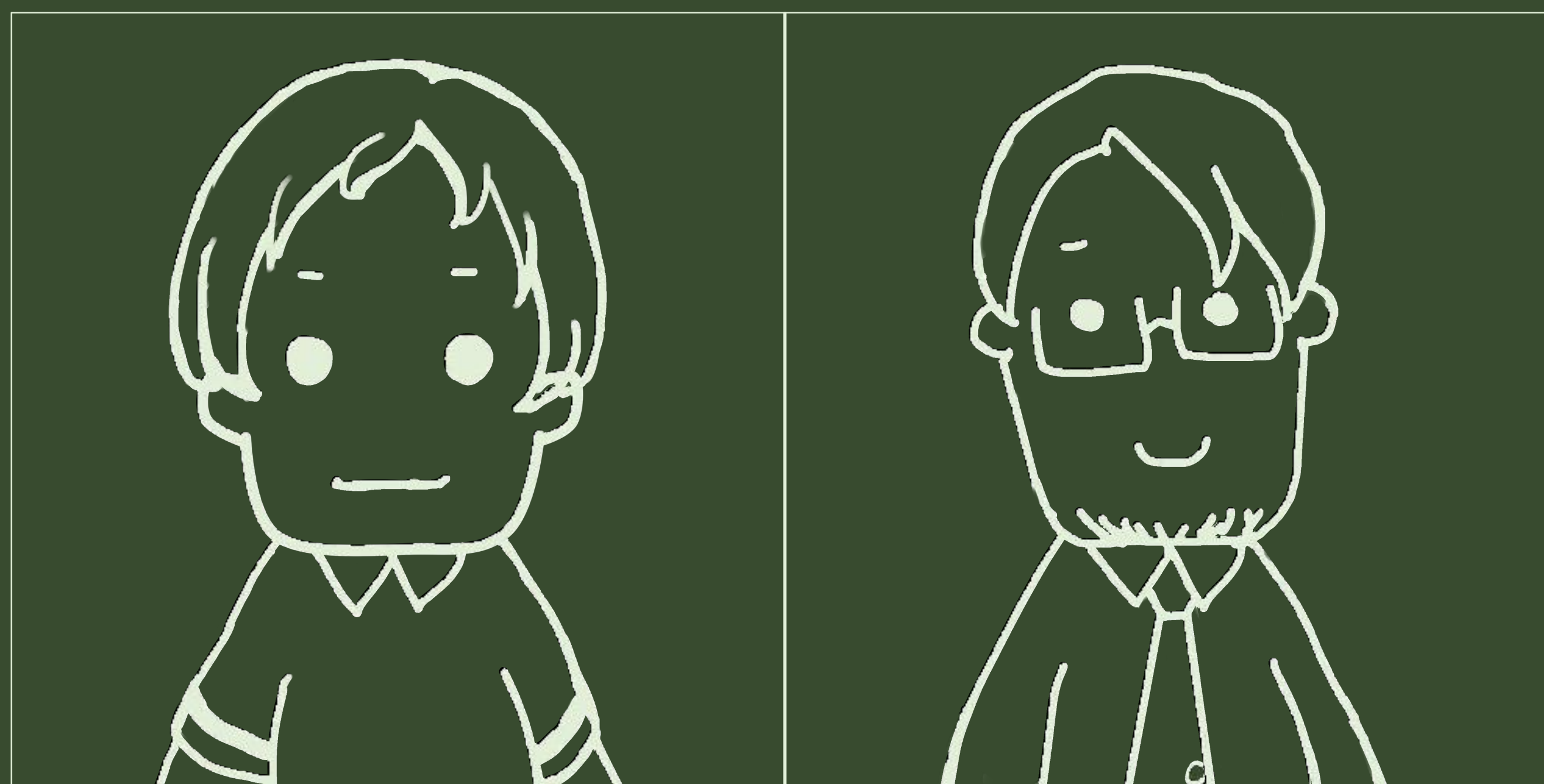
- food for your mental health



FeedMeBot collect various data from students via surveys and construct statistics that professors and students alike will benefit from. Our system consists of several tools that will help with time management based on an easy-to-use feedback system, said tools include an estimate on the amount of time needed to reach certain grades & support on judging the average skill level of students in a class.

FeedMeBot offers free guidance optimized for each course!

What is the expected time I need to invest in so that I will achieve my goals?



How much time do my students use on my assignments? I want to be able to adjust the difficulty level.

What resources are available for me in order to learn more and complete the given tasks.?

I want to collect data on the students' activities so that I can keep track of their progress.

I want to know the resources the students used when solving their assignments so that I can invest more to deliver what the students think they need.

NYSIL

«Not your standard interactive lecture»



F.L. Kristoffer Saastad CCO, Vebjørn Fjeldberg CEO,
Espen Lindstad CFO, Oscar Kierulf CTO

The area of use:

NYSIL is a software system that makes learning exciting for students and it's super easy! Even if you are a student or a professor you just log in to the system with your personal username and password on your smartphone or computer. As a student you just click on the subject you want to work with. Further, you click on the video you will watch (all videos are short). After you've seen the video there are exercises to do with varying difficulty, and you get points depending on the hardness of the exercise. As a student, you also have the option to see your score in the different subjects, use hints, add comments to the different exercises and much more. As a professor, you are responsible for adding short videos and exercises to it. And with the student comments, you can make it even better!

NYSIL works because it mixes interactivity and video lectures. Precise and short videos, followed by exercises, which ensures that you have learned what was said in the videos, is a very good learning method and it is precisely this NYSIL stands for.



Persona:

Ever felt this? This is Nora, a 22 years old student from Oslo who trains a lot to achieve her dream; Become a handball star. Beside this Nora is a hard-working student who is only satisfied with the top grades. Unfortunately, Nora has a big problem. She struggles to keep the concentration in lectures, and this leads to many heavy and boring exam periods, which really creates trouble for her big dream. After Nora started to use NYSIL she was happy because she noticed that NYSIL increased the efficiency of her work, so she could focus on becoming the star she deserved to be.

NYSIIL

«Not your standard interactive lecture»



Our priority

1. Practice what the student just learned
2. Feedback to professor
3. Track of progress in curriculum
4. Each subject has its own page
5. Toolbox with tips and examples



By combining the elements in the learning pyramid are we able to achieve the greatest learning method ever!

DeepLearning



TEAM MEMBERS

Andreas Moe
Project Team Leader

Kjetil Kværnum
Lead Software Engineer

Nikolai Tellmann
Scrum Master, Lead Architect

Karoline Velsvik Berge
Lead Graphical Designer

Tomine would like to step back to the roots of mathematics, and understand why all the formulas she's been taught actually work.



Tomine is a 22 year old student living in Kristiansand. She loves to sing and going hiking. She also loves creating new things, so she decided

to become an engineer. When she started her bachelor degree at UiA, she discovered that her fundamental mathematical skills were lacking.

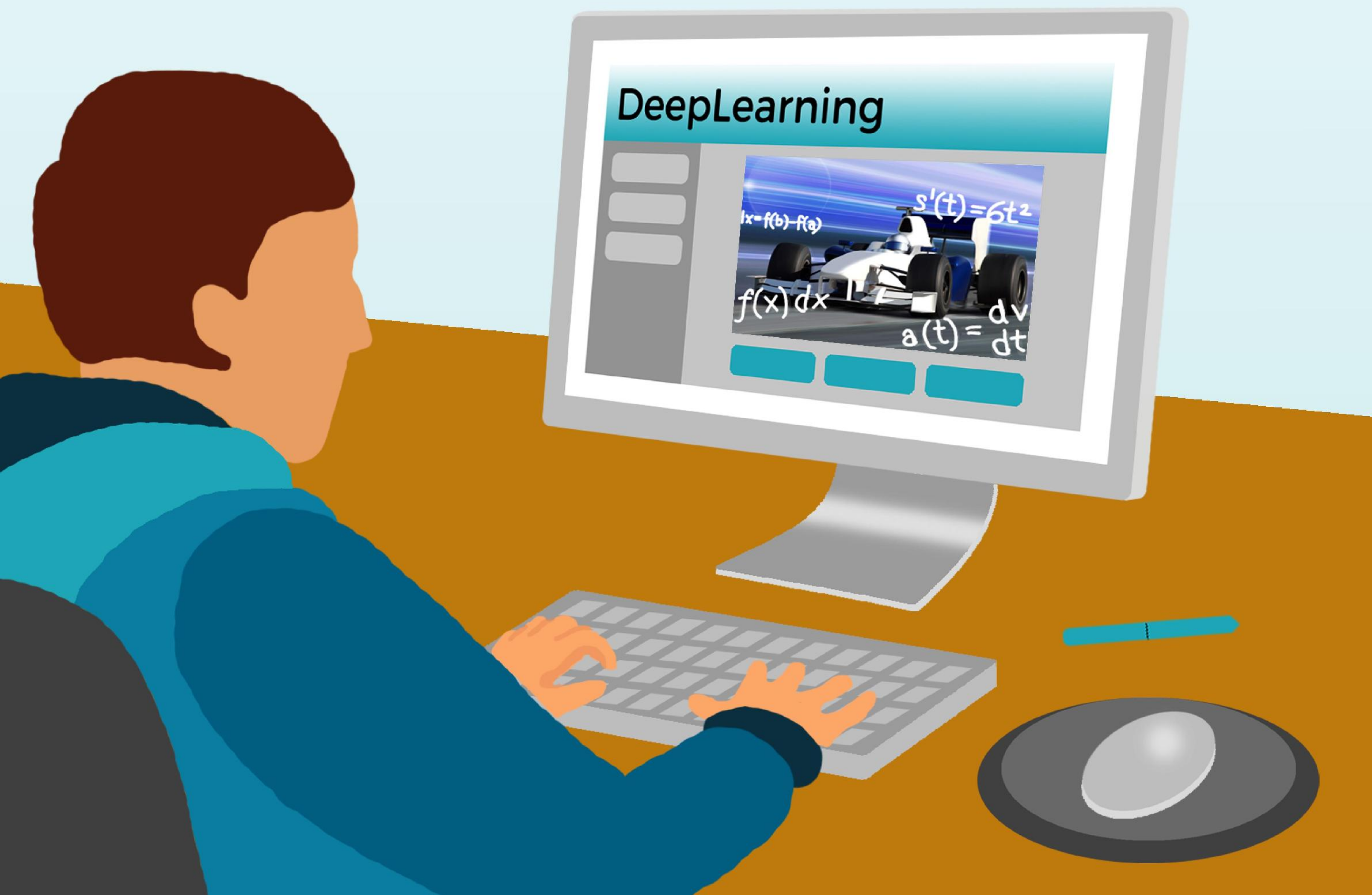
"How are we supposed to understand the complicated stuff when the fundamental knowledge isn't there?"

HOW WE HELP

We provide students with a dynamic schedule- and alert-system to help them spread the workload.

We provide the fundamental knowledge of mathematics through practical tasks that elicit interest and motivation, and that makes students want to pick up the books of own accord.





TOP FIVE BACKLOG ITEMS

As a student I want to be provided a dynamic study schedule, and a system that will alert me when I should study.

As a student I want to be provided motivating and inspiring exercises during my study sessions.

As a student I want to be tested regularly so that I can stay confident on my fundamental knowledge.

As a group of experienced math professors, we want to be able to add exercises to the system.

As a group of students we want to be able to cooperate with each other so that we can learn together.

WE MAKE MATHEMATICS FUN

Plan your study sessions ahead. Solve motivating tasks. We bust the myth that mathematics can't be fun - once and for all.

Deep Learning will help you set up a dynamic study schedule, and send you notifications when it's time to study. You will be provided with intriguing illustrative tasks, optimized for learning.

POTENTIAL TECHNOLOGIES

- Trello
- Github
- Messenger
- Google drive
- Pycharm
- Python
- Django
- Google docs

commune

The interactive classroom experience



commune is the interactive web based platform for schools and universities everywhere.

Lecturing has remained the same for over a thousand years. commune will change your classroom for the better, and we believe we can push the limits of the digital revolution even further.



The sea of learning applications today is deep, so why try commune?

Humans. Our main objective here at commune is facilitating learning between humans. We want to make classrooms more interactive – erase physical



commune achieves this with a clean, easy-to-use, interactive design. We value simplicity.

At commune we have a solid background in pedagogics and human-computer interaction. This combined with a vision of communities learning and creating knowledge together is the essence of commune.

Here is how it works:

The screenshot shows the commune web interface. At the top left is the commune logo. To its right is a dropdown menu labeled "pick a class" with a building icon. Further right are icons for mobile and desktop views. The main content area is divided into two columns. The left column contains an interactive forum board with three questions and their respective comment counts and upvote/downvote buttons. The right column contains a chat window with a list of messages and a "Type something" input field. Annotations with arrows point to various parts of the interface: "revisit any lecture during the semester" points to the "pick a class" dropdown; "choose your view" points to the mobile/desktop view icons; "interactive forum board for questions during the lecture" points to the forum board; "chat for informal queries" points to the chat window; "activate yourself;)" points to the "Type your query..." input field; and "full sized chat with advanced bot functionality" points to the chat window.

commune

The interactive classroom experience



Elise is a university lecturer and a high school teacher in Trondheim, Norway. She is passionate about education, teaching, lecturing, learning and students' wellbeing.

One of Elise's problems as a university lecturer is large groups of students with few lecturers and assistants. She does not have enough time and resources to communicate with students both during, and outside, lectures. A goal is to bridge the gap between teaching and learning.

"In many ways I wish that students and lecturers stayed at the same physical space at the university so that students and lecturers could meet more often and communicate better."



Signe S. Nordgaard – team leader and graphics
 Ulrik A. Haløy – responsible for the pedagogical manifesto
 Thomas Aven – software architecture and coding
 Niklas Hystad – user interaction and quality assurance



Cross-platform compatible

commune is easy to install, configure and run in Linux, OS X and Windows



Robust cloud based backup

commune archives your classes and takes regular backups

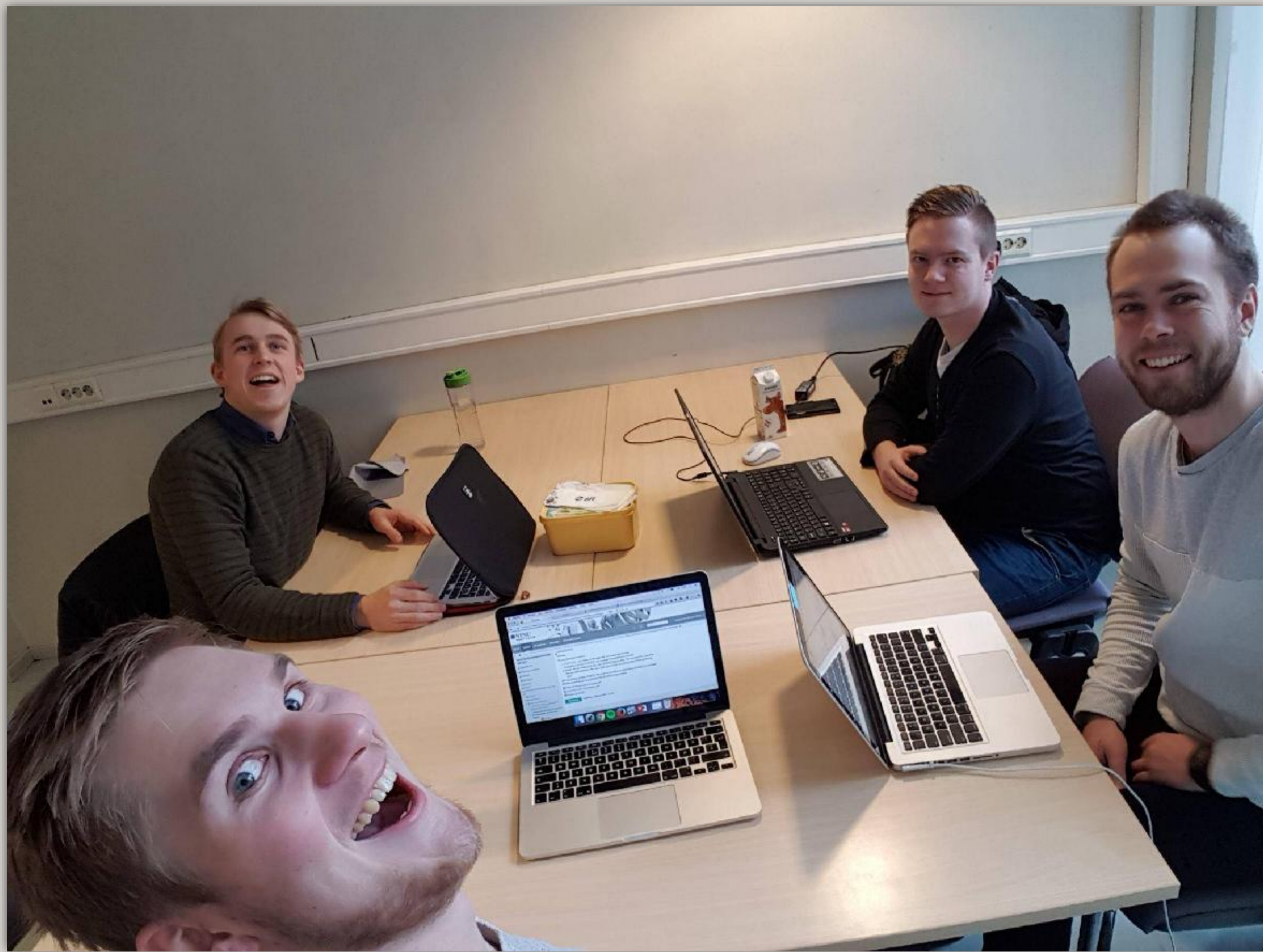


Open source

commune is easy to extend with your own plugins – write your own chat bot!



- Optimizing your institutions room distribution
- Organizing room logistics made better



Team:
Olav Nuland Sole, Leader
Kristian Endré Holdahl
Langvann, Designer
Trym Haakon Blaauw,
Developer
Per Morten Solheim,
Developer

Ole Tobias hates searching for rooms and would love to spend the time lecturing instead



Ole Tobias,
Professor, 50 years,
male, has loads of
students in multiple
courses, wants to
spend time teaching
instead of finding
good rooms

”I spent so much time looking for suitable auditoriums”

Automating the process of assigning rooms with your criteria

Roome

Date



Meeting rooms



Training rooms



Conference rooms



(Executive) board rooms



Video conference rooms



Co-working spaces*

Illustration photo only, source: google

Most important user stories

1. As a user I want to search for empty rooms
2. As a user I want to be assigned lectures automatically
3. As a user I want to know if booked rooms are not being used
4. As a user I want to swap rooms if possible
5. As a user I want my participants to know where lectures are held

Managing rooms
made easy

Our solution

1. Choose your requirements
2. Get assigned the perfect room
3. Save time and money

Implemented with: Java, JavaFX, Lucene/SOLR

crowbot

What is Crowbot?

Crowbot is a chatbot that automatically responds to your course-related questions.



Members of the Crow Crew:

Programmer and Team Leader: Einar Hansen Moheim

Programmer and Coordinator: Kristine Klock Fleten

Programmer: Marie Frøysa Bjørdal

Programmer: Daniel Lisø

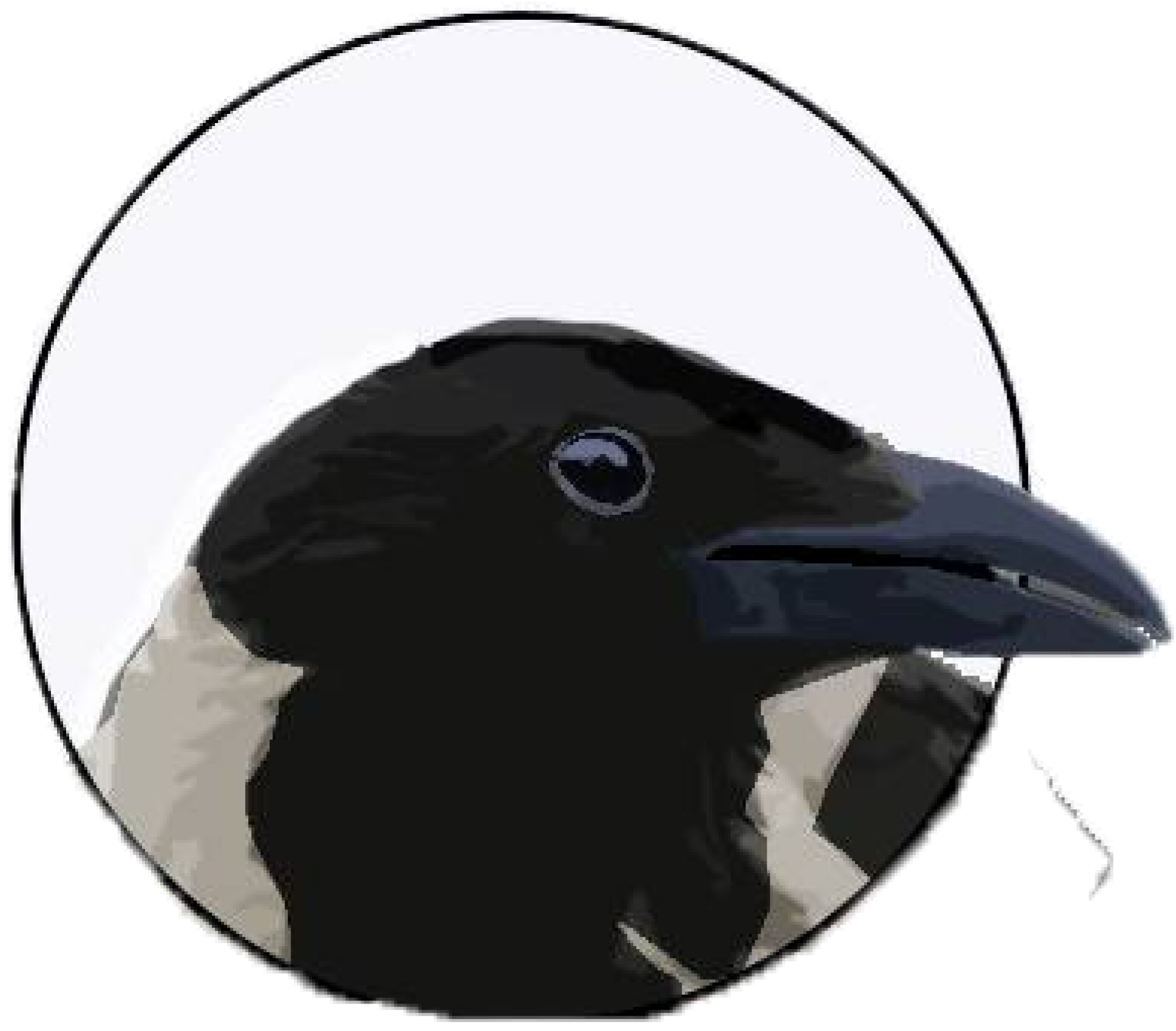


Students: No more waiting for the teacher to respond!

Teachers: No more repetitive routine questions from the students!



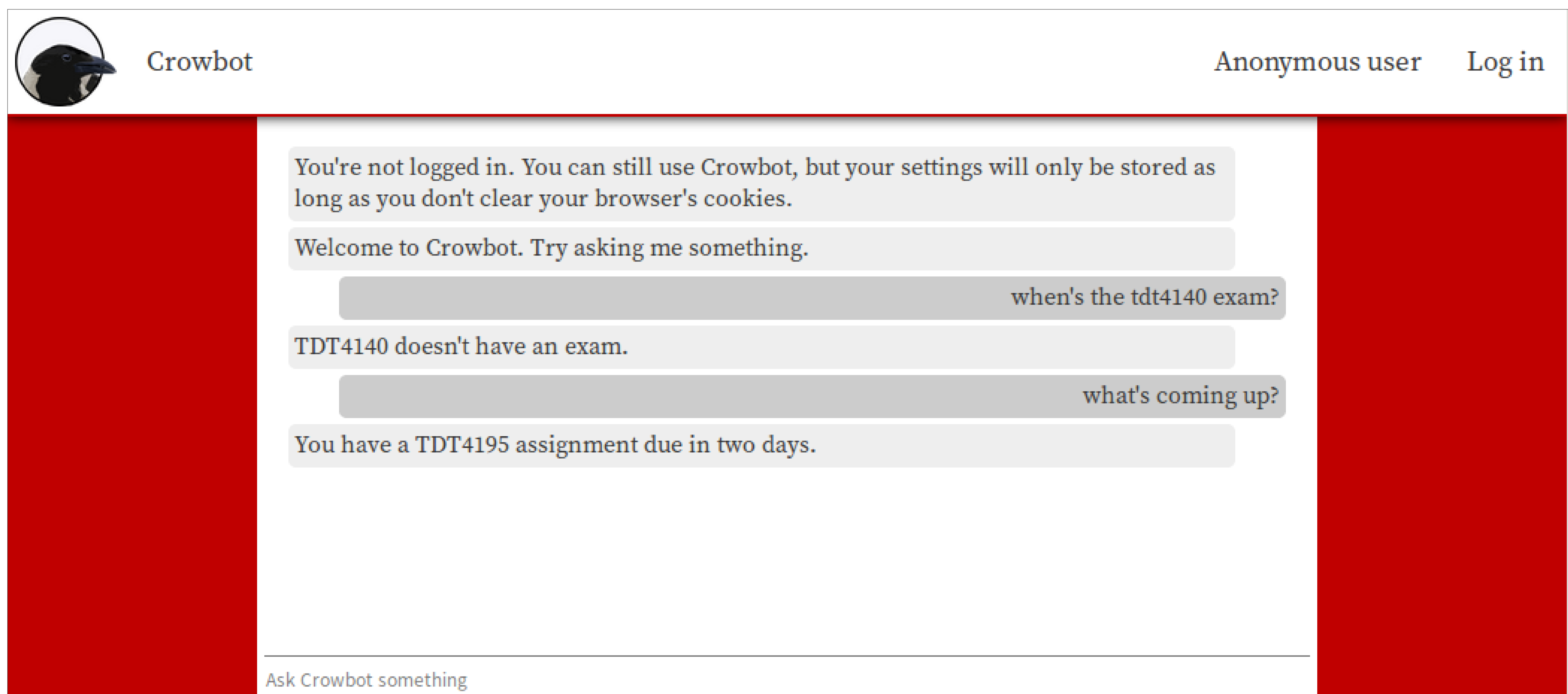
Stein-Erik is a 45-year-old professor at NTNU. He has grown tired of his students asking the same questions regarding his course, and would like to have a bot that can answer these question for him. He would also like to get notified if there are unresolved questions, as it might give him a new perspective. *"I think it would be very helpful to have a bot to automatically answer routine questions, so I can spend my time on preparing lectures and my research. In addition I assume it's very nice for the students to get instant replies to their questions."*



crowbot

– Intelligence by asking

Makes education easier for both the student and the teacher.



User stories

As a professor, I want to make it easy for my students to find information about my course.

As a professor, I want simple, frequently asked questions from students to be answered automatically, so that I can focus on novel questions or my research.

As a student, I want a single platform for getting information about all my courses.

As a professor, I would like to log in and provide official answers to questions, so that the bot can answer questions that are untraditional/specific for my course.

As a student, I want to rate the response in a simple way, so that answers maintain high quality.

How does it work?

Simply write your question, and the bot responds.

The bot answers questions related to NTNU's courses from information stored in its database.

Standard questions like exam dates and course location are answered using data automatically retrieved from NTNU's systems. The teacher also has an option to provide more specific answers by logging in.

Technologies

Crowbot is a chatbot written in Python utilizing API.AI. The website is made using Django and hosted on Heroku. To find out if the same question is asked often, the bot uses Natural Language Toolkit to compare questions.

Team 14: Einar Hansen Moheim, Kristine Klock Fleten, Marie Frøysa Bjørdal and Daniel Lisø. February 15th, 2017.

CHALK TALK

A lecture feedback system

Team Photo:



"The team" - 03-02-2017

Team Info:

- Aigars Tumanis
- Assistant designer/programmer
- Carl Erik Friedemann
- Lead designer
- Fredrik Strupe
- Lead programmer
- Thomas Skarshaug
- Team leader/Lead tester

This is Per Morten Bjørnson. He is a 61 year old norwegian lecturer at Central High school of Architecture and Leisure Knowledge (CHALK). His students think that his lectures are dull and unengaging. With ChakTalk his attendance rate would probably skyrocket and his students would be a happy bunch.

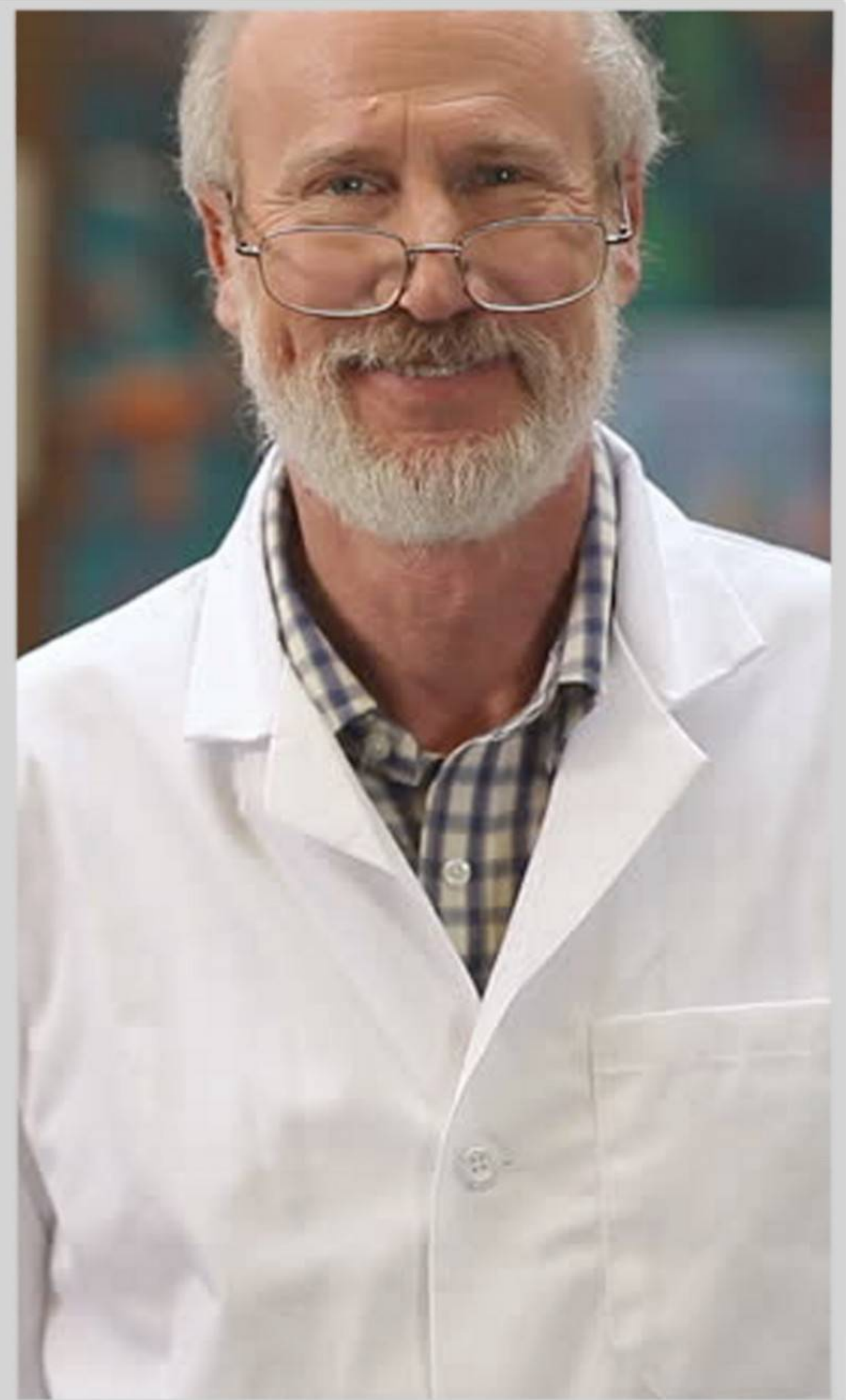


“

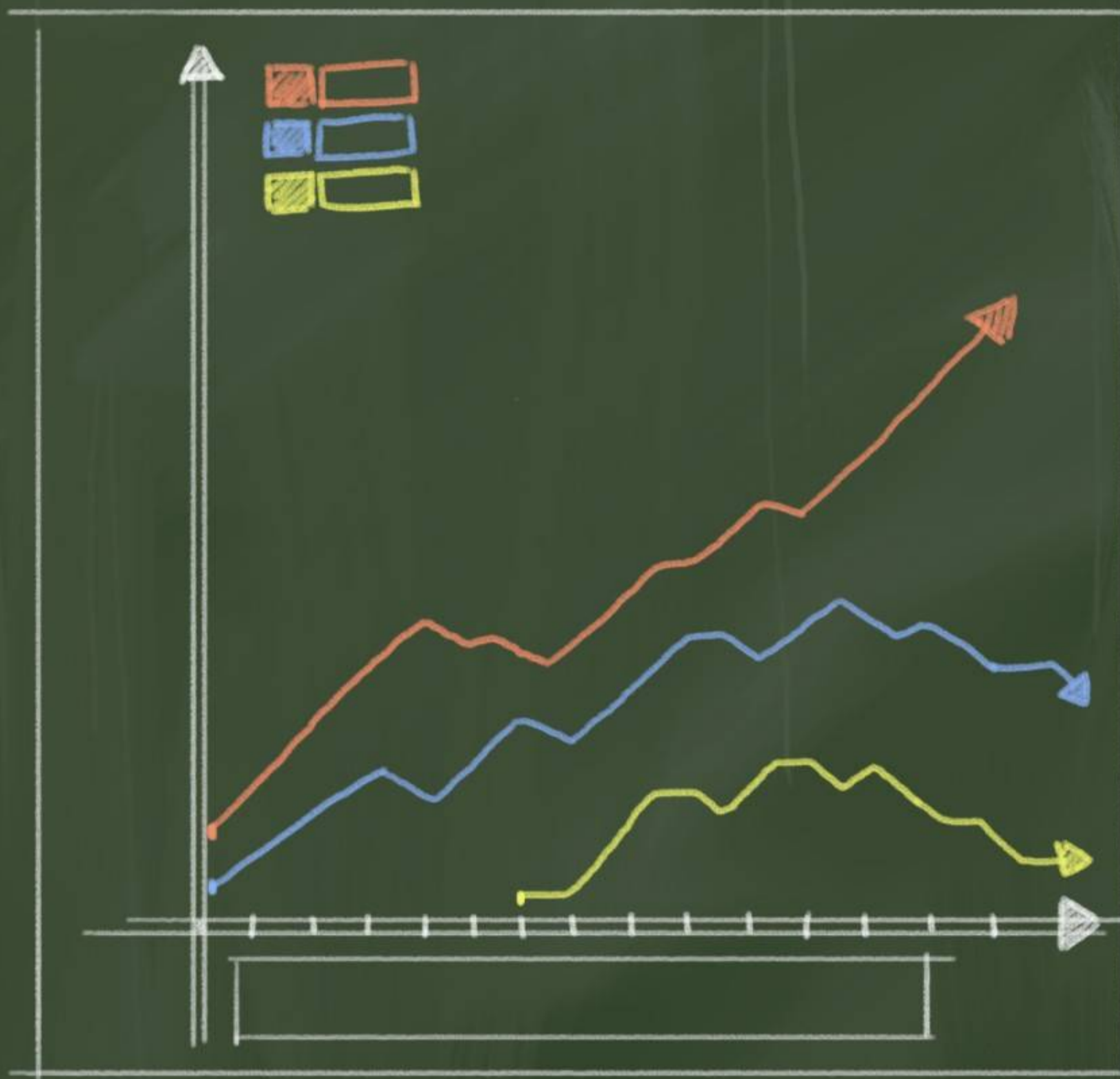
It was hard to get my students to come to class and once they were there, they didnt really pay attention to what I was saying! With a good feedback system, I could improve my lectures and create a better learning environment for everyone involved”

”

ChalkTalk makes it easier for lecturers to get feedback from students, as well as making it more efficient and easier for students to give feedback.



CHALK TALK



	~~~~~ ~~~~~ ~~~~~
	~~~~~
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## Top 5 backlog items

- As a professor, I want to be able to click on a lecture and see a comprehensive summary of the student feedback
- As a student, I want to be able to let the professor know if I understand a tag after a lecture
- As a student, I want to be able to comment on a given tag after or during a lecture
- As a professor or a student, I want to be able to log in and see the lectures I have this week
- As a professor or a student, I want to be able to navigate a plan of my lectures over the semester

## Our value proposition

Making the student-teacher feedback easier and more efficient, and increasing the teachers ability to identify the issues which the students struggle with.

## How it works

Students log in to a website and select the relevant lectures. They can then post comments or questions on topics the lecture was tagged with, and whether they understand it or not. Feedback gets sorted and presented to the professor, showing student understanding of lecture topics over time.

## The tech

Python with Flask for back-end, SQLAlchemy for database, Bootstrap as CSS-framework, JavaScript/jQuery for dynamic elements in front-end and potentially Natural Language Toolkit for intelligent feedback text to subject tags

“I have a problem with understanding the students situation during a lecture”

- Professor Astley

# RiC

Robotic  
Interactive  
Communication

## Pain Points

There is a barrier in communication between lecturer and students, which is hard to climb. The average student does not speak up in fear of being the only one confused by the subject material, and dedicating more time for communication will hurt the curriculum pace.

## Goal

Create something that can allow students to feel free to ask questions, request some repetition or general feedback anonymously.

Provide a non-time consuming way of delivering the feedback to the lecturer.

## How we will solve it

We will create an online component where students can give their feedback during the lecture and our bot will process this data and feed this to the professor in an organized, categorized and easily viewable manner.



## Project Team

*Test Manager and Front-End Development Manager*  
Jonas Vørrang Jam  
*Project Manager and Lead Designer*  
Siddise Hirpa  
*Back-End Development Manager*  
Tiril Andreassen  
*Documentation and Quality Assurance Manager*  
Ellen Bakksjø

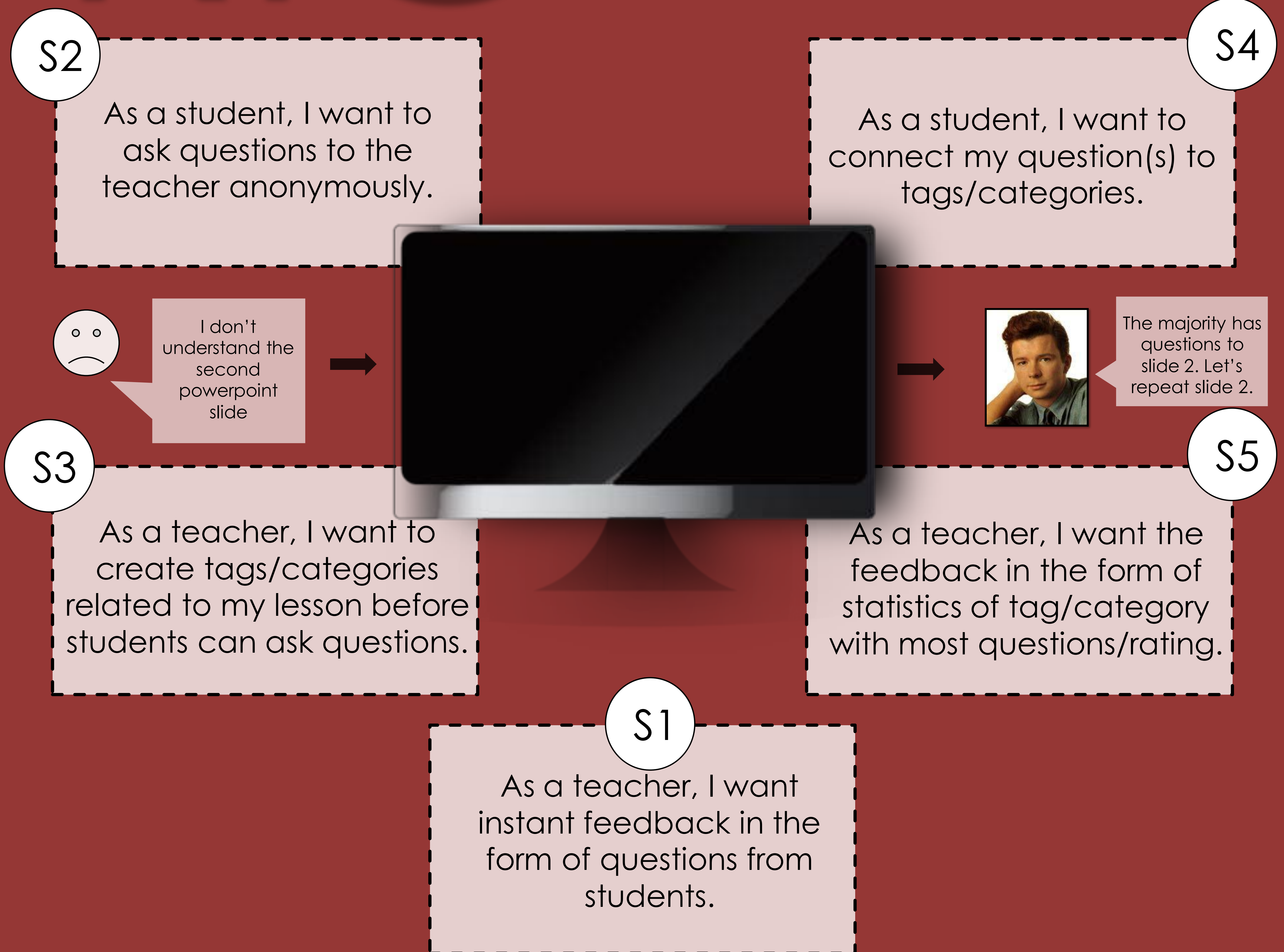


## Persona

Professor Astley is a 29 year old lecturer who experiences that because of the large group of students, he often has limited ways of communicating directly with them. He craves for a system that lets the students decide what he should repeat or talk more about, whether he's going too fast or too slow so that the students don't give up on him.

# RiC

This online resource will allow students to give feedback to the lecturer in real time and allow the lecturer to view the processed feedback without delay.

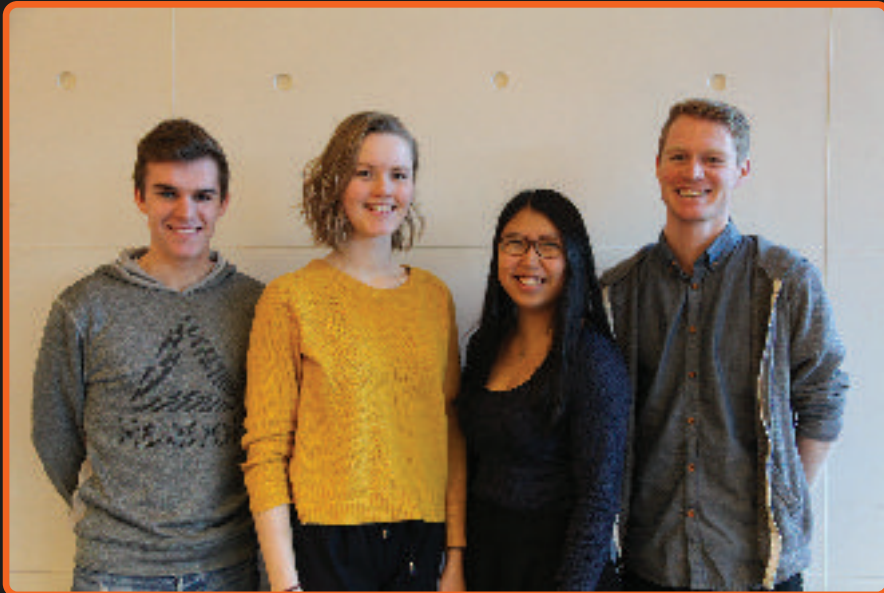


## The communication assistant for every classroom





- Helps questioning for you!



### The team

**Team member:** Camilla Tran  
**Study:** Informatics  
**Role:** Project Leader

**Team member:** Gustav Fiskum  
**Study:** Engineering and ICT  
**Role:** Scrum Master

**Team member:** Renate Bech-Sørensen  
**Study:** Informatics  
**Role:** Test Manager

**Team member:** Sindre Østgulen Deisz  
**Study:** Engineering and ICT  
**Role:** Software Architect, Secretary

### How iQ helps

- Filters out spam
- User stays anonymous
- Question arena
- Convey the questions
- Encourage participation
- Low threshold for asking
- Improves your iQ

### Personas Goal & Pain Point

Marianne Olsen is a single 25 year old female student at NTNU. She is studying Biology at her master year. During the lectures she experiences that it is hard to ask questions to the lecturer, because she feels uncomfortable speaking in front of the class. Posting questions in the iQ app can be less uncomfortable because she does not have to speak out loud.



### Real Quotes

“In large assembly lectures, it’s hard to know if all students are following.” - Guttorm Sindre  
 “The students in my lectures need something to increase the activity” - Heri Ramampiaro





## How does it work?

- Runs on any device with a browser
- Removes unnecessary posts through a filter

## Value proposition

- More activity during lecture
- Increase learning
- Free of cost
- Easy to use

## Potential Technologies

- JavaScript, HTML, CSS ++
- Database communication
- Dynamic website
- Responsive web design

## Top 5 backlog items:

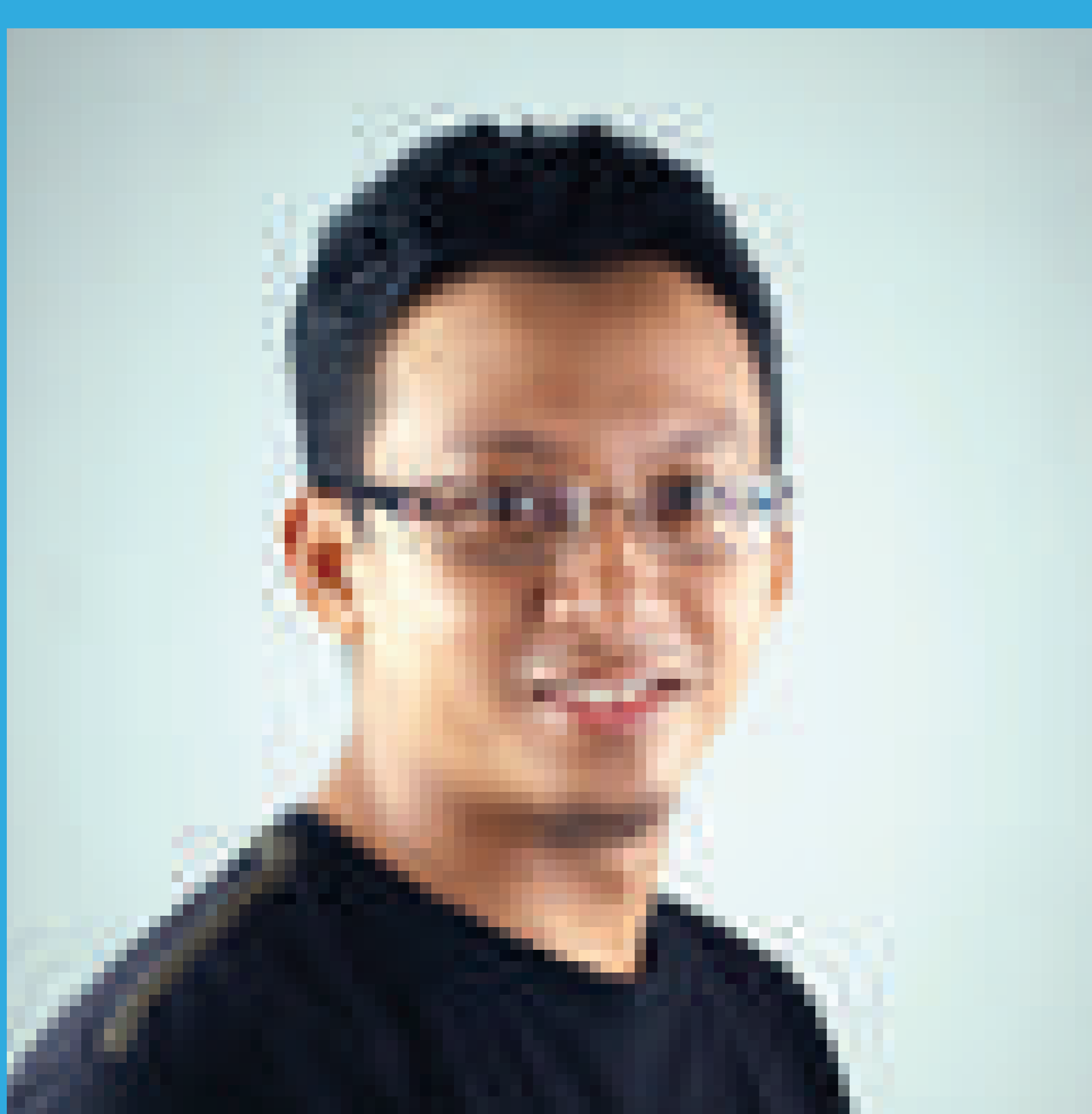
- As a user I want my question to appear in the question-feed.
- As a user I want a spam-filter to filter out irrelevant posts.
- As a user I want the web application to have a clean GUI design.
- As a user I want the web application to run on different devices.
- As a user I want the feed to be updated automatically.

# Bob

– Improving the University learning experience



Lars-August U. Johnson, Olav S. Jevne, Jørgen Borgersen, Kim Robin Rolid



## Kim Støa Yeung

Kim Støa Yeung is a 35-year-old professor and has approximately 6 years of University level lecturing experience. Of course Kim has also been a student, which means he has perfect insight in what is lacking from the learning environment at Universities.

**“Automated student guidance and actively maintaining lines of communication is key”**

### Persona goal and pain point

As a lecturer our persona is worried that the feedback from his classes is simply not sufficient. He misses a way to easily obtain information about his class' progression, his performance as a lecturer and whether or not people actually understands what he explains.

As a student our persona would have loved to have a way to ask questions about lectures, the meaning of terms, the curriculum etc. He thinks an improvement in the relationship between lecturers and students are critical to enhance the learning experience.

### How we help:

Our software system will help students in two ways:

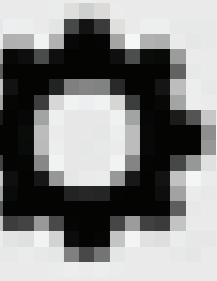
- Have a platform where you can easily ask questions concerning the curriculum of your subjects without the need to contact University staff.
- You will have the ability to effect the lectures of your subjects by giving feedback in terms of progress speed, and content.

In turn our application will also assist lecturers in understanding what topics the students are struggling with. With our bot we create an opportunity to improve the way lecture feedback, - and student assisting work at universities today.

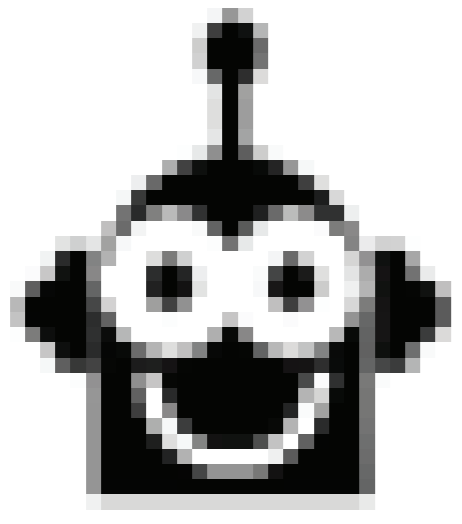
## The team:

Olav S. Jevne (Scrum master, developer)  
Lars-August U. Johnson (Lead tester, developer)  
Jørgen Borgersen (Front end leader, developer)  
Kim Robin Rolid (Lead architect, developer)

# Bob the Bot

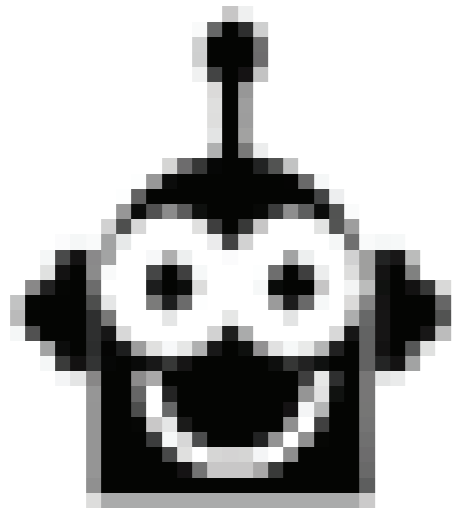


-what is RAM



RAM is mentioned in your book at pages 25, 30, 69.  
From wikipedia: Random-access memory (RAM /ræm/) is a form of computer data storage which stores frequently used program instructions to increase the general speed of a system.  
[https://en.wikipedia.org/wiki/Random-access_memory](https://en.wikipedia.org/wiki/Random-access_memory)

-what is javaeffex



I don't understand what you mean about "javaeffex".  
Did you misspell something or use the wrong command?  
Check your spelling or click the question mark for help with commands.

?

## Top 5 User stories

1. As a user I want to be able to ask the bot a question and receive a reply, so that a conversation can take place.
2. As a user I want the ability to request and use a list of commands, so that communication with the bots runs fluidly.
3. As a user I want to customize the settings on my account to match my subjects, so that the bot can retrieve relevant information.
4. As a user I want the bot to analyze my question and do the necessary tasks to respond with a good answer.
5. As a lecturer I want the bot to give me a list of the most commonly asked phrases or topics, so that I can get an idea of what the students are struggling with.

## How does it work

With our product you first need to sign in to your account, which effects the interface you will use in our application. If your account is set up as a student, you will only have access to our chat bot. However, as a lecturer you will also have the ability to edit the curriculum registrations stored in the database, as well as the ability to receive a list of frequently asked questions.

## Potential Technologies

- Java
- JavaFX (FXML)
- MySQL Database
- JDBC Driver Data
- Amazon Web Services (AWS) - Amazon RDS

# PARRY, YOUR VERY OWN STUDENT ASSISTANT

## THE LORD-E TEAM



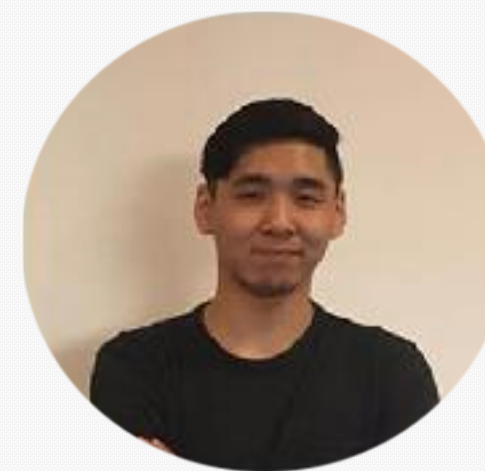
**Martin Langmo Karlstrøm**  
Scrum Master



**Sebastian Westgaard Torgersen**  
Lead Software Developer



**Magnus Peter Langeland**  
Lead Software Architect



**Uy Tuan Huynh**  
Lead designer



### PERSONA

Harold (22) is studying Computer Science at NTNU, is a coffee addict, pro procrastinator, and a bit on the lazy side. As a student Harold needs to organize his life a bit better, because what he currently is doing is simply not enough. The tools he uses to get organized are too many, and he has also done several assignments

twice and some none because of his unorganized habits. Harold is in deep need of a new tool to help him do things better, and since he is on Facebook almost all the time, why not put the bot on Messenger?

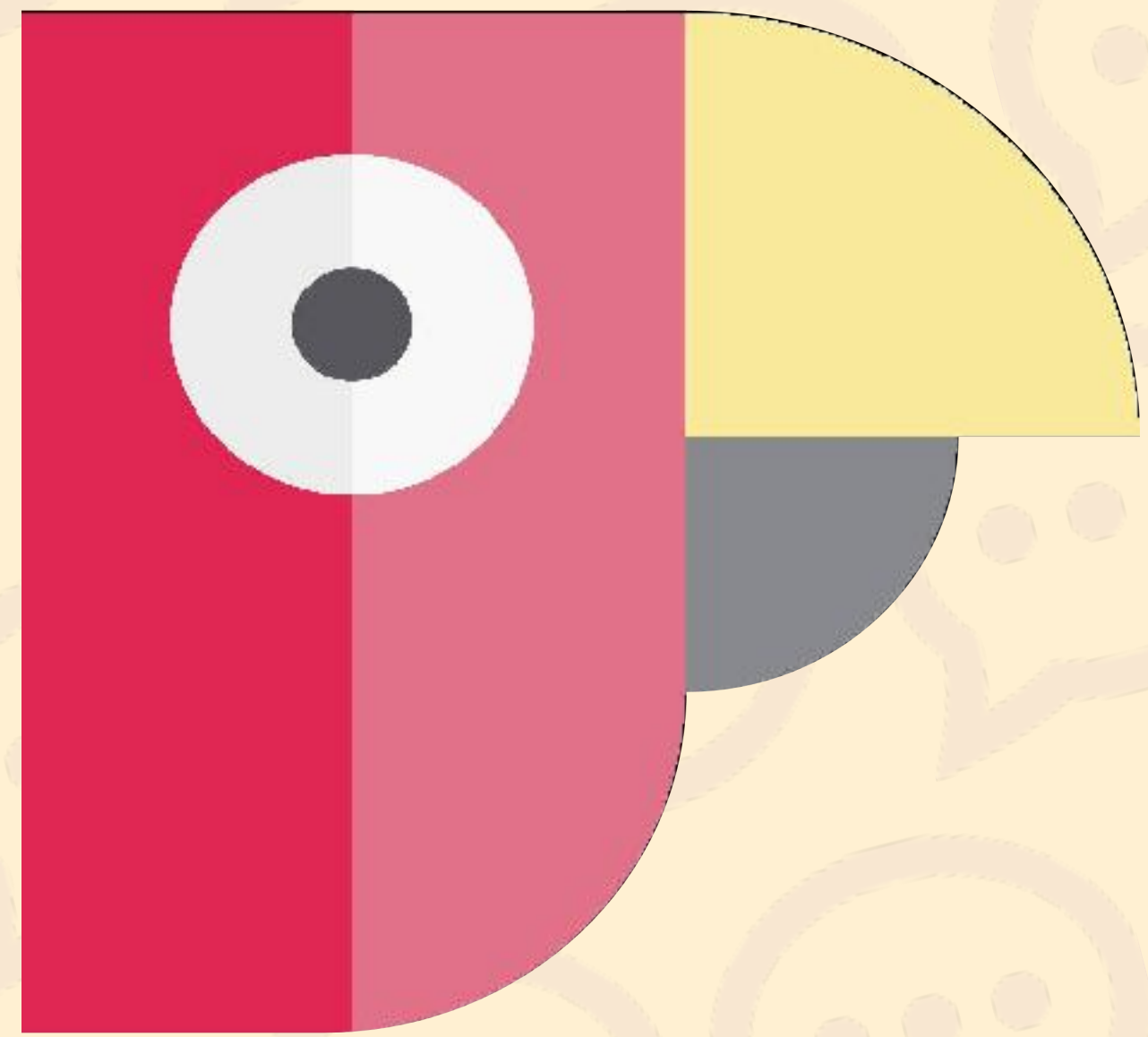
*“I wish I had some low key way to organize my student life”*

### DEMOGRAPHIC

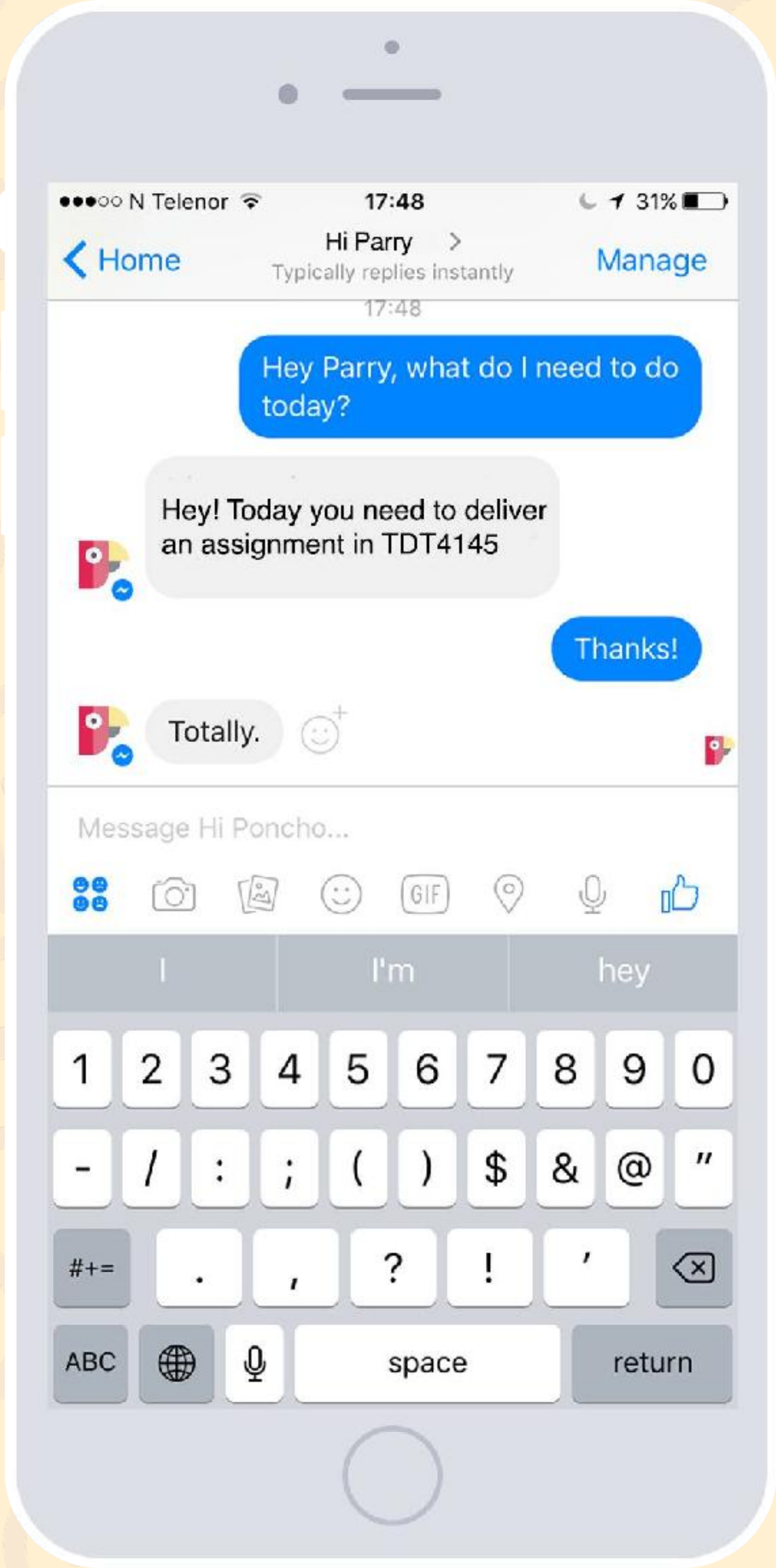
The demographic we aim at are university students, ages from 18 to 26 who struggle with focus and loose track of their work easily.

## OUR SOLUTION

*Parry is a Facebook Messenger bot that keeps track on every little thing you have to do for school, including your schedule, assignments, exams and much more! Parry will boost your productivity and ensure you stay focused on the things that really matters.*



Hi! I am Parry the parrot.  
Nice to meet you! Squawk!



# MEET PARRY, YOUR VERY OWN STUDENT ASSISTANT



**“Hey Parry, what is Scrum?”**  
Parry will provide various tools that will boost your productivity. He will be the ultimate sidekick each semester.



**“Hey Parry, do I have anything due for today?”**  
Every student is different and Parry will be personalized to accommodate for that. He will make sure you never miss a deadline or a class. Not sure what you need to do today? Just ask him!



**“Hey Parry, what is on today’s menu?”**  
Students are fueled by coffee and cheap food. Parry will make sure you always know what’s on today’s menu at the school cantina.



**“Hey Parry, I need something to cheer me up”**  
Parry will make sure to motivate during your studies, such as providing inspirational quotes, funny jokes and cute cat gifs!



**“Remind me to do hand in the assignment in 20 minutes”**  
Parry will have an oversight from your shoulder. Just ask him and he will remind you for any of upcoming event.

**Why Parry?**  
Parry is a Facebook Messenger bot that keeps track on every little thing you have to do for school, including your schedule, assignments, exams and much more! Parry will boost your productivity and ensure that you stay focused on the things that really matters.

**How does it work?**  
Connect to Facebook, find his page and chat with Parry in an instant!

Parry uses the Api.ai chat bot engine in order to deliver his witty responses. Some data are stored in a MySQL database to customize Parry for you.

## POWERED BY



# WAVER

## A FEEDBACK SYSTEM FOR PRESENTATION SLIDES



### THE TEAM

Baldur Kjelsvik  
Team leader and UX

Andrea Bach  
Design

Katrine Tunkvist Jordheim  
Backend

Petter Rølvåg  
Front

This is Alfred Aalen, he's 45 years old and a teacher. He hopes that technology can help teachers understand when students find a subject difficult. He hopes everyone will feel included to give feedback on his presentation.

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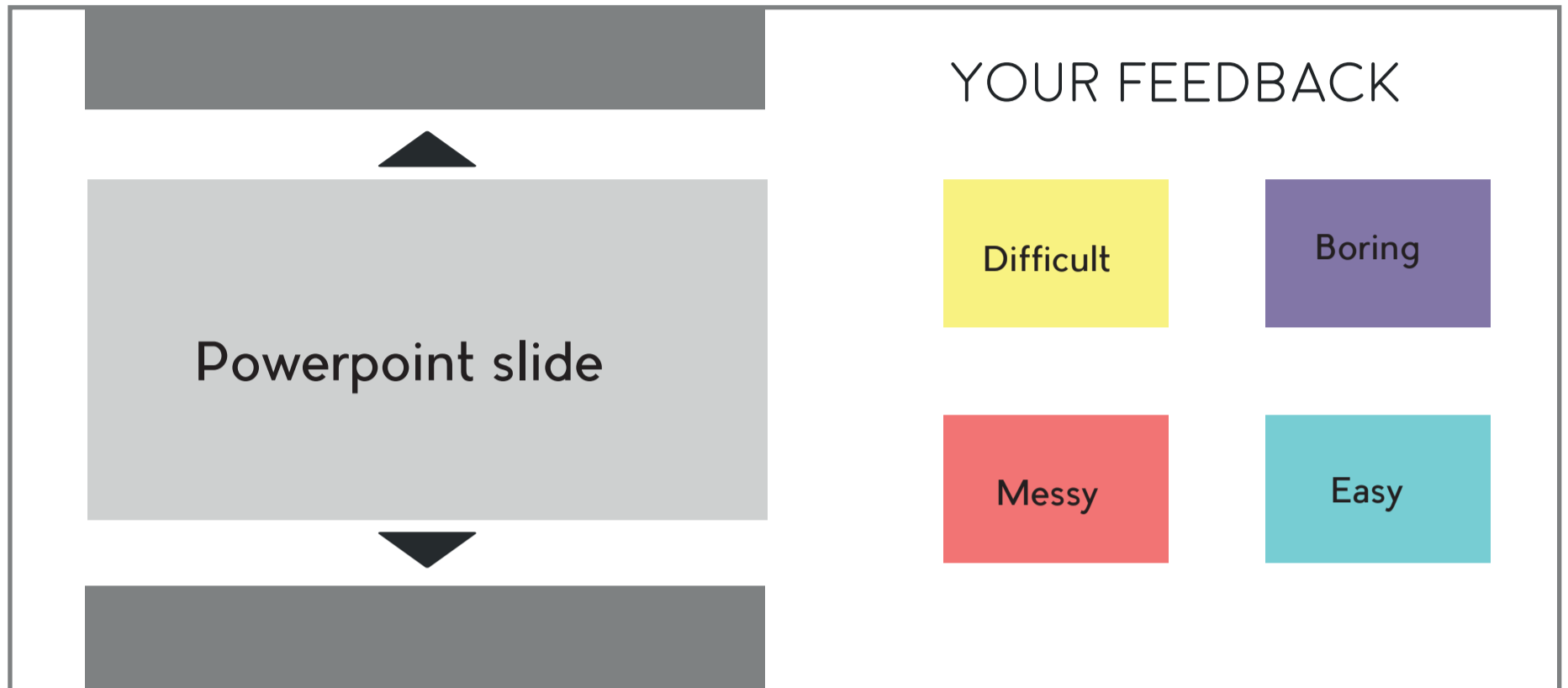
*"I have tried several interventions, but knowing if the class understand what I'm saying remains a challenge"*

---

Waver will be helpful for teachers and students. It will make giving and receiving feedback easier, so that the teacher can really focus on what the students find difficult.



# WAVER



## TOP 5 BACKLOG ITEMS

1. Receive feedback on lectures that is easy to read.
2. Navigate easily through different slides to give feedback on lectures.
3. Use the program on different computers.
4. The feedback will be organized by page number and lecture number.
5. Save the lecture slides and received feedback in the program.

## VALUE PROPOSITION

Our product will improve all classes in both short and long term. It will also branch outside the classroom to private and public sectors where they can increase their success in explaining broad and complex concepts.

## HOW IT WORKS

Our solution is making a website, that combines the powerpoint slides used in the lecture with three–four feedback buttons on each slide. The students can instantly give a feedback on whether this or that slide's subject was difficult/easy.

## POTENTIAL TECHNOLOGY

Our system will use programming languages, such as HTML, CSS, Javascript and Python. Potential technologies we will use are the Django framwork, SQL and mySQL.



**FANTASY** IT WAS ONE OF THOSE LONG AND UNDERSTIMULATING LECTURES. I SAT THERE  $\frac{2}{3}$  UP AND  $\pi^2$  ACROSS IN THE LECTURE HALL WITH MY MIND DRIFTING TO A FAR AWAY LAND. MOANINGLY DISTANT FROM THE LECTURE AND MY ORDINARY, FLAWLESS LIFE. THE BLACKBOARD LIFTED FROM THE WALL, SMACKED ME IN THE FACE AND THE SKY OPENED ABOVE ME. SOMETHING BIG FLEW TOWARDS ME. IT DIDN'T TAKE LONG BEFORE I REALISED IS WAS A TRUMP AND I KNEW THE WORLD WOULD NEVER BE THE SAME AGAIN.



**CHILDREN** WINNIE THE POOH SAT ON THE PENDULUM DANGLING HIS LEGS IN REALFAGSBYGGET, SWINGING BACKWARDS AND FORWARDS. "DO I LOOK LIKE A LIVING PENDULUM NOW, PRINCIPAL BOVIM?" ASKED POOH. "YOU LOOK LIKE A MAGNIFICENT PENDULUM" ANSWERED BOVIM. "JUDGING FROM THE POLES, WHAT TIME DO YOU THINK IT IS?". POOH SCRATCHED THE TOP OF HIS HEAD WHILE THINKING CAREFULLY FOR A LONG TIME. "I THINK IT IS MY FAVOURITE TIME BECAUSE ANY TIME I SPEND WITH YOU IS MY FAVOURITE," SAID POOH.



**ACTION** ESCAPING OUT OF THE HOTEL THE MAN RUNS INTO THE DARK AND BLOOMING FOREST. HIS RED HAIR FLOATING IN THE AIR AND HIS YELLOW LEATHER SHOES SQUISHING IN THE WET FOREST FLOOR. HE CATCHES A GLIMPSE OF HIS CAR, HIDING BEHIND THE LEAVES. HE SHOUTS IN ITALIAN "ISABELLA, STARTE DE CAR!". ISABELLA'S STEREOTYPICAL OVERWHELMING FEMALENESS GOT THE BETTER OF HER, PRESSING THE ACCELERATOR INSTEAD OF THE BRAKE. THE CAR ROARS OFF AND SLAMS INTO A NEARBY TREE.



**SEXUAL** I SAT TWO ROWS BEHIND MÅLFRID IN THE LECTURE HALL. SHE WAS THE CLASSIC, SHY, GORGEOUS GIRL - EVERYTHING WAS IN PLACE. SHE HAD NO IDEA HOW MANY TIMES MY EYES HAD LEFT HER NAKED BEFORE ROUGHING HER UP IN MY RAGING MIND. SUDDENLY THE CLASS STOOD UP FOR BREAK TIME. OUR EYES MET AS SHE TURNED TOWARDS ME. MINE WERE STILL FIERCE FROM DOMINATING HER NAKED BODY. SHE SAW THE FIRE IN MY EYES, BLUSHED AND SMILED RESISTANTLY.







From left: Markus Brabrand Urfjell, Håvard Løkensgard and Thomas Markussen Absent: Helene Dyrli

# Studytale

Go to lectures and an thing can happen

## About

- Markus Brabrand Urfjell
  - 4 th year studying Mathematics. Team leder
- Thomas Markussen
  - 2nd year studying Computer science. Developer
- Helene Dyrli
  - 2nd year studing Informatics. Developer
- Håvard Løkensgard
  - 2nd year studying Computer science. Developer

## Problem

The reason for creating this app is the problem of making students show up to a class at a University. The students may not be motivated, both the professors and the university may not know what to do about it.

How do you make students want to go to class?

“*Students are not motivated enough to meet up in early lectures*”



Alf Inge Wang - Professor at NTNU  
 Alf Inge Wang is a Norwegian professor at the department of Computer Science at NTNU Trondheim. His work has mainly been about developing application for game-based learning and is one of the creators of the learning game Kahoot.

## Key functionality

- I seek a carrot/motivation to get myself to my first lecture of the day on time
- I want the app to automatically fetch my time table
- I want the stories to be varied and always different and interesting
- I want the app to check my location to keep me from cheating
- I want to be able to include my friends in the stories and in other ways personalise them

## Goals

Our main goal is to motivate students to get out of bed and attend the lecture at the university. We hope to inspire students to get out of bed in a fun and entertaining way, and to make students start the lectures with motivation.

- Get the students to lecture
- Give the students motivation
- Make the app easy and intuitive to use

## Solution

We are going to develop an app for android that gives student part of a story every day. Each story will be random generated with a new beginning and ending every time. The app will let you include other students and yourself to customize your story.

Then there will be four main theme to choose from and many more attributes to adjust the story to fit the students preferences. The students need to be at school in time for the lecture to gain the opportunity to read todays chapter. If the student skips a day, he/she will might lose a chapter or more at the ending. In this way, the students must attend each lecture to get the whole story. Though it will be a chance to redeeme the lost chapters.

## Tools for development

In this project, we have chosen to develop the app using Android studio and programing language Java. This program gives us a lot of opportunities and it's a great tool for androids based application. For the database we have chosen to use the MySQL because it's well optimized for data storage and retrieval.

# Project Anna

## The CouncilBot



Left to right:  
Team Leader:  
Erlend Skarpnes  
Developers:  
Johannes Grande  
Andreas Flått  
Håvard Bjørnøy

### Goal and painpoint

Espen said that in retrospect, he thinks he might have switched majors a year before if it hadn't been so dreary.

«50% - 70% of students change their majors at least once, most will change majors at least 3 times before they graduate»  
- University of La Verne

### How we help

Our product can help you study the things you want to, while not being afraid to try and fail different majors.



This is Espen, a 23 year old student at NTNU student who have switched major from Chemistry to Engineering and ICT this year.

# ANNA

## The CouncilBot



## Features

- **Highly optimized** selection algorithm
- **Easy to understand UI**
- **Webscrapping** information from university websites
- **Information readily available** in a customized database
- **Crowdsourced** information about subjects

## Value

Our product will help students who feel they chose a master's degree they do not wish to pursue

## How it works

Anna lets you choose a new master's you want to switch to, and customizes a new schedule and study plan based on your previous subjects!

## Technologies

Our product will make use of powerful AI technologies to ensure an easy to use UX



**Kari M. Johannessen** | Lead backend developer

**Magnus Tvilde** | Lead tester/Lead architect

**Nicolai C. Michelet** | Team leader/Project Manager

**Ine L. Arnesen** | Lead designer

## Persona: Kasper Klæboe Berg

Kasper finds it difficult sometimes to be more actively involved in lectures. If there was an easy way to rate lectures he would be more motivated and he would become an active learner.

Kasper is a 21 year old student from Åsane, just outside Bergen, Hordaland. He's in his second year studying computer science at NTNU. In his spare time he enjoys being active and playing a variety of sports. He also has a position in the student organization Online.

*“I want to be able to provide feedback to my professors in an easy and anonymous way so I can have an impact on my own learning experience.”*



**Our solution** will provide Kasper with the right tool to do so. He can easily and effortlessly provide professors with invaluable feedback. We believe you can't change the way of teaching overnight. It starts with the students being able to influence their professors and their lectures. Kasper is just one of many students who, with our software, will help revolutionize education in a way we have never seen before.

# RateChill

*-Rating has never been so chill*



Evaluate lectures

We deliver a product that is easy to use for both students and professors. RateChill will simplify the feedback process and stimulate students in becoming active learners.



Visualized results

### How does it work?

Our solution will allow students to review each lecture and then the results are graphically displayed to professors so they know how well their lecturing is going.



Anonymous



Easy login

### Technologies

We implement our solution through a desktop application that both parties can easily access.



Feedback over time

# teaching the world.

## Why we do what we do

Teachers are the essential link to delivering a quality education to all people. To achieve the goal of universal education, the world needs more, better trained and better supported teachers. However, teachers are often in short supply. In fact, the world will need to recruit **25.8 million** school teachers to provide every child with a primary education by 2030. (UIS Factsheet 2015). In low-income countries, this might be an impossible task. The solution we believe, lies in **automatization**.

## Meet ClassMate - your robot teacher

We strive to create a universal education tool. Something that both rich and poor can utilize to make learning and **remembering** easier. Your new personal teacher is free, and is called **ClassMate**.

The app features a classic exercise system with quizzes built by the teachers, combined with automatic grading and statistics, and a personal memory-assistant that will help you remember. This gives us more personalized learning catering to the needs of the individual student - without overburdening the faculty.



## meet the team

### The people behind ClassMate

Our team consists of four NTNU students. Martin Tømmerås, studying Informatics. Mats Jørgen Skaslien, studying Computer Science. Bartosz J. Zarosa, studying Engineering and ICT. Jørgen Thorsnes, studying Natural Science with Teacher Education.

We find studying interesting and fun, but also demanding. Many students have trouble learning and remembering all the information given by their lecturers, books, and university. This is what motivates our team to help both students and lecturers streamline the learning process.

(from left to right)

- Jørgen Thorsnes** - architect, developer
- Bartosz J. Zarosa** - developer
- Martin Tømmerås** - teamleader, scrummaster
- Mats J. Skaslien** - gui developer

## making it stick

### How to remember it all

Victor Seiershaug is a 22 year old computer science student. He keeps up with his subjects, studies hard, and gets good grades. Still, Victor finds that all that hard earned knowledge vanishes come vacation. He struggles with retention over time. This is a common problem, but luckily it can be solved through a technique called **spaced repetition**.

"I have tried various methods of spaced repetition, and it definitely works. However, keeping tabs on what to repeat in four subjects is a real hassle. I would love a planner that could simplify the process and do the busy-work for me!" - **Victor Seiershaug**

### Making retention easy

The focus of the student should lie with the subjects, not organization. ClassMate is an application for quizing that shows you what to revise and when. You take the quiz in-app, and based on your results ClassMate figures out how to improve your skills.

Each time you take a quiz a score is given. This score is anonymously sent to the teacher so that figuring out what the students have a hard time grasping is at the click of a button.



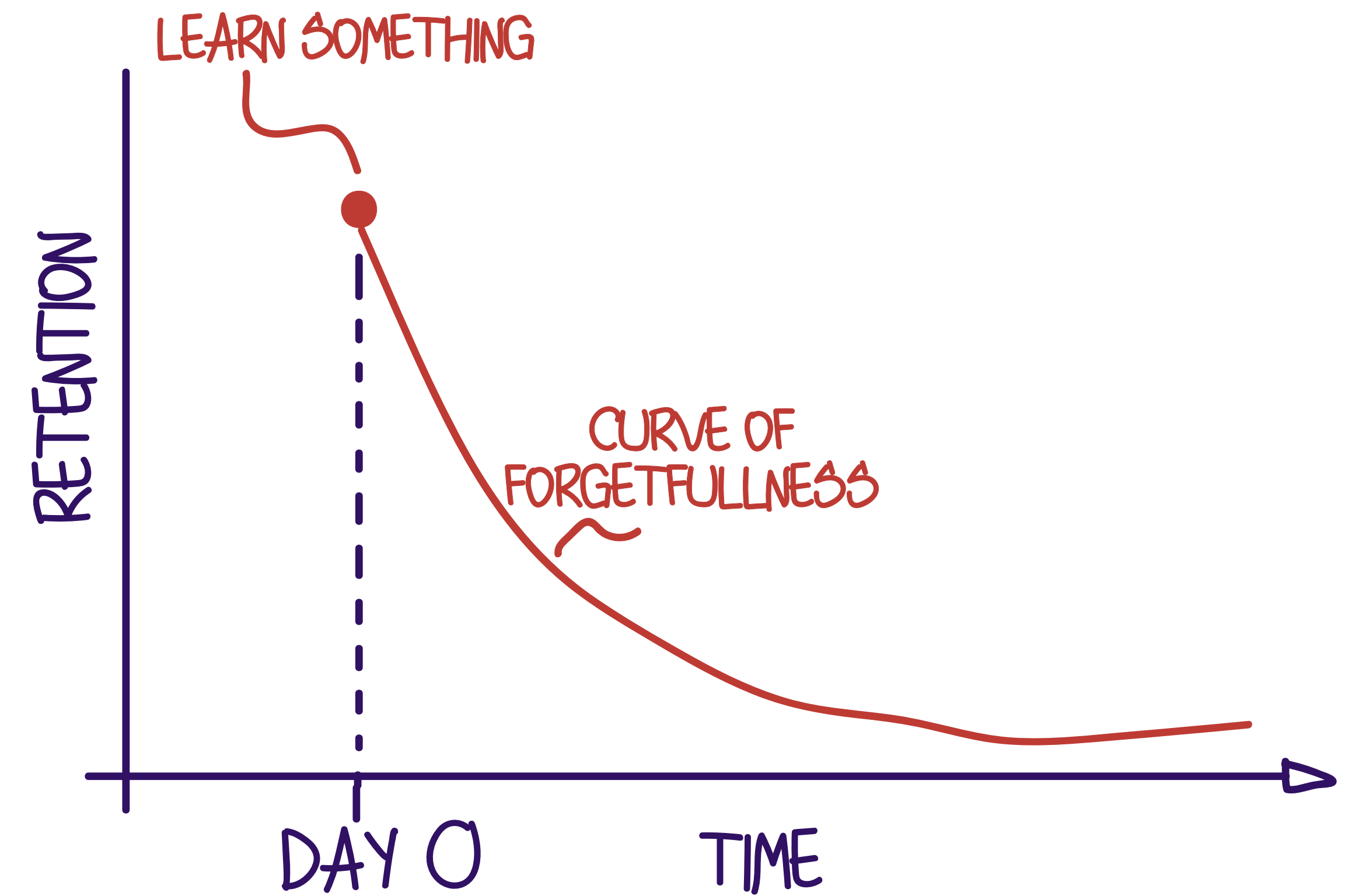
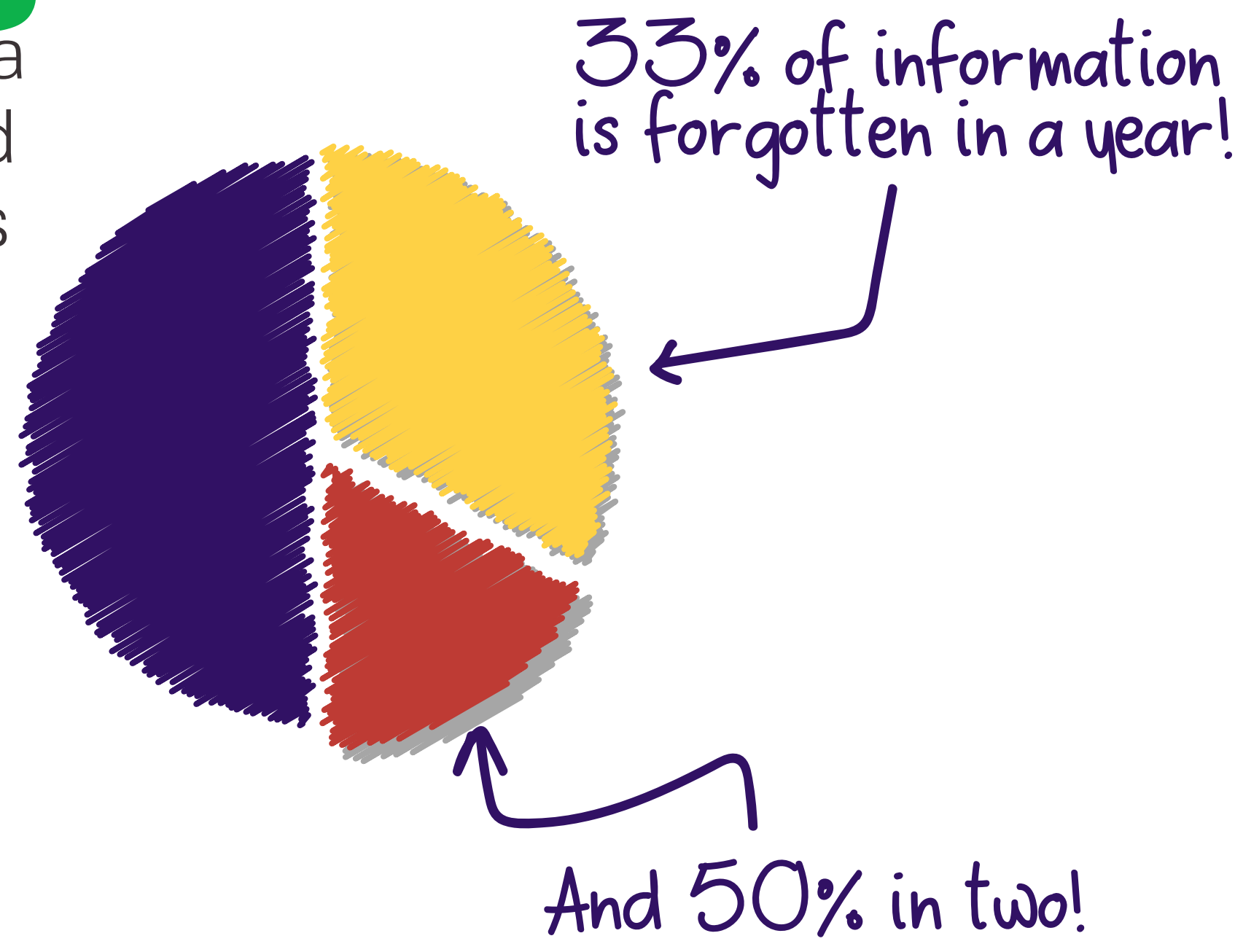
# ClassMate >

learning comes around

## why do we forget?

Many students have studied and read a lot before an exam, and maybe they did well on this exam, but how much of this newly learned knowledge will they remember in a couple of months?

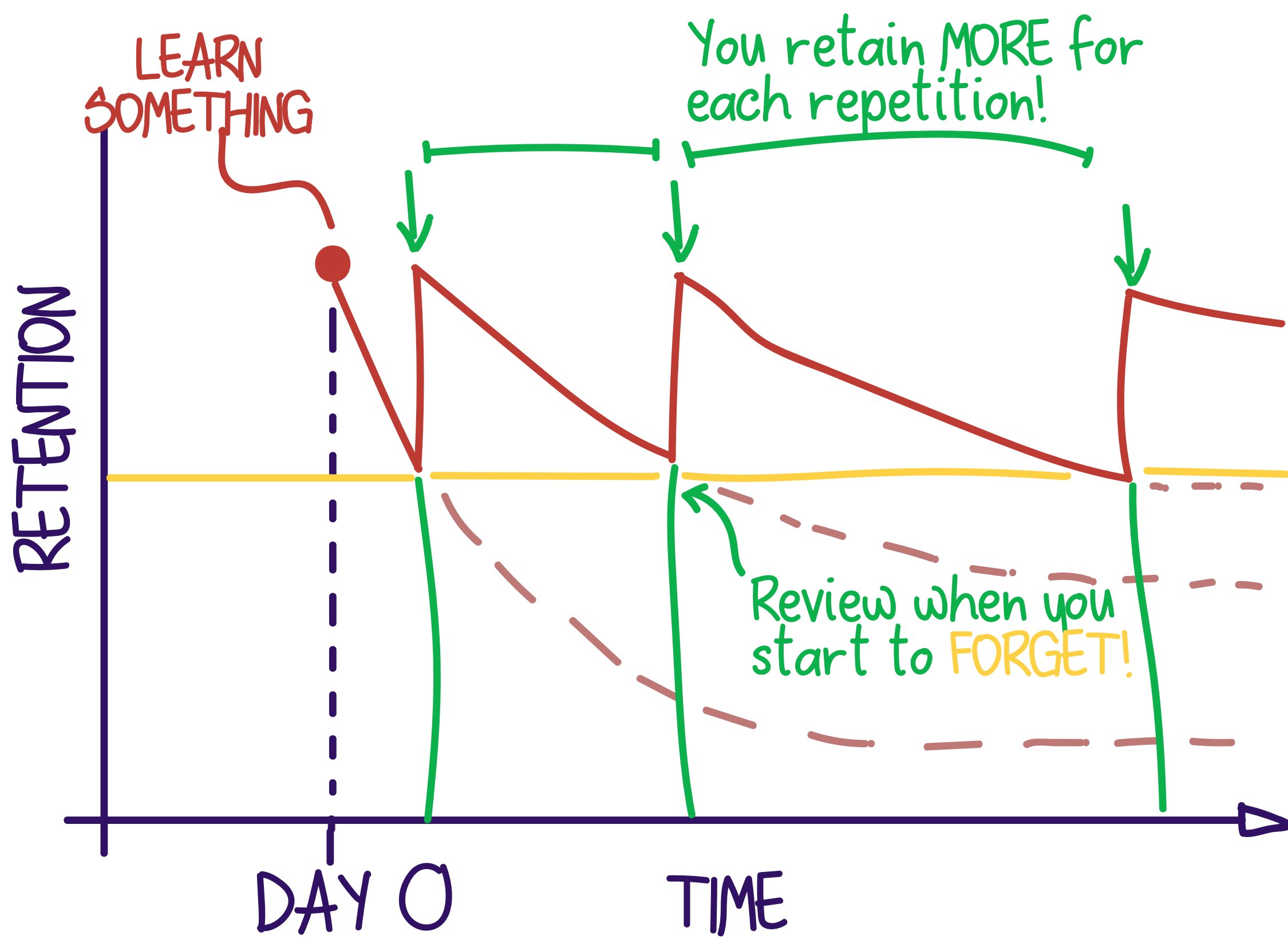
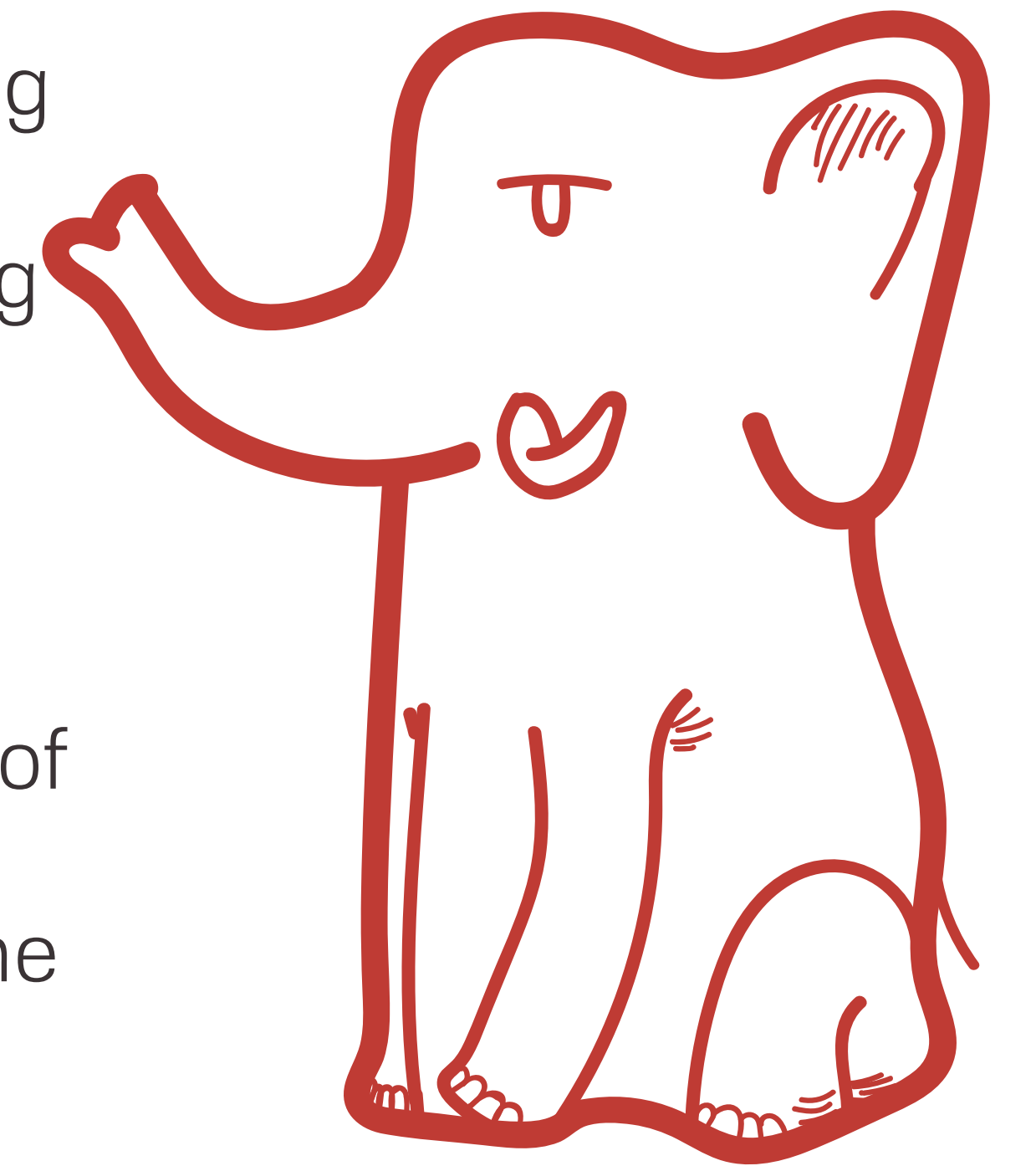
There are many theories about why and how we forget. Still, most research show that recently learned information that don't get used can quickly fade away from your memory.



## ...and how do we remember?

Research tells us that using and repeating what you have learned, will help you remember it over time. Systematically doing this, you should be able to remember forever.

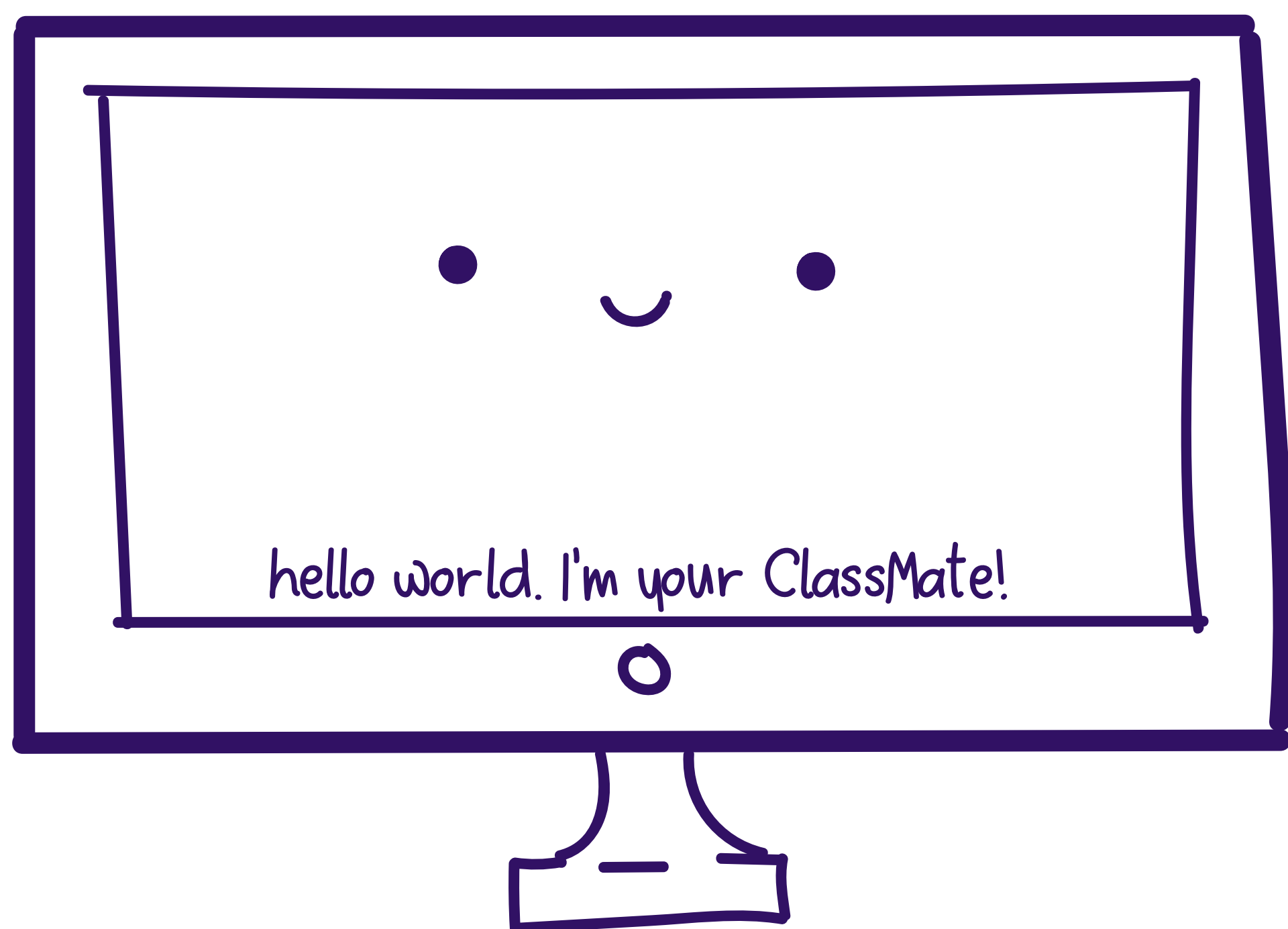
Prof. C. A. Mace proposed this way of improved learning already in 1932. This way of working, called spaced repetition, has proved effective in several studies over the last century, and still proves effective to this day.



## say hello to hassle free retention - say hello to ClassMate

### Technology

Our proprietary algorithm reminds you what subjects you should revise for maximum retention. This runs on top of Java, with our GUI created in JavaFX. The app communicates with our statistics-, quiz, and userdata database using SQL.



### Live quizzing

Professors and teachers can push quizzes live - and every student can join instantly. No more waiting for everyone to join.

### Instant statistics - instant overview

Getting feedback on how your students are doing is vital. The ClassMate system automatically generates proficiency statistics as students are doing their assigned quizzes.

### Spaced repetition

Repeating what you know before you forget it is how you make knowledge stick. ClassMate shows you what subjects you should revise when.

### Personalized learning

No two students are the same. Because of this ClassMate tailors your quizzes so that you can repeat the subjects you are having a hard time with. Focus where focus is needed.

### All your subjects in one app

ClassMate is your one-stop-shop for learning and revising. Simply efficient.

# Pekka 2.0



## The Dev Team:

- Victor Wang**  
- Rating system developer
- Kristoffer Pedersen**  
- Main bot developer
- Sondre Engehagen**  
- Main web coder
- Markus Haraldseid**  
- Web coder & dev supervisor

## Pain Points

- Andrea experiences that the pace of the lectures varies too much. Sometimes it's too fast, which leads to her having to struggle to keep up. However, some times the pace is so slow that she quickly loses focus.
- She also thinks the lecturers have a lot of knowledge, but sometimes lack the ability to transfer it to the students.



## Andre Bakke, 23

Currently resides in Trondheim, where she is a full time student at NTNU. She attends lectures in several subjects, and like many others, she has decided that some of the lectures aren't worth going to.

## "Putting the student in focus"

### How We Help

Pekka 2.0 will partially take care of these problems by engaging the students to ask, answer and vote on questions during lectures. This way the students can get help from classmates if they struggle, or the other way around.

By voting on questions the lecturer will also know what to prioritize and devote future time towards.





### TOP FIVE product backlog items

- As a student, I want to be able to post and answer questions
- As a student, I want to be able to vote on the best questions
- As a lecturer, I want the bot to recognize if a similar question has already been asked, and show previous answers
- As a lecturer, I want to see the top voted questions
- As a lecturer, I want the bot to automatically answer common questions (can be set by me)

### Potential Technologies

- HTML5 and CSS3
- JavaScript (maybe AJAX, for rating system)
- PHP or Java (bot function)

### Why Pekka 2.0?

Pekka 2.0 aims to become a top-notch online learning platform for use both in real-time situations and when one can patiently await answers. Through a diversity of users, discussion and optional views tailored to the user's demands, it will be able to provide whatever the user is truly interested in.

### A Community-driven Platform

Pekka 2.0 is an online forum where participants may post threads and responses regarding university matters. Posts of interests are given votes, and gain more visibility by rising to the top of the forum's pages, while those of lesser interest descend towards the bottom. Filters such as date period and subject, are included as well. Pekka 2.0 will also suggest answers if similar questions have already been asked by other students, keeping the platform clean.

# Breeze

*“Makes learning as easy as a breeze”*



## The team

Left to right:  
Stian Sørli - Project Lead  
Eirik Rismyhr - Back-end Dev.  
Sindre Hansen - Front-end Dev.  
Vegard Hesselberg - Lead Tester

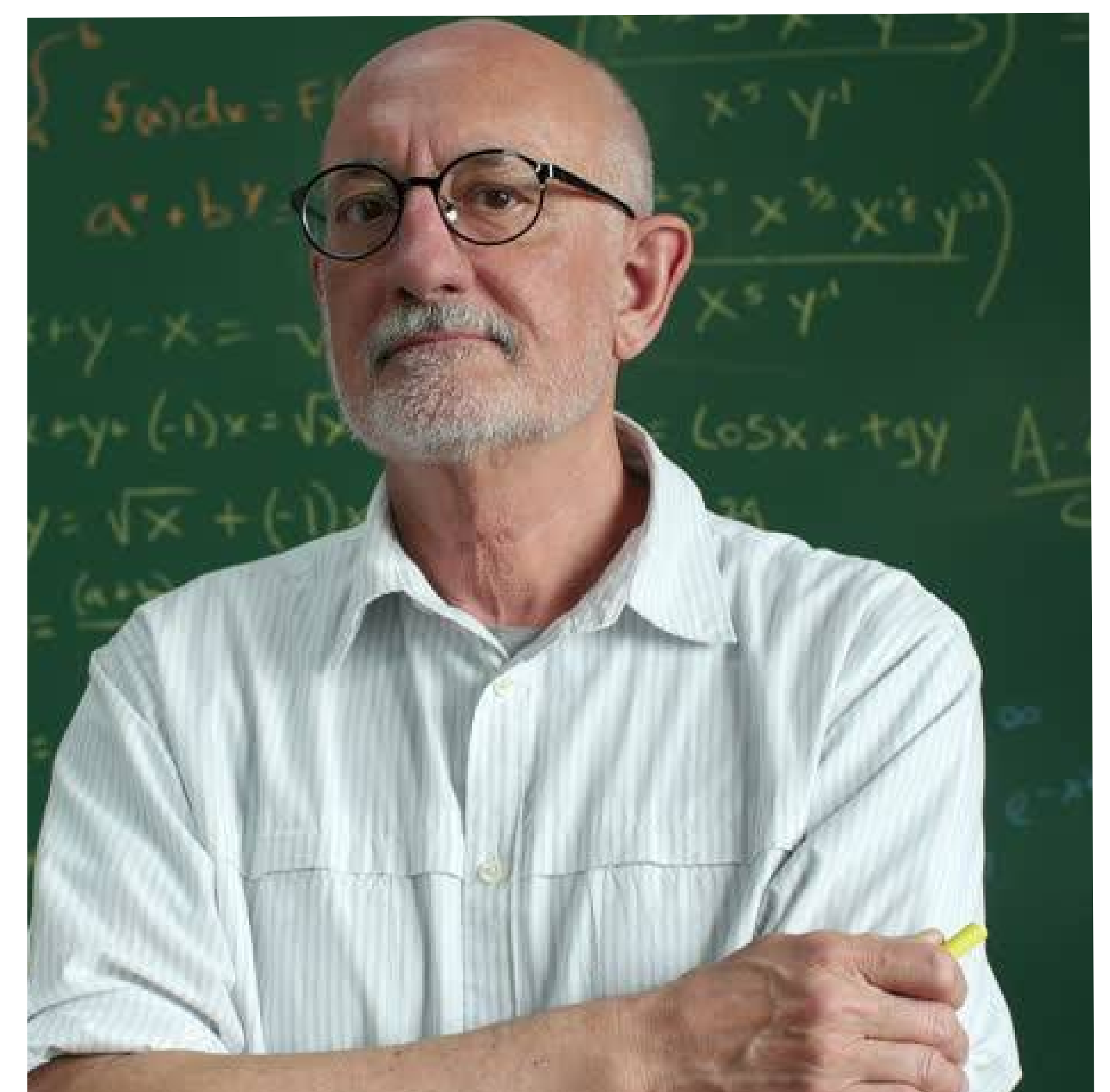
## The persona

Bjarne Barteson - 57 years old - married informatics professor at NTNU  
Bjarne believes that the current blackboard lectures are dying, and wants something new, more modern that can assist him during lectures to provide more room for discussion between students.

## Introducing Breeze

Breeze allows for lecturers and professors to dynamically group eager students into chatrooms where they, together with Breeze, will discuss the subject at hand. If they feel they've discussed enough, Breeze will give them a new topic to discuss.

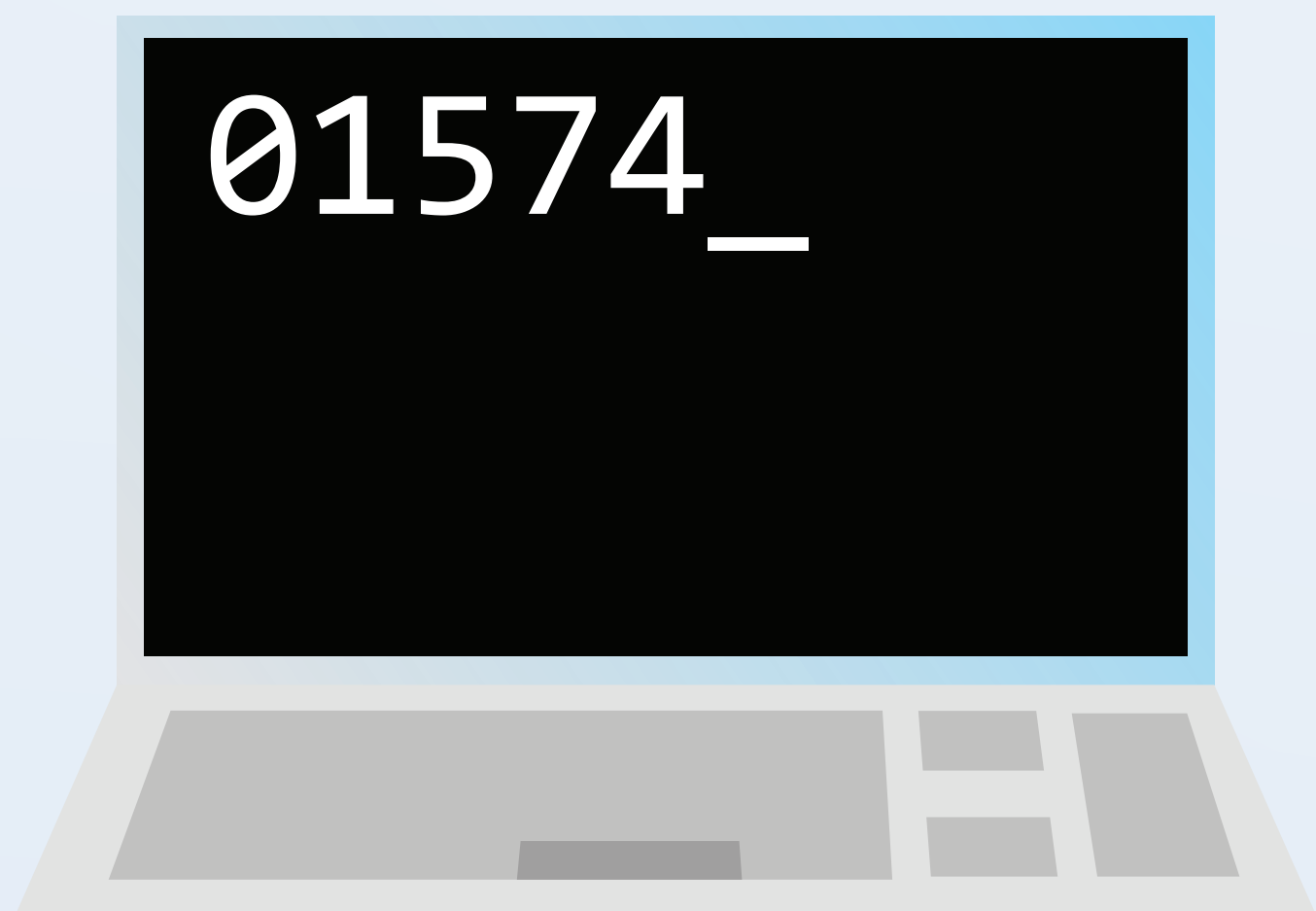
Breeze will be available as a web solution, so no cumbersome installs are necessary, it will even work on your phone!



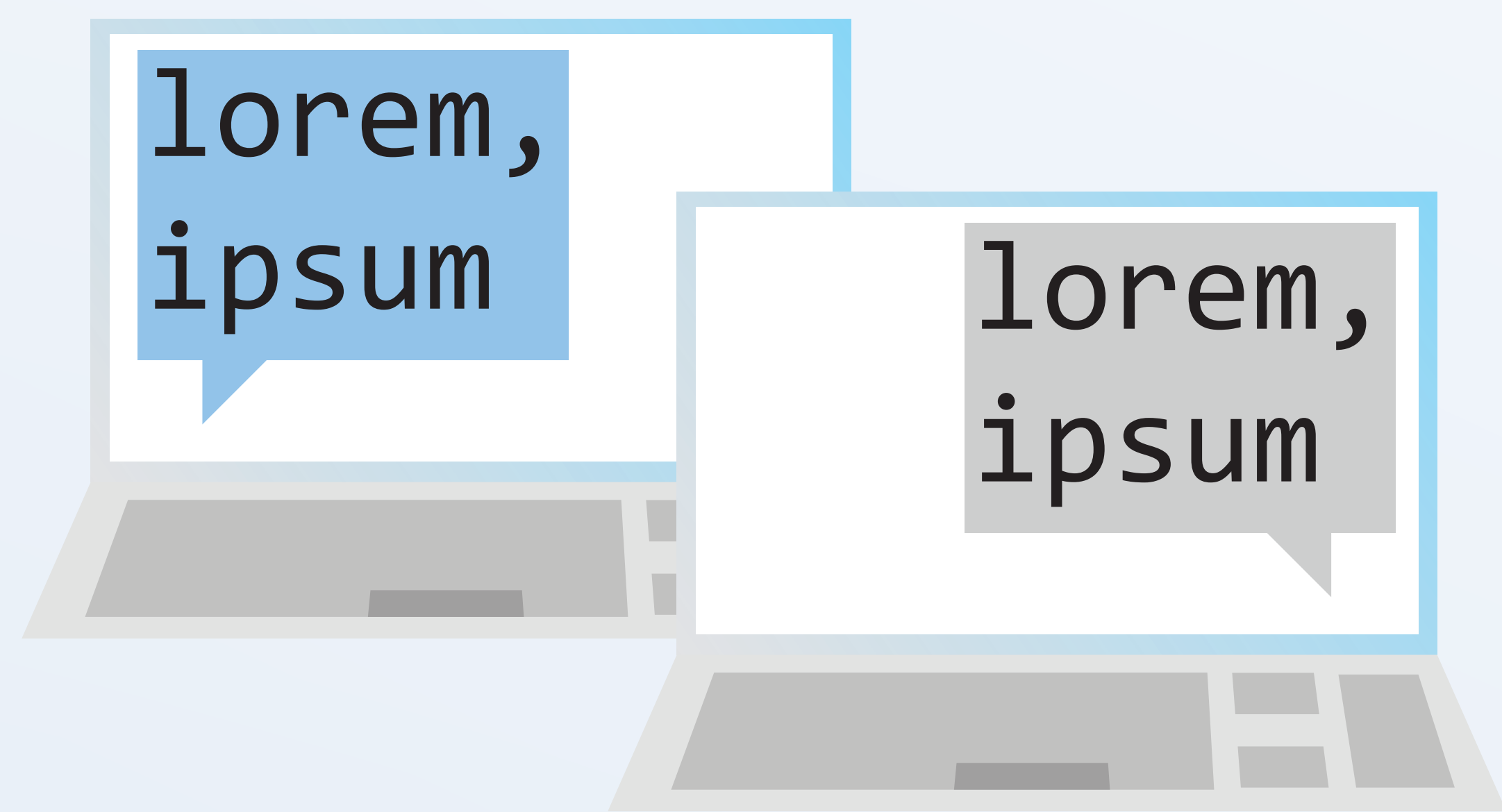
*“Relevant discussion with your class mates is necessary to learn”*

*Using Breeze is simple!*

*Just like a breeze*



Enter the code to join your classmates



Greet your discussion partners



Save your chats, so you can use them to revise



From there, everything will be a breeze

*“Breeze is able to group students together on the spot, and create valuable and meaningful discussion which adds to the value of a university course”*

Breeze utilizes familiar technologies, Django is our front-end framework of choice and the back-end server will be based on the Tornado framework, as well as a MySQL database for storage of messages and logs.

Breeze is lightweight and runs on every machine with an internet browser And will by its end be distributed as open source for other developers.

Breeze is made with the users in mind; a clean interface and no bloated functions allows for Breeze to be used by everyone, no matter their previous computer experience and knowledge

# ToDoMe



Do yourself a favour - Use ToDoMe



Jonathan is a guy currently enrolled in the Computer-Science program at NTNU. He has a busy schedule consisting of his studies, training and extracurricular activities. To manage all his activities he needs to study efficient, and maximize his learning outcome. ToDoMe is a perfect application for Jonathan, because it serves both of his needs: Managing his time and to study efficient.

“ToDoMe has made studying easier and my grades better”

## About ToDoMe

” The only task manager you will ever need. Easy to organize your tasks and goals for the day/week.

ToDoMe makes completing tasks fun and motivating by giving you credits for what and how much you do.

Additionally, you get extra points for completing quizzes created by your teachers! This helps you repeat key parts of the curriculum in a fun way.”

ToDoMe is a web-based task manager that lets you organize your tasks for the day and week in an easy manner. You earn credits for completing tasks you set for yourself and for passing the quizzes created by your teacher. ToDoMe helps the students repeat the curriculum throughout the semester and it gives the professors a better overview of their students progress.



The Team - from left to right

Caroline C. S. Kverne - Teamleader & Developer  
Marius Christoffer Hornslien - Developer  
Erik Ormevik - Developer  
Mathias Maagers Svendsen - Developer & Database specialist



Django is a high-level Python Web framework that encourages rapid development and clean, pragmatic design. Built by experienced developers, it takes care of much of the hassle of Web development, so you can focus on writing your app without needing to reinvent the wheel. It's free and open source.

React makes it painless to create interactive UIs. Design simple views for each state in your application, and React will efficiently update and render just the right components when your data changes.

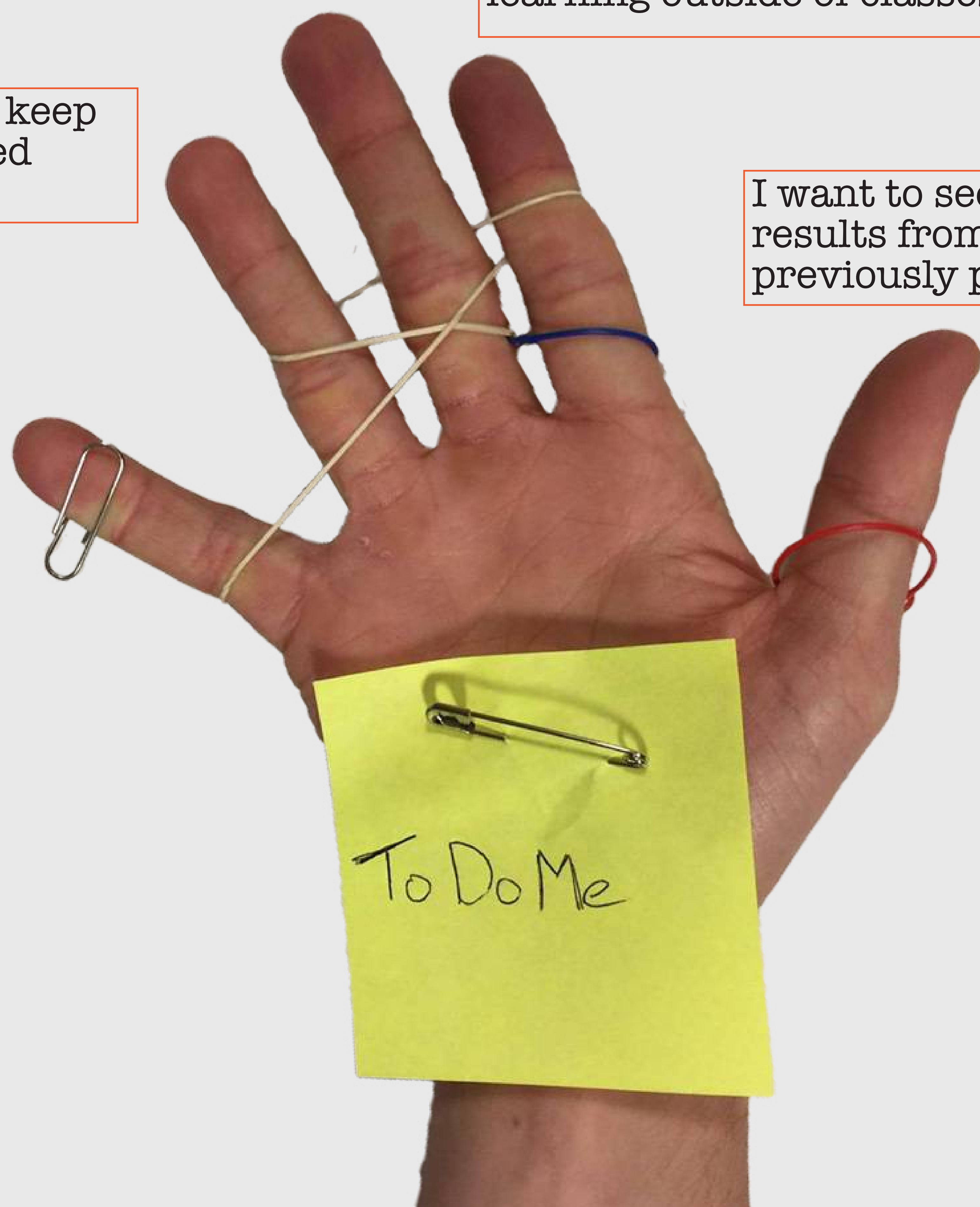
I want to track my own progress in subjects as well as compare it to my friends'.

I want to create quizzes for my students to encourage learning outside of classes.

I want the system to keep track of my completed tasks.

I want to see the results from quizzes previously posted.

I want to have a task manager that allows me to set up and organize tasks for myself.



# EDITF2704



Sander Masoud Zandi  
Project team leader/Software engineer



Alexandra Mjaatvedt  
Software engineer/Lead UI designer



Mikael Ramstad Wenger  
Software engineer



Benjamin Aune Brekken  
Software engineer



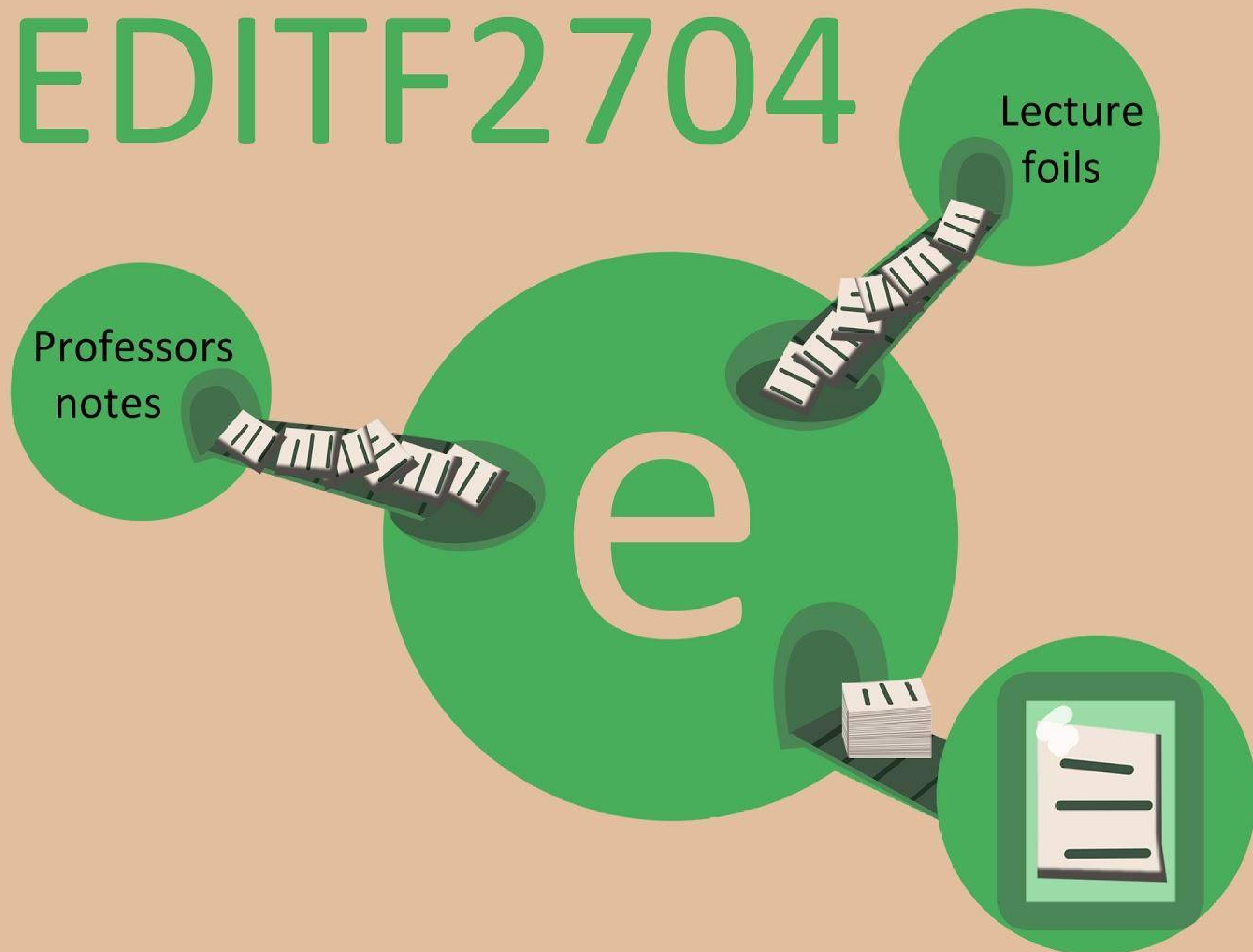
«The most vexing part of being a lecturer is having students who are not prepared»

Fredrik Carlsen is currently working as a professor at the institute of Social Economics NTNU Dragvoll). He thinks students do not prepare well enough for his classes.

Our bot will help solve these problem by automating extraction of info from the professor's foils.



# EDITF2704



EDITF2407 is designed as a unique educational helping tool to make students more independent and prepared. Through automatic fetching of information with a scraper our bot will assist with the everyday learning experience.

- As a user I want to get info about my subjects so I can easily prepare for lectures.
- As a lecturer I want to be able to post course material easily, so students can find info they need.
- As an admin I want to be ensure that the bot collects data automatically.
- As a user I want to be able to save the info.
- As a user I want to be able to log in and out as I please.

By using a scraper tool our bot will be able to automatically fetch important information from the lecturer's foils. It will then store this data in an easily accessible database structure.

## Technologies

- Scraping tool
- Web page
- Database structure



# BOTLER

- YOUR EDUCATIONAL BUTLER



Martha H. Andersen | **Product developer**  
Sondre Brekke | **Software developer**

Jørgen Frost Bø | **Software designer**  
Maren T. Noreng | **SCRUM master**



BotLer provides students an overview over upcoming events, progression statistics and interactions with lecturers.



Maries goal with BotLer is to boost her learning experience.



BotLer features SDKs for iOS, Machine Learning, Big Data and High Performance.

**Marie Holte**  
Student, 22

Marie is highly active in student organizations, workout often and therefore find very little time to spend on mandatory assignments. It is thus important that she spend her valuable time efficiently. Marie likes to attend the lectures, but often find herself loosing focus since the professors have a higher pace than she prefers. Since the referents rarely meet, she feels the lecturers doesn't adapt.

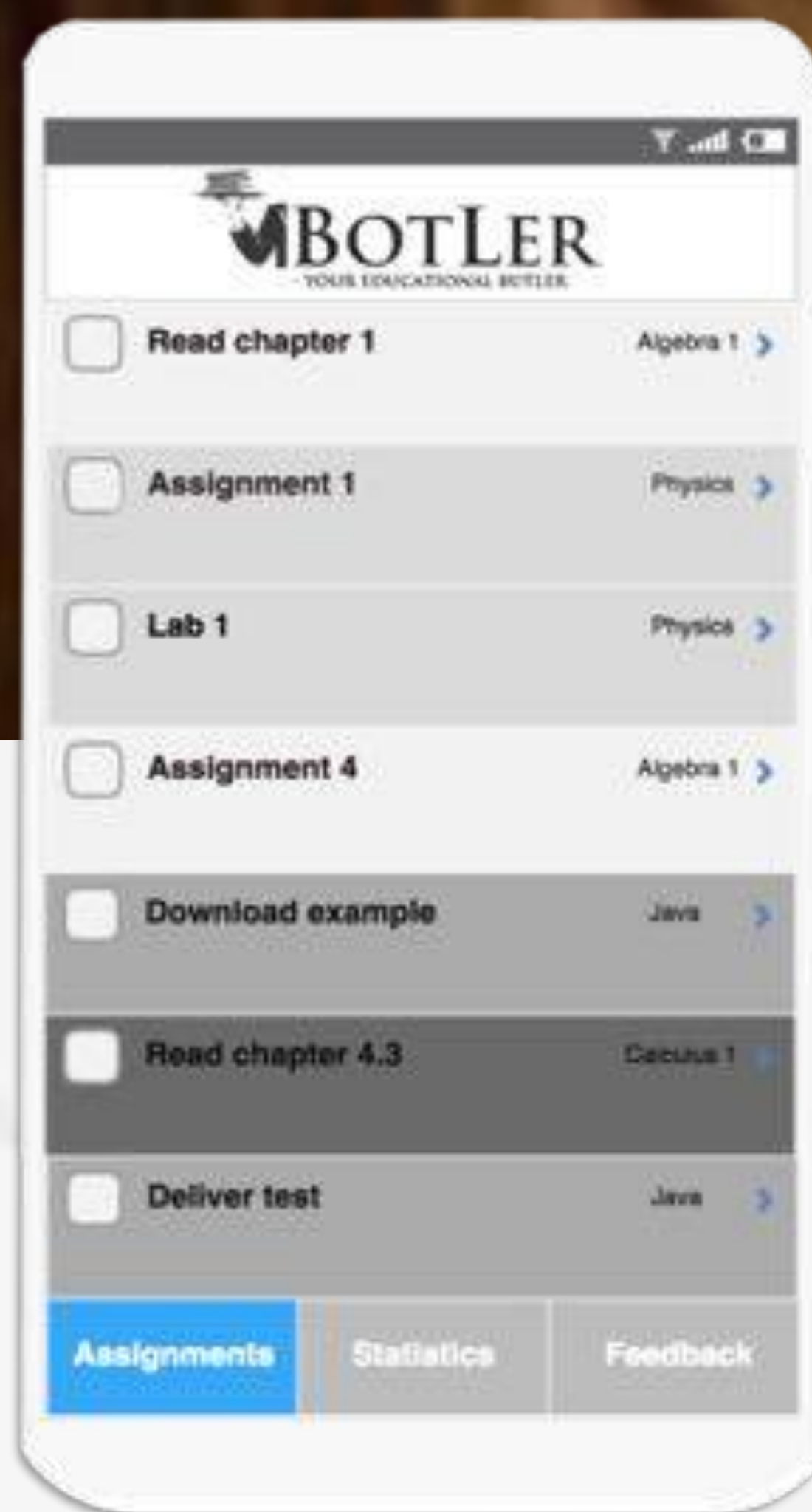
“

*I had benefited greatly from an application that worked as my educational butler.*

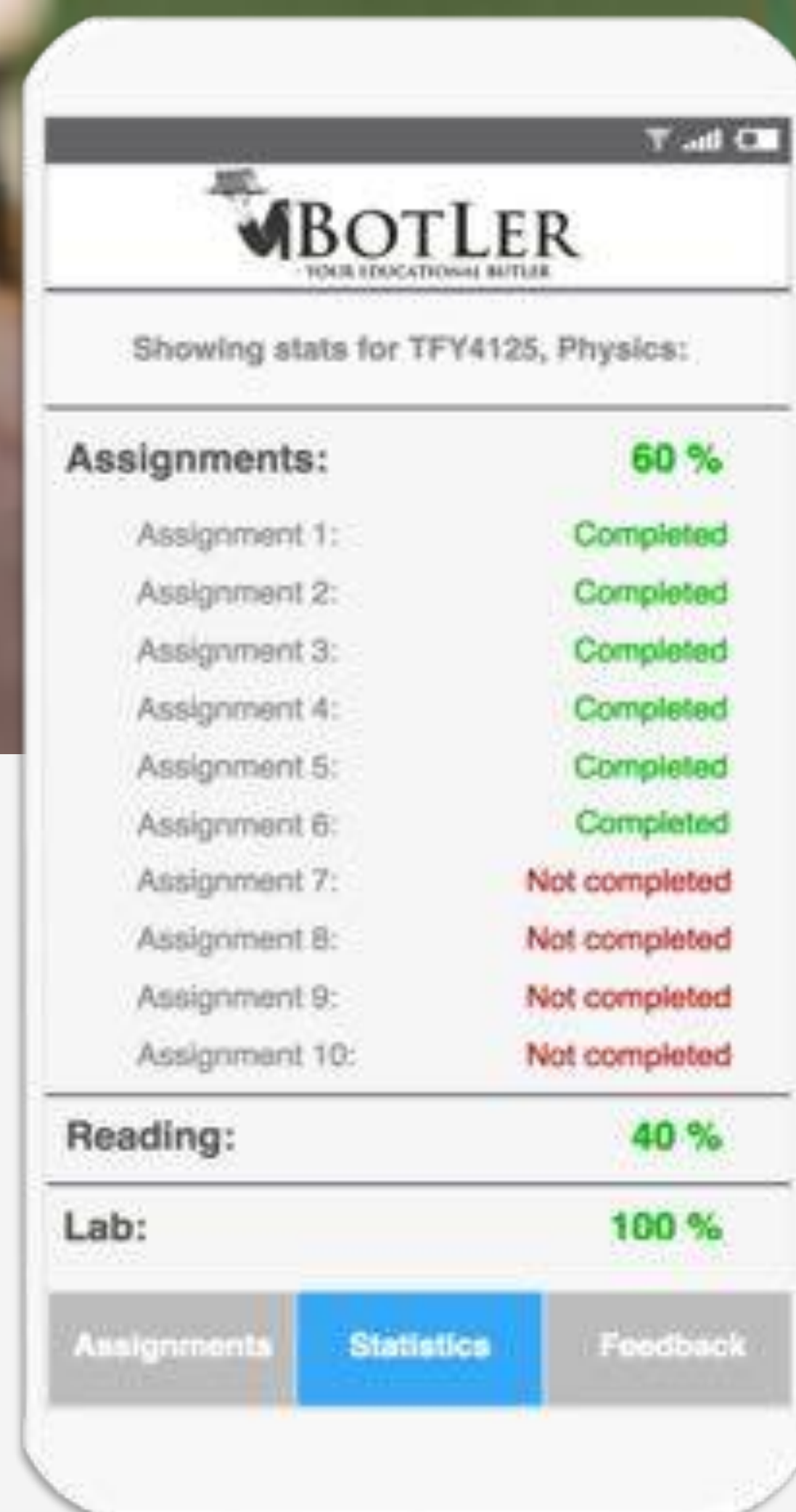
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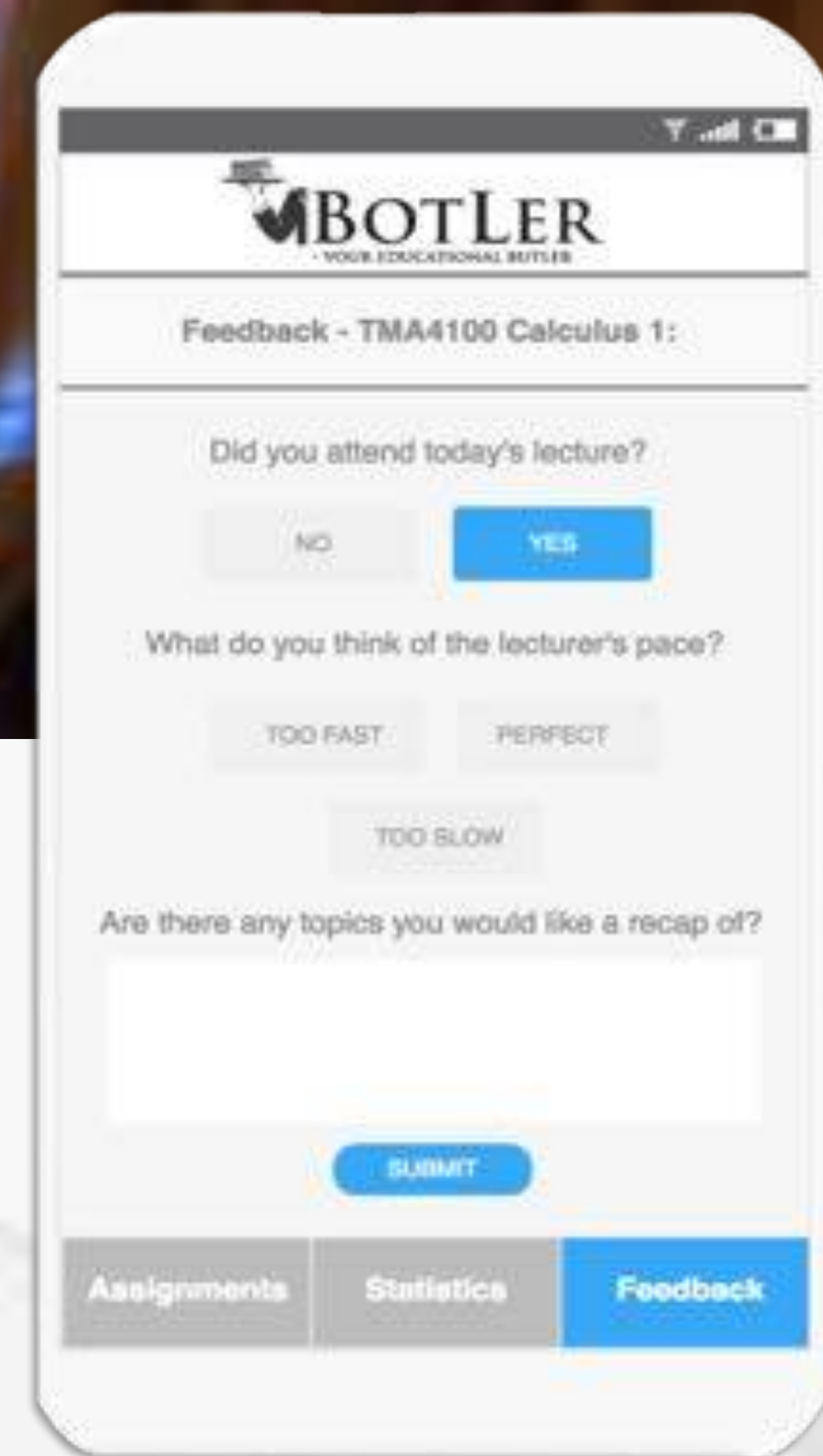




The students will receive information on upcoming work, both mandatory and preparatory



The app will provide the students with information about their progress in the course



The students will be given the opportunity to fill out a survey to rate each lecture



# MBOTLER

- YOUR EDUCATIONAL BUTLER



"As a student, I would love an app that reminded me of upcoming events, lectures and due dates, so I never fail to deliver on time."



"As a professor at NTNU, I miss a way to get feedback from my students to improve my lectures."



"As a student, I would have benefited greatly from an application that kept me updated on the progress in the courses."



"As a student, I need an application that can tell me how to prepare for my lectures."



"As a student, I want an easier way of giving feedback to the lecturer. "

BotLer helps students organize and structure their studies, handing them information about the class, to secure no late deliveries. With direct feedback to the lecturer, the application redefines the student-teacher relationship and makes lecture adaption easier than ever before.



TDT4140 Software Engineering course, Spring 2017

Concept poster

Lecturer: Pekka Abrahamsson, Anh Nguyen Duc  
 Coaches: Henry Sjøen, Kari Eline Strandjord, Audun Liberg,  
 Evelyn Saxegaard, Hung Quang Thieu, Jie Li, Håvard Estensen

# PST

## THE PERSONAL STUDY TRACKER

TDT4140

Group 30



**Aslak Hauglid**  
Scrum Master/  
Head of Development

**Jan Olav Moltu**  
Lead Back-End Developer/  
Test Leader

**Kasper Berg**  
Team Leader/  
Head of tracking

**Anders Salvesen**  
Lead Front-End  
Developer

“ *Every morning, looking at my schedule, I feel stressed and lack of motivation.* ”

– Nicolai Michelet

As most students Nicolai struggles with organizing his daily routine. Due to having a busy schedule, organizing and being disciplined is challenging.

By tracking his work hours in the different courses, while keeping up with the curriculum, Nicolai will easily structure his overloaded schedule.



**Nicolai Michelet** is a 21 year old student at NTNU. Besides keeping up with his studies, he's doing sports and extracurricular activities.



# PST

## THE PERSONAL STUDY TRACKER

### TOP 5 USER STORIES

- As a professor I want to get **feedback** on lectures, so that I can use this to adjust my lectures according to students needs.
- As a professor I want to be able to add curriculum **progress plan** to a course, so students can get the information they need.
- As a professor I want to be able to know how many hours students spend on my course(s) in order to adjust the expected **workload**.
- As a student I want to be able to see all my **delivery dues** in one place, so I can have an overview of future deliveries.
- As a student I want to be able to **log time** spent working on a course so I can keep track of **time spent**.

### CONTROL YOUR LIFE

PST tracks your study progress, so that you stay disciplined and motivated.

A web application where each student can set an expected work schedule and keep track of their study progress, delivery dates, expected workload and rate lectures.

Our application is cross-platform and available for all students and professors.

# REAL BACK

Real time feedback system to improve any lecture



## The RealBack Team



Martin Lunde - *Project Manager*    Petter Bemelmans - *Developer*  
Kristian André Volden - *Developer*    Christoffer Almankaas - *Developer*



## Persona



### Persona Information

Name – Jørgen  
Age – 20  
Occupation – Student  
University – NTNU Trondheim  
Field of study – Cybernetics and Robotics

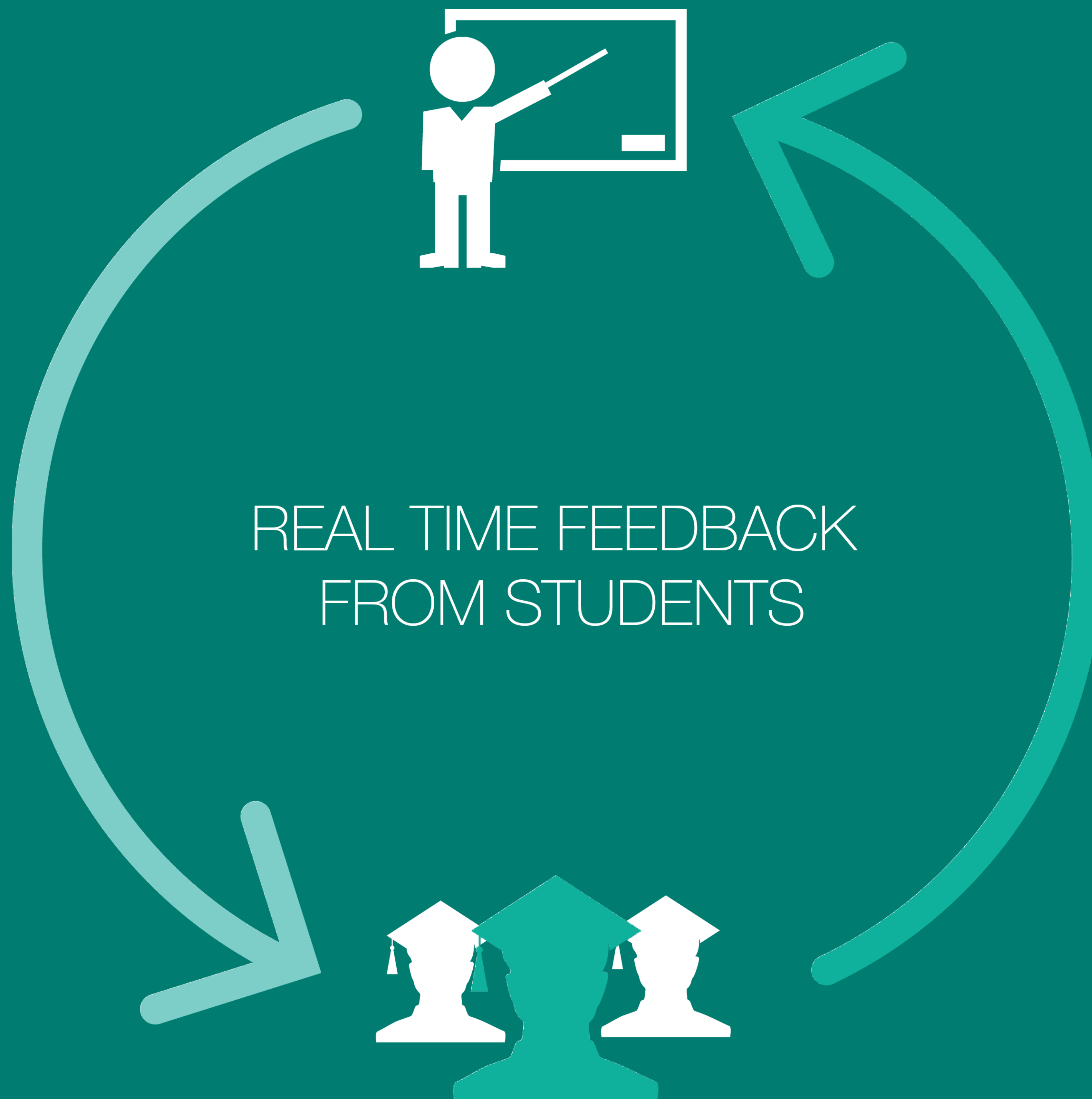
### Goal And Painpoint

Jørgen wants the best possible grades but sometimes he finds it difficult to understand the topic being lectured.

*“I would like to let the lecturer know that I don’t understand the topic without feeling stupid by raising my hand.”*

### How RealBack Helps

By creating a website where the lecturer can host sessions, the students can connect and give real time feedback. Not only will the website support feedback on how well students understand the topic, but make them able to give feedback on sound, let him know if he’s going too fast or too slow and ask questions.



## What is RealBack?

### Top 5 Backlog Items

1. As an instructor, I want to be able to log in and create a new "lecture" for every lecture I am having.
2. As an attendee, I want to be able to login to a webpage/app, so I can easily access the system.
3. As an attendee, I want to be able to use the system with either my phone or computer, so that I don't need to bring a specific device to the lecture.
4. As an attendee, I want to be able to ask a question anonymously through a user interface, so that the threshold for asking is lowered.
5. As an instructor, I want to be able to see recently asked questions, so that I may be able to answer them in time.

### Value Proposition

RealBack makes it easy to get improved feedback from students. With our low overhead solution you will be able to make your classroom more interactive, more enjoyable and most importantly more educational.

### How Does It Work?

Teacher's create a instance of their lecture online. This instance can then be accessed by the students, where they will be able to ask questions and give general feedback without interrupting the teacher. This will make it easier for shy students to get engaged in the classroom.

### Developing Technologies

Basing our application on Bootstrap, jQuery, JavaScript, HTML, CSS, Django and SQLite allows for compatibility with all modern platforms and devices.

# Weebo



From left: Roman **Bachmann** (Backend solutions), Emil Grip (Database architecture) Sølve **Hunvik** (Team Developer & developer), Thayanan **Tharmapalan** (Frontend & design)

With Weebo, students are able to watch, rate and share their best educational videos for a specific subject. Professors are then able to verify the quality of content, suggest videos, or even publish an own video. Weebo will be the future for finding videos for any subject, independent of university or school.



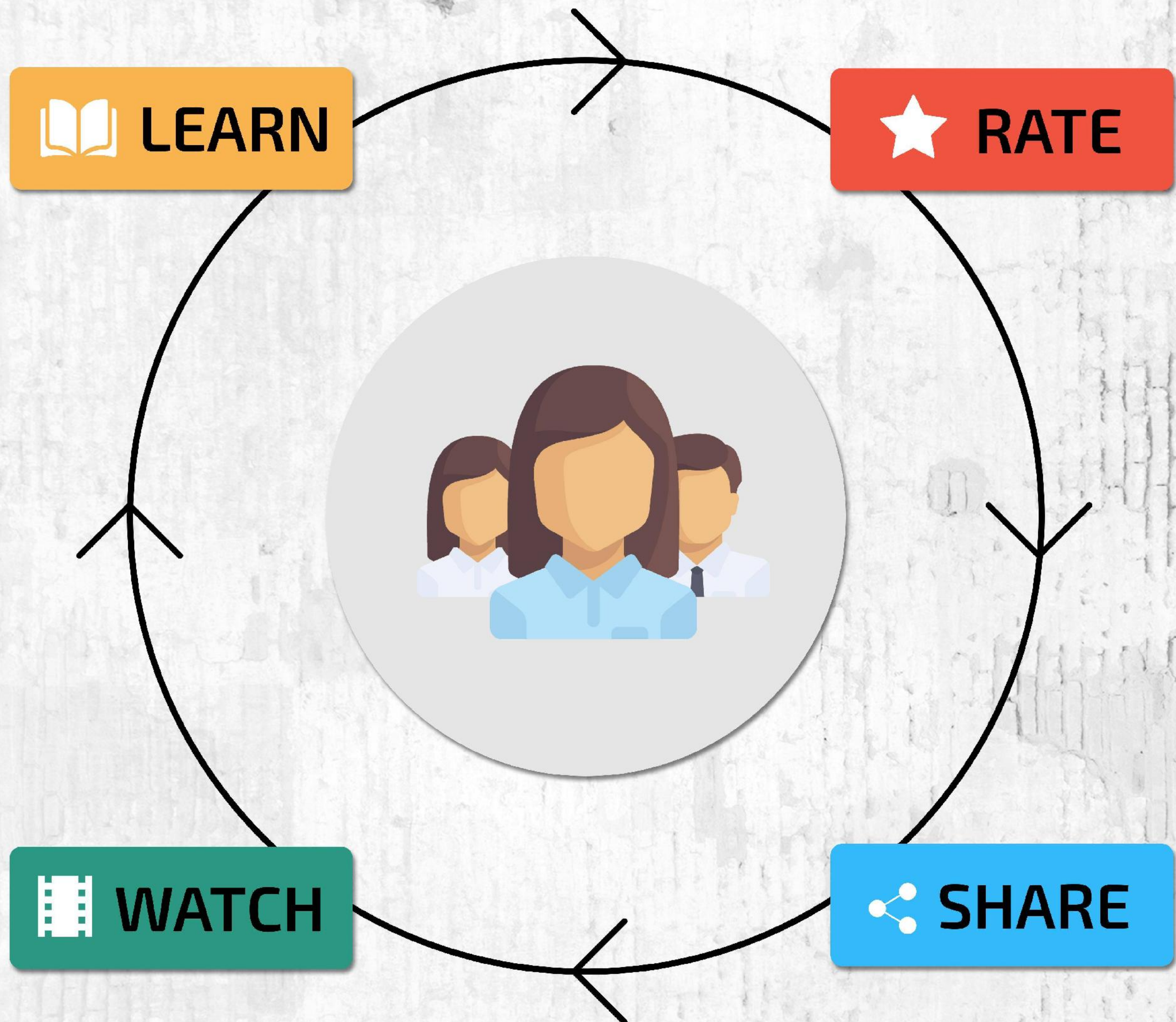
Daniel Rodríguez (28), is currently studying Informatics at the Norwegian University of Science and Technology. He finds it difficult to find the best video for his subject.

*“In last semester, I had a subject called Algorithms and Data structures. I found it really annoying to browse the whole internet to find a good video to study a specific algorithm. I would definitely use a solution like Weebo.”*

## Goal & painpoints

Daniel want to use his time on learning rather than using time to find educational videos to supplement the lectures.

# Weebo



## We change the way you learn!

### Most important product backlogs

- As a student, I want to be able to see the best rated videos for a specific part of the curriculum in a subject
- As a student, I want to be able to share videos for a desired part of the curriculum
- As a professor, I want to be able to post the videos I prefer
- As a learning assistant, I want to be able to post videos that helped me get through the subject
- As a professor, I want to give the video I think is best more attention by selecting it

### Value proposition:

We want to make sure that the students find the best content of videos, more importantly the right videos for a specific subject. Professors are also able to verify & suggest content.

### How does it work

Weebo is a platform with all educational videos shared in one place, where the users, both professors and students, can rate & validate the quality of each video.

### Potential technologies

With the use of HTML, CSS, and frameworks such as React and Bootstrap, we will produce a dynamic website for the users. Later, the platform can adapt to applications in mobile devices for ease of use, whenever and wherever you are.

TDT4140 Software Engineering course, Spring 2017

Software Processes  
Agile Software Development  
Project Management and Planning  
Architectural Design  
Software Design

System Modeling and Unified Modeling Language  
Software Process Improvement  
Configuration Management  
Software Testing  
Concepting

Security  
Software Reuse  
Software Evolution  
Service Oriented Architecture  
Software Quality Improvement

Concept poster

Lecturer: Pekka Abrahamsson, Anh Nguyen Duc  
Coaches: Henry Sjøen, Kari Eline Strandjord, Audun Liberg,  
Evelyn Saxegaard, Hung Quang Thieu, Jie Li, Håvard Estensen

# LectureQ

more interactive lectures



**Jens Alfsen** (Product owner)

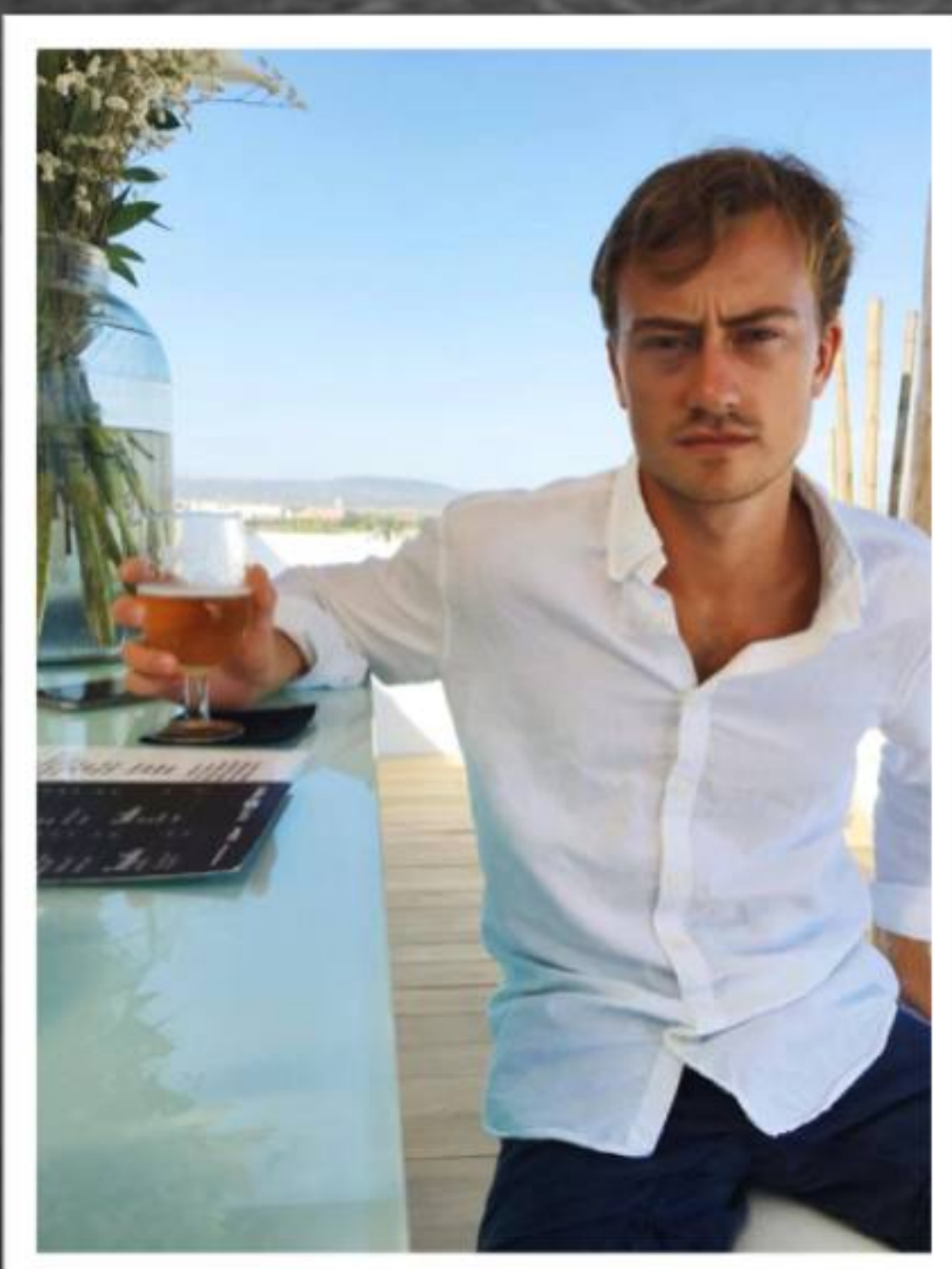
**Håkon Edøy** (Development team member)

**Simon Meinhard** (Development team member)

**Tord Haflan** (Scrum-master)

## How we help

- more dynamic lectures
- lectures customized to the majority of the students
- teachers get real time feedback from the students
- teachers can improve lectures based on previously gathered data



## Persona

Petter Narvhus is a 21 year old student at NTNU, currently taking a master in industrial economics. He does not see himself as a shy person, nevertheless he rarely asks questions in class. He therefore thinks highly of this idea, and emphasizes his enthusiasm for being able to tell the teacher to go faster/slower. "Even though I'm not afraid to ask questions in class, there is definitely more comfortable to ask questions through this app – which benefits everyone."



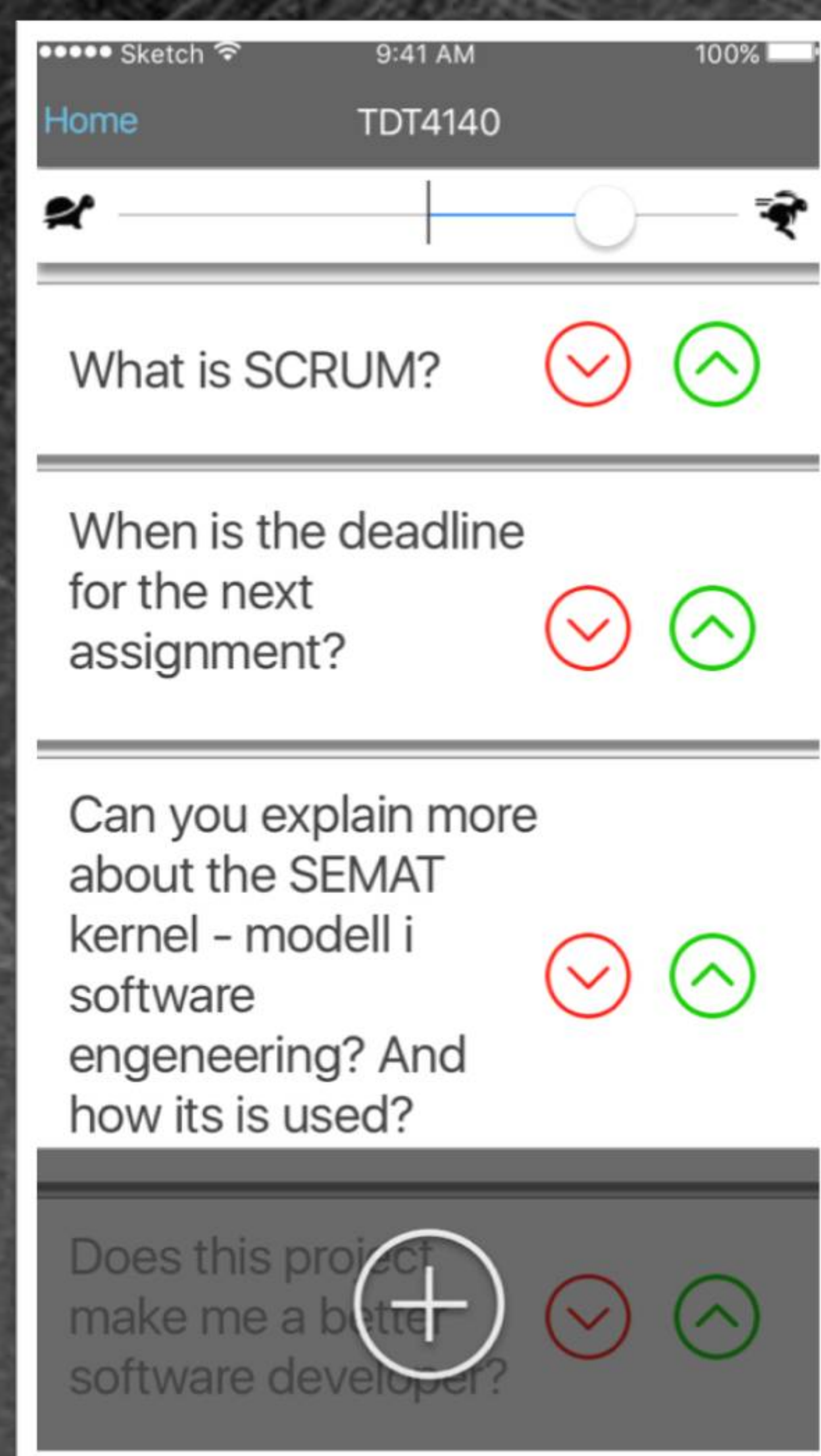
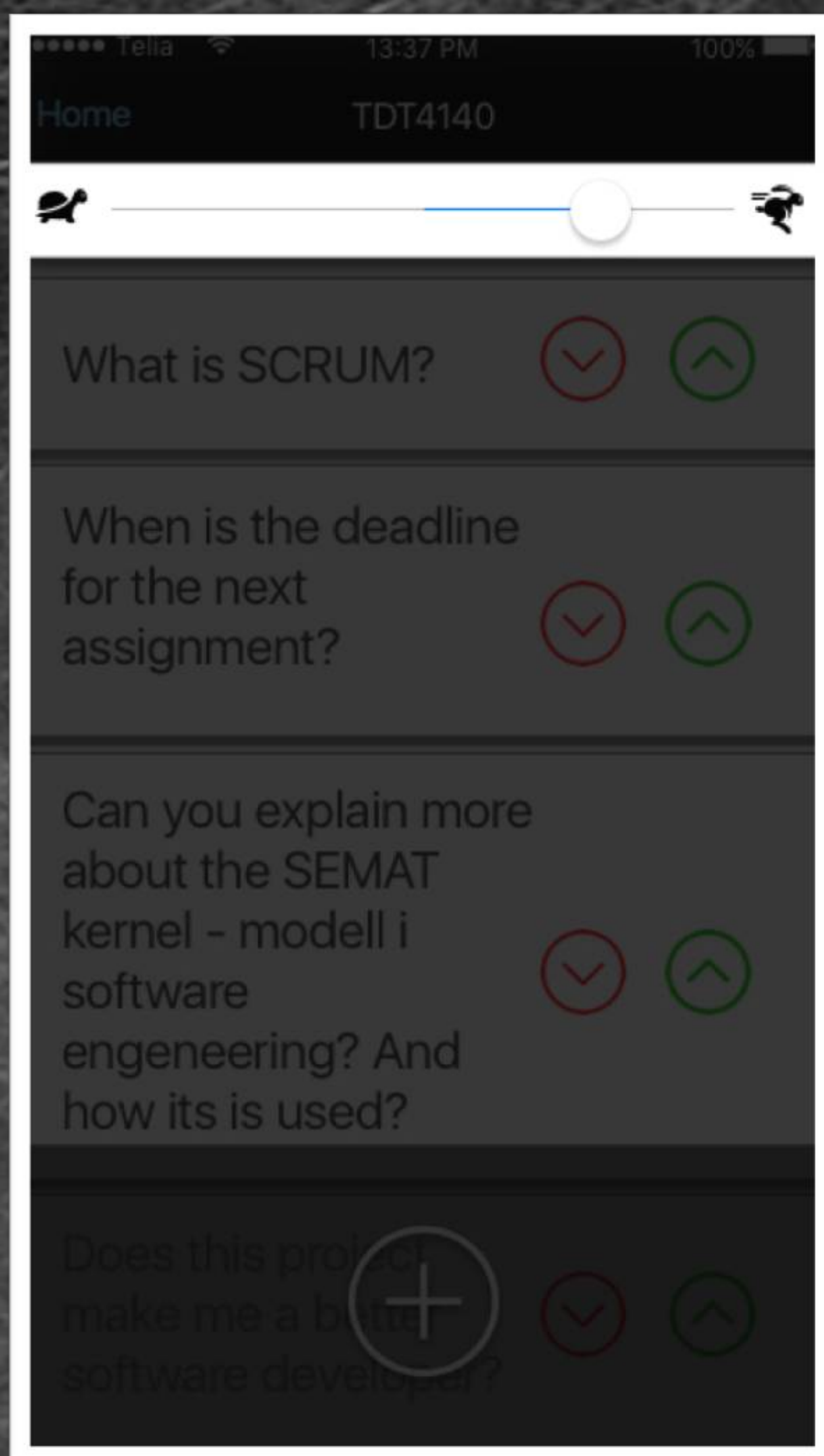
# LectureQ

## Top five backlog items

- different user interfaces for students and teachers
- ability for the student to influence the speed of the lecture
- ask questions that the teacher can see in real time
- vote on which questions for the teacher to answer
- teacher to be able to create lectures easily accessed by the students

## Potential Technologies

- Ajax technology stack
- Java



## Lecture speed

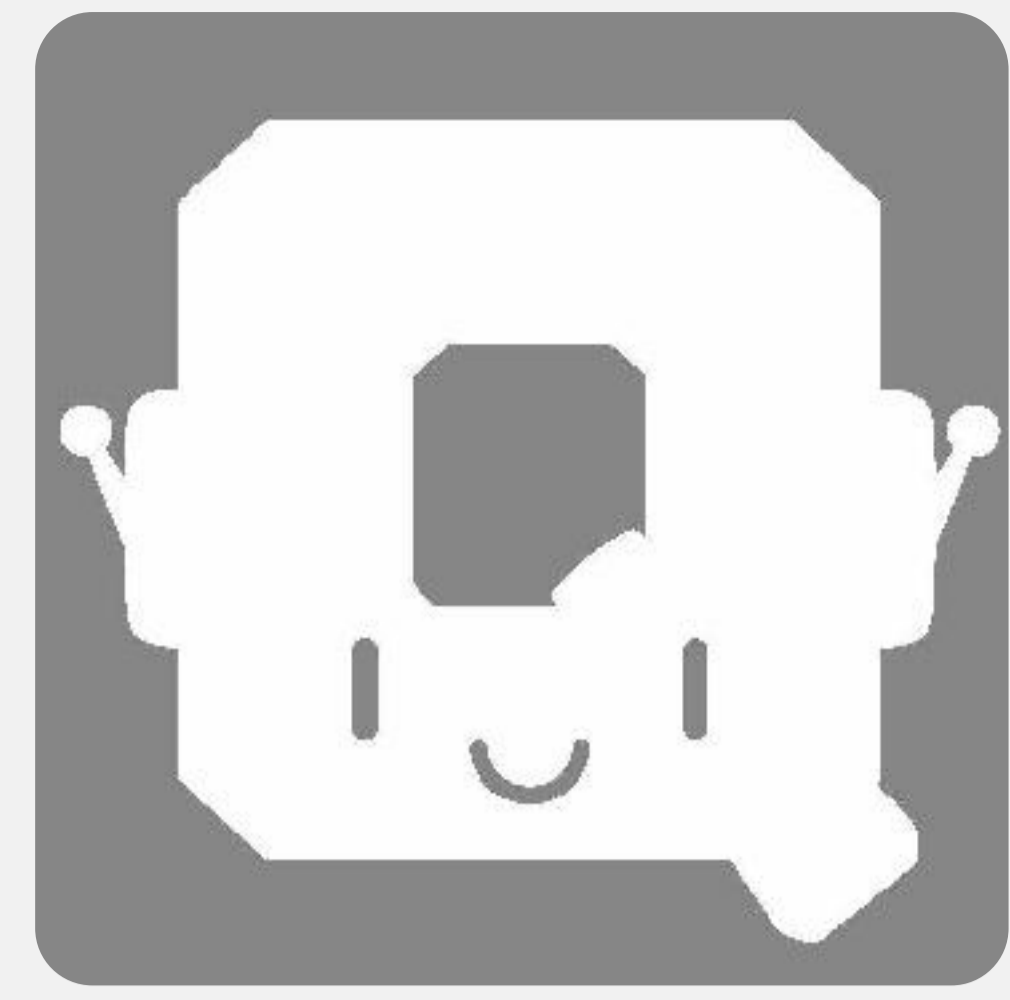
The slider gives the students the opportunity to express whether they think the lecture is going too slow or too fast – and to what degree.

## Questions asked

Students can upvote and downvote questions. One can also post own questions.

## Easy entering

The students enter for example the course code, or another pin, and gets right into the question page. No need for email, username or password.



# qBot

- real questions answered



**Silje Riseng**  
Scrum-master  
Architect



**Håkon Molven**  
Lead developer  
backend



**Long T. Thai**  
Version controller  
Lead tester



**Eivind Keil**  
Lead developer  
frontend

## Made with



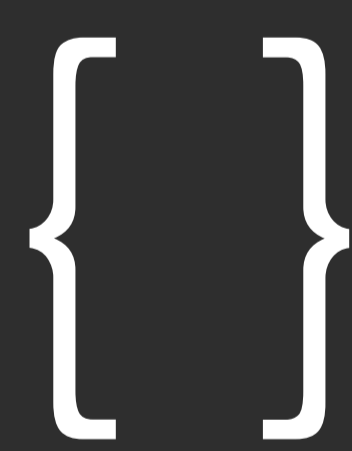
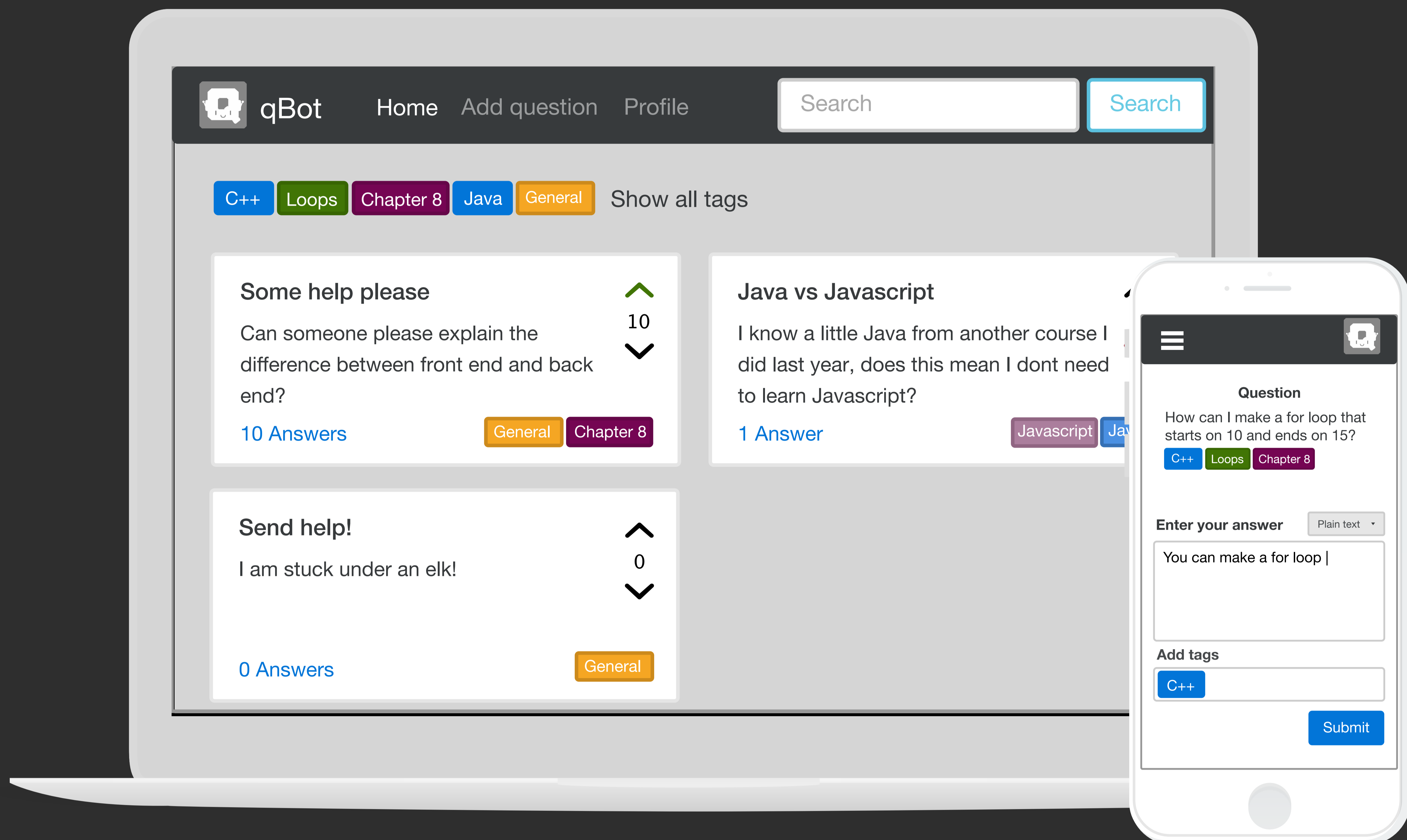
Python



Django



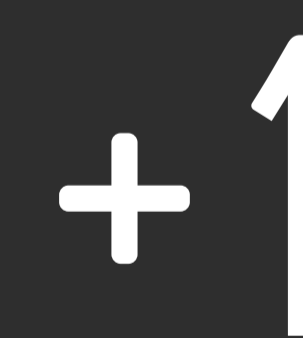
Bootstrap



**Syntax highlighting**  
Sharing code made prettier



**Anonymity**  
Because it shouldn't matter who's asking



**Voting**  
Highlight relevant questions, and show appreciation



**Extra features for lecturers**  
Give extra credit, and see statistics



**Tags, sorting and search**  
Find what's relevant for you

# What is qBot?

Imagine being a lecturer in a class with over 300 students. How can you know what topics the majority of your students are struggling with right at this moment? qBot answers this, and many other questions. Collecting the knowledge of your students and staff, and engaging the students.

qBot is a responsive, light weight web app. Made to solve real problems, by answering real questions.



**Name:** Janette Hole  
**Age:** 43  
**Location:** Heimdal  
**Gender:** Female  
**Work:** Computer science researcher, teaches a C++ intro course

**“Ideally I’d have a way to help my students without affecting their ability to think for themselves”**

- Terje Rydland , Professor

Janette Hole is married, has two children, and likes to read. She spends a lot of time doing her research, and finds her field of work very compelling. In addition, she teaches the C++ intro course at her university. She is well educated, but not interested in following the newest tools and technologies.

Janette spends a lot of time planning her lectures and doing work related to her research. This leaves her with little spare time to meet her students outside of the classroom. She knows that her students possess a lot of knowledge, and would like to use this as an asset. She also dislikes giving her students detailed guides to how to solve problems, because every time she answers a question in writing, all of her students end up with exactly the same answers.

## Solving the problem with qBot

By encouraging students to ask questions, and contribute to their classmates learning, the students will get a better learning outcome. A tag system gives the lecturer a better overview of what their students are struggling with. This can help the lecturers adapt towards students actual needs. A voting system allows for the lecturer and students to give credit to good answers, and to upvote questions to make it clear what the majority is struggling with. Points from votes, and answering questions will be automatically summed up, and this can be used for adding bonus points when grading the students.

All of these features increases the value of time spent answering questions, both for the students and the lecturer. Anonymous posting makes sure no question is too stupid or too small to ask, and pinning questions or answers you found helping makes it easy to find what your’e looking for. Code snippets, and programming language support allows for the students to get help in specific problems, and giving examples.

# Educational Organizer



From left to right: Henning, Adrian, Tørres and Lars

## Personas Goal and Pain Point

Professors often experience that students come unprepared for lectures. They would like a way to organize and deliver material to be read before and after the lectures to help students grasp the core concepts of the lecture.

### Real Quote

"The problem that university students do not realize is that the main responsibility for learning has to be placed on the student, not the university."

– Gunn Trulssen

### How We Help

We will make a calendar that extends the communication between student and professors. So students know what professors expects from them and professors get feedback in what the students know.

## The Team

Tørres Lande (Team leader)  
- Database

Lars Martin Aders  
- Design and GUI

Adrian Jünger Steffenakk  
- AI

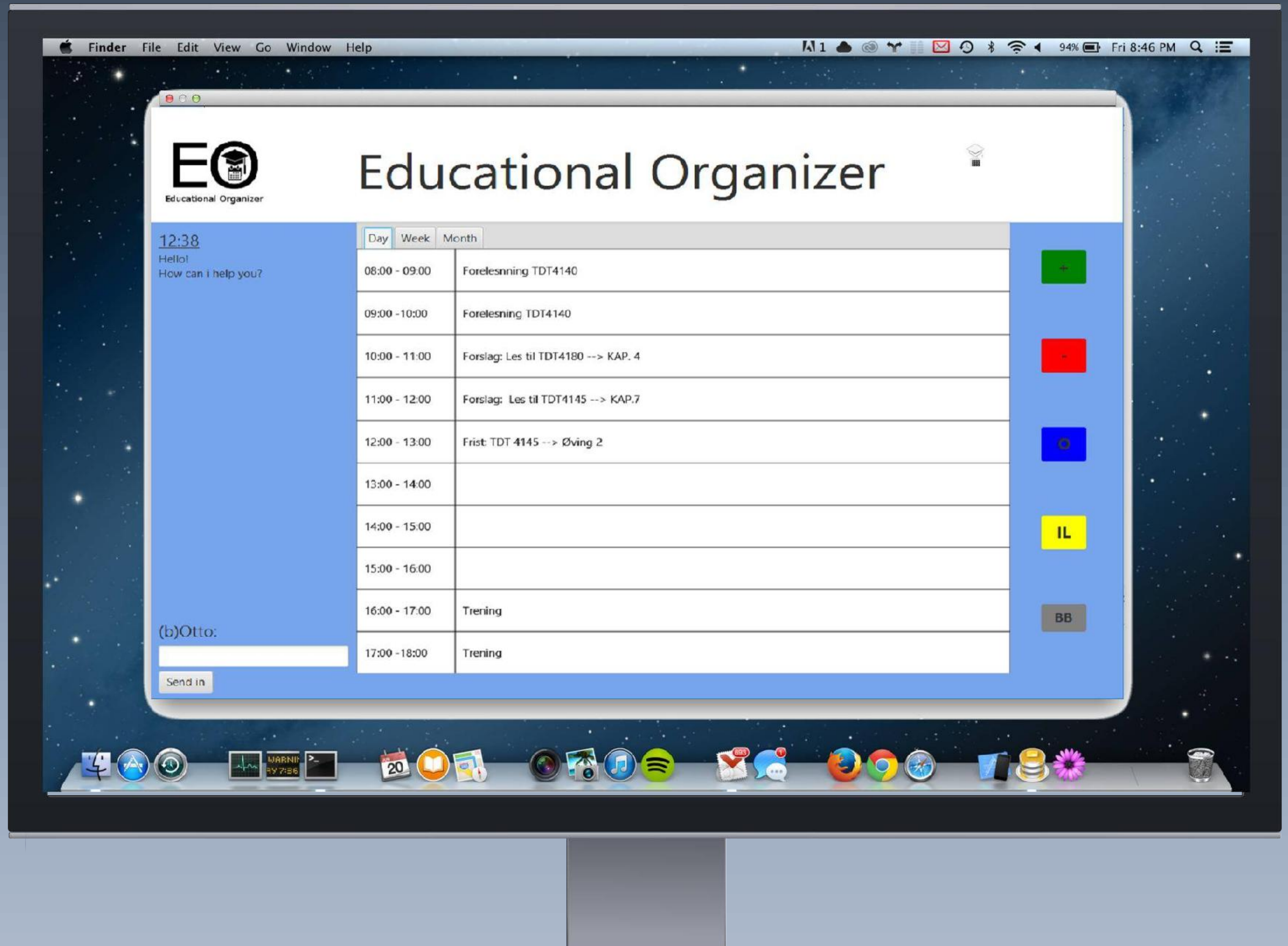
Henning Bang Halvorsen  
- Unit testing

## Gunn Trulssen



Gunn Trulssen is a professor at IMGU, and she teaches industrial archaeology with 20 years of experience as a professor.

Trulssen has many students coming unprepared to her lectures, so she often use too much of her time to go through material that the students should know already. She would like a way to motivate her students to read before the lectures.



## Top Five Backlog Items

- As a student, I should be able to view a calendar with lectures, work to be done, activities, etc. so that I don't have to plan my week.
- As a teacher, I should be able to enter the curriculum to be read before and after lectures.
- As a student I want to ask the app different questions (When to read, when the exam is, when we go through a certain chapter, questions about how the apps work etc.) and get appropriate response.
- As a student I want my calendar to schedule itself and also take all others activities in considerations
- As a teacher I want see statistics on how the students work and how it affects their grades.

## Value Proposition

Everyone have had the problem that they have a lot to do, but nothing gets done. Educational Organizer will help professors to point out what student need to focus on and split up the work so you want have a thousand thing to do, but only one at a time.

## How Does It Work?

You can ask the system for future elements in the calendar. For example, when an exam or an assignment is, what to read for a given lecture and when to read it, or if there is a free space in the calendar to do some recreational activities. You can organize your own calendar, by putting in the elements you like.

## Potential Technologies

We will make it a Java applet which connects to educational online sites. There we get the information we need so the bot functionality can make the program answer the relevant question the students, or teachers may have.

# L.I.M.B.O.

-Lecture InforMation BOT-



## The team (from the left):

**Embrik Einang:** Team Leader, Developer

**Andreas F. Eikeland:** Lead Designer, Developer

**Ola Syversen:** Welfare Officer, Developer

**Håvard Hellem:** Scrum Master, Developer



## The Persona

This is Bråstein Ragnarsson(23) and he is a student lecturer at NTNU Trondheim. As a student he has often felt that he does not have a very good connection with his professors and often gets lost in the lectures. In the same way, when he gives exercise lectures in the various courses he is a student assistant in, he often feels that the students lose focus and a lot of them are too shy to raise their hands to tell him. Our goal with LIMBO is to help both students and lecturers like Bråstein.



Improving your future

## The Vision

LIMBO aims to better the communication between students and lecturers with a simple and easily accessible interface. LIMBO will collect various data about the lecture, and display it in a nice orderly fashion.

# Revolutionizing Lectures

LIMBO



Improving your Future



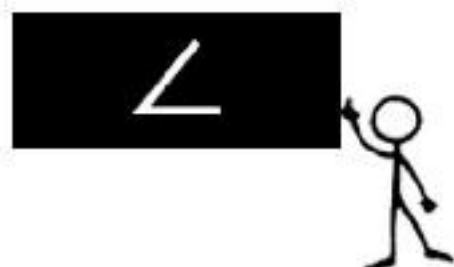
LIMBO will help you reconnect with your lecturer. In the most organized way yet.



**Rating**  
With LIMBO you will be able to not only rate each individual lecture, but both you and your lecturer will receive points. These points are based on the feedback received and will be used to construct top-lists of most active students and best lecturers



## Feeling lost?



## But how does it work?

LIMBO will be set up as a website where users are able to log in and save information. The website will keep track of user information in a database set up with Flask. There will also be support for both lecturers and students to choose subjects they are involved in.



The implementation of the website will be done with as mentioned Flask, and other tools such as HTML, Javascript, SQLite, Python and websockets

TDT4140 Software Engineering course, Spring 2017

Lecturer: Polka Abrahamsson, Anh Nguyen Duc  
Coaches: Henry Sjoen, Kari Eline Strandjord, Audun Liberg, Evelyn Saxegaard, Hung Quang Thieu, Jie Li, Håvard Estensen

# HipLearn

Keeping track has never been easier or more fun!



Our **TEAM** consists of:

- Håkon Ringdal, CEO
- Bjørn Iversen, CTO
- Ingeborg Lianes, CFO
- Janne Nesse, COO

Ragnhild Frøhaug is a data technology student at NTNU  
Her goal is to improve her grades by keeping track of her progress in the subjects.

Ragnhild is a 21 year old student, who lives in Trondheim, Norway. She has always enjoyed her school work, but some times longed for more free time from her studies. Ragnhild is at her second year of studies.

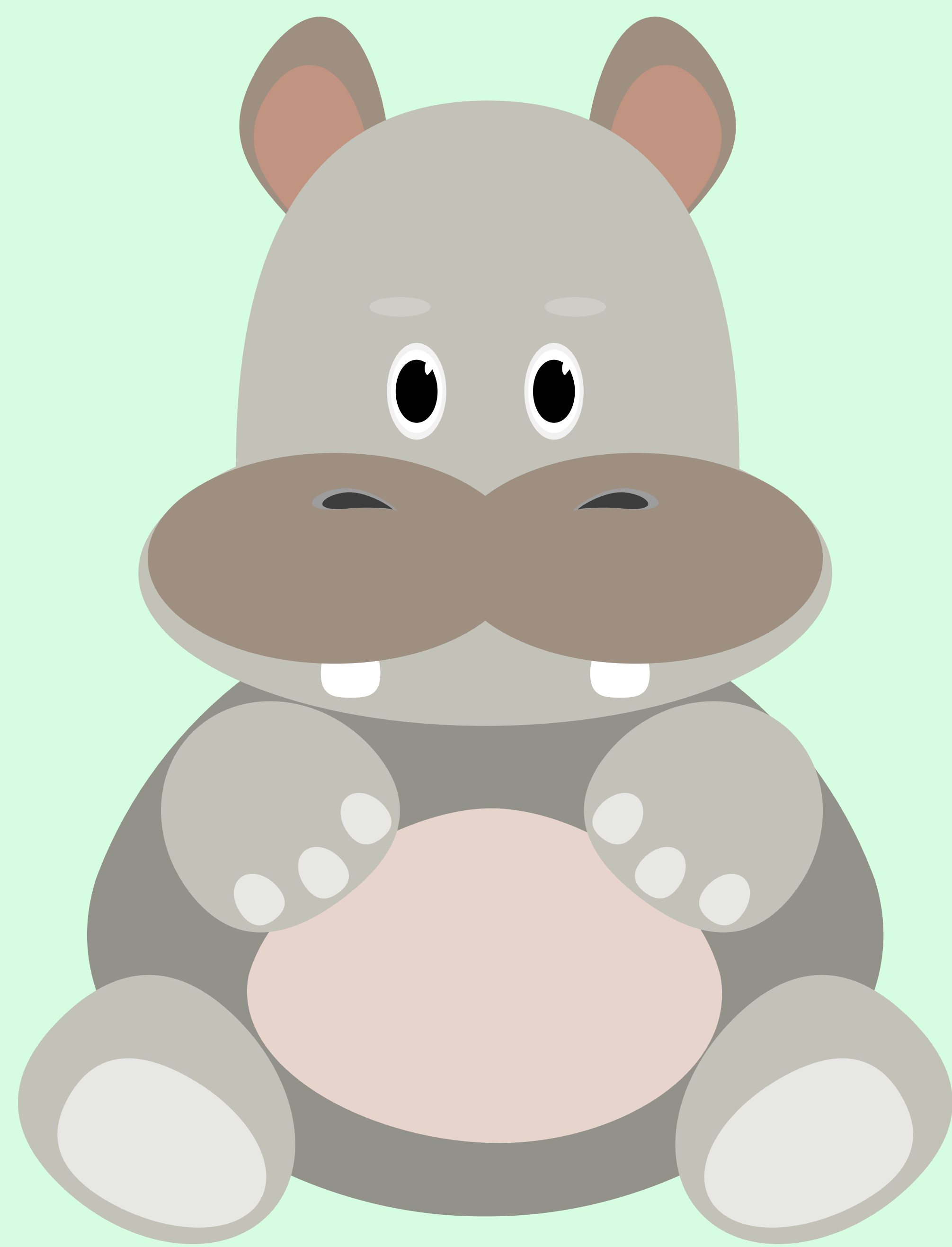
*"I would like help to making sure I don't miss out on important examples and tasks in my subjects"*

- Ragnhild Frøhaug



Many students, like Ragnhild, struggle to manage the heavy workload given at their universities. We would like to help the students get a better overview, so more of their time can be used on the curriculum.





# HipLearn

## Top three backlog items:

- 1) As a student user, I want HipLearn to remind me of important deadlines.
- 2) As a student user, I would like to keep track of exactly how much of the curriculum and exercises I have finished.
- 3) As a teacher user, I would like to get the quantitative data to see how far the students in my course have gotten.
- 4) As a student user, I want my subjects to automatically appear in HipLearn.
- 5) As a student user, I want to have a “Todo-list” so I get a structured overview.

## Our vision is simple:

We gather your student life in one place. We help you reach further and gain more success. We do the organizing for you. We want you to focus on the important matters.

HipLearn is an application which gets your subjects, shows you what you should read and which exercises you should do. It keeps track of your progress.

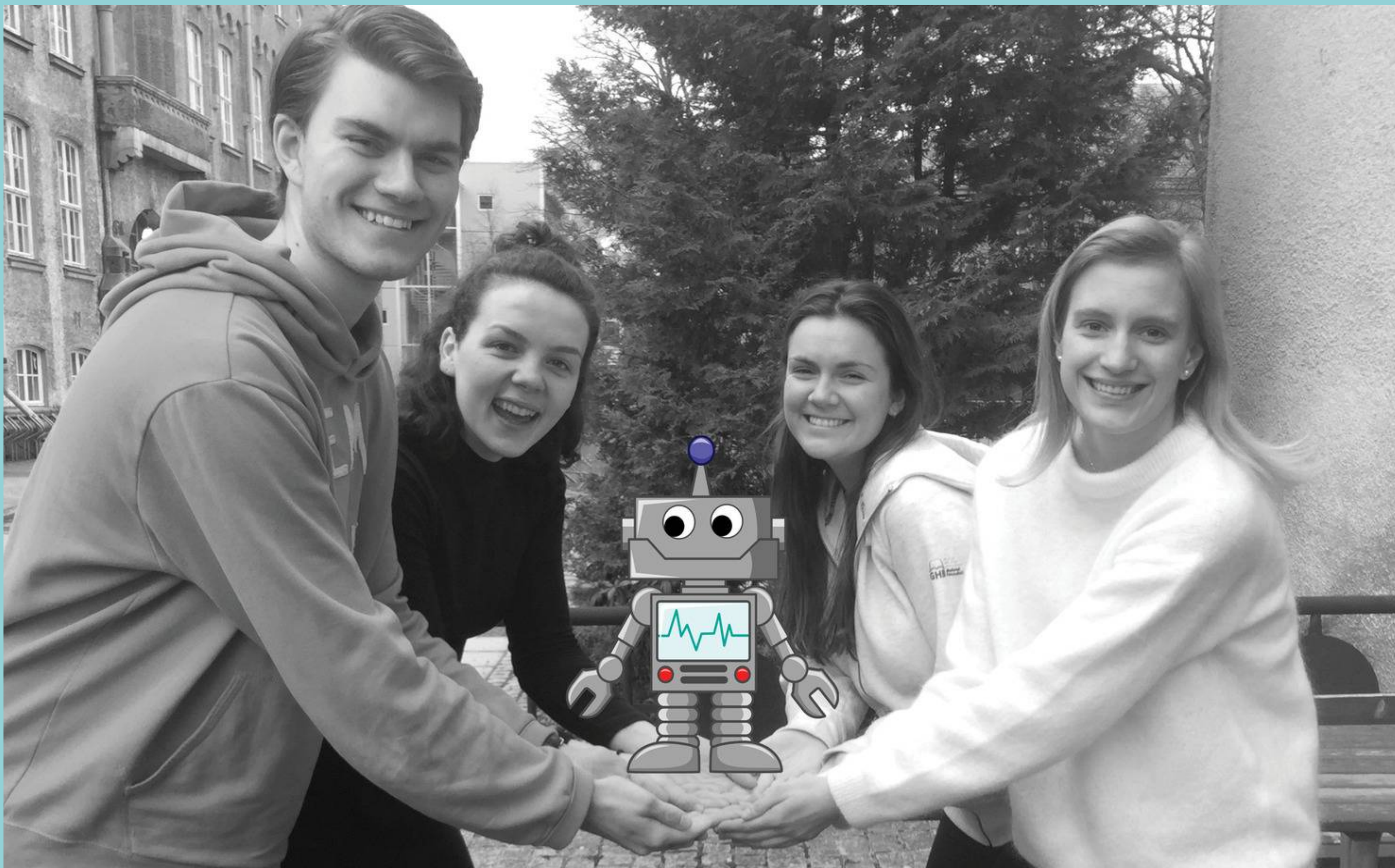
## Potential technologies:



# BUDDYBOT

YOUR SMARTEST PROGRAMMING BUDDY

Lars Erik Kleiven    Head of Business  
Helena Pontseele    Head of Development  
Ingrid Hermanrud    Feature Team Leader  
Sigrid Lea Fosen    Head of Technology



"I ALWAYS STRUGGLE TO KEEP UP WITH ALL THE DELIVARABLES"

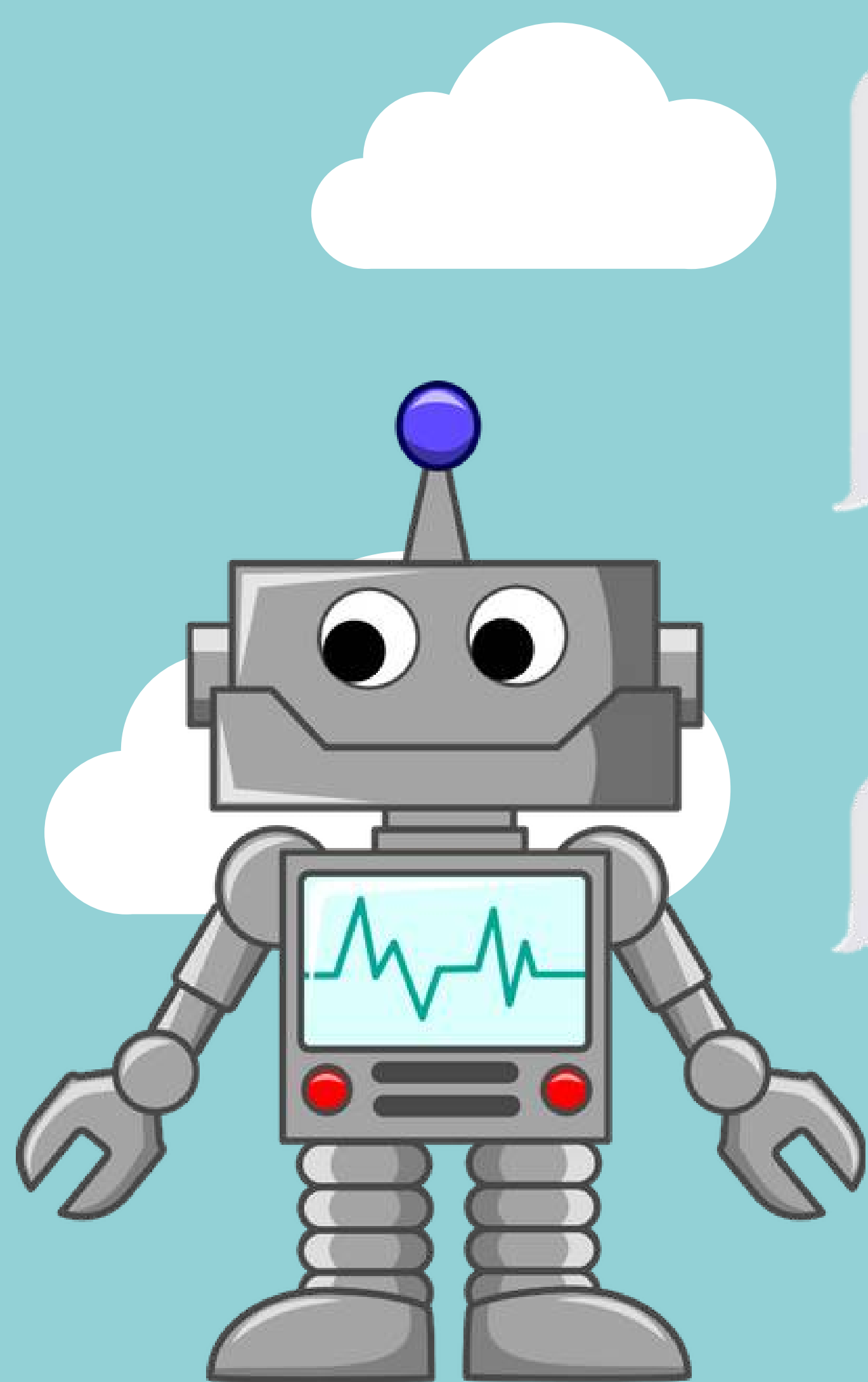
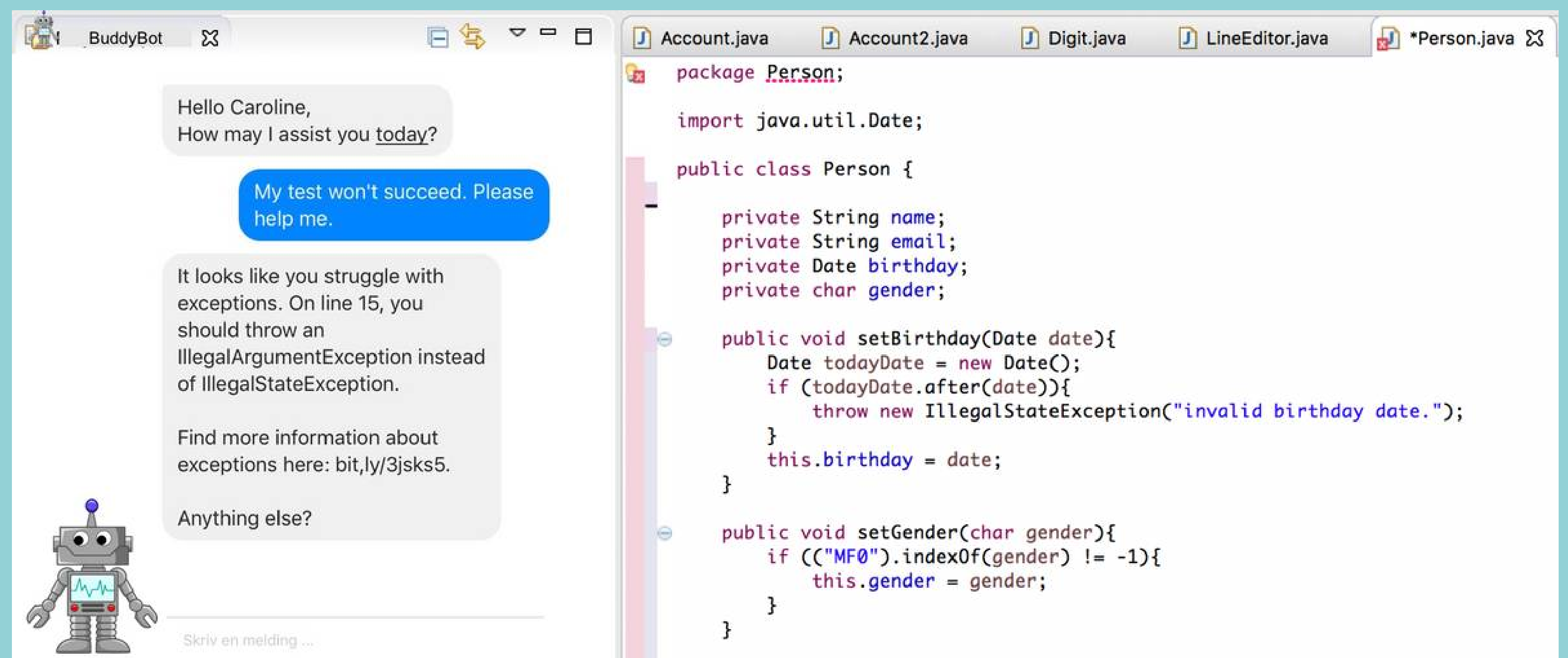
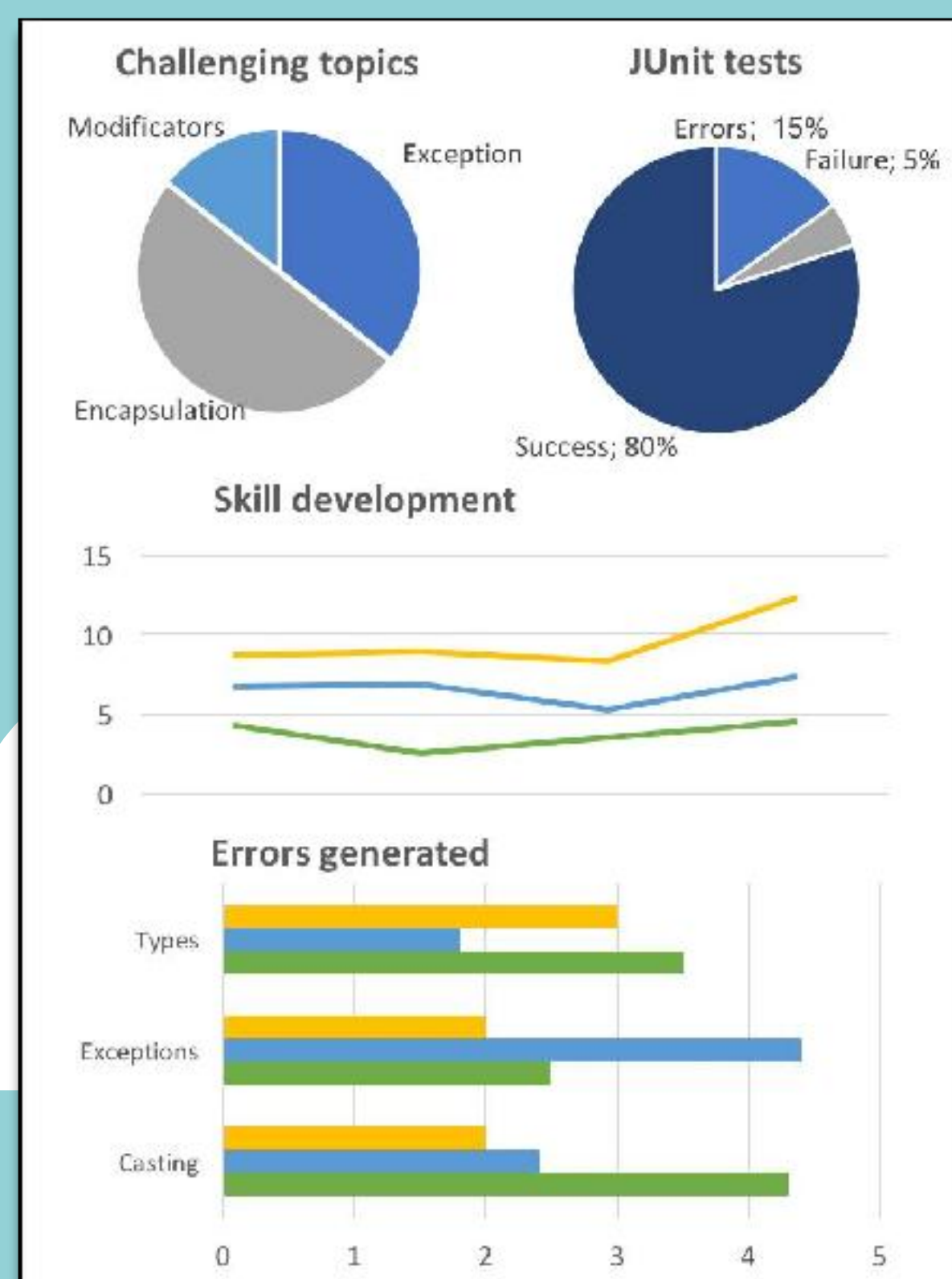
This is Caroline Myrland - a 24 year old student from Oslo. She struggles with programming courses and finds it challenging to keep up with assignments and study-related deadlines. She needs BuddyBOT to give feedback on topics she struggles with, and to provide her with learning resources. BuddyBOT also makes sure she follows up on her assignments.

This is Kåre Tvinnereim - a 32 year old programming professor from Stryn. He wants to know what his students struggles with, so he can customize his lectures. He needs BuddyBOT to provide him with information about the most common failures among students, so less students fail his course. BuddyBOT also makes sure the students exploit the web resources Kåre has provided them, which reduces academic inquiries in Kåre's mailbox.



# BUDDYBOT

## YOUR SMARTEST PROGRAMMING BUDDY



[TDT 4100] Hi Caroline. You haven't worked with your programming exercises this week. Maybe you should start on your next assignment?

When is my next assignment?

Your next assignment is due to next thursday.

## TOP 5 BACKLOG

- As a student, I would like feedback on programming exercises, regarding errors and concepts I might have misunderstood.
- As a student, I want BuddyBOT to recommend relevant online course lectures, wiki-pages etc. on topics I am struggling with.
- As a professor, I want BuddyBOT to provide insight in how my students are handling the programming exercises, and how they are mastering different topics.
- As a student assistant, I want to maximize my ability to help students by letting BuddyBOT assist the easiest cases.
- As a student assistant, I want a quick report from BuddyBOT on what the student asking me for help, is generally struggling with.

## WHAT WE DO

BuddyBOT is a roBOT that seeks to assist and guide students in their everyday studying, with several assignments and digital platforms to keep up with.

The main function of BuddyBOT 1.0 will be to assist students that follow programming courses at NTNU, by providing more information about parts of the programming language the student finds challenging. This is done through guiding the student forward to a platform where common causes of the specific exception are described.

BuddyBOTs activity will be logged in a database and generate a report to the lecturers weekly. As a result of this, the lectures can be adapted to what students find most challenging in the subject. In addition to this, BuddyBOT will notify students in prior to every deadline for deliverables and class they should attend.

## HOW WE DO IT

BuddyBOT is an Eclipse plugin that tracks your programming activity. BuddyBOT keeps track on your errors generated which will be sent to a SQL database. When a sufficient number of errors are generated within a topic, the BuddyBOT window will guide you through the exercise.

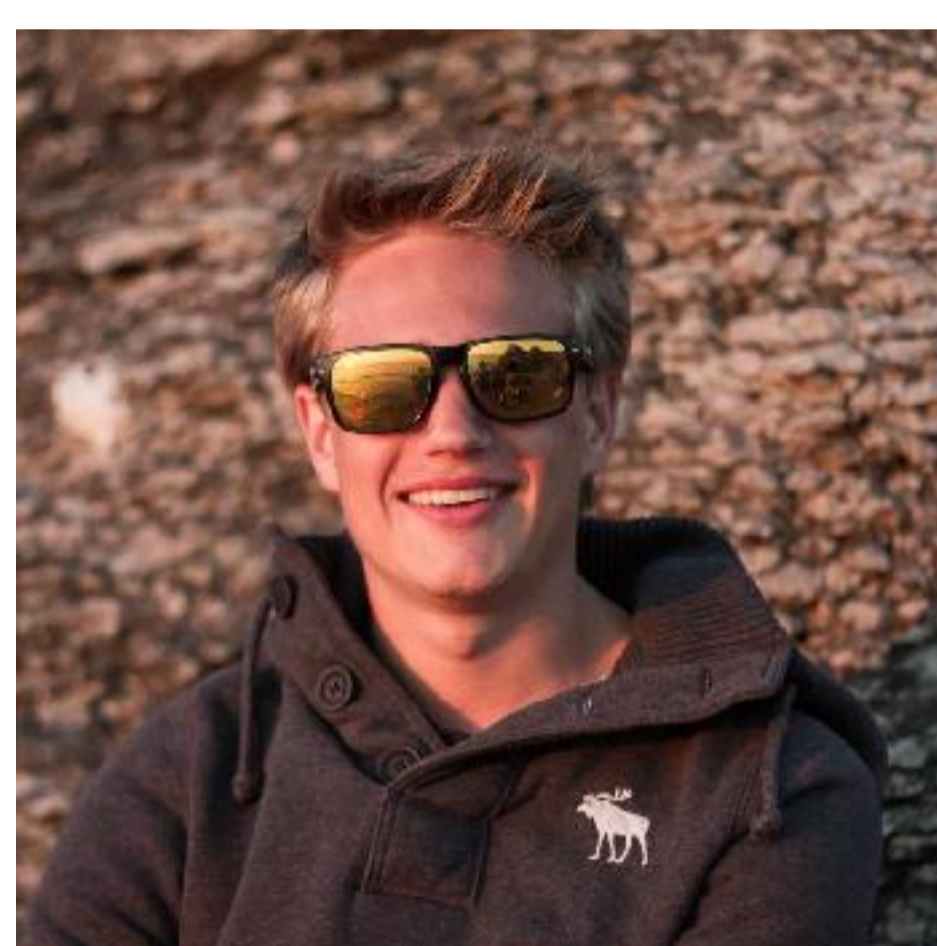
BuddyBOT provides the programmer with online resources within different topics, designed to help each individual programmer.

The database containing error-messages from different students will be accessible for the course staff through a web page or through mail reports which functions as a GUI. Then the course staff will be able to customize the lectures and help each student more accurate.

In general, we have considered other technologies. For the chatbot we will use API.AI, but have also considered chatbot.io. For data fetching, a potential technology is "Ruby on Rails" or Excel.

# Teaching Assistant

We are making your learning become a breeze



## Our team

Emil Schrøder, Team Leader  
Øystein Hammersland  
Fride Elise Bakken  
Frida Strand Kristoffersen

*"I think it is difficult to know whether the students understand everything I say during my lectures, and I think they are missing a lot by not asking questions while I teach. I believe the Teaching Assistant has the potential to increase the students learning dramatically without claiming too much effort."*

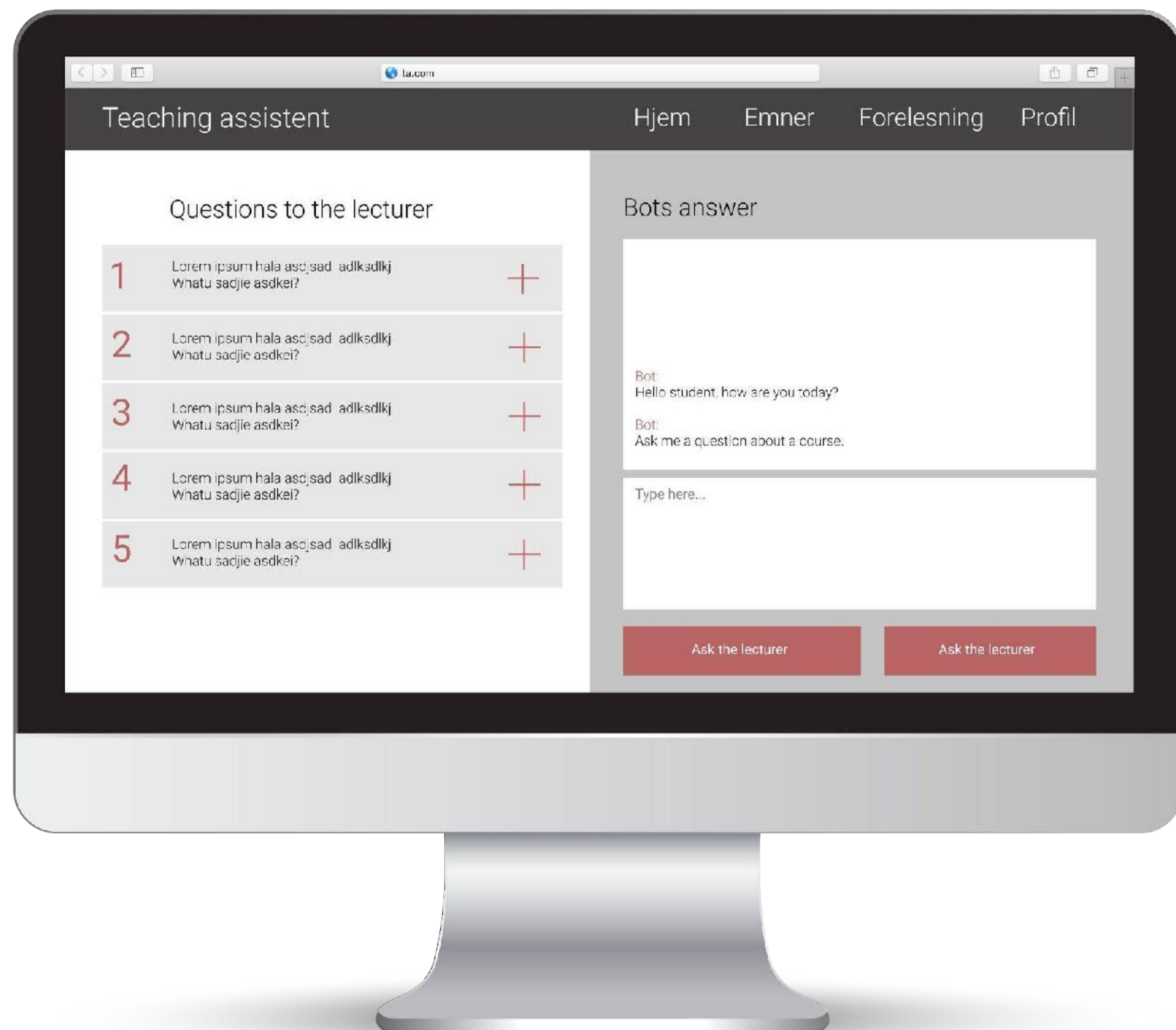
- Michael Christie



The TA ensures the academic quality in a lecture by making it easier for both the lecturer and student to communicate through the TA-website. At the same time, the TA will work as the students personal guide through being able to answer practical questions regarding each subject.

Associate professor, Michael Christie, is currently working at University of the Sunshine Coast (USC) in Australia. He's teaching areas are mainly action research methods, contemporary issues in education, professional learning – transitioning into the profession and master of education.

# Teaching Assistant



## By using the TA you can...

- ...as a user you can login as either a student or a lecturer
- ...as a lecturer ask the whole class questions
- ...as a student ask the lecturer questions during a lecture and even get noticed if similar issues already has been pointed out
- ...ask practical questions regarding each subject
- ... as a student you automatically get the subjects you are registered in

With the TA you get the opportunity to ask the questions you have never had the courage to ask in front of the class!

By logging into the TA-website it opens a brand new world of learning possibilities!

During the process of creating the TA we are going to use technology connected to website development to ease the usability. I.e. HTML and CSS. Additionally we are also going to achieve programming knowledge concerning recognition of specific topics.

## IMPROVES LEARNING EXPERIENCE



### The Team

Team Leader: Stine Forås

Developer: Kolbjørn

Flaarønning

Developer: Nikolai Philipp

Developer: Edvard Holmen

Hetland wants a better and more automated way of communicating with the students both during lectures and when they do assignments for the class.

*“It could give advice on what to read and what you should test yourself on and when to do it” -Hetland*

We will make a bot that will help each student track their learning, information on what to read on and what you should spend time on studying.

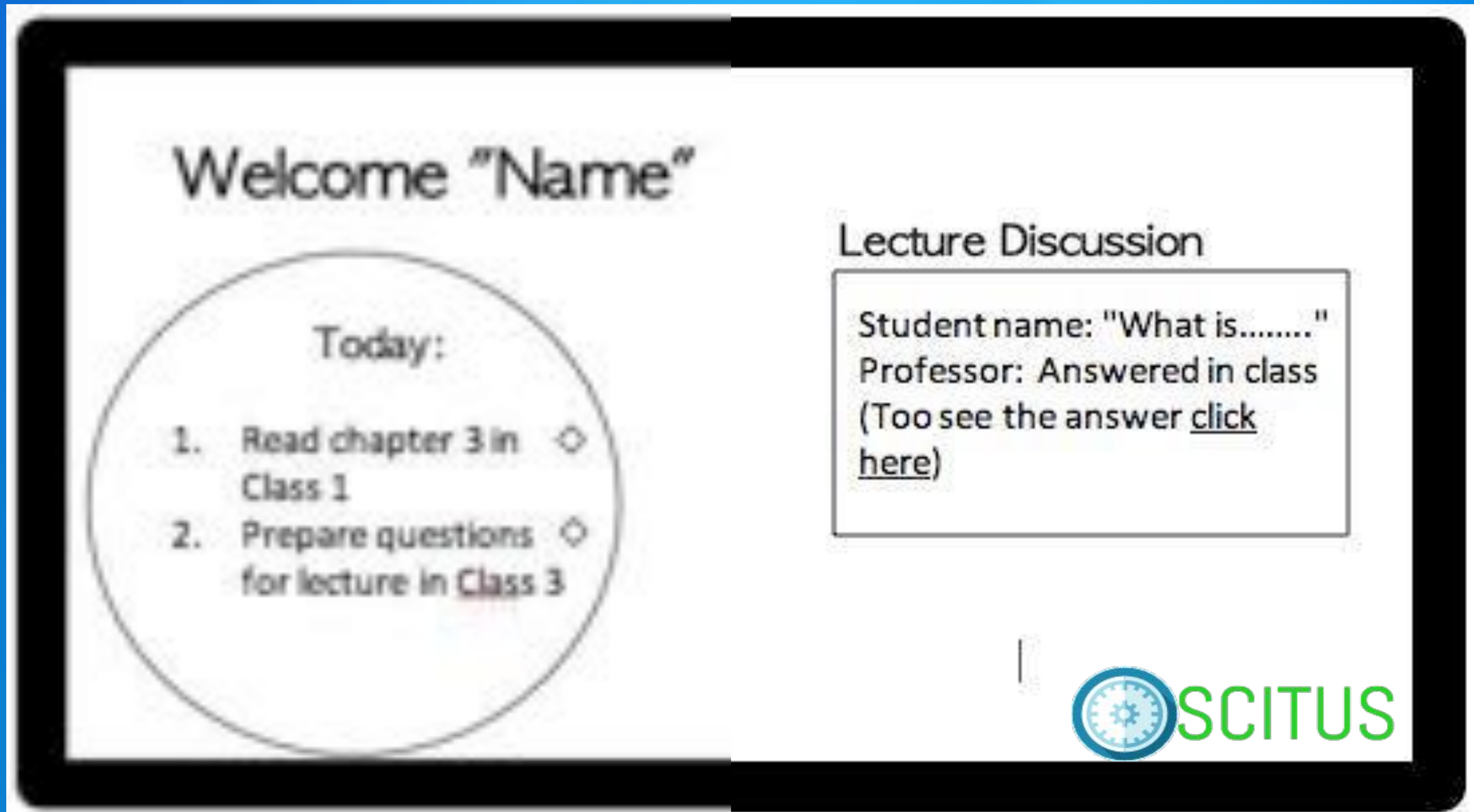


This is Magnus Lie Hetland. He has been an associate professor at the Department of Computer and Information Science since 2004. He has been teaching the course Algorithms and Data structures since 1999 and is also teaching algorithm construction.

# SCITUS

Authors: Stine Forås, Kolbjørn Flaarønning, Nikolai Philipp, Edvard Holmen

Date 03.02.2017



- *As a student I want to be able to track my progress in subjects to see if I'm on track with my learning.*
- *As a lecturer I want an atomized bot that calculate which topics that students find difficult and should be repeated.*
- *As a lecturer I want a website where I can put up the topics of my lectures for the students to respond with their confidence in the topic.*
- *As a student I want to create my own account and see an overview of my performance in previous lectures and in the subject as a whole.*
- *As a student I want to be able to ask questions during the lectures for the lecturer to see and respond to.*

**Making both teaching and learning a better experience**

By logging in, the application fetches your classes automatically and starts setting up charts and lists over assignments and readings.

During the lectures the students will be able to give feedback on selected topics. It gives you the opportunity to send in questions before and during class. You can also choose whether or not you want it to be anonymous.

## Technologies:

**MERN:** MongoDB      Express  
React      Node.js

# THE SYME PROJECT



## THE TEAM

Petter Dybdal - Scrum Master  
Kristina Berg - Developer / Secretary  
Ola Toft - Testing responsible  
Øystein Knutsen - Lead Developer

*«I find it ridiculous that not all lectures are filmed»*

*NTNU Student*

## THE PROBLEM

Students today want to be able to see lectures online. There are colliding classes and sometimes they're sick and don't want to fall behind.

The lecturers also want to give the students the possibility to see lectures remotely. But it is currently not as easy to set up as it should be.

## OUR SOLUTION

To help resolve these difficulties we will develop software which enables lectures to be automatically recorded and also live streamed to students taking the class.

This way the lecturers don't have to do anything to start the recording and students can see it live or whenever they want. Students will also be able to ask the lecturer questions in real time and have the slides from the lecture available.

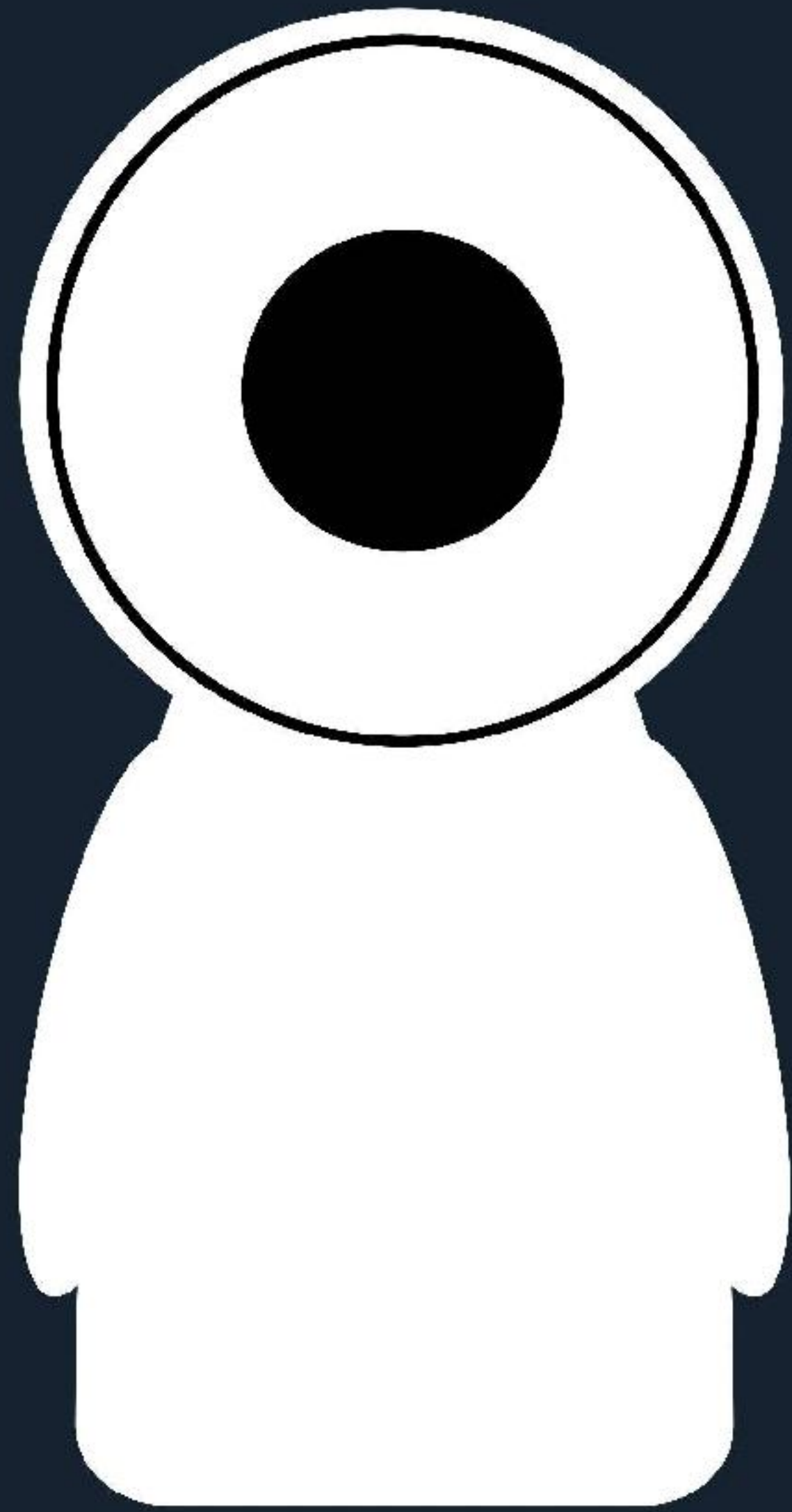
COLIN BOYD is a professor at the IIK faculty at NTNU. He holds multiple lectures a week.



Currently to get lectures filmed it involves a request from the lecturer and someone to set up and manage the camera. Not all lecture halls are support either. Therefore Colin would like an easier way of recording and sharing lectures, as it is a frequent request from students.







# SYME

## Never miss a lecture

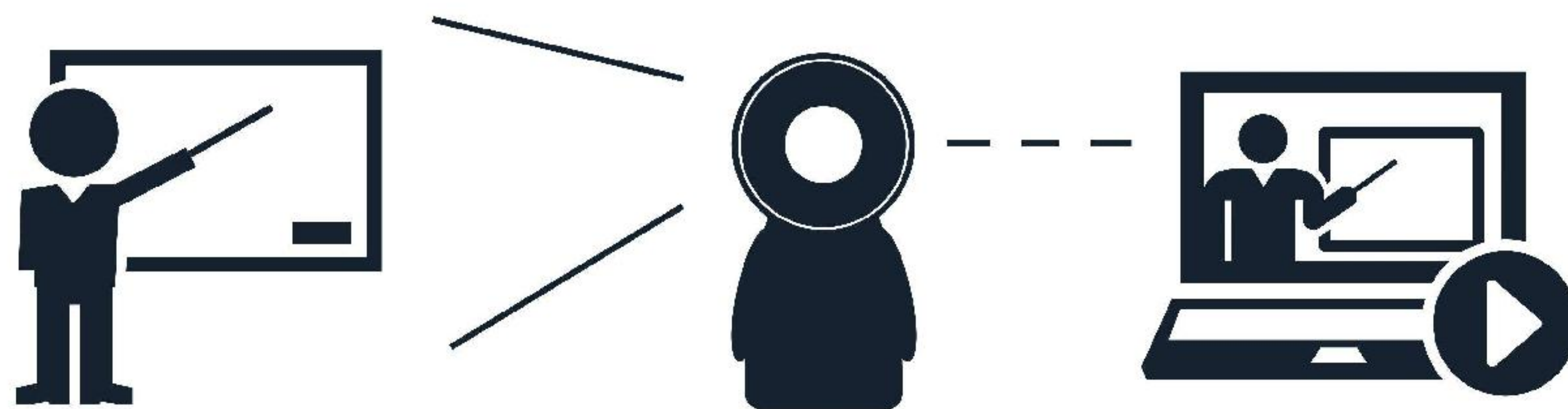
## WHAT & WHY?

SYME is software that makes it possible for students to see lectures in real time as well as seeing them on demand at a later time. The students can also ask questions to the lecturer and see the slides used in the lecture.

Today filming lectures is possible, but not all lectures are filmed and it's not easy for lecturers to set up. SYME will change that.

## HOW?

To achieve this we will build software that can run on a small computer with a camera connected. It can for example look like our logo. The computer gets the schedule for the lecture hall it is placed in from the university website and starts recording automatically. It streams to a webserver where students can log in and see the lectures.



## TECHNOLOGY

To build this software we will use SQLite and Python as the main components backend. This ensures the development to be efficient and gives the system high maintainability. Frontend HTML5, CSS3 and Javascript will be used to support most browsers and provide high performance. Hardware needed is a small computer and HighRes camera.

## TOP FEATURES

- See your lectures online in real time
- Ask questions during the lecture
- The streaming starts automatically
- See a schedule of upcoming as well as past lectures
- Have the slides available as you watch a lecture

# THE ALFUS PROJECT

Our goal with ALFUS is to help the individual student become better through personalized tasks. ALFUS stands for Adaptive Learning For University Students, which sums up its main purpose.



Yanzhe Bekkemoen **Architect**

Arild Sørensen Dalsgård **Developer**

Marie Svanes **Scrum master**

Vigleik Lund **Project leader**



This is Joachim, he is a 20 year old student living in Trondheim. Joachim often struggles to find tasks to match his skill-level and he is missing specific feedback on what he can do to improve.

He really likes the idea of exercise tasks tailored to him and believes that it could make learning easier. He also likes to idea of getting specific feedback as it can often be hard to get help from student assistants.

“I want to be the very best, is a saying I find very fitting for this website. ALFUS would really help me improve my skill level.”

# ALFUS

## Adaptive Learning For University Students

Vigleik Lund, Arild Sørensen Dalsgård, Marie Svanes, Yanzhe Bekkemoen

### Multiple choice tasks

ALFUS is a website where you log in to the system and interactively do tasks in a multiple choice manner and the difficulty of these tasks tailors itself to the individual user. The administrator will also be able to create the multiple choice tasks.



### Technology

We have used the Django framework to build our application.



### Feedback

The user will also be able to get instant feedback on a completed task, as well give feedback on the difficulty of a task.



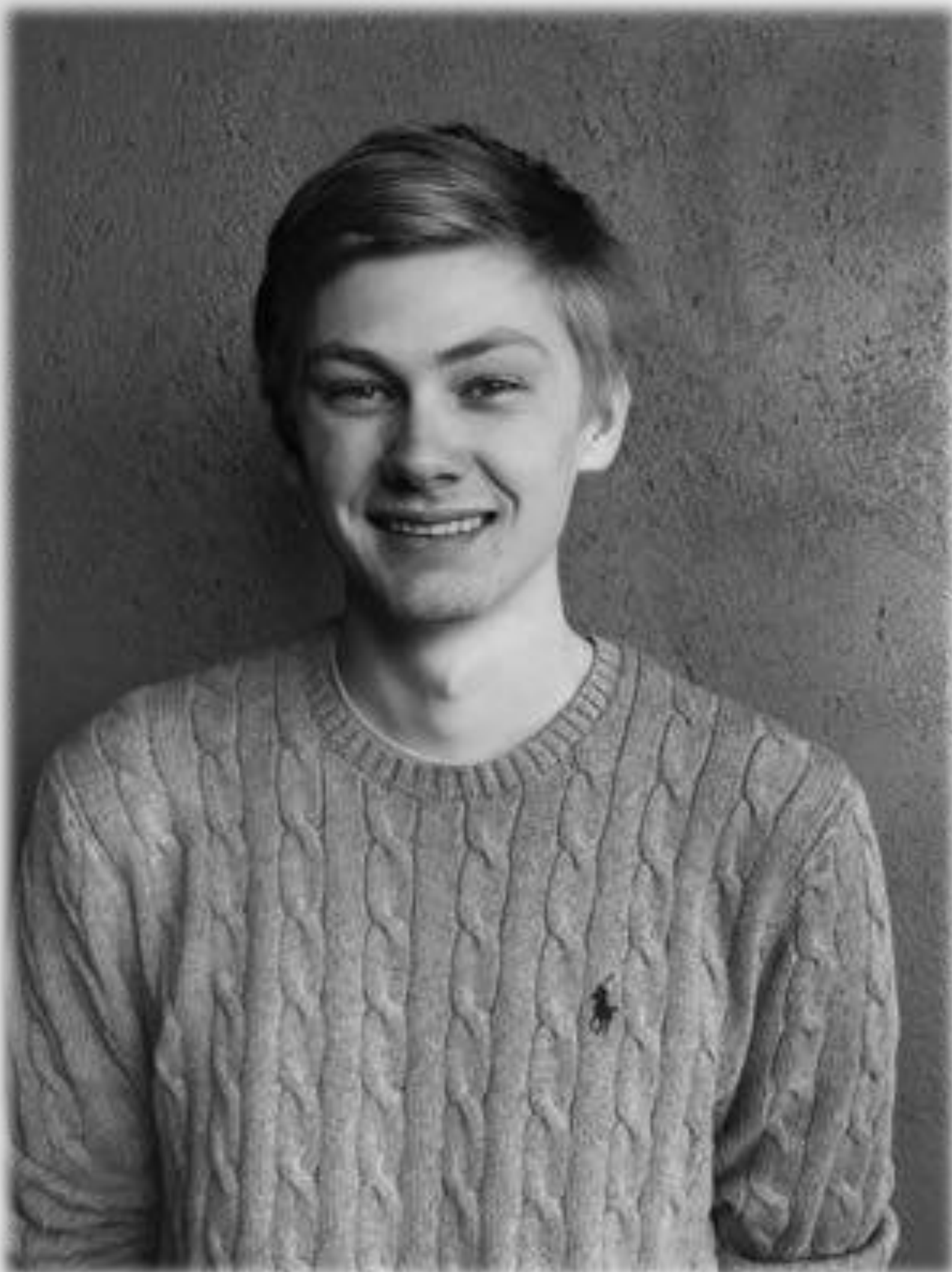
If only there were a website where I can do learning exercises which tailors itself to me..

# prepBot

Improve your preparations with prepBot



Ingrid Medalen – Project leader, Colin McDonald – Test leader  
May Helen Storvik – Developer, Maria Rønning – Developer



## Jonas Berg

Jonas is a 21 year old student at NTNU, Trondheim. Jonas wishes to learn as much as possible throughout the semester.

He wants to finish his education with good grades. One of his pain points is therefore the lack of an easy way to prepare for lectures.

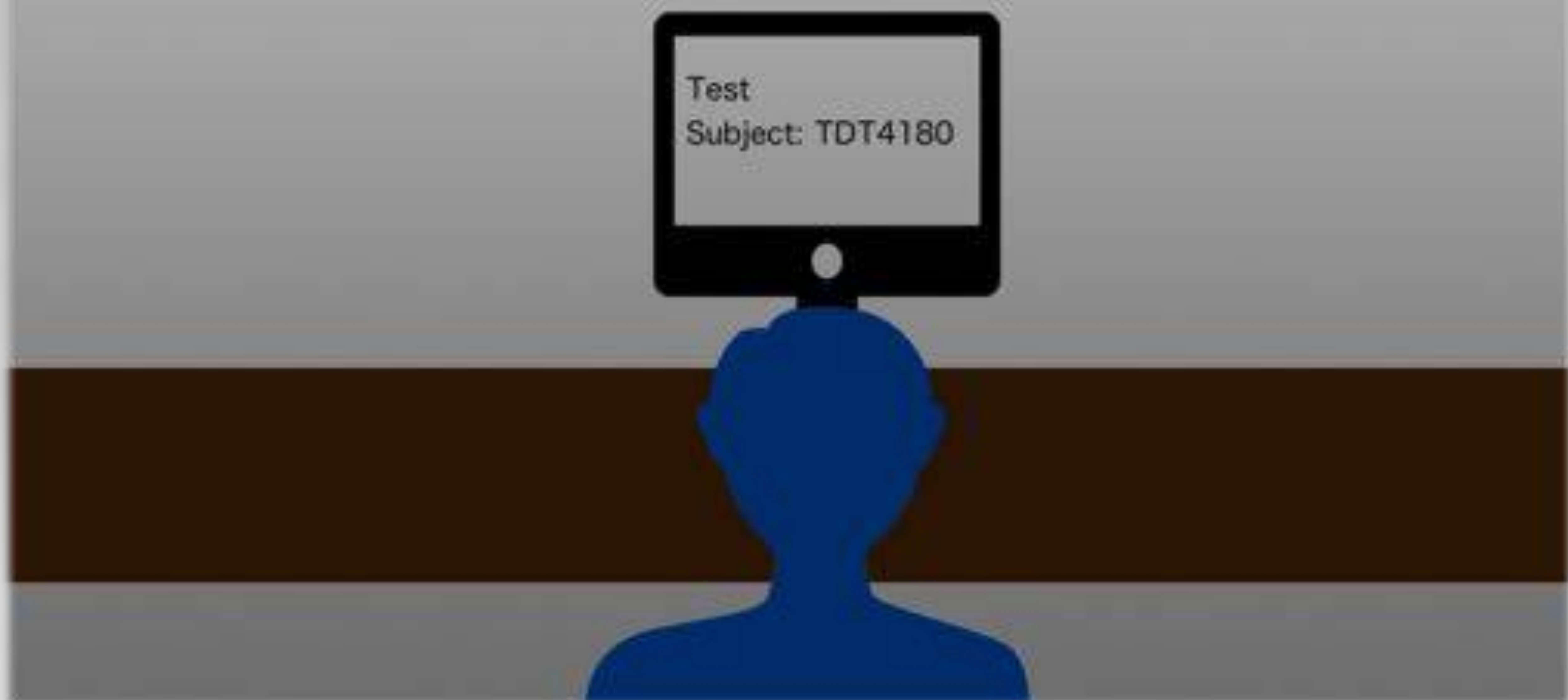
Our bot will enhance the lectures by preparing the students and allowing the lecturers to gain insight on the overall level of knowledge.

*“prepbot helps me prepare for lectures and test my knowledge so that I know which parts of the curriculum I must focus on”*

# prepBot

*helps you prep, step by step*

“We’ll improve learning by prepping”



## Top 5 user stories:

As a user, I want to be able to...

#1 ..log in to my user account, so that I can get an overview of my subjects.

#2 ..search for subjects and add them to my list, so that I have an overview over subjects.

#3 ..choose a subject, so that I can prepare for lectures.

#4 ..get auto generated questions from earlier exams in the subject, so that I can check my knowledge level.

#5 ..get questions based on my level of knowledge, so that I can get better by answering more difficult questions over time.

## Description:

prepBot gives students an easy and fast way to prepare for lectures in different subjects.

The students will be able to take a test before a lecture with questions that are based on their level of knowledge. The results are then presented to the lecturer, so he/she can adjust the level of difficulty in lectures.



# PRODO

BRINGING EDUCATION INTO THE FUTURE.



**TRYGVE VALLE KARLSRUD  
(DATABASE)**

**JONAS EINAR THORSEN  
(APPLICATION AND DESIGN)**

**THEA KARIN SKYLSTAD  
(PROJECT MANAGER,  
SCRUM-MASTER)**

**CHRISTIAN NYVOLL  
(LEAD PROGRAMMER,  
GITHUB-SUPERVISOR)**

WE HAVE DEVELOPED A PRODUCT THAT LETS THE STUDENTS GIVE FEEDBACK IN REALTIME TO THE TEACHER, WITHOUT HAVING TO RAISE THEIR HAND AND ANNOUNCE THAT THEY DO NOT UNDERSTAND.



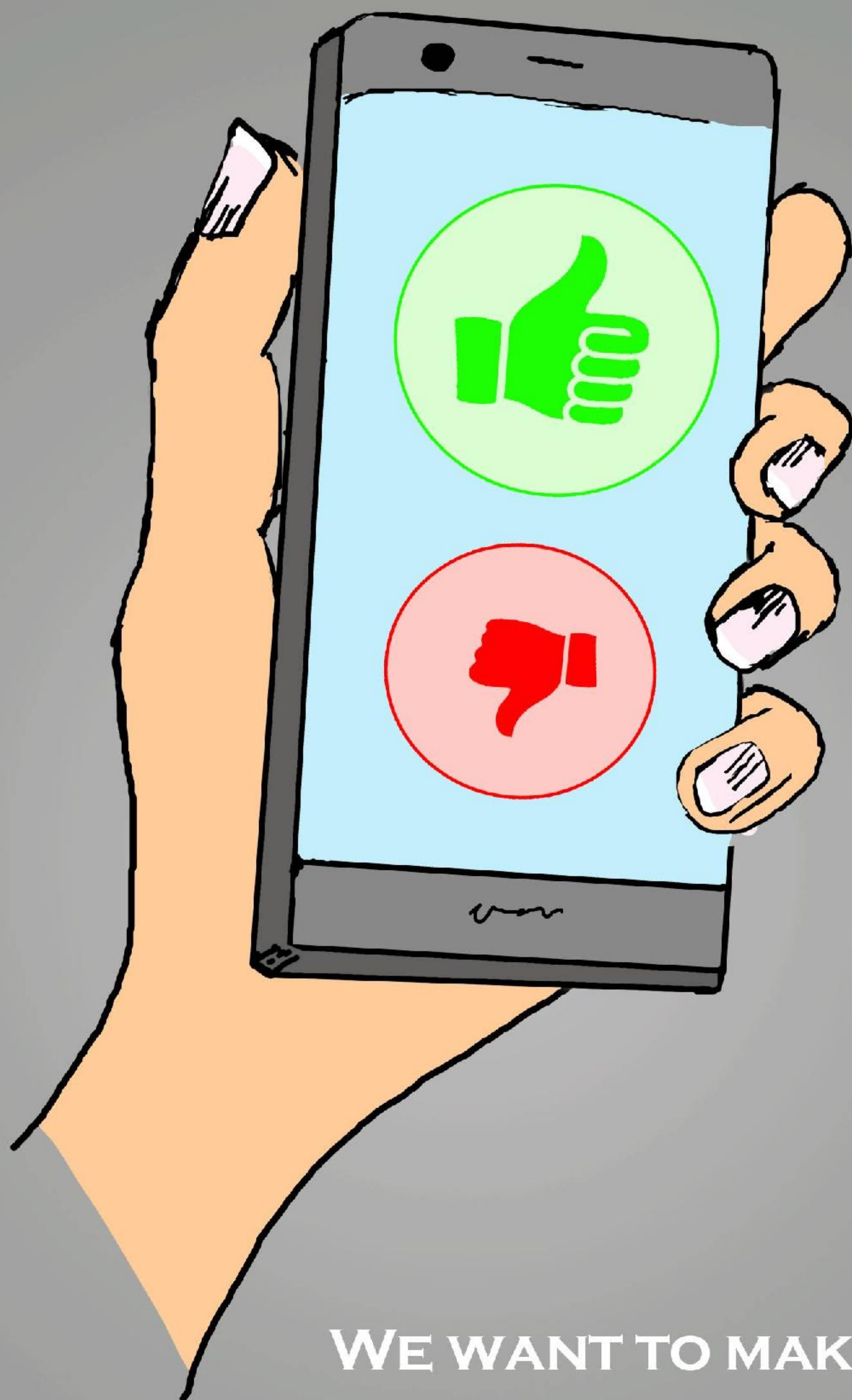
ROBERT BOCK IS CURRENTLY A PH.D CANDIDATE AT NTNU AND HE IS TEACHING THERMODYNAMICS FOR THE SECOND YEAR IN A ROW. HE IS 33 YEARS OLD AND FROM GERMANY

”IT IS HARD TO TELL WHETHER THE STUDENTS HAVE UNDERSTOOD THE TOPIC I’M EXPLAINING.”

ROBERT WISH TO COMMUNICATE BETTER WITH HIS STUDENTS. HE FINDS IT A BIT HARD TO READ THEM AND KNOW WHETHER THEY ACTUALLY UNDERSTOOD WHAT HE JUST SAID OR NOT. HE ALSO MENTIONED THAT ASKING DOESN’T NECESSARILY HELP EITHER AS THE STUDENT ARE USUALLY TOO SHY TO SPEAK UP.

# PRODO

TRYGVE VALLE KARLSRUD, JONAS EINAR THORSEN,  
THEA KARIN SKYLSTAD, CHRISTIAN NYVOLL



“AS A LECTURER I WANT TO BE ABLE TO ADD A PLAN FOR EACH LECTURE WITH A LIST OF THE TOPICS I WILL BE VISITING.”

“AS A STUDENT I WANT TO BE ABLE TO PROVIDE FEEDBACK TO THE LECTURER ON HOW WELL I UNDERSTOOD WHAT HE JUST WENT OVER IN THE LECTURE.”

“AS A LECTURER I WANT TO BE ABLE TO SEE THE FEEDBACK THE STUDENTS ARE GIVING ON MY LECTURE RIGHT NOW.”

“AS A STUDENT I WANT TO BE ABLE TO SEND THE LECTURER QUESTIONS DURING THE LECTURE ABOUT THE TOPIC THAT IS DISCUSSED RIGHT NOW”

“AS A LECTURER I WANT TO BE ABLE TO SEE THE QUESTIONS THE STUDENTS HAVE ASKED”

**WE WANT TO MAKE COMMUNICATION BETWEEN STUDENTS AND PROFESSORS EASIER.**

PRODO IS A NEW WAY FOR STUDENTS AND PROFESSORS TO COMUNICATE. IT CONSISTS OF TWO PARTS: A PHONE APPLICATION WHERE THE STUDENTS CAN RATE HOW WELL THEY UNDERSTAND THE CURRENT TOPIC IN THE LECTURE AND ASK QUESTIONS, AND A COMPUTER APPLICATION WHERE THE PROFESSOR GETS THE FEEDBACK AND THE QUESTIONS ON HIS SCREEN INSTANTLY.

#### POTENTIAL TECHNOLOIGES

- ANDROID STUDIO
- JAVA/JAVAFX
- GOOGLE DRIVE
- TRELLO
- MYSQL
- SLACK



# copybot

Our team:



Kristiane Westgård - *Team leader*

Fride Skarseth - *GUI and front end*

Harald Vinje - *Reporting and documentation*

Zawadi Berg Sveta - *Back end*

## The problem:

Today lecturers get little to no live feedback during classes, which makes it almost impossible for them to improve the quality, as they don't know what students want. At the same time, students struggle with following lectures and therefore missing out.

*"We want to let students and teachers connect in a new way during lectures, to make them more rewarding and fun"*



## How we help:

We are creating Copybot, a program that allow students to give feedback and ask questions during lectures. This will give teachers a better understanding of what the students need in order to learn more, and help student to participate.



### Kristiane Westgård

- 20 years old
- Norway
- Informatics Student

### Fride Skarseth

- 21 years old
- Norway
- Informatics Student



### Zawadi Berg Sveta

- 23 years old
- Norway
- Informatics Student

### Harald Vinje

- 21 years old
- Norway
- Computer science student







# capybot

- As a lecturer, I can view statistics regarding student responses for help with planning new lectures.
- As a student, I can log on a lecture using a simple numerical code, so that my participation is registered.
- As a lecturer, I can determine a set of default responses.
- As a student, I can register a user profile using feide, making log in easier.
- As a student, I can gain “points” for posting, upvoting questions and answering questions, to reward my participation.

**We hope to make interaction in lectures fun and rewarding!**

*Register a user-profile, sign in to lectures with a numerical code, and ask and answer questions to gain “nerd-points” and compete with your classmates!*

## Technologies:

- React JS
- Django
- HTML/CSS
- JavaScript

# CheckPoint: A learning experience



Øyvind A. Bjørhus: - Developer	Tiril M. K. Solberg - Developer	Edvin Johnsrud: - Team leader and javascript	Håvard A. Løvik: - Backend and Security
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## Persona goal and pain points:

Currently, there are not a lot of ways to identify whether students are lagging behind and need guidance. She would like a tool that actively tracks student progression and gives her a way to help students keep up.

"I want to help my students learn better"

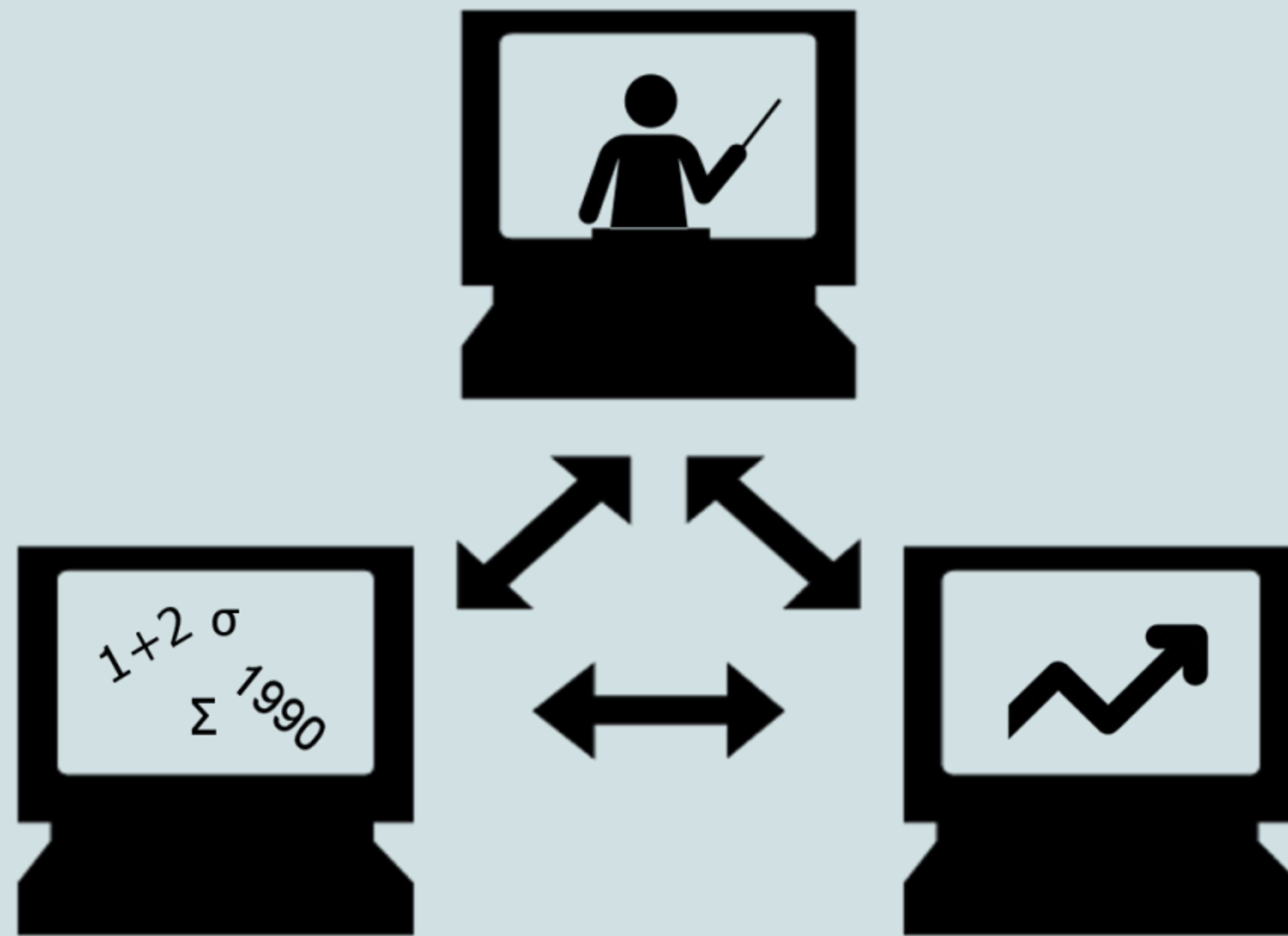
By automating the assignment system and making statistics we will help the teachers keep track of the students' progression.

## Persona description:

Kari Nordmann is 35 years old, a mother and a lecturer in chemistry from Bergen. Teaching students on a daily basis, she is always interested in knowing their progression in her subjects and how she can help them improve.



# CheckPoint



- Assignment system
- Automatic assignment grading
- Automatically generated statistics
- Plan maker
- Extra: Automatic question maker

Value proposition:  
Track learning progression and improved learning!

With an easy to use and secure web solution, Checkpoint will automate assignments for both students and teachers.

We will implement our solution using web technologies like Django and JavaScript.



The active feedback revolution

From left to right:

Navjot Singh: Main back-end developer and product architecture

Helene Haukås Moe: Documentation and main tester

Henrik Høybak Ølsvik: Main front-end developer

Vebjørn Sletta: Team leader and organizer



## SMITH'S DIFFICULTIES

Jack Smith is a lecturer and teaches "Electrical circuits and digital design" at NTNU, and more than 200 students attends the lectures. He is interested to know what the students think of his lectures, and he finds it hard to know because it is so many students, and many of them are shy and afraid to speak in public. He would like something that tells him the popular opinion on how the lecture was like. He had this to say about his problems:

"I find it hard to appropriately adjust my lectures to the students in attendance. It's difficult to know what the students want and need from my lectures." - John Smith

## OUR SOLUTION

We want to create a live feedback system where students can give feedback to lecturers during their lectures, and the lecturer can view in real time. We also want to create a summary at the end that consists of different types of relevant data, so that the lecturer can prepare differently for the next lecture.



## JOHN SMITH

John is 59 years old. He is from Texas USA and lives in Trondheim Norway where he works as a professor in Electrical Engineering at NTNU.

# ActiFEED



## TOP PRODUCT BACKLOG ITEMS

1. As a student I want to be able to give feedback so that my lecturer may improve his/her lecturing.
2. As a lecturer I want to view feedback through a web service so that I can see the feedback quickly after a lecture.
3. As a student I want to be able to give live feedback during the lecture so that the lecturer can do adjustments to the lecture while it's in progress.
4. As a lecturer I wish to be able to distinguish between my lectures so that I can see what parts of the curriculum the students handle well and which they don't.
5. As a faculty administrator I want to be able to view the total ratings for lecturers so that I can tell what lecturers are doing well.

## VALUE PROPOSITIONS

With this tool lecturers and students alike will gain a unique opportunity to enhance the educational experience. It'll enable unprecedented tailoring of difficult subjects and give students across the world an edge in tackling them.

## OUR PRODUCT

Students will have the opportunity to directly impact lectures by giving live feedback that the lecturers access through any web browser. The feedback is temporarily stored on a database and lecturers will be given a summary of it, as well as an overall rating at the end of each lecture. The system will store these overall ratings and provide the lecturer with an average figure. This average figure will be available to the faculty administrators. The main technologies we will use are: PHP for backend web, and database interaction. HTML5 for development of web UI with CSS for styling. MySQL for database design. JavaScript for frontend web work.

# NIDDALA

## NTNU's Individually Dynamically Assigned Learning assistant



« It would be useful to have a better overview of what the students struggles with, both to tweak the lectures, and the exercise program »

- Magnus Lie Hetland  
Assistant Professor IDI

### GOAL

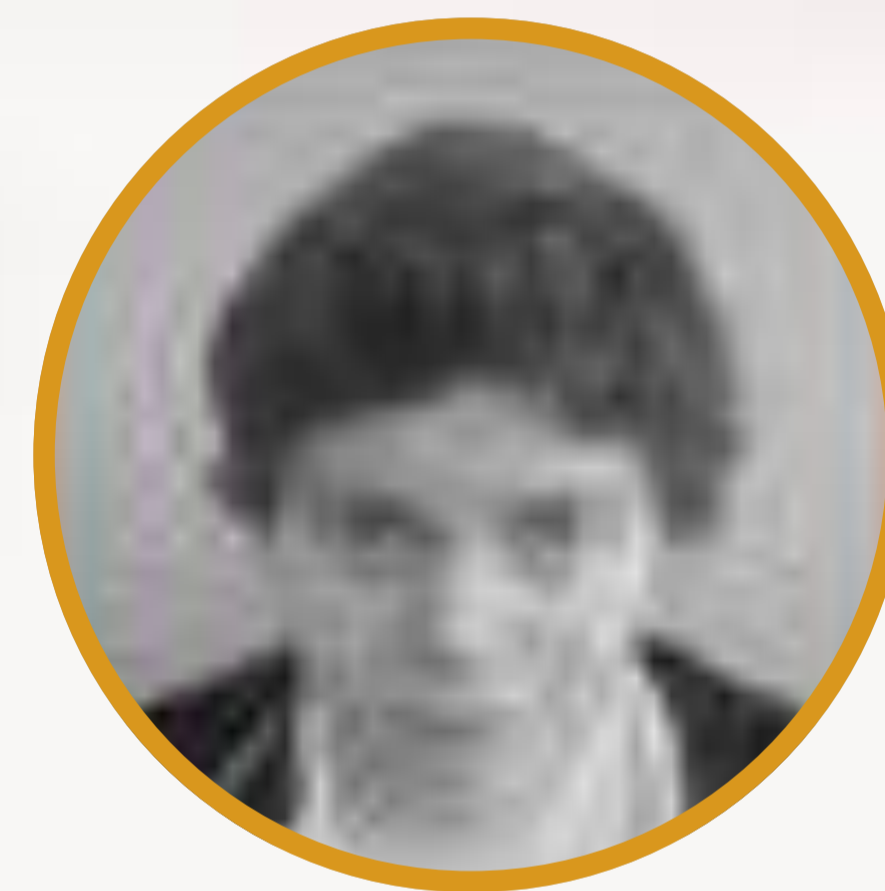
To implement a modern software solution, in the form of a (ro)bot, with the goal of improving today's education in some way, shape or form.

### HOW WE HELP

By providing a more refined way to structure an exercise program, we help improve the students long term gain from the program. In turn this will help the students retain their knowledge, both in and outside the university.

### PERSONA

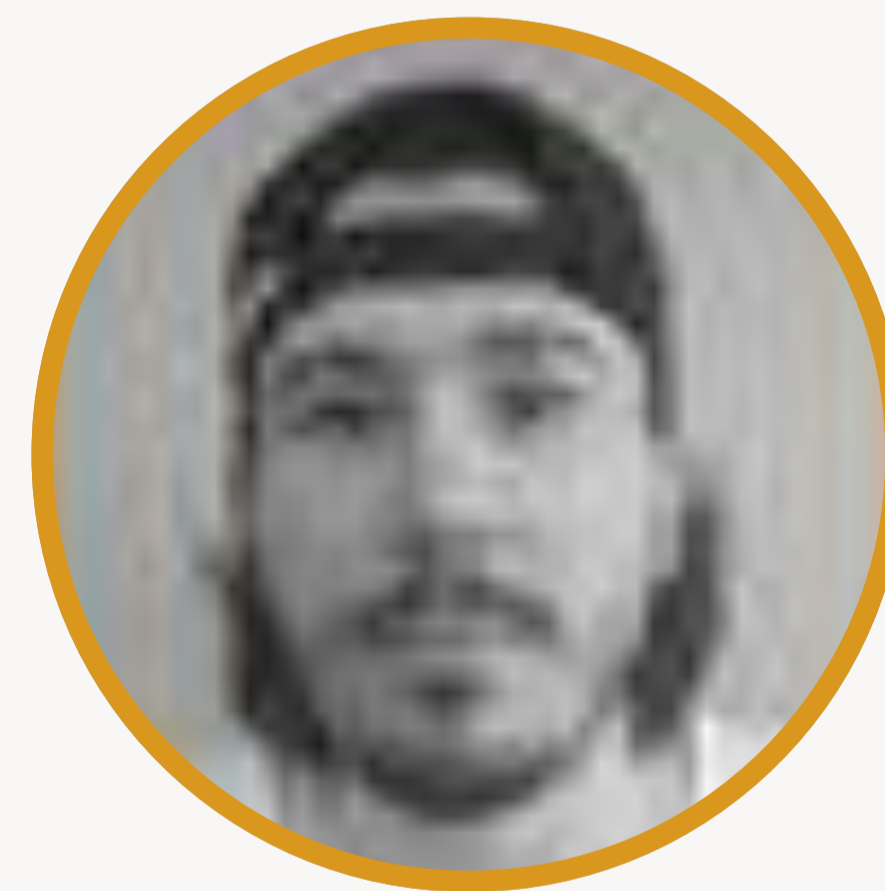
Student Sture is 21 years old and is currently taking TDT4120. Sture has a lot on his mind and a busy schedule, so he seeks the most efficient way to learn the curriculum. He does not want to have to learn everything over again when the exam arrives.



Chief executive officer  
Håvard Opheim  
Computer Science



Chief marketing officer  
Kristian Haga  
Computer Science



Chief design officer  
Morten Jansrud  
Cybernetics & Robotics



Chief technology officer  
Martin Simensen  
Industrial Economics

# NIDALA

## NTNU's Individually Dynamically Assigned Learning assistant

Chief executive officer Håvard Opheim, Chief design officer Morten Jansrud  
Chief marketing officer Kristian Haga, Chief technology officer Martin Simensen



T1: As a lecturer I want the students to have access to an exercise system where the exercise is adjusted to each student individually.

T2: As a lecturer I want previous exercise questions or subjects to be repeated further down the line, in order to increase the value of the exercise program, and learning effectiveness.

T3: As a lecturer I wish for a way to see what exercises the students are struggling with.

T4: As a student I want to get relevant feedback and links to resources after taking a quiz, not just the final score.

T5: As a lecturer I wish to know about the students that is clearly struggling with the exercise program. I want some sort of way for the staff to get notified when a student is about to fall of the wagon, so a teaching assistant can contact and help them.

Exercise 1: Question 1

What is the best free learning environment teachers can use?

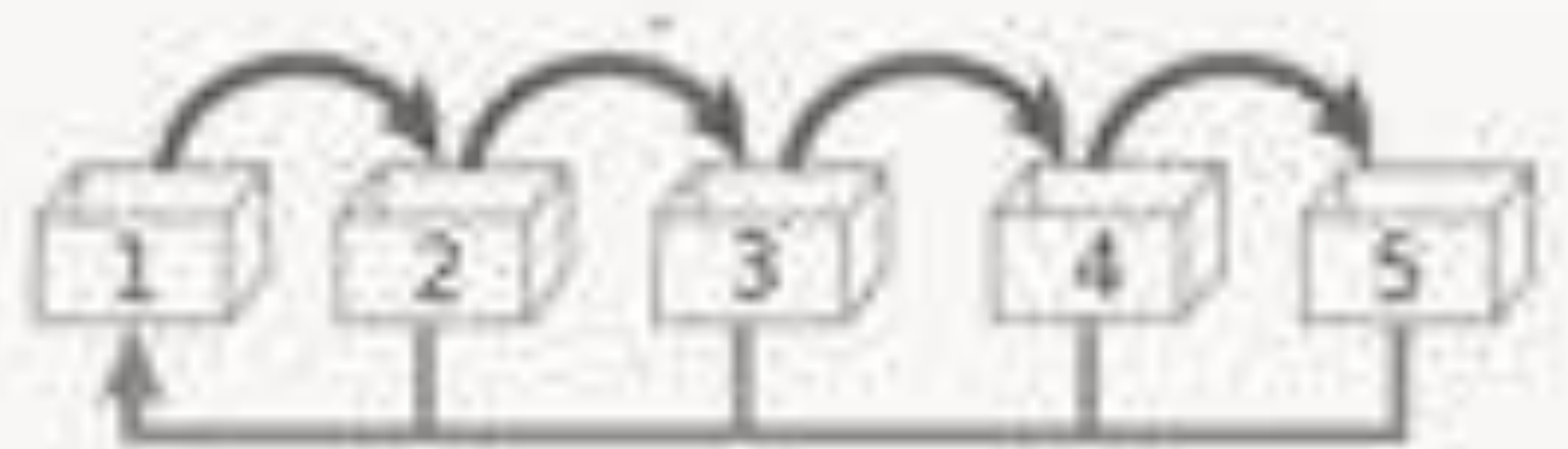
NIDALA  KAHOOT

Wrong

Exercise 2

## HOW IT WORKS

Utilizing the brain's capability to remember subjects better when repeated at certain intervals, NIDALA dynamically assigns you questions each week to help you learn more efficiently.



## TECHNOLOGIES

Domain, database system and a configured web hotel. In our case the website will be runned by Django on a CentOS server hosted in London.

# HUBRO

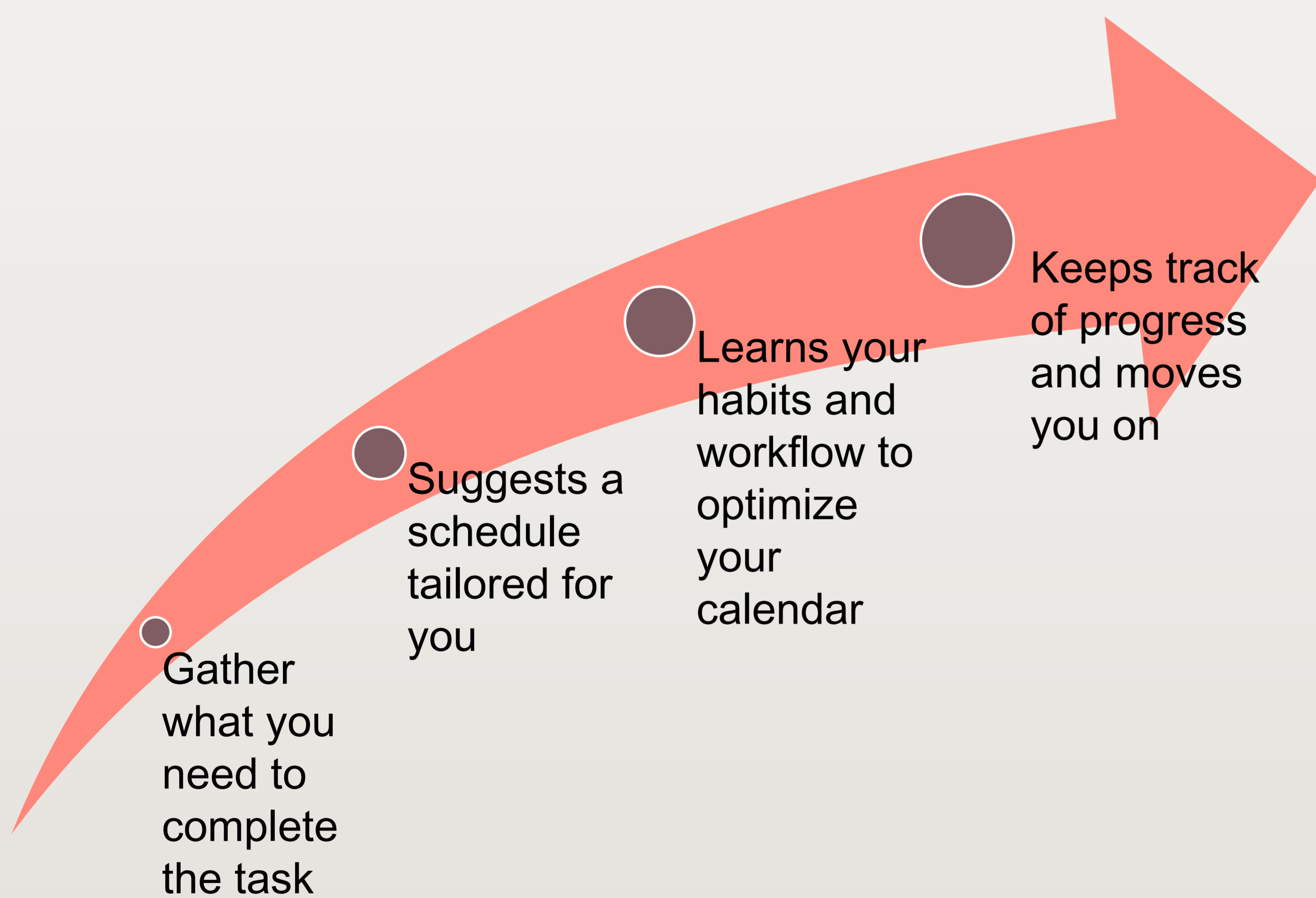


Jørgen Ljønes  
Project Leader

Eirik Rivedal  
Head of Process

Johannes Vollan  
Head Architect

Helene Sæther  
Head Developer



Eirik is a student at NTNU. His schedule keeps filling up with school, exercise, organizational work and chores. Days feels like they are too short and there is always loads of things to do. He does not want to waste time keeping track of it all.

If a personal assistant could help him schedule tasks throughout his day, it would let him excel in the things that really matter.

*“An automated personal assistant would be a dream come true!”*





# Hubro

*Work out your optimal schedule*

Optimize your day with artificial intelligence to free your intelligence to do more of what matters

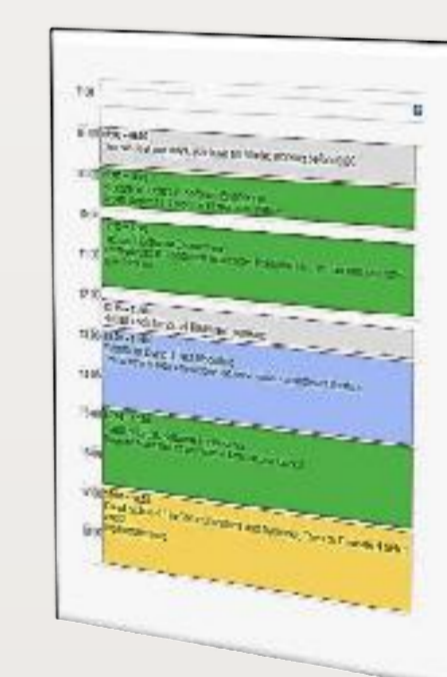
08:00	08:00 – 09:00 The two past Mondays, you have not started working before 9:00.
09:00	09:00 – 10:00 Prepare for lecture in Software Engineering. Repeat chapter 1 (10 pages) of SEMAT book, link here.
10:00	10:15 – 12:00 Lecture 4 Software Engineering Realfagsbygget R1 - Folder with lecture notes here follow link. - You can write your notes here, follow link
11:00	
12:00	12:15 – 13:00 Set up lunch for you at KjelHuset - KjelHuset
13:00	13:00 – 15:00 Finnish up Øving 3 Data Modelling Link to working folder with exercise text, previous work and relevant literature
14:00	
15:00	15:00 – 17:00 Team progress Software Engineering Take one Asana Task for your team in Software Development
16:00	
17:00	17:00 – 19:00 Read section 4.1 in Communications and Networks. Then do Exercise 4 task 1 and 2 Workingfolder here
18:00	

- Import data** As a busy student I want my scheduler to automatically import exercises and other deadlines to my calendar.
- Estimate** As a student I want my scheduler to accurately estimate how much time I will need to finish an exercise and suggest a time slot in my calendar.
- Suggest** As a user I want my scheduler to suggest optimal time slots for breaks, food intake, socializing and physical activities.
- Optimize** As a user I want my scheduler to suggest travel methods based on time available, weather and traffic between two subsequent activities.
- Positive reinforcement** As a student I want positive feedback on achievements and study progress

Step 1: Scrape data



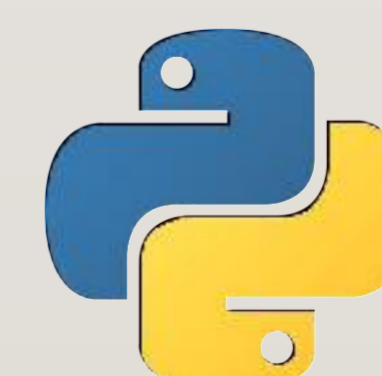
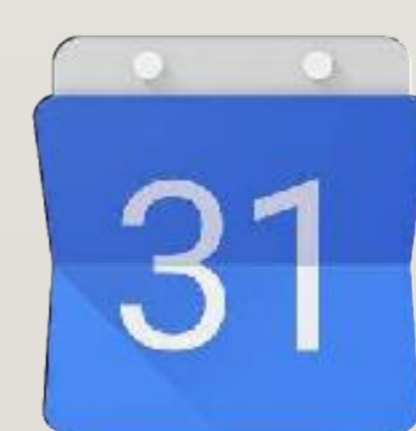
Step 2: Suggest schedule



Step 3: Learn user habits



Step 4: Optimize and display





# THOTH



Helene Engeness Mørk  
Team Leader & Webdesign

Camilla Marie Dalan  
Database

Håkon Grov  
API

Brynjar Glimsdal  
Testing & Security

## PERSONAS

Erik Smistad is a 29 years old computer scientist working at NTNU and SINTEF. When teaching programming, he would like more feedback from the students about the pace and difficulty. For small tasks within lectures he wants to know how many managed to complete a given task by providing the correct answer.

*"After an entire lecture on a topic, they told me in the break the prerequisite topic was not yet covered by the other lecturer."*

## HOW WE HELP

Our product is an interactive website for students and lecturers, providing real-time feedback within lectures. The feedback is aimed towards three main aspects: lecture speed, questions and task validation. A digest of this information will be available to the lecturer, who will then gain a better understanding of what the students struggle with and hopefully prevent scenarios like the one Erik Smistad experienced.



# THOTH

The Thoth website aims to connect students and lecturers using real-time feedback, allowing teachers to optimise lectures to meet the academic level of the students.



## BACKLOG TOP 5

- 1 Students can click buttons to rate lecture speed
- 2 Teachers can check when lecture speed is too fast/slow
- 3 Teacher gets notification about lecture speed real-time
- 4 Students can ask simple questions to a chatBOT
- 5 Student can log into the specific classes using an ID

## STUDENTS

You can log in to the lecture assistant using the unique lecture-ID on the Thoth website. There you can rate the lecture speed and quality, post anonymous questions, rate other students' questions, chat with a simple lecture robot and participate in questionnaires or tasks by the lecturer.

## LECTURERS

Log in to receive real-time notifications about your lecturing speed and read student questions. You can also create questionnaires or tasks for use within lectures, with automatic validation and a summary of student performance.

## TECHNOLOGIES

The Thoth website coded in HTML, CSS and JavaScript, and uses the node framework for real-time interactions. Questions and tasks will be added to a SQL database for easy re-use. Question logic is enhanced using an open source natural language processing API.

# Teaching Assistant bot



Karoline Velsvik Berge is a Computer Science student at NTNU who demonstrates assignments almost every week. Sometimes she doesn't know where the TAs are, or when they are available. When she does meet up, the queue is long and she ends up waiting in vain. Wouldn't it be simpler if she knew where the TAs were, or how long the queue was beforehand?

We want to solve this by creating an interface between the TAs and students with an automated queuing and notification system.

Didrik Galteland  
(Informatics)  
- Developer

Synnøve Soon Halle  
(Computer Science)  
- Developer

Pål Christian Glenna Iversen  
(Informatics)  
- Developer

Pernille Johnsen  
(Computer Science)  
- Leader  
- Developer



## Top five features

- A student can request a TA, and get his/her position in the dequeue
- A TA can accept a student request. It will then be removed from the queue.
- An admin can add courses to the App and add when TAs are in the computer lab.
- An admin can add new assignments to the course, and the assignments delivery date.
- A student can get information about when and where a TA is in the computer lab

# BoTA

## Making learning better

### Value proposition

Make it easier to find a TA, and significantly less time consuming. See when TAs are available and request a TA before leaving home.

### How does it work?

Before you go to school, you can find out where your TA is, and how long they will be there. Place yourself in the queue with a press of a button. Instantly get your position in line. When it's your turn, you will be notified.

It is equally easy for the TA: they request the next student, and the student's name will appear on their screen.

### Technologies

Because people have different devices, we want our software to be cross-platform. We chose to make a dynamic webpage, implementing technologies like HTML, CSS, JavaScript, Node.js, SQL



- 1. Ola Nordmann
- 2. Siri Dett
- 3. Bjornfinn Bertsen
- 4. Petter
- 5. Trude Elvnes



# Project TRYBOT

- Try Reasearching Yourself BOT

## The Team!



Alexander  
Marchand-Melsom  
*Head of  
Documentation*



Daniel Sandberg  
*Head of Back-End*



Duong Bao Nguyen Mai  
*Head of Front-End*



Shivam Verma  
*Head of Website-  
Interaction*

## Persona



### Nils Petter Vedvik

Nils Petter Vedvik is a professor and a scientist at NTNU. Every semester he spends countless hours answering questions from students wondering when the next assignment is due, which day the exam is, what syllabus for the exam is, and so on. He wants to spend this time on science instead, but that is currently not possible.

### Frustrations

- Repetitive and unnecessary questions
- Responding to already answered questions

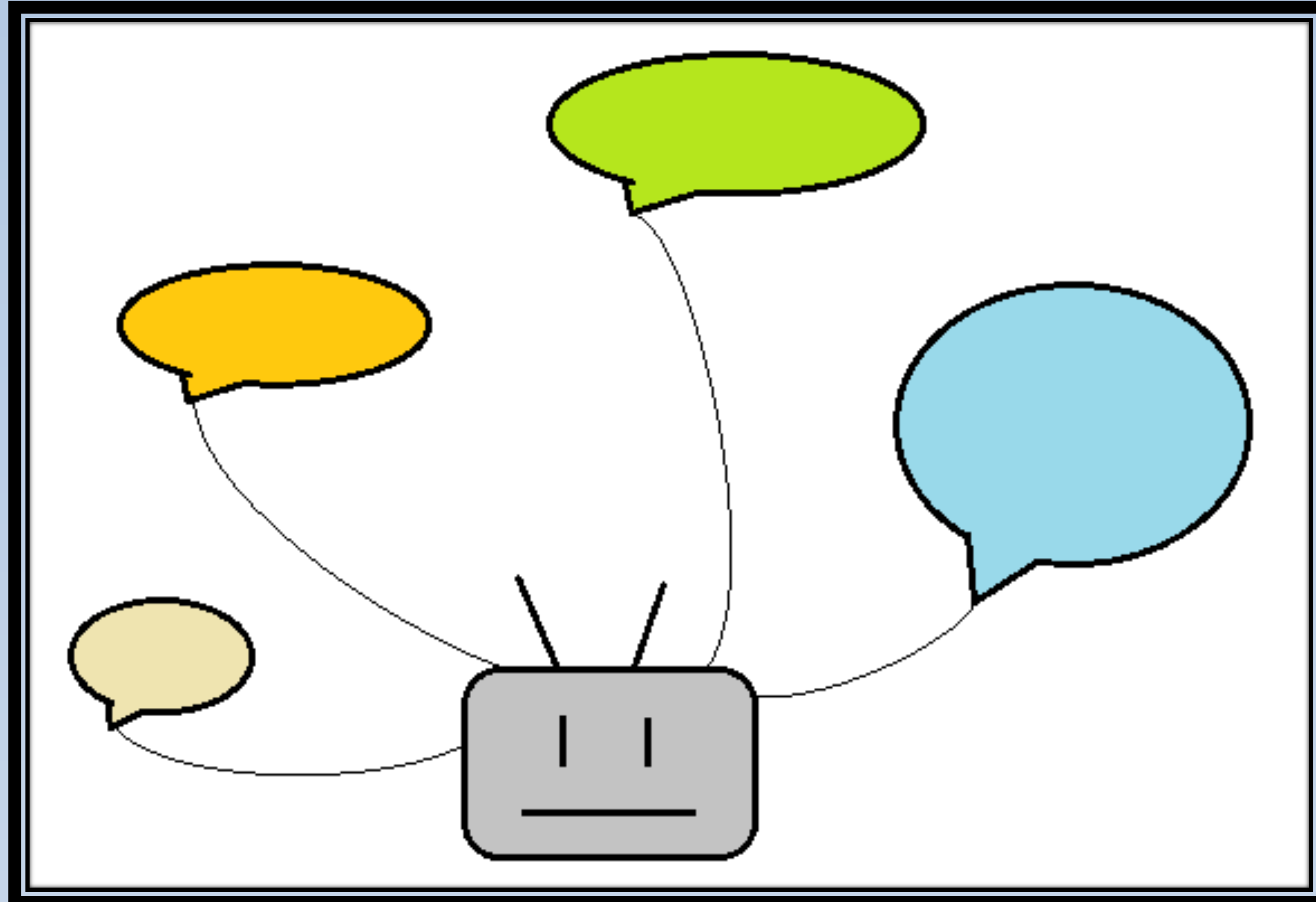
### Goals

- Stop wasting time on needless questions

### How we help

- We aim to make a bot that automatically answers questions on an online forum, e.g. Piazza

# TRYBOT



## Top 5 Backlog Items:

1. Answering repetitive questions
2. Minimal amount of setup
3. Prompting professors to respond when system's answer is unsatisfactory
4. Endorsing/invalidating answers provided by the system
5. Quick response time

## Value Proposition:

- Simple
- User friendly
- Fast
- Saves time

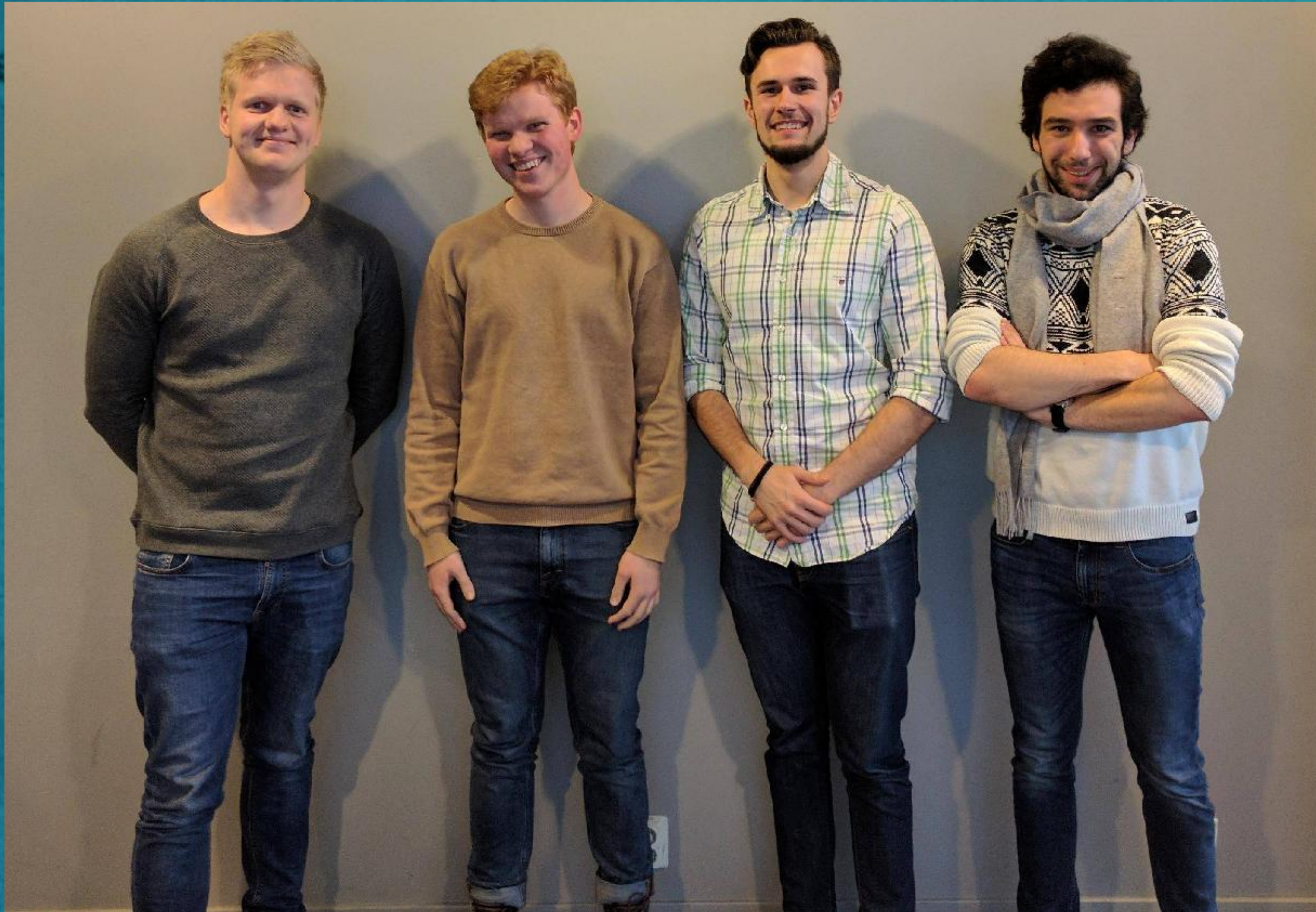
## How does it work?

Using question analysis and automation to achieve automated answering to questions on forums, e.g. Piazza.

## Potential Technologies:

# Stelios

Taking education one step further



## The Team:

Erling Ljungren: Manager

Kim Borgen: Lead Developer

Andreas Berger: Architect

Øystein Krogstie: UI

The student wants resources that are relevant to what they are doing right now

The professor wants to map student knowledge

*“Formative rather than summative education”*

John Krogstie

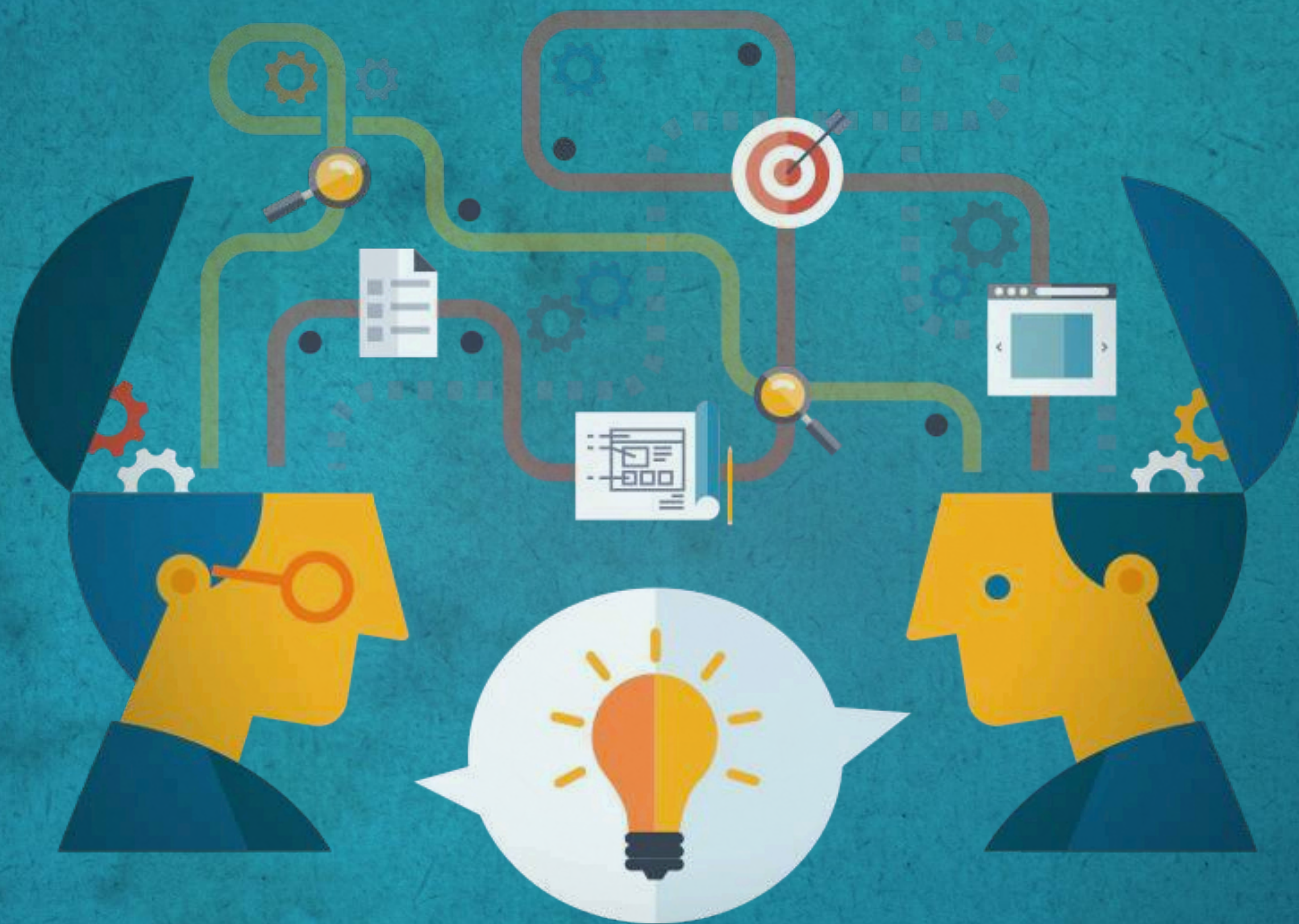
We help by providing relevant information for lecturers and students.



Josh, computer student at NTNU, wants to succeed with his studies, but dislikes that finding relevant info can be difficult. He is active in Tekna, and thus haven't got too much time to waste.



# Stelios



## Top five

- A topic-based wiki
- An exercise system
- Automated feedback
- Statistics on the students' knowledge
- Automated testing based on wiki

## Value proposition

To make evaluation easier and more informative for both student and lecturer

## How it works

By keeping track of what topics each student masters, we can automatically provide relevant learning resources and feedback for the student, while giving the lecturer an overview of how the class is doing

## The technology

Our final deliverable is a web app made with React and Redux, which are Javascript libraries, for the frontend, and Django, a python web framework, for the backend.

# StudyTime

## Real-time Feedback for Lectures



**Brage Nilsson:** Chief Architect  
**Olav Ljosland:** Head of Design  
**Eivind Bøhn:** Project Manager  
**Martin Willoch Olstad:** Head of Business and Customer Relations

Jens thinks it's hard to get real feedback from the students about what they think about his lectures. He hopes to achieve a greater awareness of which parts of his lectures that are helpful to the students, and which parts are confusing.

We hope that StudyTime can provide Jens with the feedback he needs to do his job optimally.

"Most of the time I just hope for the best"  
-Jens

Anders wants to participate in all lectures, but often feel that they move either too slow or too fast. Sometimes even the same lecture can move too fast and then too slow! He hopes that StudyTime can help make the lectures become more fitted for the audience.

"Communication between the professor and the students make everything better"  
-Anders



Jens is a 54 year old caucasian male who works as a professor. He is married and have two kids.

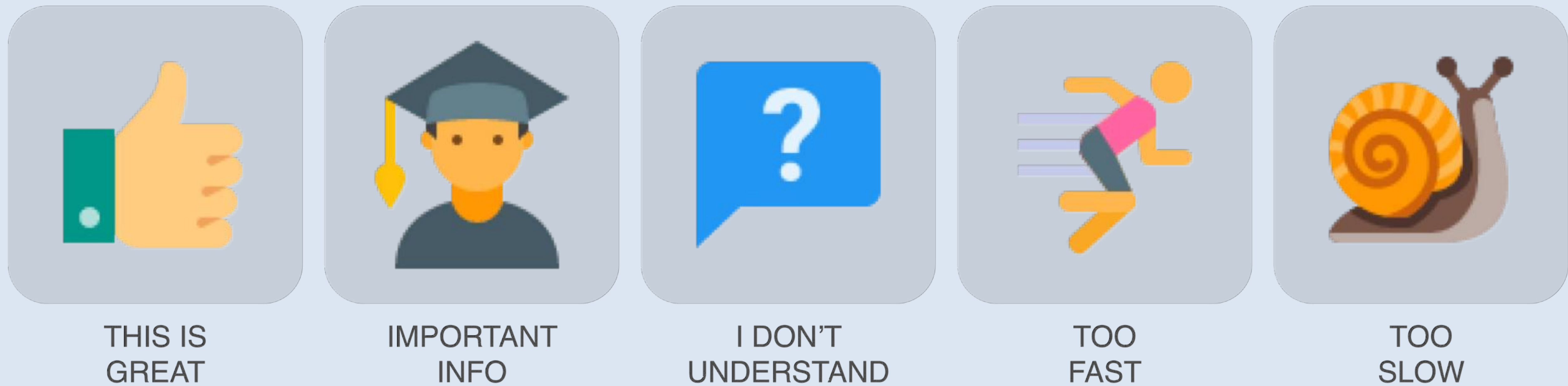


Anders is a 23 year old engineering student. He enjoys skating, programming and flirting with cute girls.

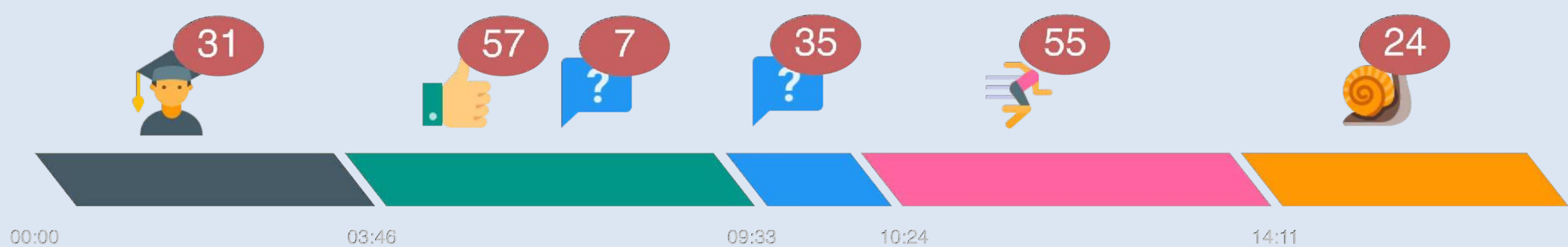
# StudyTime

Date

Give your lecturer feedback in real time!



As a professor, see what parts of your lecture the students liked, and where you lost them.

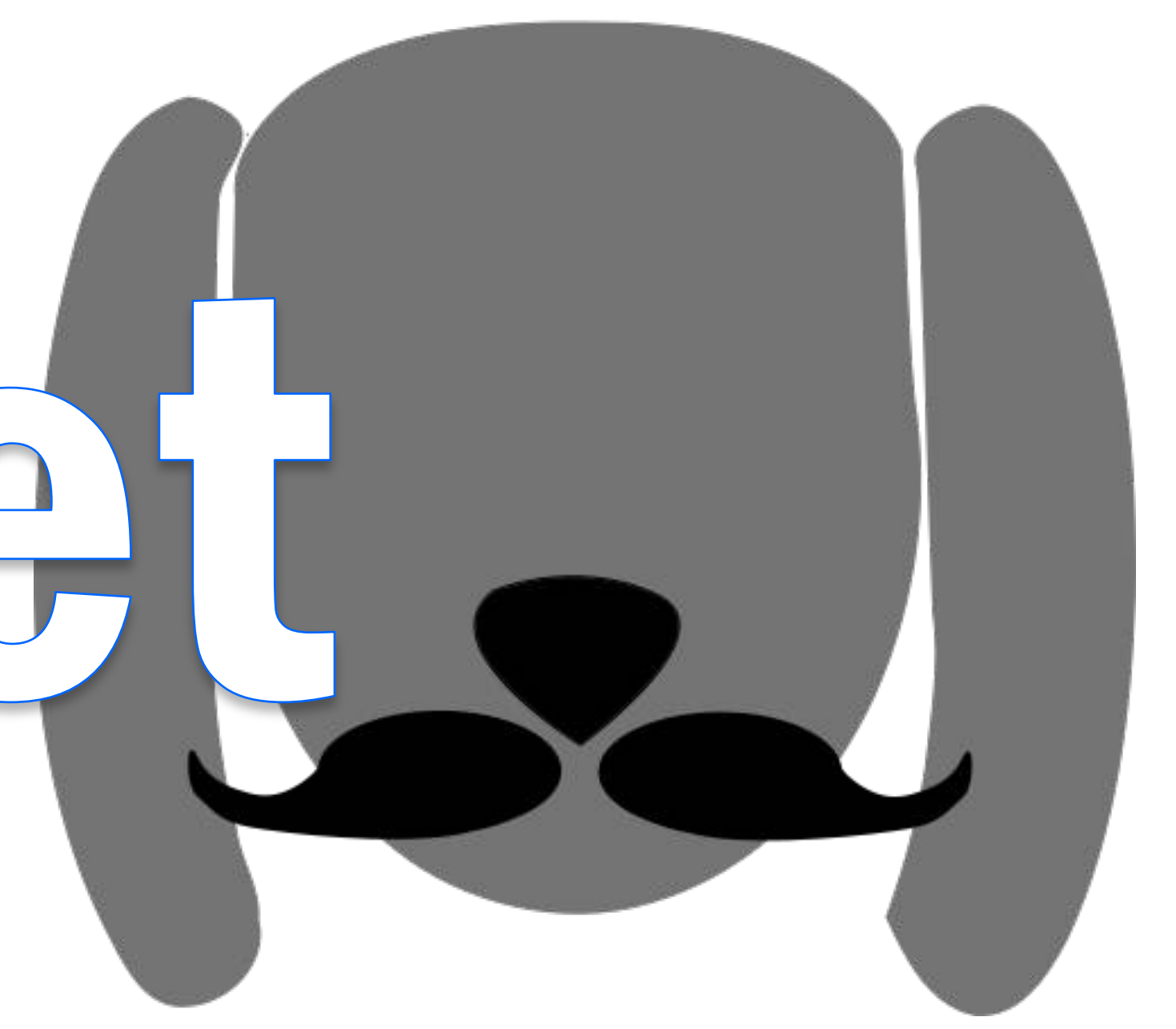


- Real-Time Feedback
- Collaborate on Questions
- Link Feedback to Time
- Easily Review Lectures
- Mobile and PC Friendly

By utilizing web sockets, StudyTime facilitates communication between students and professors. By providing a unique channel of real time feedback, lectures can finally adapt to the students needs.

# Teacher's Pet

Throwing a bone



## Group Members (Left to right):

Christopher W. Gjøvåg,

- GUI & Back end Developer

Eirik Osnes,

- GUI & Front end Developer

Magnus Leikvoll,

- Project Manager & Front end Developer

Mathias Lien,

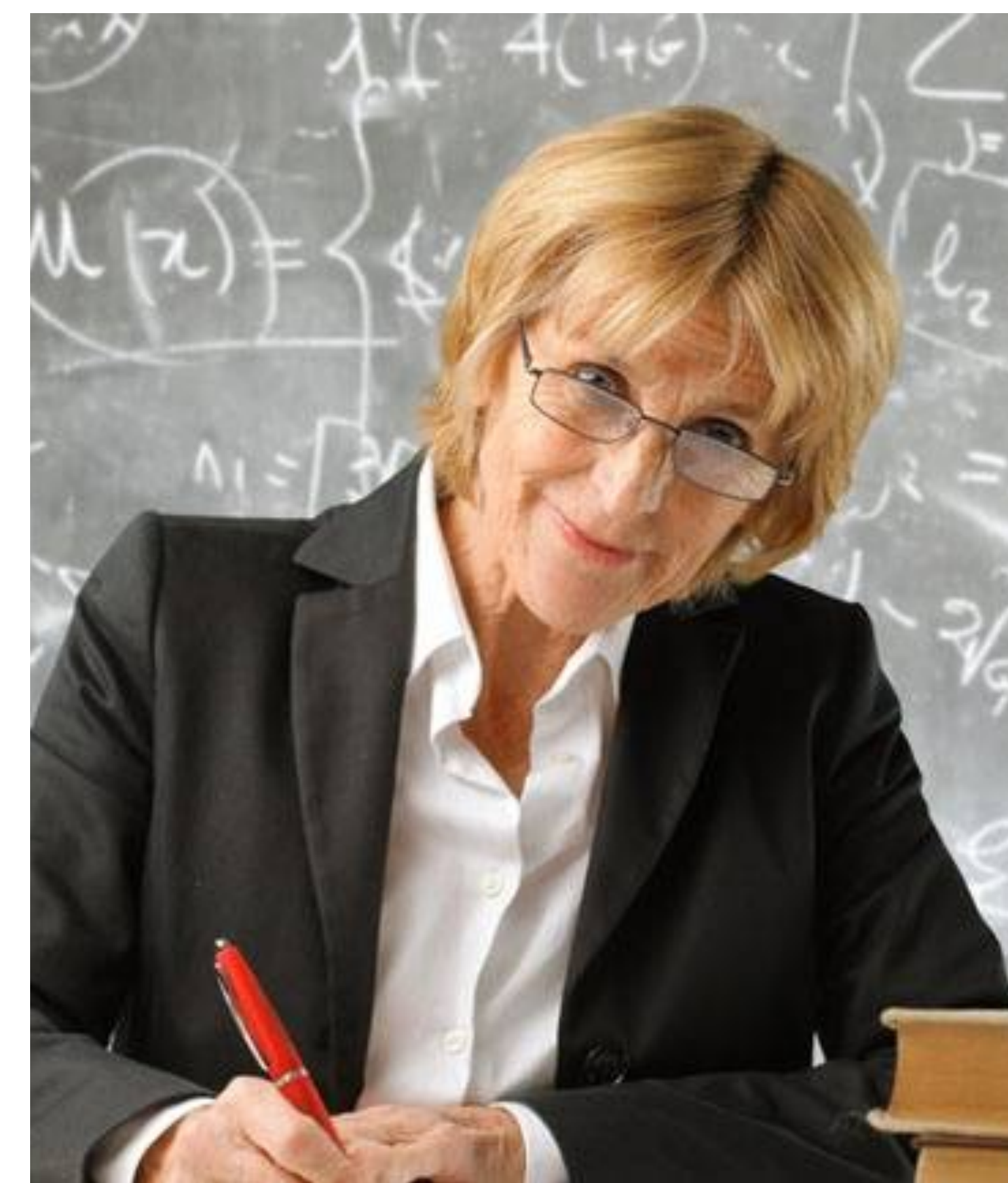
- Lead back end Developer

## Persona

Prof. Mentory is having trouble understanding at what pace the students want her lectures to be at and how much the students understand during her lectures. She wants more feedback during the lectures.

***“I wish that it was easier for my students to give me feedback”***

Teacher's Pet will give Rudy a new tool to better understand her students – giving her the data she needs to adjust her lectures.

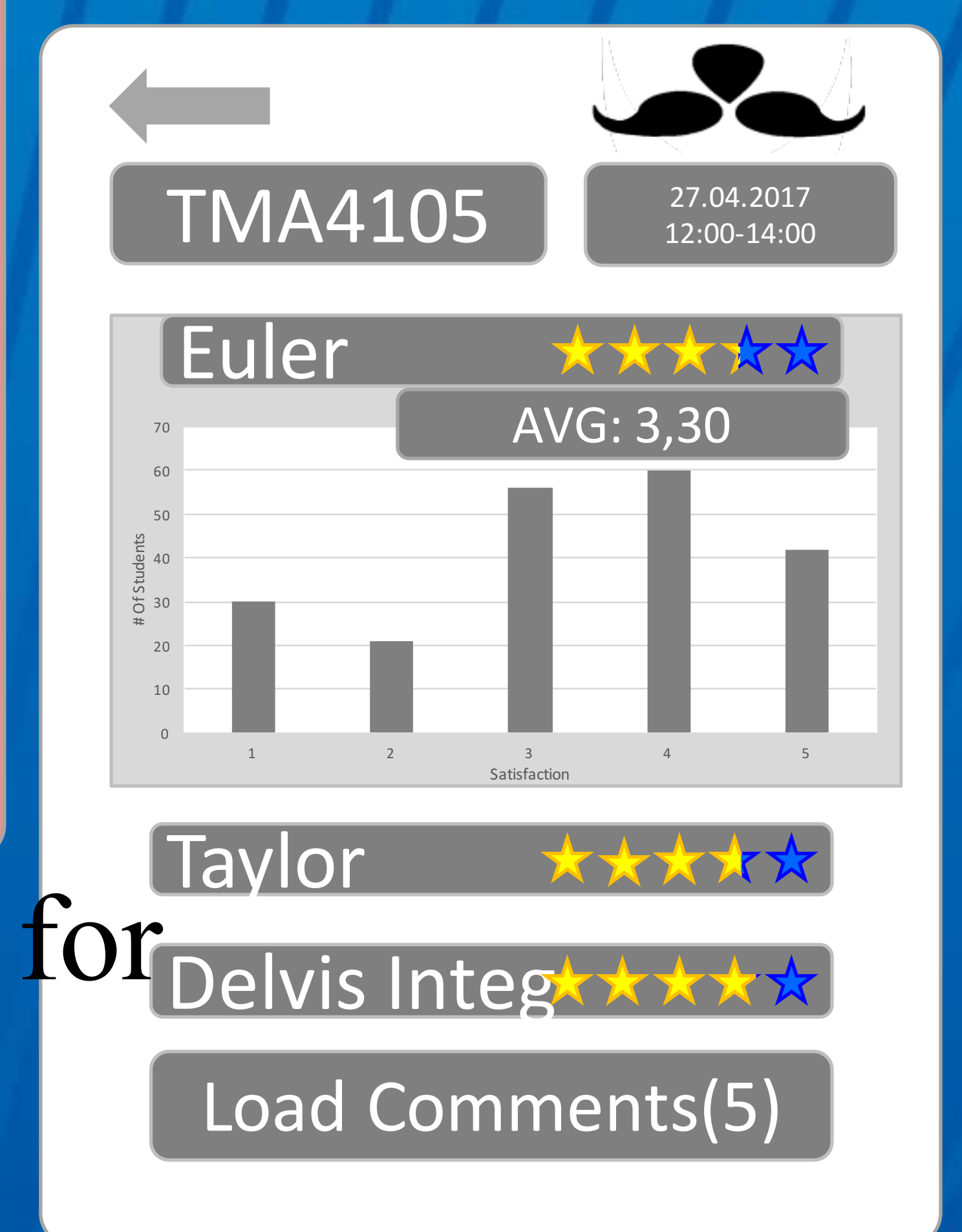
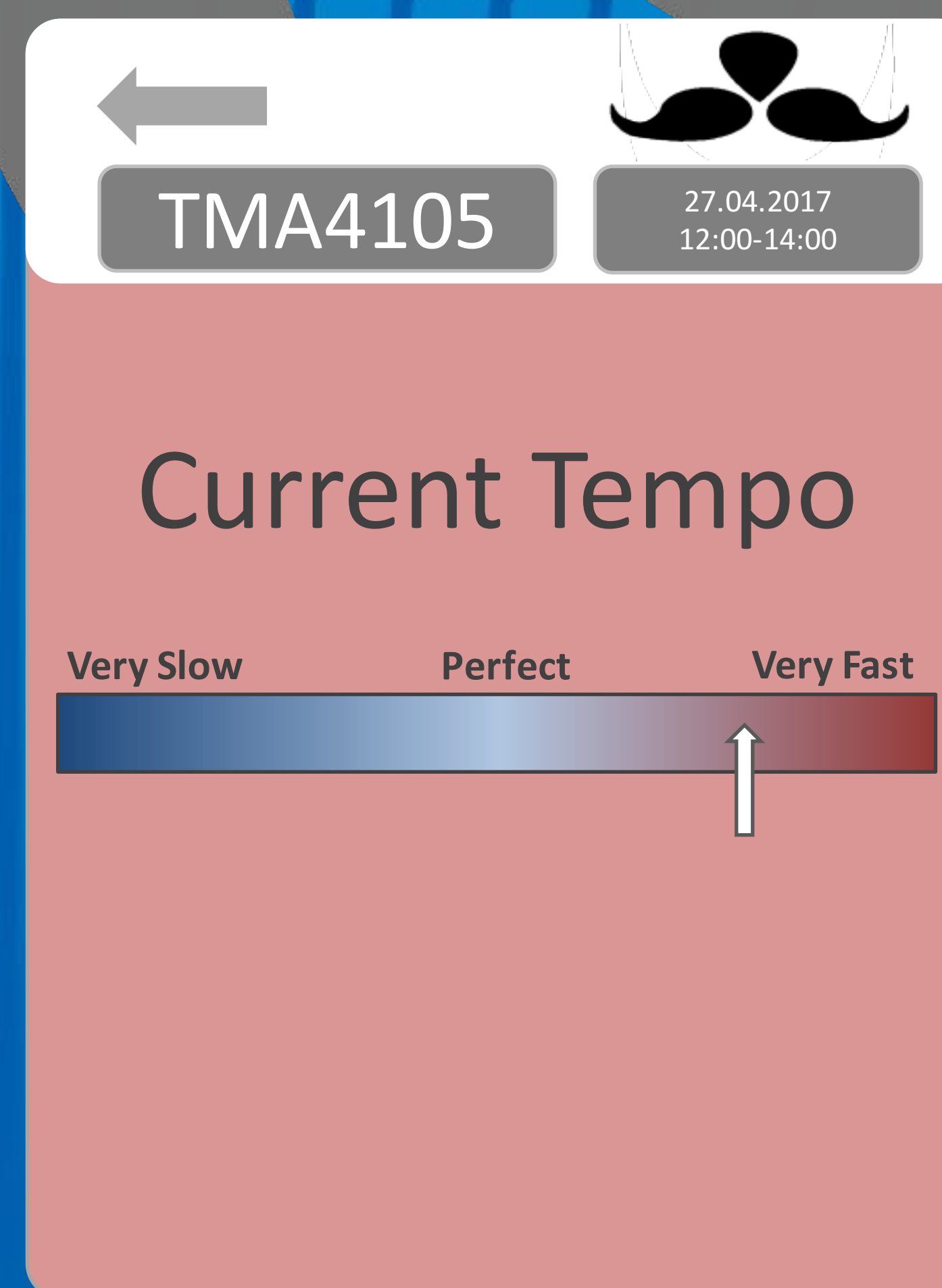
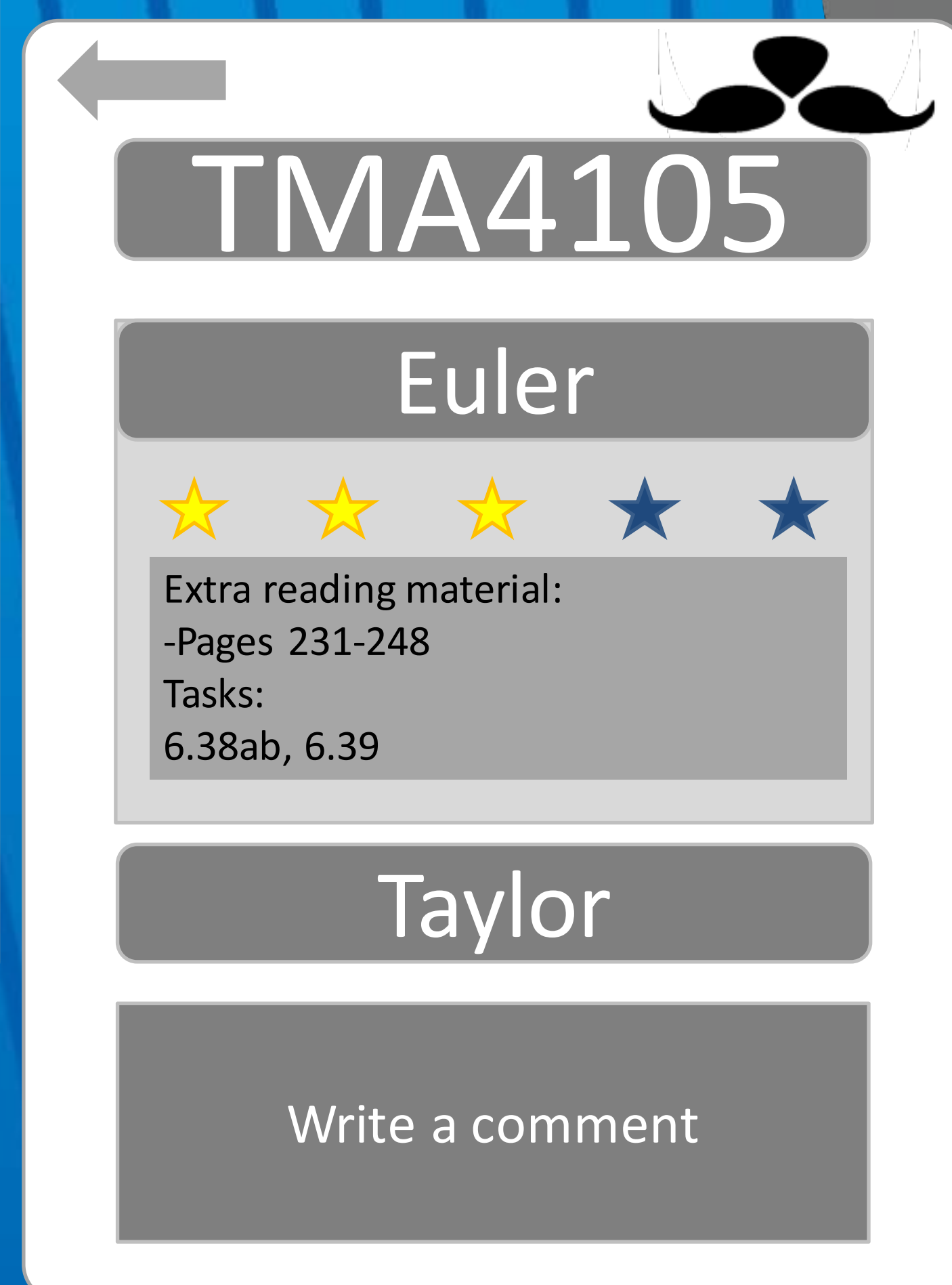
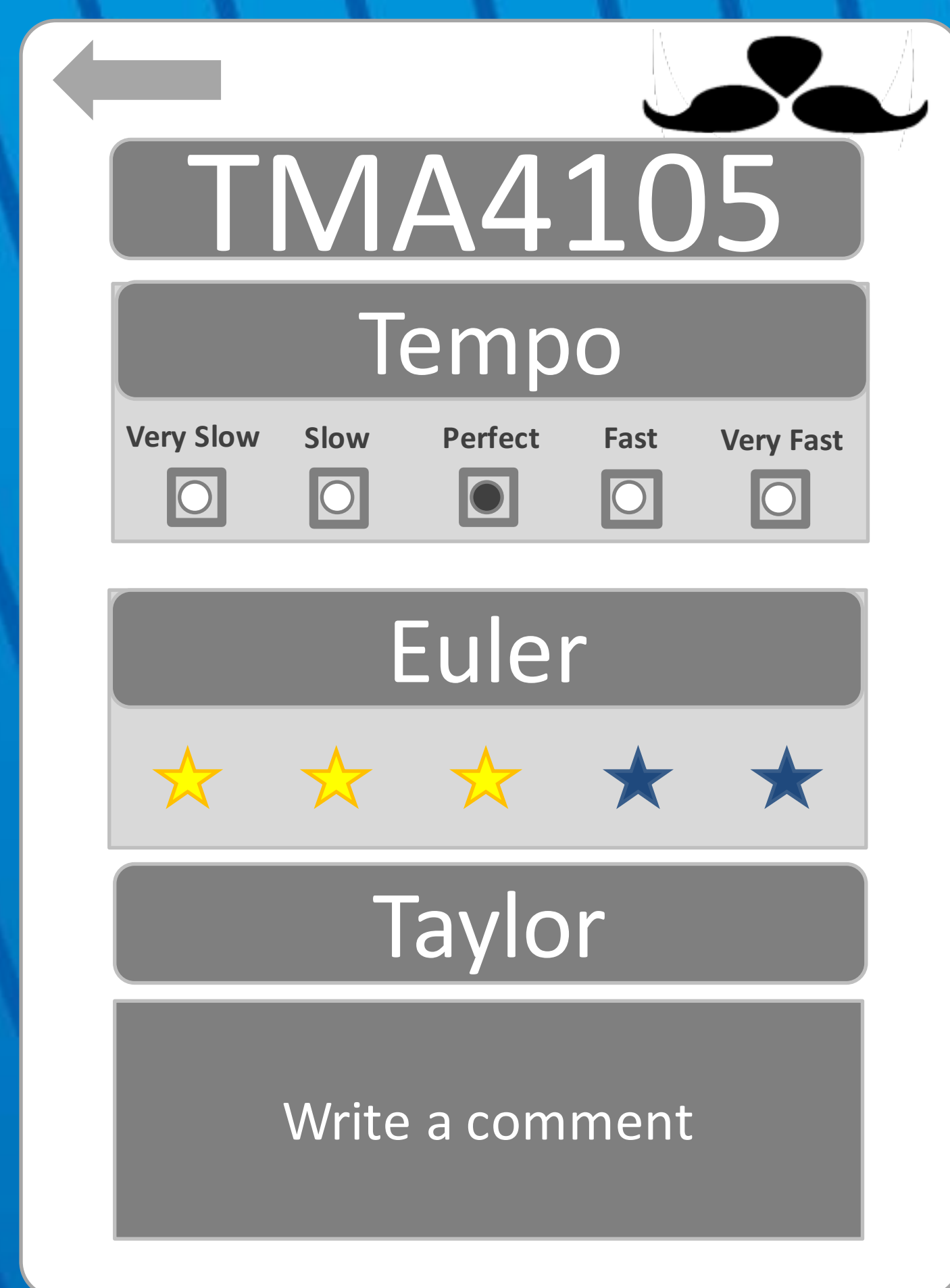


Rudy Mentory

Prof. Mentory is a 66 year old physics professor from Wales who's currently working at the University of Bromsø.

# Teacher's Pet

C. W. Gjøvåg, M. Leikvoll, M. Lien, E. Osnes



Giving the students a way to influence their classes, and to find more material!

And great information for the teacher!

## What

- Students giving feedback on lectures
- Processing of feedback
- Visual representation
- Feedback for individual subjects
- Quick and easy set-up

## Why

Teacher's Pet will provide teachers with a platform for information-gathering about student's understanding of subjects in real-time. This will give them invaluable data in order to adjust the pace of lectures to best suit the current student body's needs, as well as giving the option to set up extra reading material. All this to make it easier for lecturers and students alike, and make the learning experience smoother than ever before.

## How

Teacher's Pet will run as a real-time application allowing students to rate the pace of lectures based on pre-set goals set by the teacher before the start of the lecture, as well as tempo during the lecture it self. The application will allow for the teacher to set up the topics as much as he/she wants – including allowing for tying extra reading material / working tasks tied to the specific student's understanding of a topic.

## Technologies in use

Android SDK, IME API, SQL, Java 8, Network Protocols

## The team



**Jacob Odgård Tørring**  
Chief Technology Officer

**Ole Anders Stokker**  
Chief Information Officer

**Dora Oline Eriksrud**  
Chief Executive Officer

**Vetle Bjørngård Gundersen**  
Chief Design Officer

## Persona



Øystein Skartsæterhagen is a postdoctoral researcher at the Department of Mathematical Sciences at NTNU, and a lecturer in Calculus 3, TMA4115. By integrating Viestintä with his usual way of lecturing, he will no longer be in doubt of whether or not students understand the subject presented.

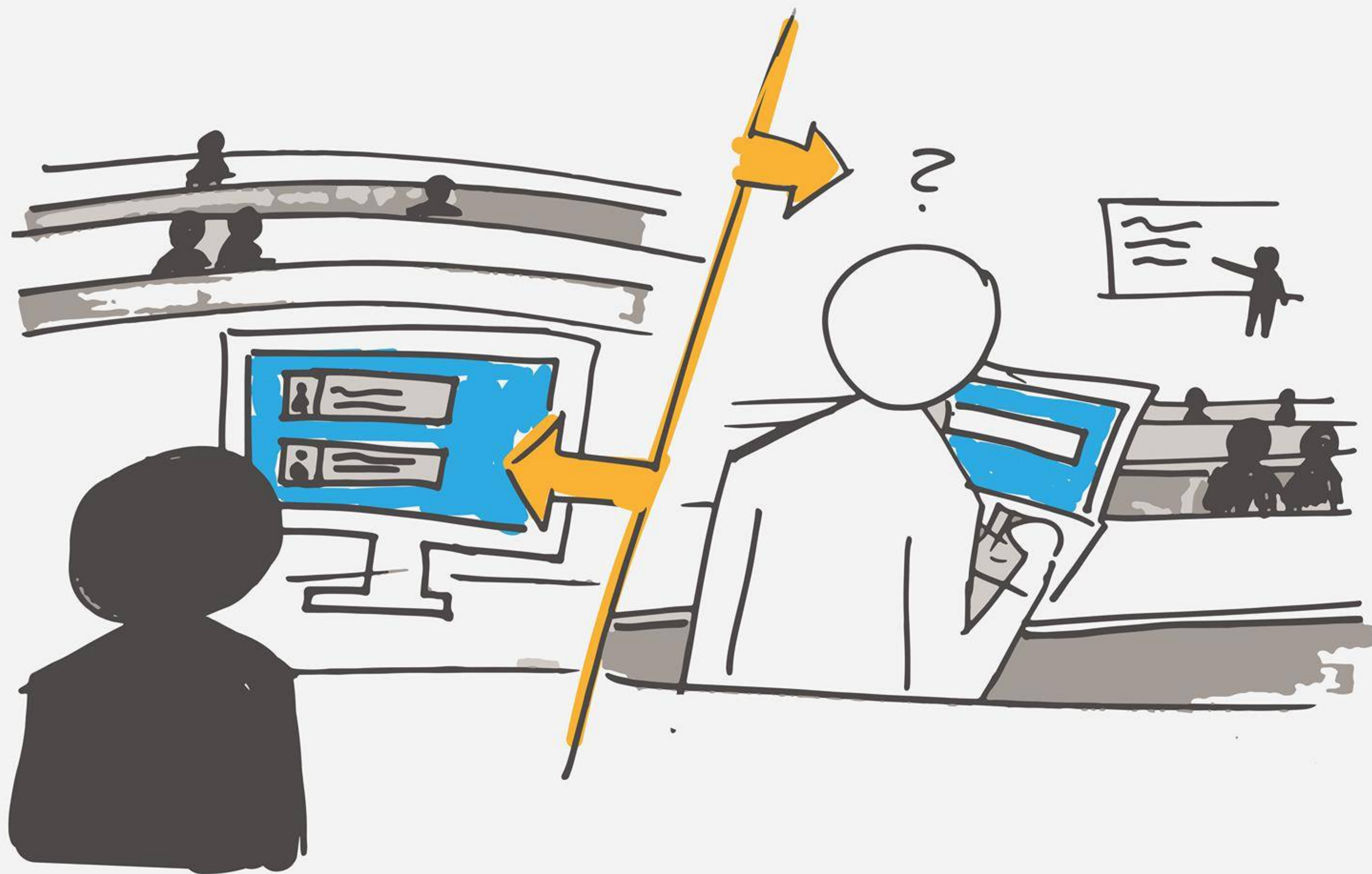
**«It's not easy to know how all of the students perceive the lecture, or to get a hold of what they don't understand»**

## Help through interaction

Viestintä (*communication* in Finnish) will merge with the lecture, not interrupting the agenda, and help highlight the struggle of the students.

By having the ability to adjust the lecture based on real-time feedback from the audience and creating a comfortable learning environment, the lecturer can keep students motivated and increase the value of the lecture as it is today.

# Viestintä



## > Easy login

Both lecturer and student will sign in using an already existing NTNU account.

## > Ask questions

Post questions relevant to the lecture in an easy-to-use interface.

## > Real-time feedback

Both lecturer and student will benefit from real-time communication. Resolving any unclarities whenever suited.

## > Rank questions

Prioritize key issues.

## > Statistics

Get an overview of the lecture and increase quality over time.

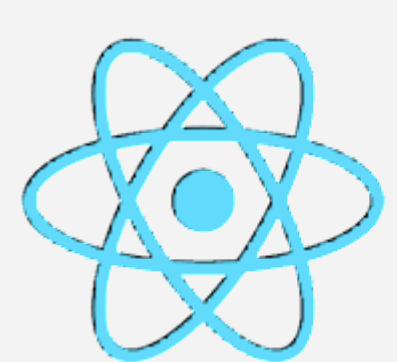
## Making communication and feedback easy

Both lecturer and student will sign in with their NTNU account, to a session hosted by the lecturer. All questions posted will be anonymous among the students, keeping the threshold for asking low, but at the same time show what has already been asked.

The lecturer will see questions as they are asked, making it optional to answer the queries as soon as possible. This will also be an indication of pace and level of the lecture.

At the end of the lecture, the data from the session is presented to the lecturer as a means to improve the quality and point out topics which may need more or less time.

## Potential technologies



React

Interactive User Interface



Cross-platform runtime environment



Natural Language Application Programming Interface

# CallyBot

- Your calendar just learned to talk!



## Team 57 - Pentum



**Jahr, Joachim**, Computer Science 2. year  
Project Manager, Architect

**Falstad, Jon Steinar**, Engineering and ICT 2. year  
Scrum master, GitHub master

**Turkerød, Ingrid**, Computer Science 1. year  
Developer, HR manager

**Meyer, Pålvar Rasmus**, Computer Science 1. year  
Developer, Tester

**Nyvoll, Samr Maria**, Computer Science 2. year  
Graphic design, User experience, Developer

*"With all of the subjects I have this term, it would nice to have all of the deadlines in one place"*

## Pain Points

- Trouble keeping track of all the deadlines
- Don't want to download new apps
- Trouble getting easy and fast access

## Our Solutions

- All of the deadlines, gathered in one place, with reliable reminders
- Utilizing Facebook messenger, an app most already have installed, and know how to use
- Simple userface in an app most people are familiar with and logged in on



## Persona

This person is an active student at NTNU, and she is currently in the second year of studying Computer Technology. This term she has two extra courses. Additionally, she travels via train 2-3 weeks.

*"With all of the subjects I have this term, it would nice to have all of the deadlines in one place. Also, I have storage issues with my phone, so I'm happy I wouldn't have to download any new apps. It would be useful for me to be able to get reminders this easily, especially in an app I'm always logged in on anyway, and I know it would be safe."*



# CallyBot

by Sander Petráš, Jozsef Árkai, Viktor Kovács, Mária Árkai, Mária Nyell, Imre Tóthmérész



*Assembling all projects and events on a simple, agile platform*

## Top 5 Backlog Items

- 1 As a student, I want something to remind me of upcoming deadlines.
- 2 As a student, I want to be able to see a detailed overview of all upcoming deadlines in a course.
- 3 As a user, I want to set how long before deadlines I want to be reminded of them in each course.
- 4 As a user, I want the bot to be easy to use, self-explanatory and give me easy access to see all of its features.
- 5 As a user, I don't want to download any extra software or apps, but use a product I already regularly use.

## How Does It Work

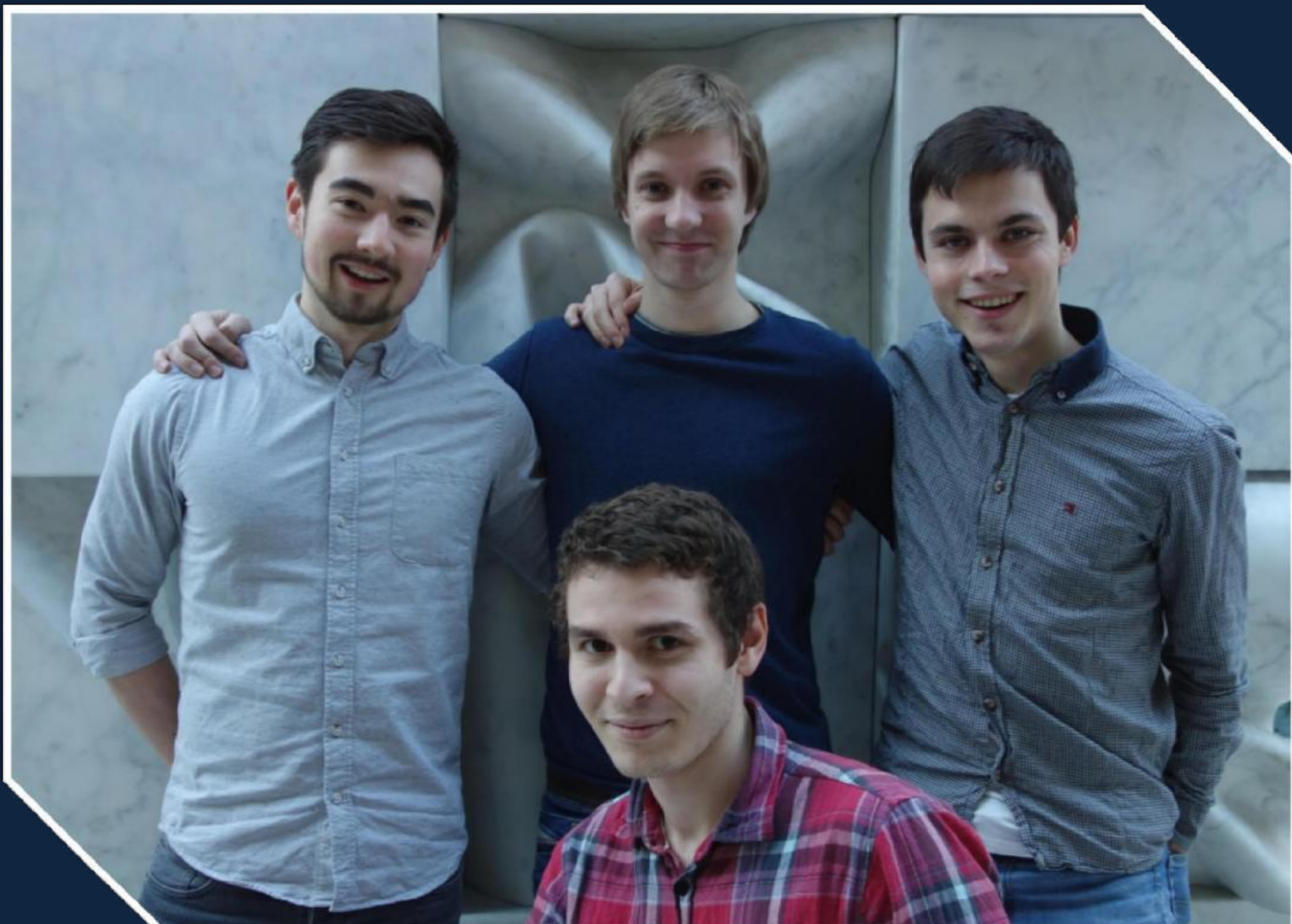
CallyBot will use Facebook Messenger as a platform, and inform the user of upcoming events and deadlines. The user can add their own events as well as adjust the time and frequency of the reminders.

The bot will use IME's data API and web scraping in order to automatically update on dates and deadlines. Students can subscribe and unsubscribe to courses.

## Used Technologies



# QAtalyst



## Jonathan Nilsen

*Team leader  
ScrumMaster  
Process metrics*

## Olav Kaada

*Code review*

## Runar Johannessen

*Test coverage  
Packaging and deployment*

## Simen Husøy

*Web developer*

## Making Questions happen



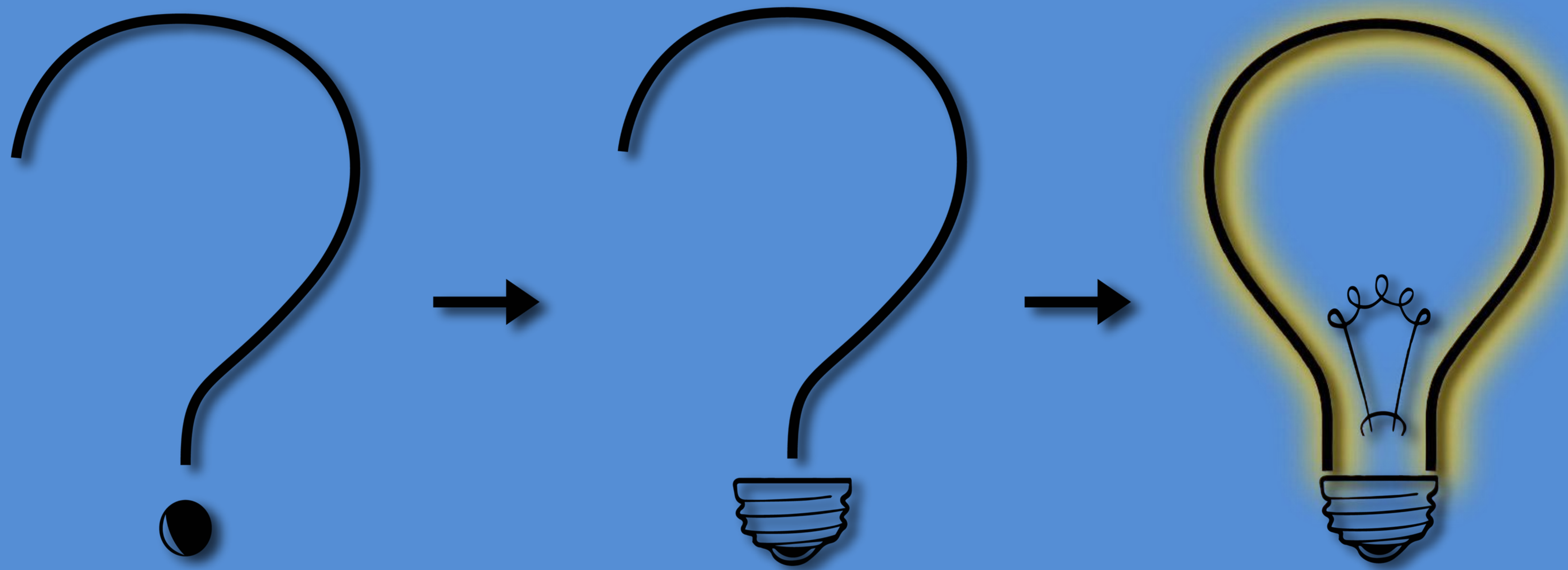
*"Hvordan kan vi legge til rette for at studenter kan være aktive i en forelesningssituasjon?"* - Mette Langaas

A dead simple web application that removes the barrier for students to ask their questions



- The ability to ask questions anonymously during the entire lecture, not just at set points
- Organisation of received questions based on time, votes and relevance

# QAtalyst

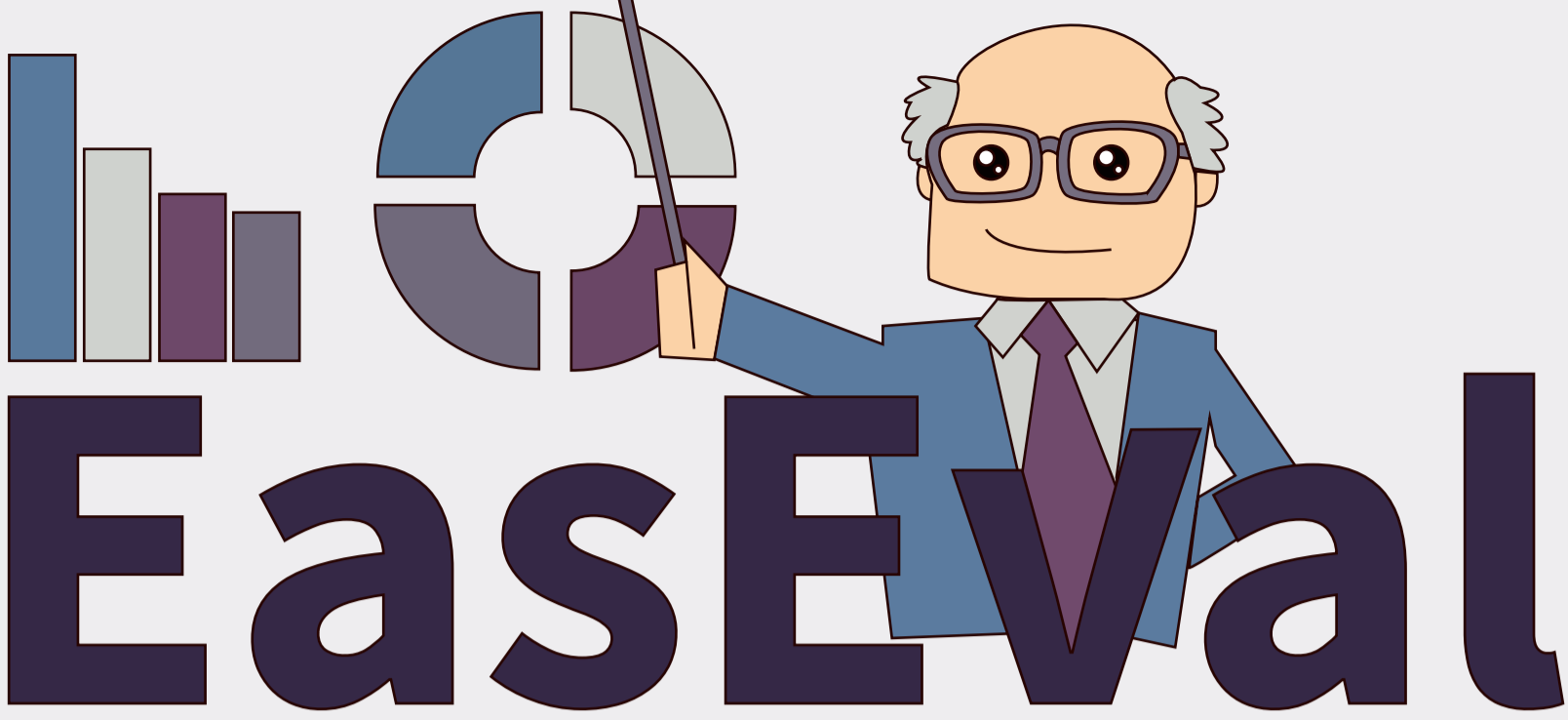


- As a student, I want to be able to ask questions via my phone or laptop during lectures
- As a professor, I want to be able to read the questions my students have asked
- As a student, I want to be able to see what questions have already been asked
- As a student, I want to be able to vote on questions so that I can help decide which questions are the most important
- As a professor, I want to be able to view a history of previously asked questions in my course so that I can read and analyze them after the lecture

**QAtalyst will improve student learning and make lectures more effective and dynamic**

Offers a web interface for professors and students to create and participate in lecture sessions

- Powered by Python and the Django web framework
- Customized for both computers and mobile phones



# EasEval

It's easy.

Peter Salvesen

- Project manager
- Graphic designer

Simen Ullern

- Scrum master
- Web developer



Eivind Rebnord

- Web developer

August Lund  
Eilertsen

- Database developer
- iOS developer

“As a teacher, it is more relevant to know how the students ended up with a solution to an assignment, than the fact that they did.” - Hallvard Trætteberg

Gunnar (45) is a professor and researcher currently working at NTNU. He is giving lectures on a weekly basis and responsible for the exercises. Gunnar is dedicated to his work and would like to know his students better, so that his teaching staff can enhance the learning experience.

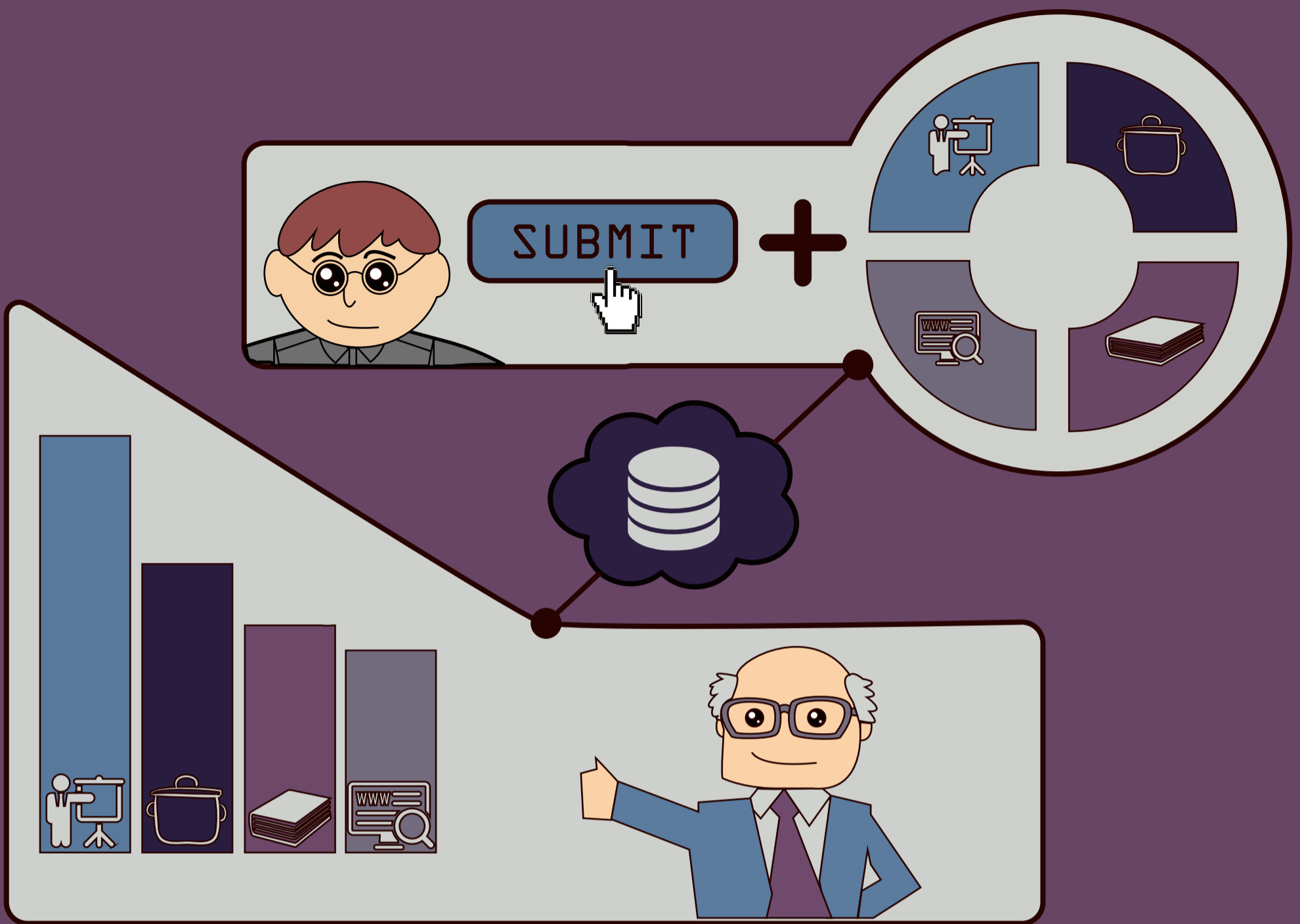


EasEval is an application that manages evaluation of deliverables from students. The application will form a report on what aids that were used to solve the exercise, and the students opinion on the given tasks.



Kevin (22) is a third year student at NTNU, currently working towards his bachelor degree in mathematics.

“It should be obligatory to give feedback. Too many students go through the semesters, year after year never saying a word, yet holding valuable information”



## Top features:

1. Rate your exercises  
Loved or hated an exercise? Perhaps just mediocre? Let the teaching staff know!
2. Give instant feedback anonymously  
Done in less than a minute with your name hidden behind safe encryption algorithms.
3. Create an evaluation class instantly  
EasEval fetches the data from your learning platform.
4. Ease of use  
Be automatically redirected from your learning platform, so that you only need to focus on filling out the evaluation form.
5. See the statistics  
Let the numbers reveal themselves in our sleek designed app.

EasEval will continuously contribute to improve the learning experience. As a member of the teaching staff, you will be able to view representative statistics on how the students solved the task and the reason for it.

This will help to improve future exercises.

This can all be done in a simple manner.

**It's easy!**

## Potential technologies:

- Mobile and web compatible
- Extension to Itslearning or Blackboard
- Automated user authentication

# EDU QUIZ

UPCOMING EXAM?  
NO PROBLEM  
IT'S QUIZ-TIME!

Reading the entire curriculum  
can be demotivating and time  
consuming

EDUQUIZ tests your knowledge  
by quizzing you with questions,  
tailored to your needs!



The exam is closing in.  
Olivia C. D. has studied  
well throughout the term,  
but wants to review the  
subjects and confirm she  
is ready for the exam.  
EDUQUIZ is the perfect  
solution for her!

## Team

Amund Tenstad

- Project leader

Ludvig Pedersen

- Requirement analyst

Adrian Hatletvedt

- Head of communication

Vetle Birkeland

- Senior developer



1.

2.

3.

4.



## Backlog

#1 As a student, I want personalized questions matching my knowledge level so that I can maximize my learning outcome.

#2 As an admin, I want automatic question rating (by difficulty), so that I don't have to rate them all myself.

#3 As an admin, I want users to have the ability to add questions, so that I don't have to add them all myself.

#4 As a mobile user, I want it to look good and be usable on mobile devices, so that I can quiz myself using my mobile device.

#5 As a user, I want the opportunity to select topics within a subject, so that I can start practicing the relevant topics early in the term.

*“ I want the exam preparations to be both fun and educational ”*

Providing motivation through the exciting and interactive learning process EDUQUIZ

EDUQUIZ utilizes Django and Semantic-UI



learn different.



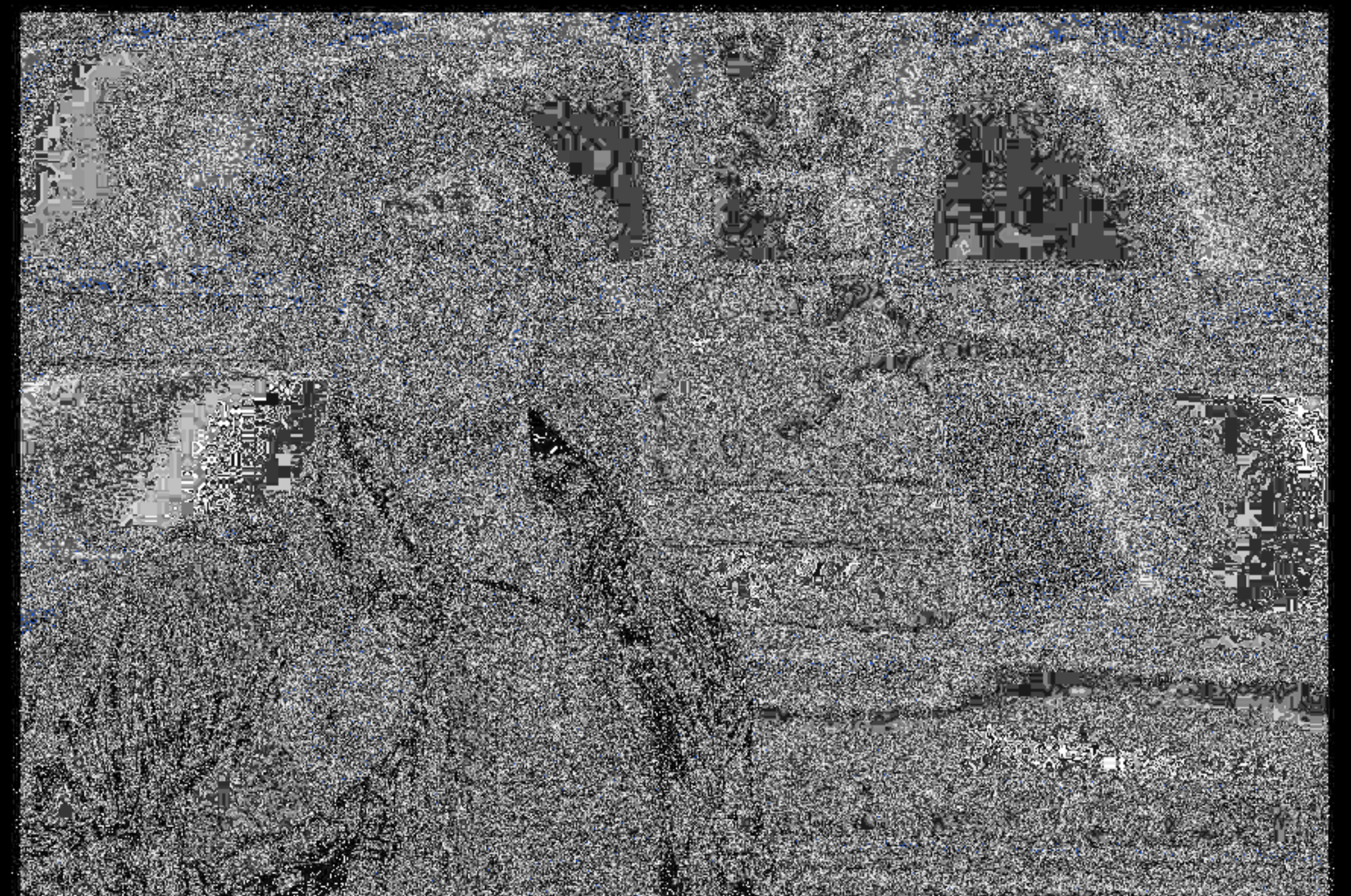
## Our pineapple team

- Andreas    Leader
- Jakob     Moderator
- Richard   Lead Programmer
- Michael   Peacemaker

Peter is a dedicated professor, who wants to give his students the best lectures possible. To do that he needs to know what his students find challenging or easy, so he can focus where it is most needed. But in the past he has often found himself in situations where he over- or underestimated the students' knowledge.

*"Providing help without knowing the current state of progress or knowing what the student has done, is difficult."*

We can help peter by giving him an exercise system which stores, organizes and analyzes information about student performance and understanding.





# pineapple

## Pineapple improves education by

- Showing professors what students master or struggle with.
- Letting students find relevant information quickly and easily.
- Relieving professors of employing people to evaluate exercises.

## We make it work by

Building a webapp serving as interface between the professor, students and the database. The webapp will host exercises in the form of multiple choice questions, which provide us with the data we need.

## Technologies we use are

- The django framework
- Bootstrap

## Some use cases

- As a teacher, I want to know what problems the students struggle with.
- As a student, I want to receive information on where to read, when I can't figure out how to solve a problem.
- As a student, I want the program to keep track of problems and assignments I struggled with, so that I can review them later.
- As a teacher, I want instant and easy evaluation of tests.
- As a student, I want problems tailored to my level in the subject.
- As a student, I want to know how I compare to the rest of my class (anonymously).



*“You may not realize it, but artificial intelligence is all around us”*

*Judy Woodruff*

More than 100.000 students were offered spots at Norwegian educational institutions in 2016. Did you know they had over a thousand different studies to choose from?

We know a lot of people struggle to find just the right study, and that is why we invented **uniBOT**. By combining everything you need to know about higher education with a chatbot built on AI-APIs, our app lets you personalize this jungle of information based on your own interests. Whether you want to compare studies or simply know grade requirements, uniBOT has the solution you need.



## The uniBOT Team

**Herman W. Horn**  
Project Manager

**Erik Kjernlie**  
GUI Developer

**Jørgen Mortensen**  
Application Developer

**Jonas Sagild**  
Application Developer

## Persona **Jon Ugland**

Jon is a 19 years old High School student from Oslo. He wants to start studying at NTNU next year, but struggles to decide on what kind of engineer he wants to become. Jon would love to have an app that lets him explore his possibilities: *“I just want to talk to someone about the different studies at NTNU, but even the school counselor doesn’t know the difference between “engineering and ICT” and “computer science”, which drives me mad!”*.



# uniBOT

Do you want to be one of those 20% who choose the wrong study before settling for what you really want? No? Then download our app and find your perfect match!

Hello Jon Ugland. We calculated your student credits to be 57.9 points.

Is that enough to get into Computer Science at NTNU?

Most likely. Last years requirements were 55.2 points.

What about Cybernetics?

Maybe. Last years limit was 58.2, so you are very close.

 easy access

 smart technology

 instant response



get easy access to information regarding educational opportunities while on the go  
get digital assistance from someone who can help me choose the right study based on my preferences  
get the information I need in a well-presented way  
find out, based on my grades and educational background which studies I qualify for  
easily compare studies of my interest

# Lecturify

## Connecting lecturers and students



From the left;

- Mathias Lundteigen Mohus: Databases Computer Engineering, 2nd year.
- Martin Halvor Kostveit: leader and pace interaction application. Computer Science 2nd year.
- Morten Mulvik: Networking. Computer Science, 2nd year.
- Kjetil Vaagen: Messages. Computer Science 2nd year.

Students will be end-users, and has the persona: Someone with the intent to learn, and will use tools which are easy to use, to be able to learn as efficiently as possible

- Lecturers/professors/student assistants will be end-users, and has the persona: Someone who wants the students to succeed, while limited to certain demands for the subject.

Magnus Lie Hetland: I would appreciate; Real-time feedback during lecture, especially regarding the pace of the lecture. Also special subjects the students want more information about or repeated.

We want to make a web application that helps students give feedback in lecturer.



### Magnus Lie Hetland;

Magnus Lie Hetland is an associate professor at IDI, a position he's held since 2004. He's been responsible for Algorithms and data structures class since 1999. He's also held lectures in algorithm construction for a number of years, but he doesn't remember exactly when he started.



### Hallvard Trætteberg;

Trætteberg has over ten years of experience with teaching object-oriented programming for large classes. We value his answer and recognize this opportunity to gain some insight into the challenges with the learning experience with classes typically consisting of many hundred students each lecture.

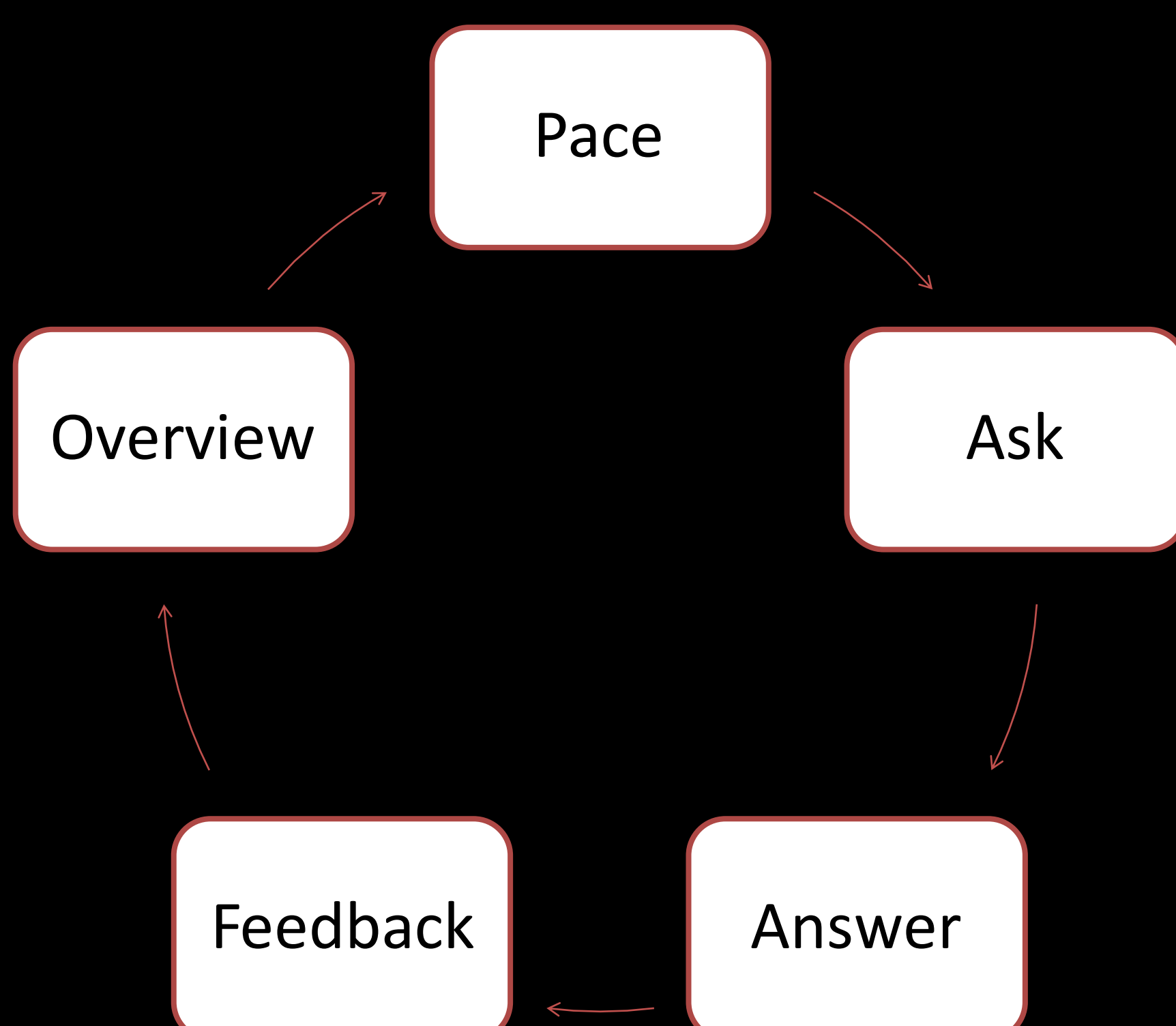
# LECTURIFY

All Knowledge in one place



## User Stories

- As a student I want to give feedback to the professor on whether or not the lecture is going too fast or too slow.
- As an system admin I want to be able to create a professor account with a username and a password.
- As a professor I want to be able to see the feedback from the students on the pace of the lecture.
- As a student I want to be able to create an account with a username and a password.
- As a professor I want to be able to create a subject subscription.



## All your lectures in on place

Follow all your lectures more closely and effectivize your **learning experience** With **real time feedback**, ask all your questions without even raising your hand

Ask questions during lectures, and get feedback from a large community of students, teaching assistants and lecturers

Our solution is implemented on a cross platform, which brings our product to all users

# chalks

outline your knowledge



**Arthur Evensen**  
Team Leader



**Kristian Stamland**  
Developer



**Grzegorz Swiderski**  
Developer



**Aslak M'kadmi**  
Developer



“Courses can at times be convoluted”

Robert has just started studying for a bachelor in mathematics at NTNU, but has run into a big problem: the pace doesn't match any he's experienced before! And with all the other students around, the professor doesn't have time to spare for him. Unable to figure out what he needs to do to keep up and do well - or which topics to apply his efforts to - his frustration quickly grows.

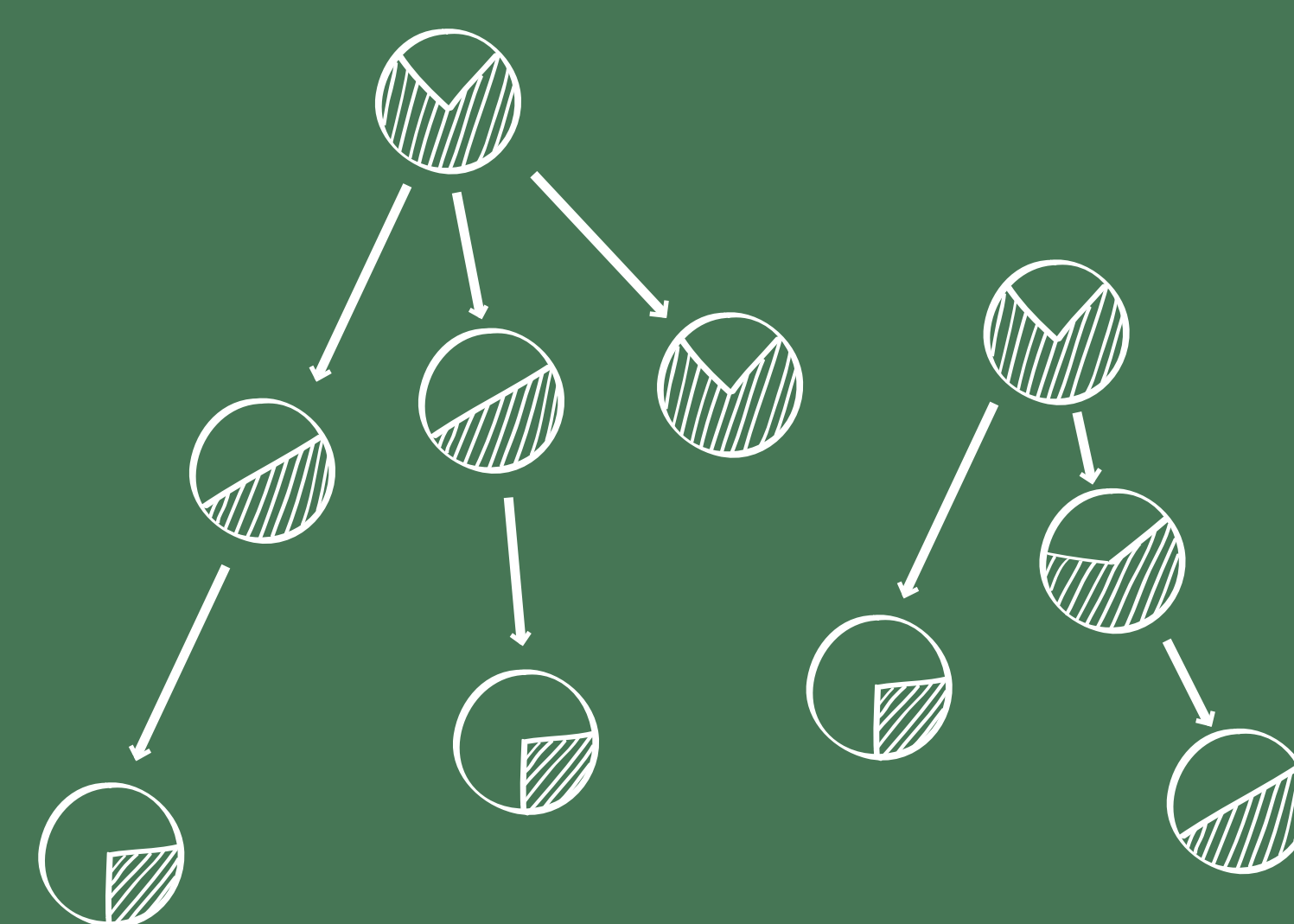
“In-depth learning requires human follow-up and interaction”

Wandelf has taught eager students for thousands of years with great success. In recent decades, though, the number of students has grown by leaps and bounds, and he suddenly finds that his old methods fail to handle the increased student mass. If only he had a system which took care of simpler feedback, so he could concentrate on the actual necessary human follow-up and interaction.



## How we help

Chalks helps students and professors get an understanding of how well they do in a course, by providing a simple graphical representation modelling the knowledge attainment so far. Professors can utilize this knowledge while planning their lectures, thereby helping everyone.



# chalks

## outline your knowledge



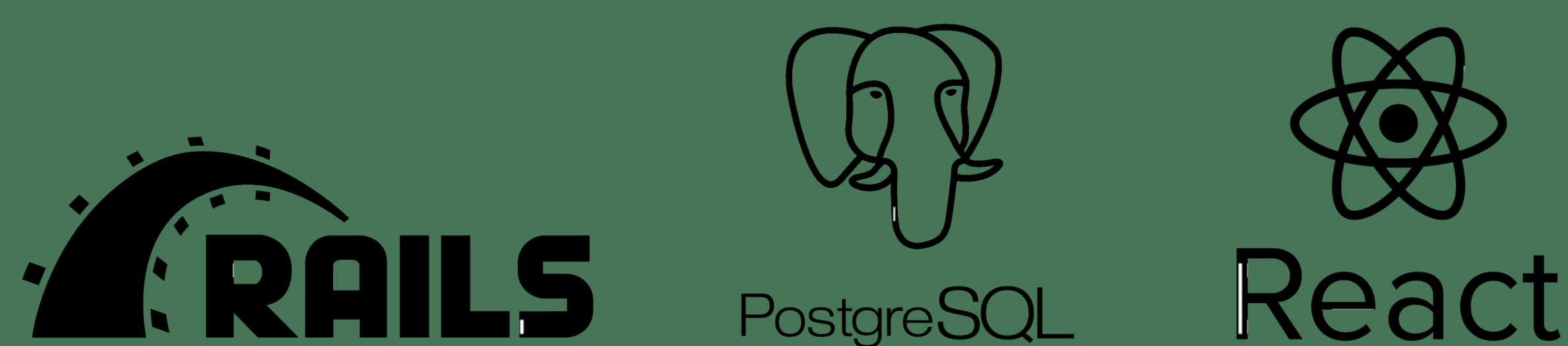
### TOP FIVE BACKLOG ITEMS

1. As a **student** I want to get a graphical view of my performance so that I can understand how well I do in the course.
2. As a **student** I want to view info and stats in topic nodes so that I can find out where and how to apply effort in my study.
3. As a **professor** I want to see conglomerate statistics for a given course so that I can use them to guide my teaching and effectively reach large groups of students.
4. As a **professor** I want to devise tests so that I can use the system to model the students' abilities.
5. As a **professor** I want to inspect test attempts, new and old, so that I can see how well students perform over time.

### WE WANT TO STRENGTHEN THE RELATIONSHIP BETWEEN STUDENT AND PROFESSOR.

Chalks implements a unique graphical interface that helps students break down their knowledge in a graphical overview for any particular course. Chalks creates these graphs with the help of an inbuilt testing system. Not only do the students get to benefit from these graphs, each professor can also look up the students' progression and plan their courses accordingly.

### POTENTIAL TECHNOLOGIES



Any Turing complete technology will do the job fine, but we think this stack in particular will provide what we need without the undue development overhead of building systems in assembly.



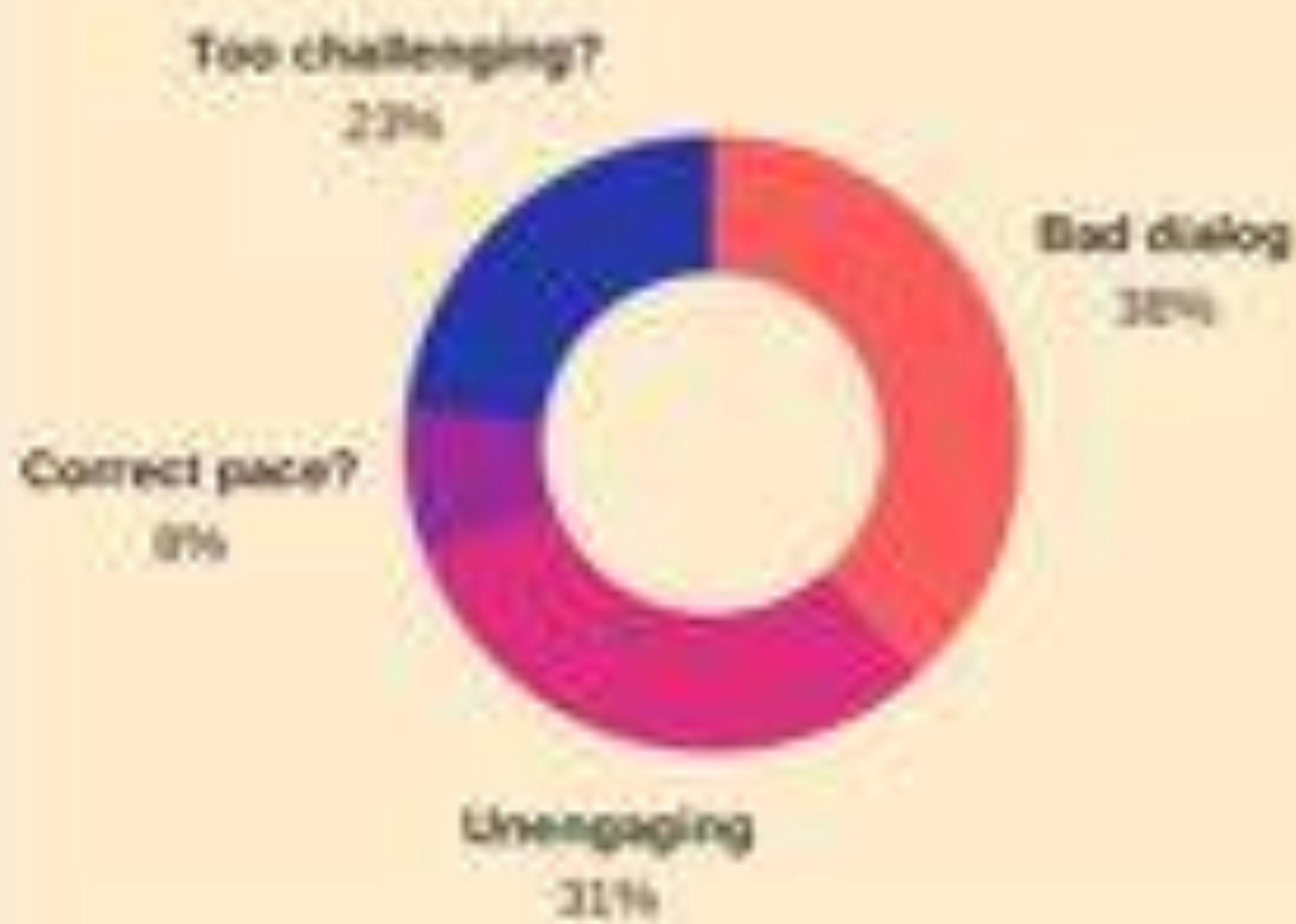
Provide questions and rate others

"The main problem I meet as a lecturer is the lack of engagement and feedback from the students"

- Alf Inge Wang, lecturer and maker of Kahoot!

# HearMe

Lecturers identify the following pain points:



## How we help:

Through our service we will revolutionize teacher-student relations in the education sector by facilitating for improved communication and feedback during lectures at universities.



## What we do:

We provide a platform where students can ask questions and let the lecturer know if the pace is too fast. The lecturer can constantly monitor (incoming questions with the students' ratings) and be alerted when a lot of students are lost.



# The team behind

Erling Ihlen, Informatics  
Peder Gjerstad, Industrial Economics  
Karl Magnus Smeby, Industrial Economics  
Anders Rantala Hunderi, Computer Science



Students can press a button when they don't understand the content of the lecture

Students can ask questions anonymously

Students can rate other students' questions

Lecturers can monitor how many students are keeping up with the pace

Through speech recognition technology, HearMe points to the place in the lecture where the students struggled to keep up

What do the students think about the current pace?

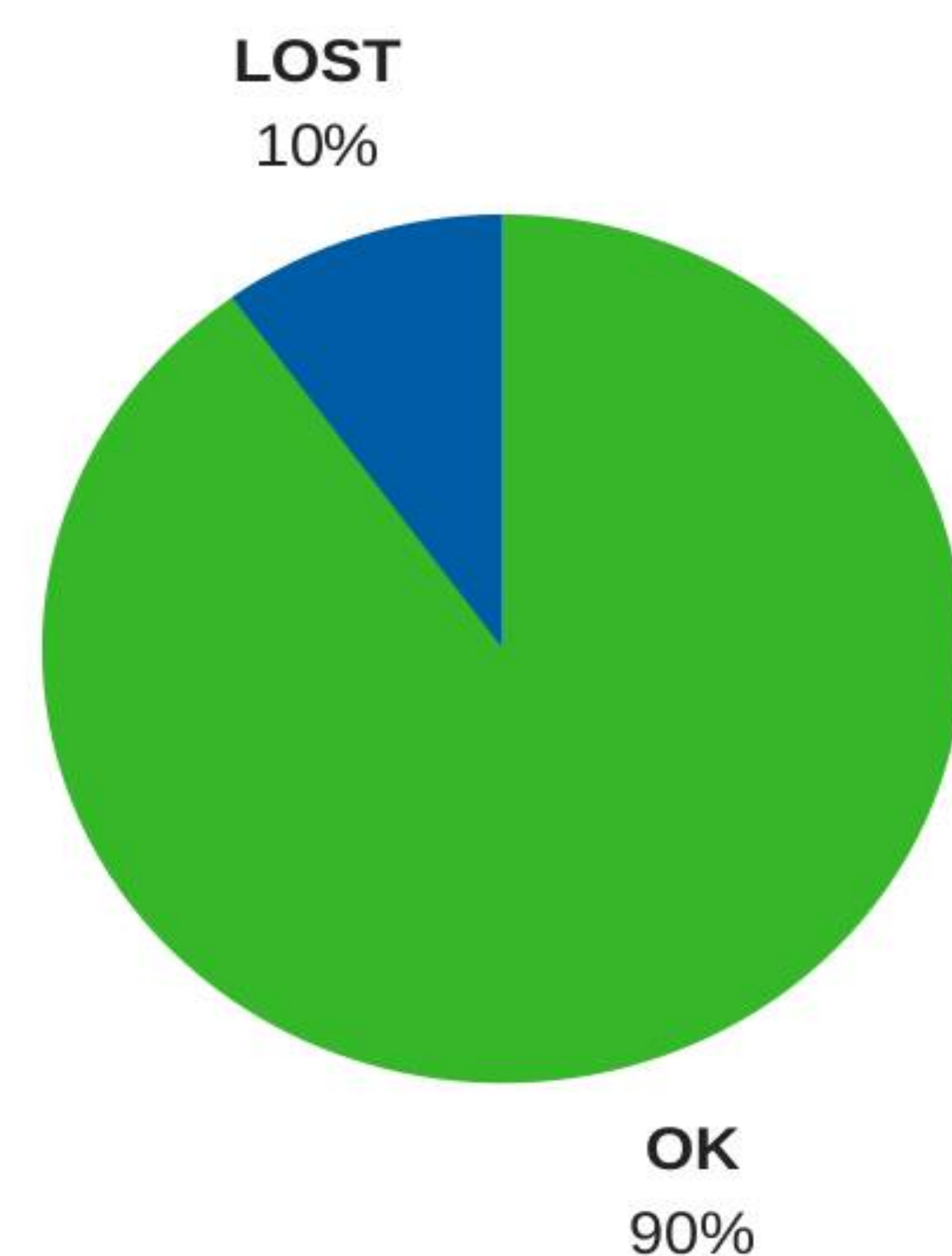
27 Can you show us an example in python? ✓

16 What could cause a fixed disk error? ✓

9 What do you mean by stable sorting? ✓

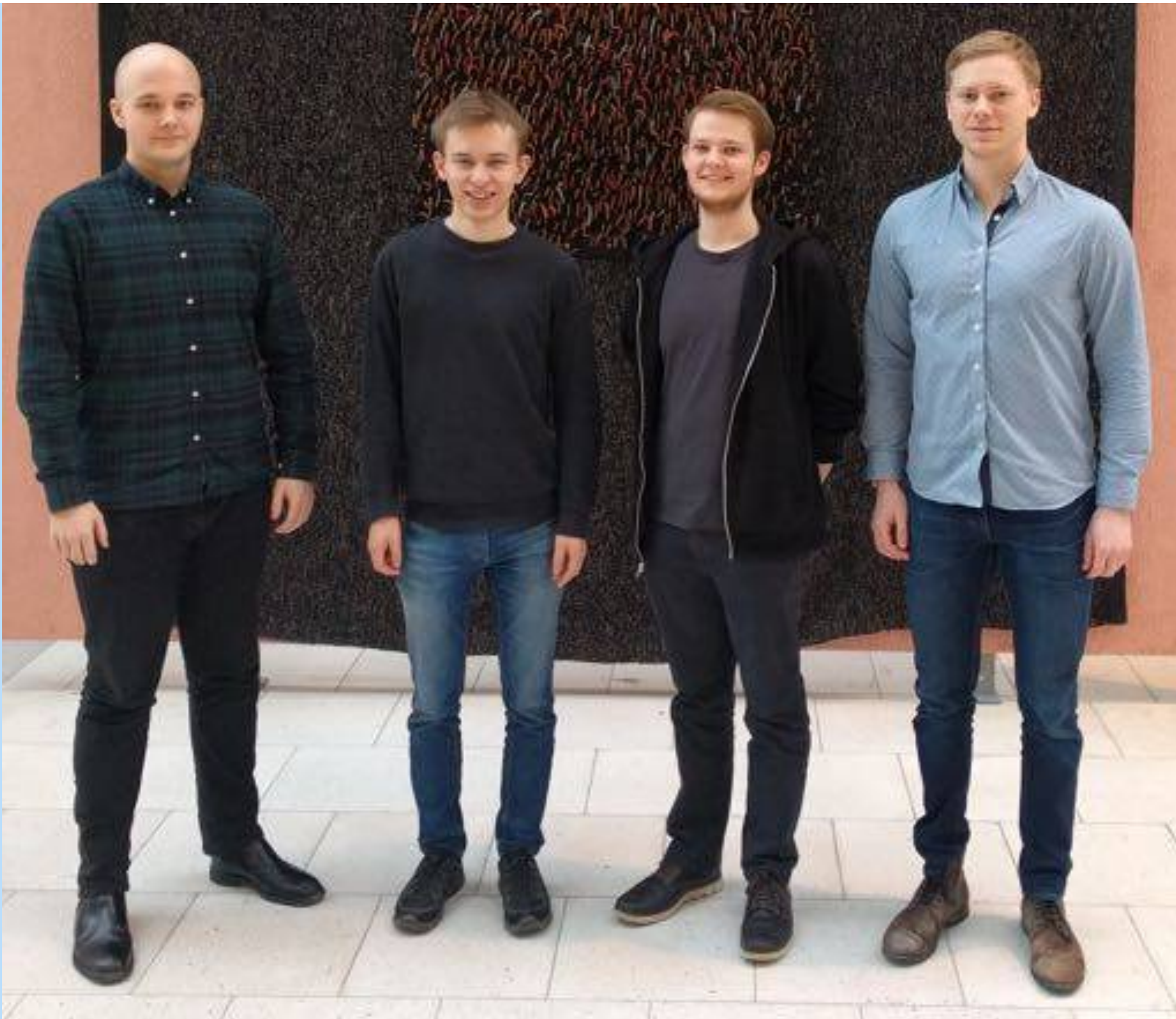
5 How can you assume that the array is already sorted? ✓

Pick among the most popular questions



# IRIS

## *Intelligent Real-time Information System*



### The Team

*Left to right*

Anders Larsen  
Team Leader / Developer

Eirik Smithsen  
Developer

Mathias Müller  
Developer

Sondre Jensen  
Developer

## Persona

### Goal

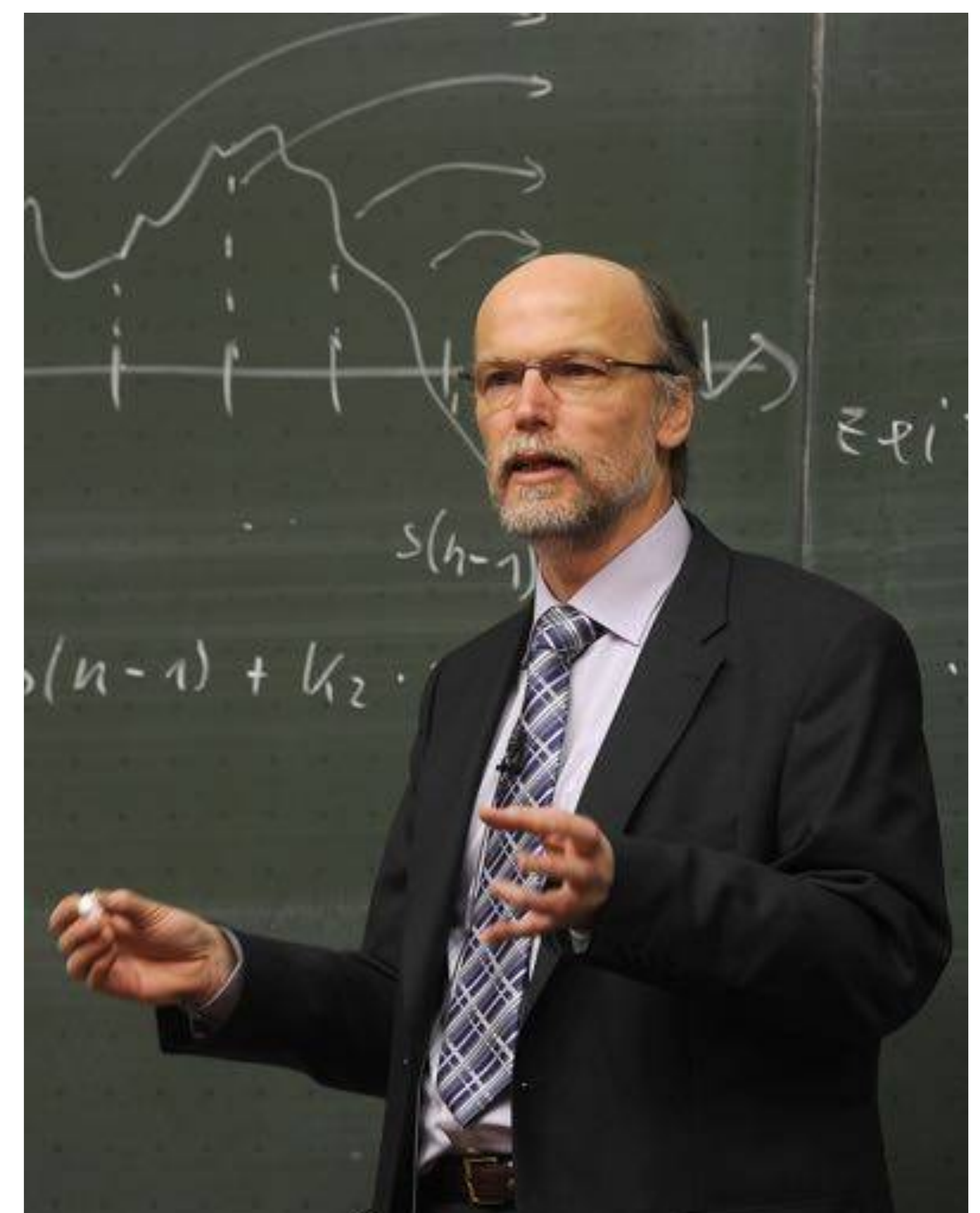
Get the necessary feedback to provide students with the best possible lectures suited for them.

### Pain

Students are shy. It's difficult to gauge if the lecture is moving along at a reasonable pace.

*"I want to adapt my lectures to the needs of the students."*

Freddy Peterson is a 42 year old professor. When teaching elementary programming to hundreds of students, Freddy feels disconnected from his class. How can he know if the shy guy on the back row can keep up with the pace? He's looking for a way to get feedback on his lectures. Freddy needs IRIS to bridge the gap between himself and his students.



### How we help

IRIS collects feedback from the students and outputs it to the teacher in a timely, and easily understandable fashion. By giving even the shyest of students a voice, the lecturer can adjust his or her lectures to the needs of the many, as opposed to the needs of the vocal few.

# IRIS

## *Intelligent Real-time Information System*



*Not representative of the final product*

## Top Five Backlog Items

- As a student I want to give the lecturer feedback on the pace and difficulty of the lecture.
- As a lecturer I want to be able to start and stop a feedback session.
- As a lecturer I want to be able to log in and see my courses.
- As a lecturer I want to see a graphical representation of the data collected during the lecture.
- As a student I want to ask questions to the lecturer.

## Value Proposition

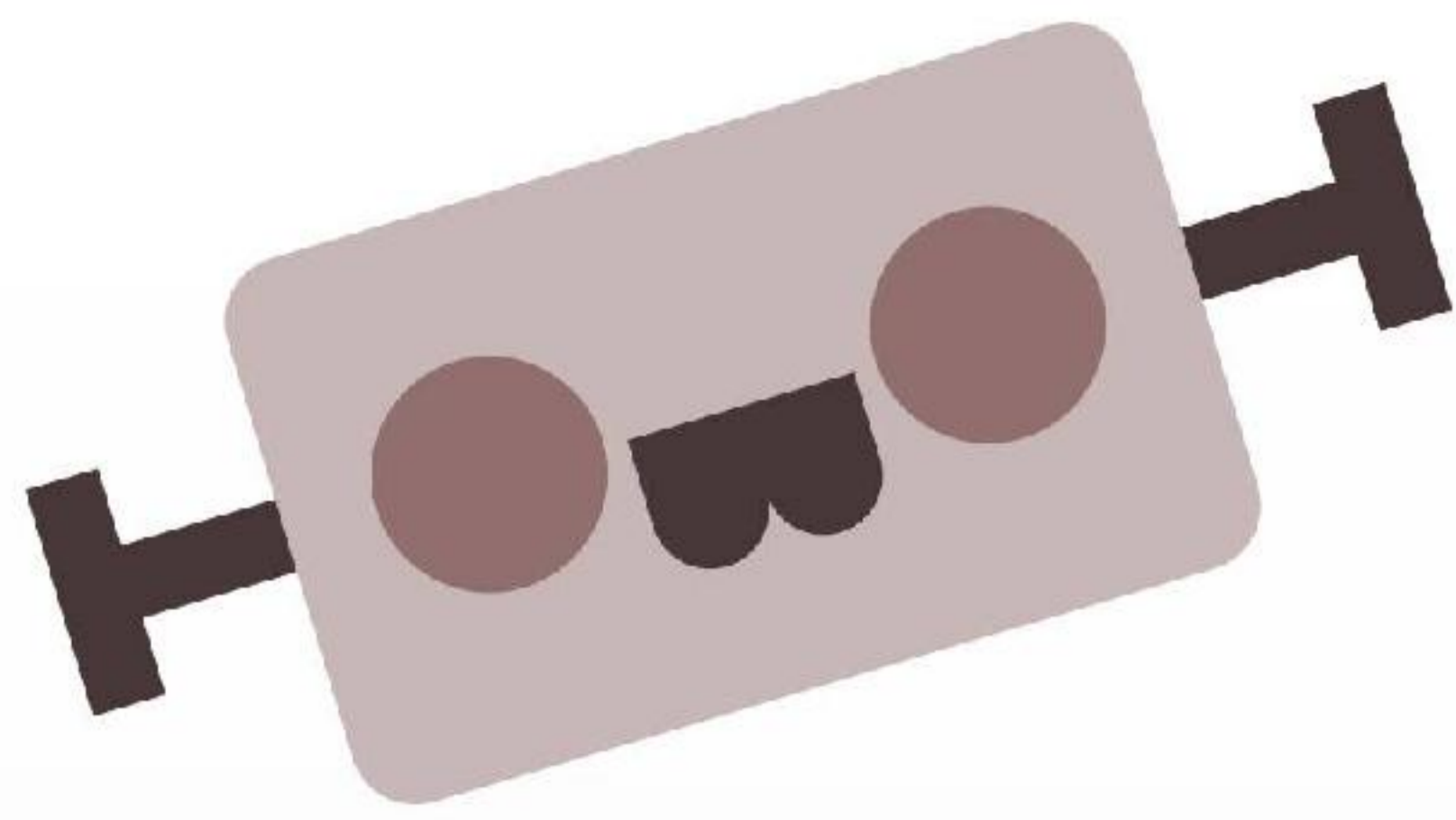
What good is a lecture if nobody can keep up with the pace of the lecturer? By providing even the shyest of students with a voice, IRIS can give the lecturer the feedback he or she needs to adjust. Relaying this information to the lecturer allows for lectures best suited for everyone.

## How does it work?

IRIS acts as a bridge between the students and the lecturer. Students can utilize this bridge to voice their concerns with the pace of the lecture, and ask any questions they desire. IRIS will gather and analyze the information and relay the results to the lecturer. This allows the lecturer to slow down, speed up, or take questions when it is optimal to do so.

## (Potential) Technologies

IRIS will be built on HTML, CSS, and Javascript. Additionally, we will utilize Flask and SQLite (Python3), Websockets for communication, and if time allows it, we'll use NLTK and/or API.AI.



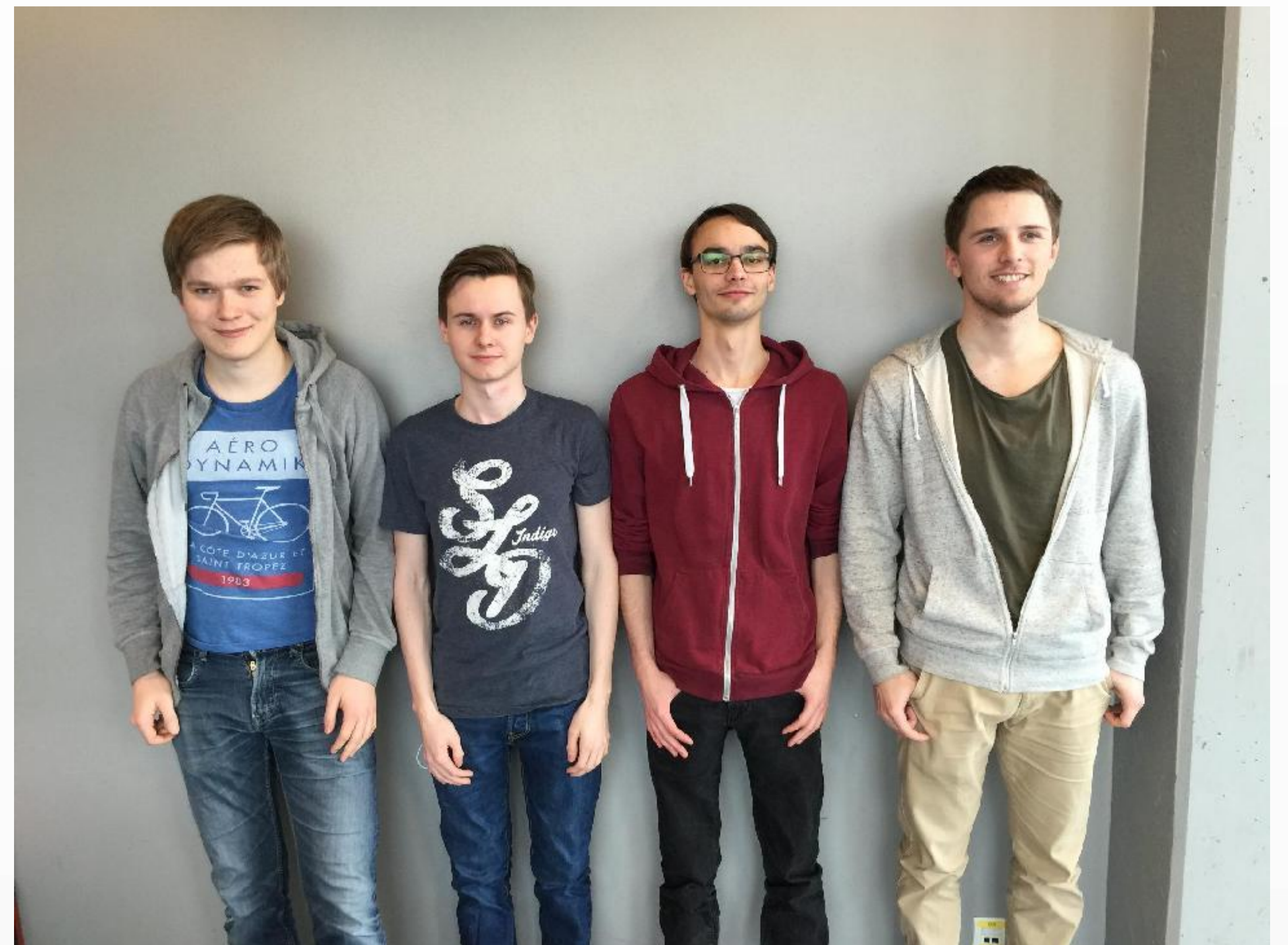
# TOBOT

Teaching Observation Bot

## The team

**Halvard Hummel, BIT** - Backend Developer  
**Niklas Molnes Hole, BIT** - Frontend Developer  
**Philip Puente, BIT** - Team Leader  
**Espen Haugsdal, MTDT** - Database Manager

(left to right)



## The challenge

We interviewed professors and learned that a common problem they encounter is that it is difficult to gauge the students level of knowledge at the start and during the course. This often affects the learning experience in a negative way.

## Our solution

We want to provide the professors with tool that will help them gauge their students need to create excellent lectures, provide feedback and assistance and assess the knowledge level of the students. We will map out the knowledge of multiple student users and use this to visualize the average knowledge level in a topic.

## Persona



Magnus Lie Hetland has been an associate professor at IDI, NTNU since 2004. He mainly teaches TDT4120 - Algorithms and Datastructures, but has also taught TDT4125 - Algorithm Construction.

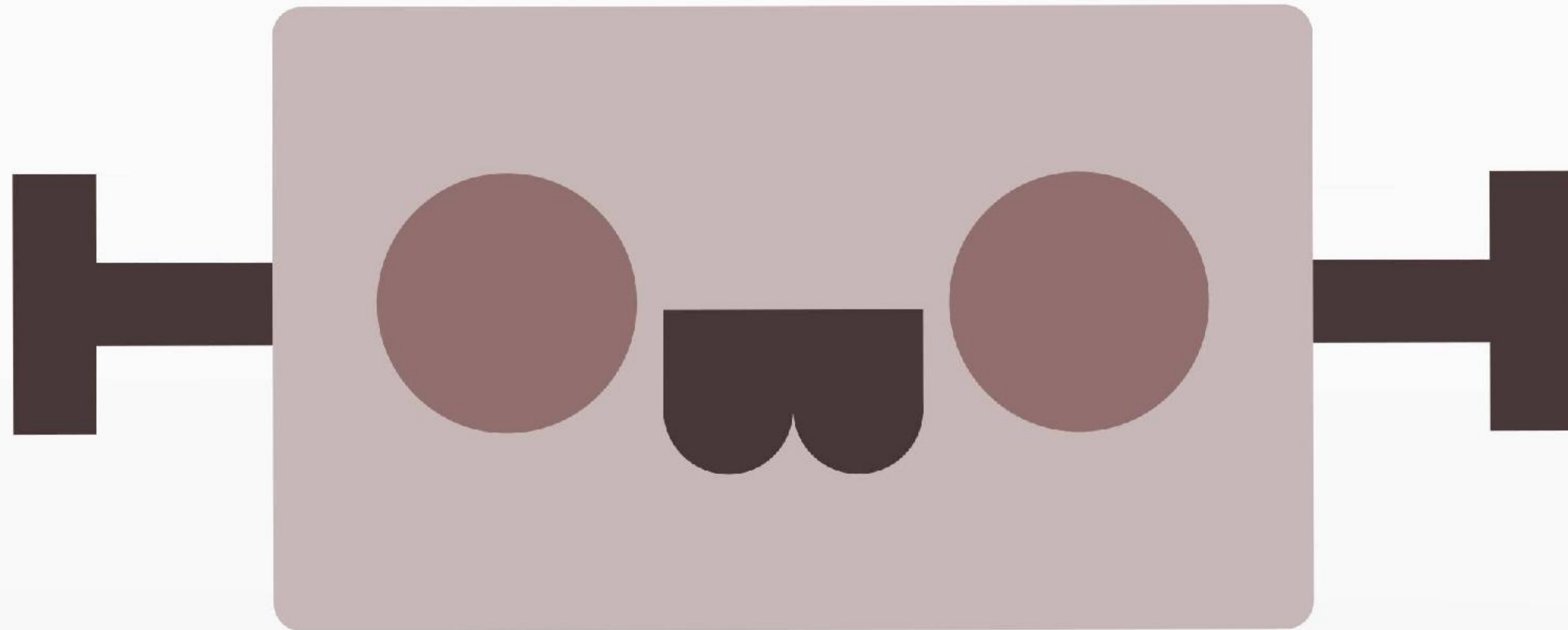
He like many other professors have found difficulties with gauging the students level of knowledge when preparing the curriculum, lectures and exercises in a subject.

“It would be nice to have a system to give advice on what to study next, which exercises to do next, etc.”

- Hetland (paraphrased, translated)

# T O B O T

## Teaching Observation Bot



### How does it work?

Our system organizes and relates different subjects and topics and links literature, exercises and lectures to those topics.

We can then use that linked information in many ways and add modules to the system like: Visual representation of your knowledge, recommendations on what to study, daily tasks/exercises related to your topics and more!

### Value

Our solution will help both Teachers and student understand and visualize what topics are difficult and needs to be paid more attention to so they can improve the overall understanding of the subject.

### Technologies

Java, SQL, Web(HTML, JS, CSS),  
TextRank, OCR, Recommendation  
System

### Our 5 most important features:

- Are you a student? Let our bot keep track of your knowledge!
- Our bot gives you recommendations of what to read wherever you go!
- Scan lectures! Our bot will remind you about them later when you need them.
- Learn while having fun! Be rewarded for doing exercises with our exercise system.
- A professor? Our bot can give you the current state of your students knowledge.



## THE TEAM MEMBERS

**Fredrik Sørmo** - Head of Communications.  
**Michael McMillan** - Team Leader and Head of Testing.  
**Felix Prinz** - Head of Database.  
**Odd Kristian Kvarmestøl** - main writer.

## SIMEN BLIKENG



Simen is a regular 21 years old student at NTNU. Simen wants to be able to get more one on one follow up in his courses. But he can't get this because there are so many students in his classes and only one professor. Currently Simen solves this by sending private emails to his professor as well as trying to get some one on one time at the end of lectures. Simen likes our solution because it gives him the opportunity to access course material whenever he wants, and it gives him the follow up he needs. However, Simen doesn't get direct one on one time with his professor, but the solution supports his needs. Simen does not necessarily have a lot of technical experience, but our interface makes it easy for him to navigate the course material.

Quote - "Jeg må vite hva jeg skal jobbe med."



## The future of education

Imagine being able to learn at your own pace without having to get up at 7. am in the morning. We believe that you learn best when you want to learn. However, liberty can be challenging. To ensure you don't fall of the wagon, R2TeachYou continuously provides you insight into how well you have learnt the material with quizzes and metrics.

## DEVELOPING TECHNOLOGIES

Using technologies like HTML, CSS and Flask. We are able to both use python in developing main functionalities, as well as using HTML and CSS to generate excellent designs for our web application

## TOP 5 BACKLOG ITEMS

As a student, I want to access material so I can learn

As a student, I want to be asked question related to the course material so that I can be certain I have learnt the material.

As a student, I want to get suggestions for relevant material, so that I only need to spend time on things I still need to learn.

As a student, I want to register so that I can login.

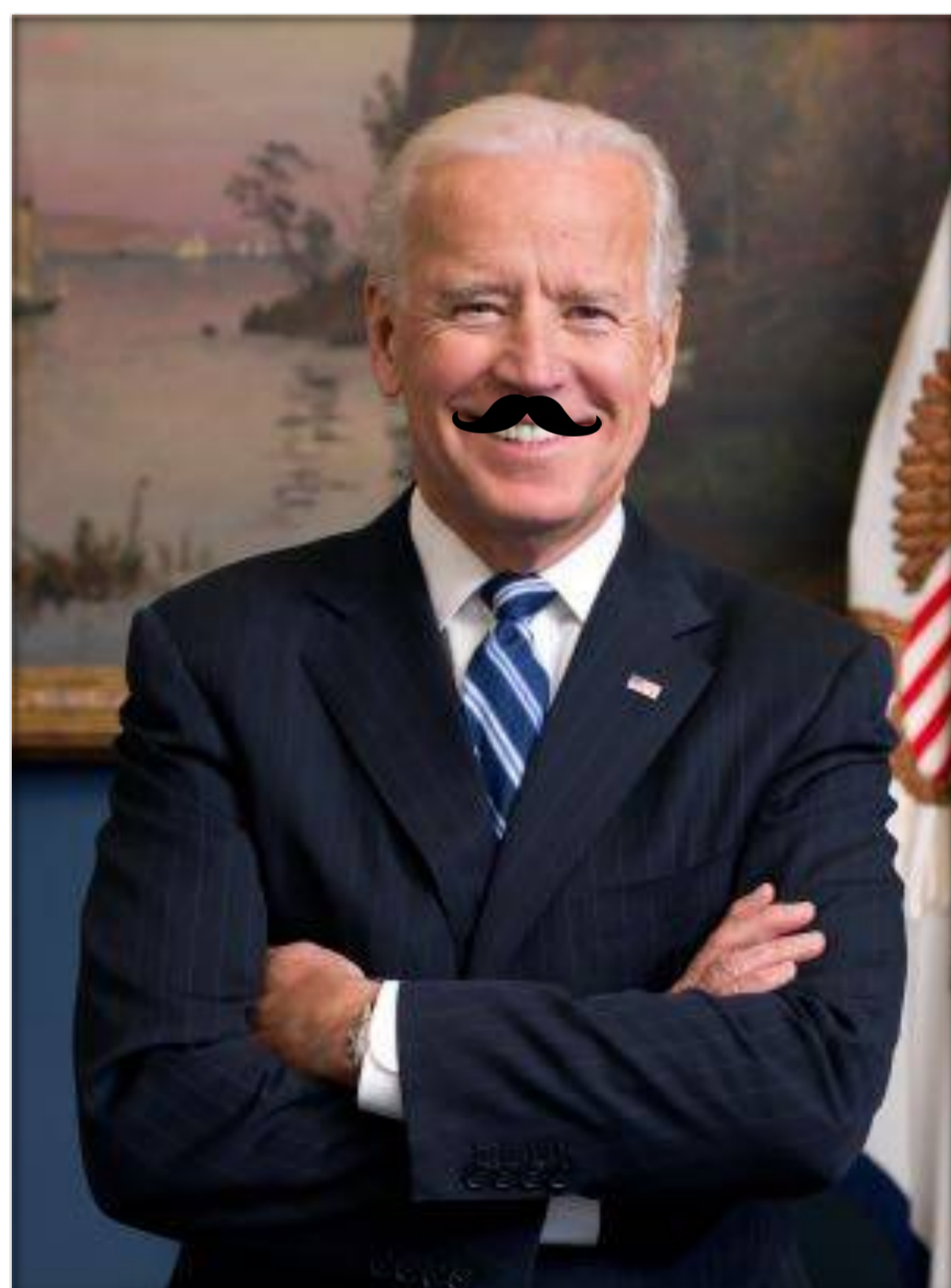
As a student, I want to log in so I can access personalized data.

## HOW IT WORKS

R2TeachYou uses questions about the material to figure out what you know and what you still need to learn. Then it selects the most relevant material based on your answers. This way, you do not need to follow a preset order of material, which can both bore you with trivial parts and confuse you with too advanced topics. Instead, the material presented to you by R2TeachYou is tailored to your current level of comprehension.

# Interlecture

Making lectures interactive. Present anywhere. Receive questions from students directly in the presentation tool. Ask students multiple-choice questions on the fly, and watch the answer graphs grow as the answers are given. Simple, easy, powerful.



Bo Jiden is a university lecturer who finds it hard to gauge the learning of large classes. He wants a system to gauge students' learning during the lecture, and lower the bar for asking questions.

- o Lecturers can present from their browser
- o Students can ask questions in the same system
- o Give multiple choice questions to the students mid-lecture to measure learning
- o Give, turn in and grade deliverables in-browser, without ever having to download a pdf
- o Put students in groups to facilitate teamwork

Built with , coffee, and these technologies:













Image courtesy of MCGunner on Imgur. Fetched from <http://imgur.com/V2PYK8S> on Feb 1, 2016



# Experience It

# Meet the Team



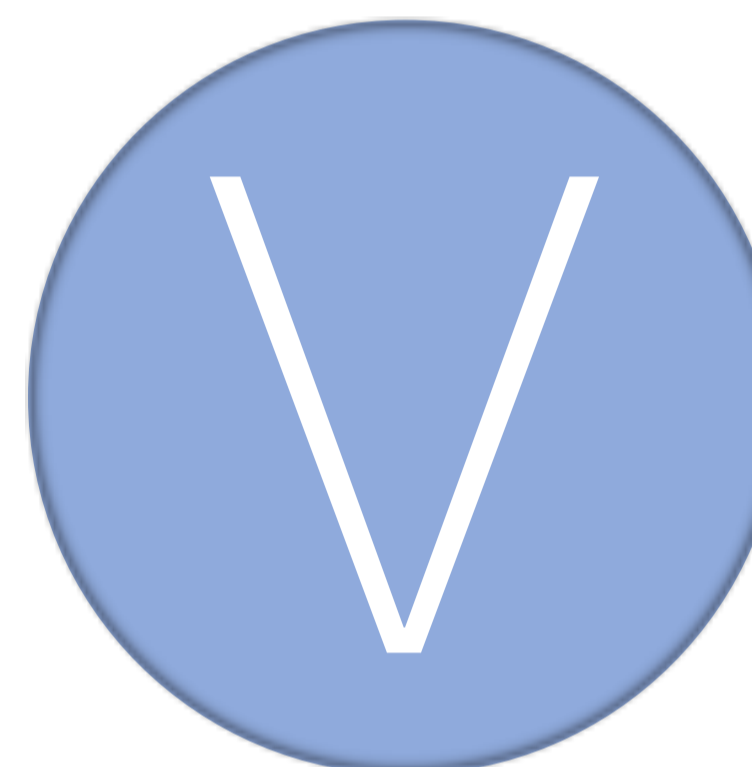
Stand by  
for  
screenshots!



Erlend Morthen  
**Lead Frontend Developer**  
Background from Automation and Electronics



Kristian Trandem  
**Cat Herder & React Expert**  
Background from Web Application Development and Management



Valentin Plotkin  
**Lead Backend Developer**  
Learned to Program before learning to talk



Andreas Friestad  
**Lead Designer & Django Expert**  
Background from Web Design and Frontend Development

## Our Vision

Simply put, we want to make the one tool that will make your lectures as good as they can be.

We want the lecturer to have a simple, yet powerful presentation tool. We want to let the students follow along live on their own devices. We want to remove shyness from the equation of question-asking. And last but not least, we want the lecturer to easily gauge what the students struggle with, so you will always know what and when to recap. That is the vision of Interlecture.

# ItsCrawling



Håkon Verås - Project manager  
M.Sc Mathematics, 4th year

Orhan Hirsch - Developer  
M.Sc in Computer Science, 2nd year

Mikhail Vasilyev - Developer  
M.Sc in Robotics and Cybernetics, 4th year

Joakim Fremstad - Developer  
B.Sc in Mathematics, 3rd year

Current learning management systems lack good and intuitive file-browsing and have no search functionality.

I want to make it easier for students to use and find material I provide, by making it searchable.

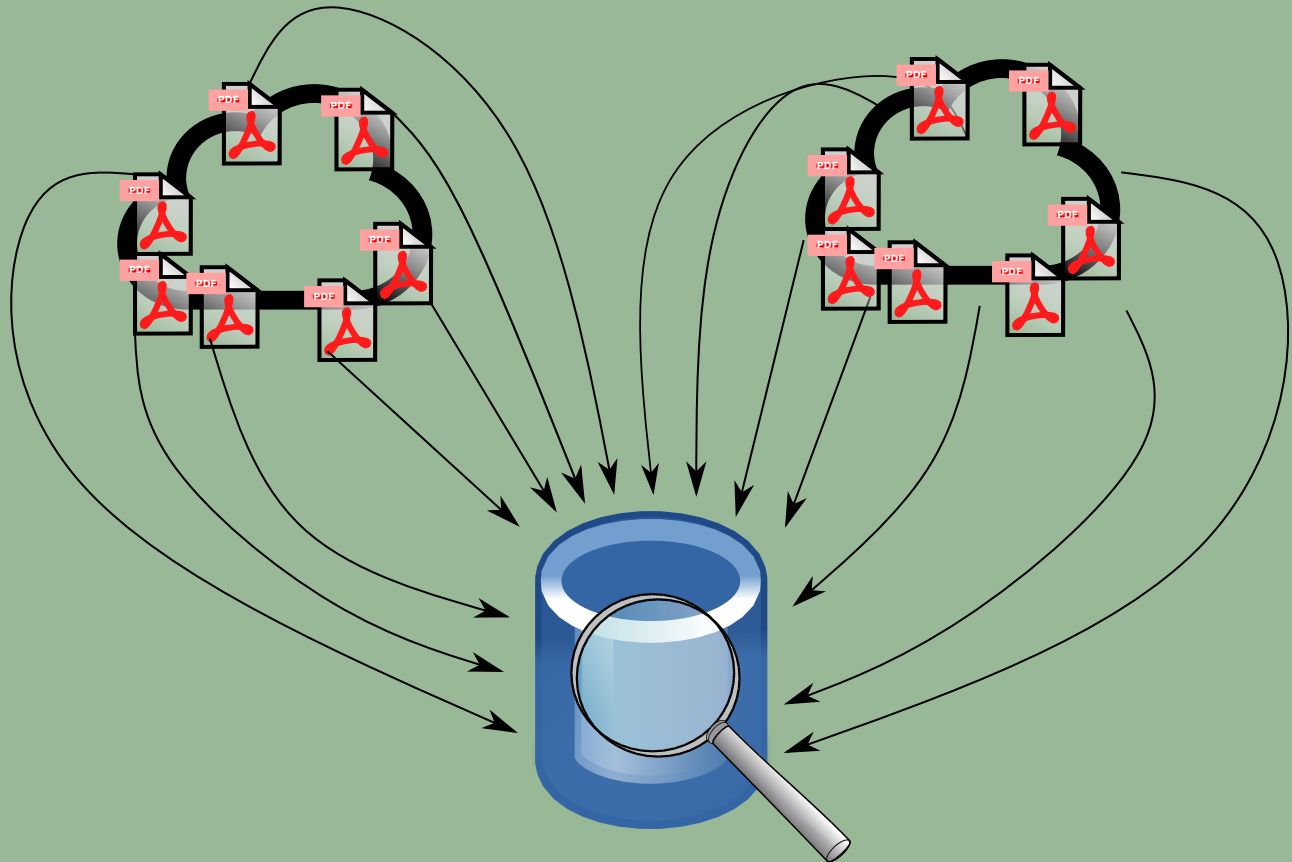
”  
make students actually use the learning tools and material I provide them  
”

We collect your documents and make them searchable.



Gunnar Vatlief (55) is a professor in literature at the University of America and prefers a clean work. Mr. Vatlief frequently shares lecture material frequently on learning platforms. He is mediocre at using computers and digital solutions and prefers simple and well-made solutions for making his day easier.

# ItsCrawling



- Collects all education material in one place
- Easy access through browser
- Search through an entire course in one go
- Lecturers can upload documents
- Get anonymous user-statistics

- Save frustration!
- Save time!

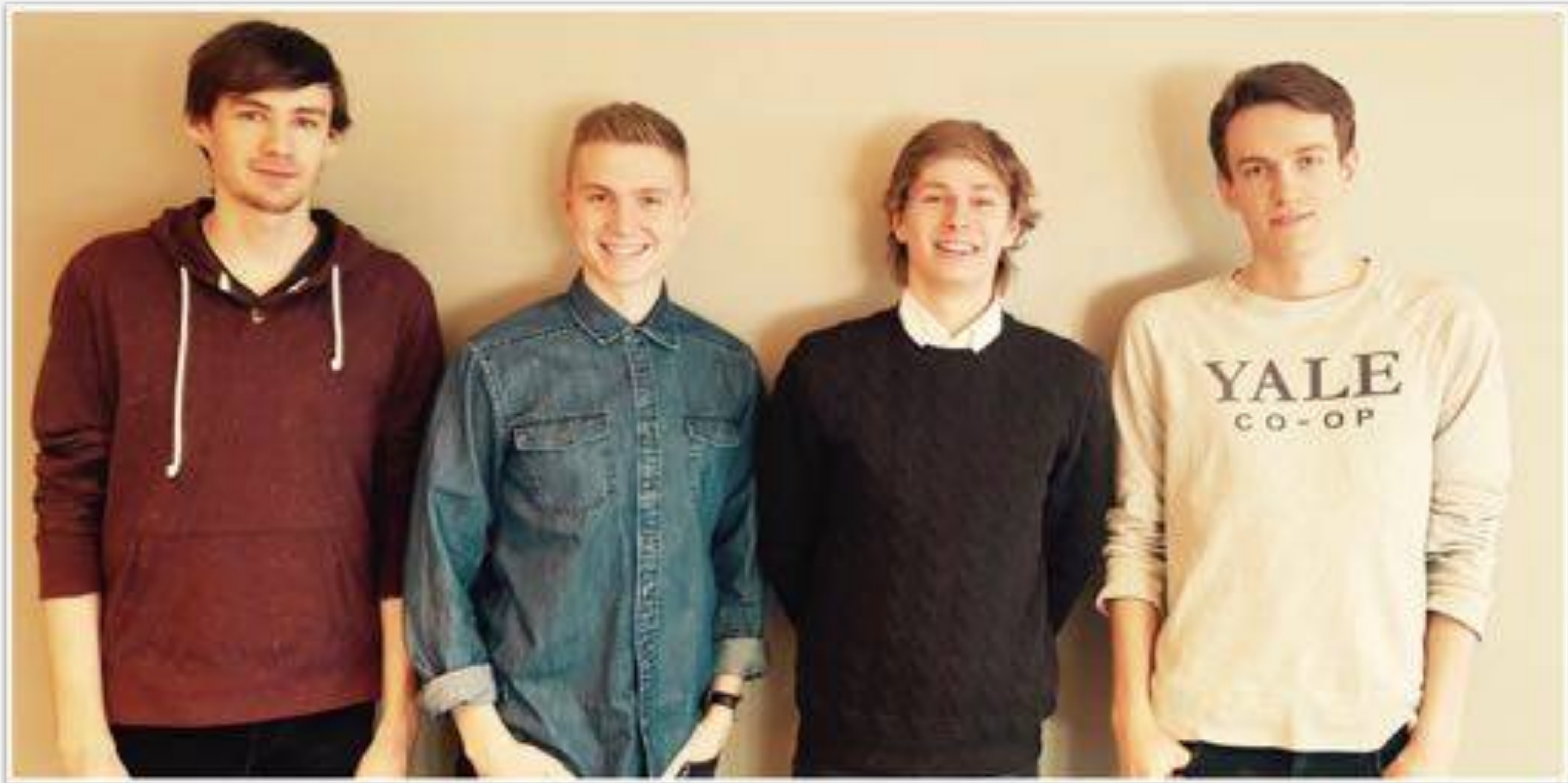
ItsCrawling helps you extract the files you need quickly by indexing the files

Based on: Django, React, PostgreSQL, and Elasticsearch



# PIG

Partition Into Groups



Erlend Hofstad Langseth – Lead Tester  
Sebastian Olafsson – Team Leader

Marius Aarsnes – Developer  
Daniel Romanich – Developer



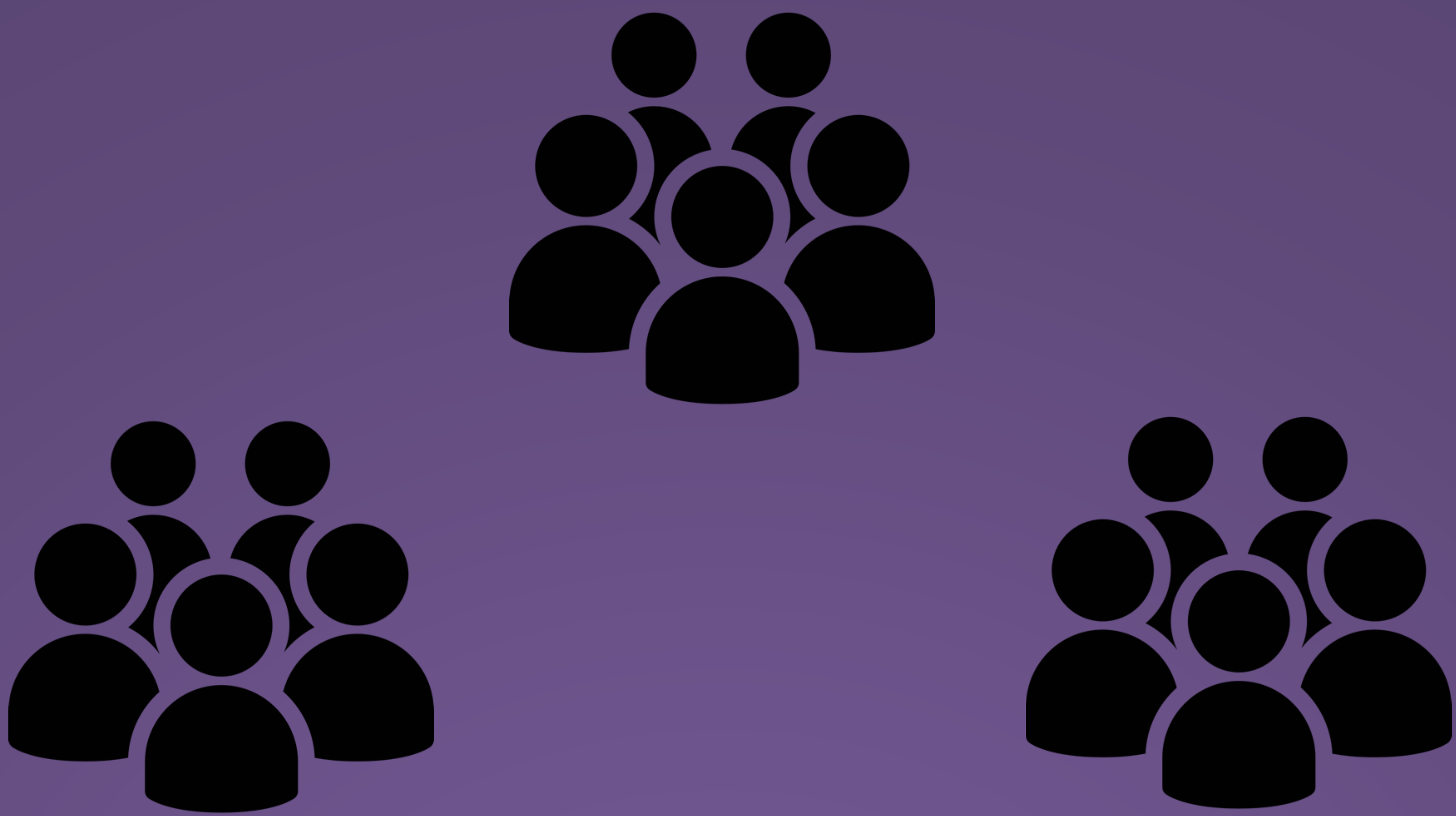
Michael is a 40 year old teacher at NTNU who regularly spends his time dividing students into groups.

There are many things to take in account when creating groups, like skill level or individual group preferences.

He finds the whole task very cumbersome and uses time he otherwise could be spending on important tasks. He thinks that PIG is a phenomenal tool that will help him achieve that goal and revolutionize the group making process.

“At the beginning of each semester I spend up to five days creating groups. This is due to all the factors I have to take into consideration.”  
- Michael

**How we are solving the problem:**  
We are making a bot that intelligently divides students into groups, helping teachers all over the world save time and effort.



# Group division, built for professors.

We make it easy and stress free to divide your students into groups based on your own parameters.

## How does it work?

PIG utilizes an advanced **algorithm** to intelligently divide students into groups based on defined criteria.



As a **professor**, I want to:

- Create an **instance** of group division
- Define my own **parameters**
- Assign a **priority** to a parameter

As a **student**, I want to:

- **Sign up** for an instance of group division
- **Influence** how I am placed in a group



From left: Victoria Hajdu - System Analyst, Karoline Bougsta - Graphic Designer, Charlotte Heggem - Main Software Developer, Tora Selim Gunstad - Team Leader

# UP2D8

## Project Summary

## Persona



### The product

The product will help students to keep up to date with university tasks, such as assignments, exercises, lectures and exams.



### Be reminded

The app will send the student notifications of what is happening in the upcoming week, to make it easier for the you to remember all your responsibilities as a student.



### Reaserch shows..

...that many students think it is hard to combine studies with a social life. The app will give you a complete overview over your tasks, to make it easier to plan your weekdays.

Guillermo Estrin has been working as a scientist and teacher at NTNU, and was appointed professor at IOI in 2004. He wants more students to be prepared to lectures to make them more informative and interesting.

The students have a hard time dealing with the upheavals from lower education to universities, with more responsibility and less monitoring. The app will help the students to achieve the required outcomes in the end of the semester.



Keep track of exercises, lectures, exams and projects.



Register your subjects, and the app will collect all the information in your calendar



Plan your week with this complete overview, and get more time for social activities



Get notifications so that you never again will forget an assignment or a lecture

# UP2D8



As a user I want to have a complete overview in my calendar over my subjects to make it easier to remember deadlines



As a user I want to know what the teachers are going to lecture about, so that I can feel inspired



As a user I want to be able to know when and where all my lectures are, and be updated with the lecture plan



As a user I want to know when and where I can get help from student mentors, and when they are available

# Study Buddy

For a better learning experience

## Team 73


Ingrid Våge Hovland - Product Development Leader  
Mari Fredriksen - Developer  
Duc Ha Vo - Lead Architect  
Ole Jakob Schjøth - Scrum Master



"If a program could help remind me when to repeat the curriculum and also tell me when I have an important lecture, it would help me a lot."

Inga is a 21 year old student at Marine Technology, NTNU and has been for the past two and a half years. She is a busy student who takes volunteer positions, plays lacrosse and works out regularly. She uses her computer every day when studying and often finds it hard to plan her days at school. Her goal is to get more effective and ultimately achieve her goal of getting better grades.



The title 'StudyBuddy' is written in a large, white, rounded, hand-drawn font. It is centered over a background image of a wooden desk with a laptop, a tablet, a smartphone, and a small potted plant.

Be reminded about when you should read or repeat a certain topic

StudyBuddy sends you notifications and helps you keep track of your progress

Adapt the reminder-frequency to how challenging the topic is, and be reminded about the things you find difficult more often!

Super-easy to use!

**Makes your reading sessions more effective!**

StudyBuddy uses the spaced repetition technique to notify you when you should repeat a subject

To develop StudyBuddy we are using Python and many of the helpful tools that comes along, like APScheduler and tkinter.

TDT4140 Software Engineering course, Spring 2017

Concept poster

# AI WONDER

- Don't be afraid to ask!



Group 74(from left to right):  
Simen Nilssen: Software dev.  
Simen Blikeng: Software dev.  
Lasse Eggen: Software dev.  
Henrik Sørensen: Leader

Fredrik doesn't want to raise his hand in lectures to ask questions.

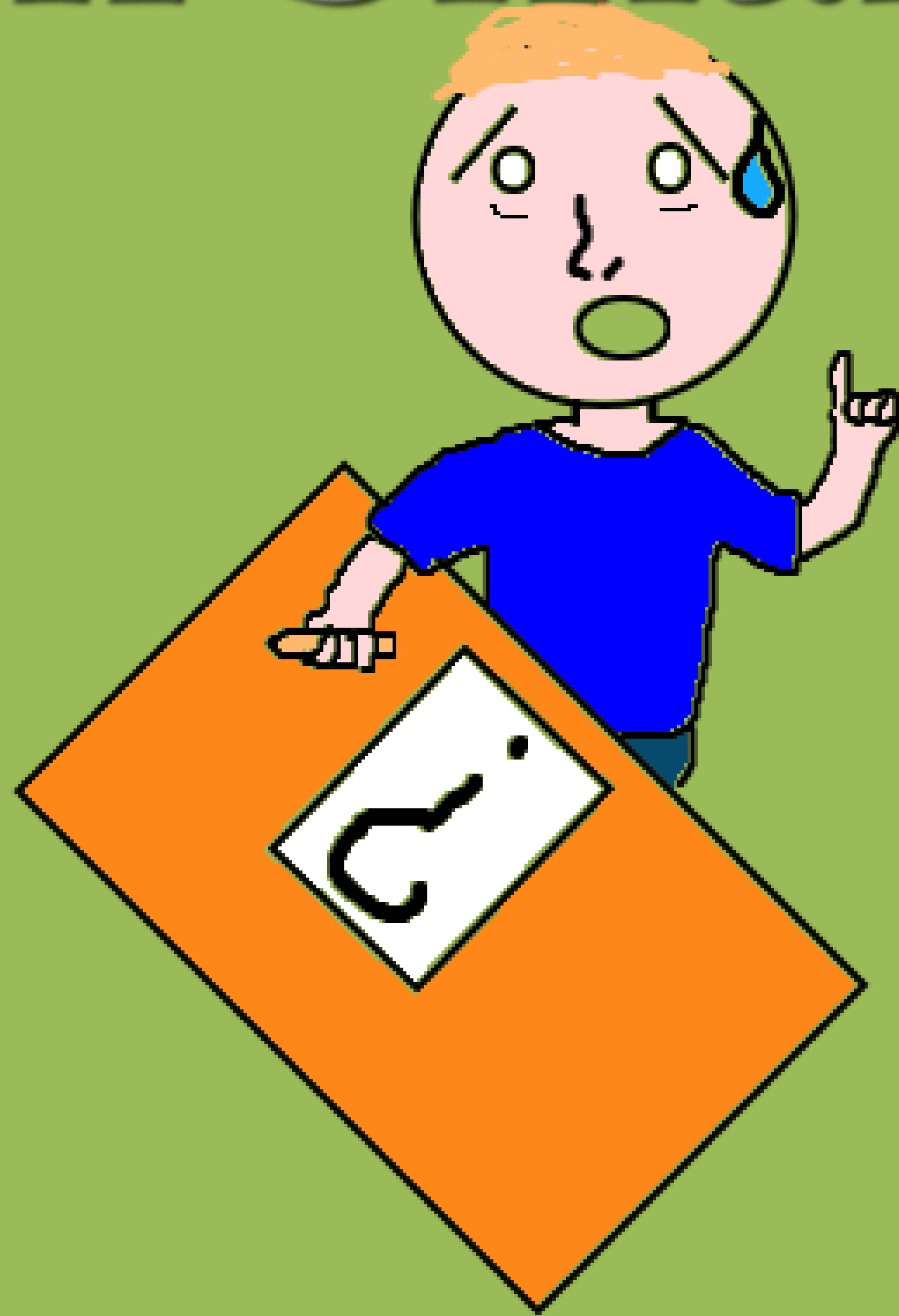
"I feel that other students have the same questions as me in lectures, but don't dare to ask."

AI Wonder provides the student a way to ask questions easy and anonymously.



Persona: Fredrik Sørmo  
Fredrik is 21 years old from Sarpsborg and studies computer science at NTNU Gløshaugen. He attends about seven lectures per week but rarely asks questions, even though he might not understand. He wants communication between the lecturer and the students to be more efficient.

# Ask Smart in class



1: As a lecturer, I want to be able to see questions from students in real time, and as a student I want to ask questions anonymously in real time

2: As a student I want to ask questions and be presented with possible answers based on previously answered questions

3: As a student I want to let the lecturer know I don't understand the current and/or previous theme.

4: As a student i want to give feedback on the speed of the lecture.

5: As a lecturer I want a auto-generated code for the students to join the current lecture

AI Wonder provides a better learning experience by lowering the bar for communication between students and lecturers

Ask questions anonymously

Will be realized using technologies like API.AI, Flask and MySql



Morten Bujordet	Developer
Dag Erik Gjørvad	Developer
Solveig Godhavn Lunde	Developer
Marie Kjellstrøm Thorkildsen	Team Leder



Kari is a 21 year old woman studying computer science at NTNU. She is very concerned with learning, and studies hard to understand each subject.



Knut is an associate professor at NTNU, where he lectures several courses involving algorithms. He is concerned with making his lectures fit the needs of his

## Pain points & goals

Not enough questions to help with her understanding of different subjects

Use less time on finding correct reading material, and more time reading

Difficulty getting information about which subjects the students are struggling with

Be able to adapt his lectures to fit the needs of the students

"...I think it would be very useful to get more information about the students performance in a given assignment"  
- Knut Kvitsund

We make tests that give the student a useful feedback, so they can study more effectively.  
- Morten Bujordet

- 1 As a student I need to be able to answer assignments
- 2 As a student I should be able to see my own results
- 3 As a TA I should be able to see the results of the students in my group
- 4 As a professor I should be able to see every students result
- 5 As a professor I should be able to add questions to the question bank

Make education great again

A Program that helps you study, both by giving you, as a student, extra tasks in difficult subject.

But at the same time a statistical overview to your professor.



# PIRKA

## The Student Helper



MARIUS KOHMANN  
*Technical manager*

EVEN KALLEVIK  
*Test manager*

MARI HOVEM LEONHARDSEN  
*Concept developer*

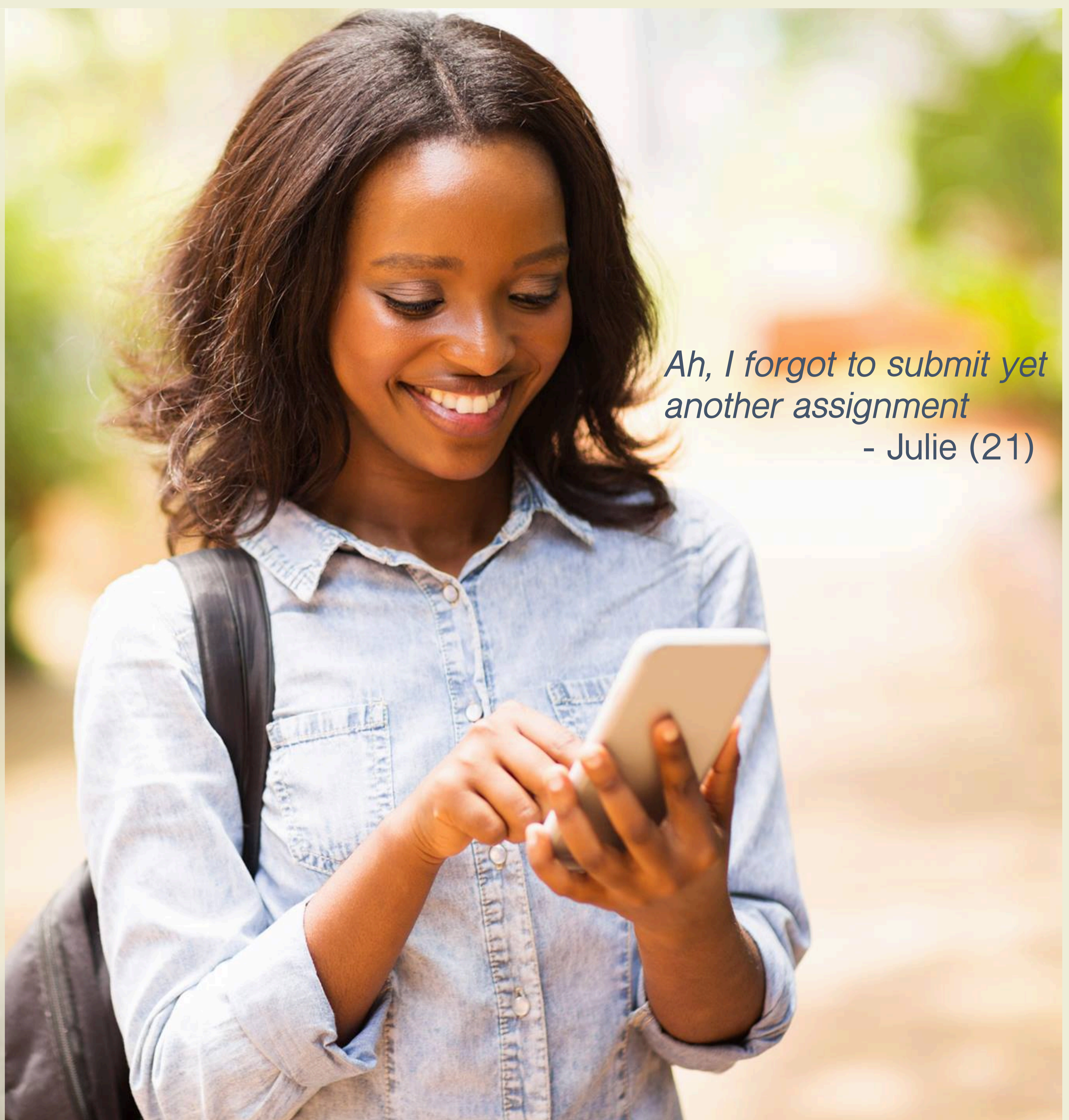
LIVE FORFANG BJØRNSTAD  
*Team manager*

### How Pirka helps Julie

Julie is a 21 year old student at NTNU. She is majoring in biology and lives in an apartment with three of her friends from school. She spends a lot of time on school work to achieve good results, but keeps forgetting her deadlines, and feels overwhelmed by all the different places she need to check for new course content.

Pirka[®] wants to help Julie succeed in school. He will send her reminders and answer her questions regarding deadlines and other educational information, in addition to delivering weekly aggregates of upcoming events, information of lectures and progress relative to the course syllabus.

By downloading Pirka[®], Julie will spend less time worrying about deadlines, and more time studying.



*Ah, I forgot to submit yet another assignment*  
- Julie (21)



## How does it work

To make use of Pirka's vast knowledge the user has to initiate a conversation with Pirka in their favorite messenger service.

The students can ask Pirka a specific question, and thus making a search query, or navigate in a decision tree. Within seconds they will get a useful reply.

The user will have the ability to configure Pirka to send the digests on a set interval, and send them assignment instructions when it becomes available online.

## Technologies

API.AI is the core of Pirka and supplies Pirka with natural language processing and integration with Facebook Messenger.

Pirka utilizes APIs for Blackboard and NTNU to create a database of due dates, event dates, course syllabus and other relevant information students might need.

Down the road dynamic quizzes, tailored to each student, might be implemented. This would require statistical analysis of user data.

## Value Proposition

Pirka will make every student use less time looking for relevant information, and use more time studying.

The professors would also benefit from usage of Pirka as the amount of administrative questions the professor receives will decrease, and getting quality feedback from the students will increase.

## Top Backlog Items

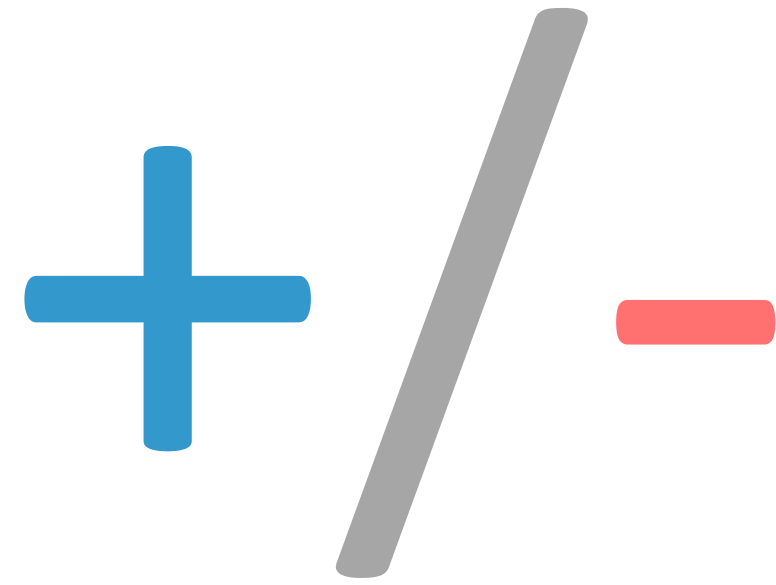
1. Finding due dates on request
2. Push notifications for due dates
3. Weekly digest
4. Overview of upcoming work
5. Finding time and place for events

# Curri

Learn. Rate. Review.



Go to class



Rate it



Review it

## Professor?

Curri will show you feedback from every lecture and make it easier for you to improve them.

## Student?

Curri will let you know what topics you have been struggling with. Preparing for exams will require less planning!

Available on all platforms!







**Henrik Munkeberg**

Project Manager

**Ludvig Killingberg**

Software Architect

**Betina Pedersen Bye**

Lead backend

**Erlend Fauchald**

Lead frontend



**NAME:**

Simen Blikeng

**AGE:**

23 years old

**STUDY:**

2nd year in Computer Science at NTNU

”Curri will make a great impact on the everyday of all students by creating a link between the student and lecturer. The product will ensure that we as students are able to give constant feedback to our lecturers to ensure the best possible teaching tailored for our needs. Really looking forward to this product! ”

# STUDYNATOR

*"Your number one study buddy"*

Made by:



Jakob Westermoen  
Scrum Master  
Team Leader



Jarle Trollebø  
Lead Architect  
Backend Master



Signe Carlsen  
Frontend Master



Margrethe Sofie Lie  
Test Master

Nina's dream is to land a good job. She is in dire need of something to help her structure and organize her days



**Nina Prill**  
(April 9th, 1996)

Nina studies geology at NTNU, Trondheim. She feels like the days are too unstructured for her to be effective, both in school and at home.

**"The Studynator changed my life for the better, look at all my spare time!"**

Studynator automatically generate your timetable, allowing you to focus on what's important

# STUDYNATOR

*"Your number one study buddy"*



## Top five backlog items

- #1 - As a user I should be able to login
- #2 - As a user I should be presented an auto generated calendar on successful login
- #3 - As a user I should see an overview of upcoming lectures and deliveries
- #4 - As a user I should be able to add my own activities to the calendar
- #5 - As a user I should be able to track the time I spend on my deliveries

## The best time scheduler around!

The Studynator finds your courses, and updates your timetable with lecture hours, delivery deadlines, exam dates and help you plan when to do your deliveries! You will also be able to add your own activities and chat in the forum, either for a delivery, or a course!



Jakob Westermoen, Jarle Trollebø, Signe Carlsen, Margrethe Sofie Lie

# OnkiBot

Optimization. Nuclear. Knowledge. Intelligence.



Håkon Thorstensen ↪ Front-End Developer  
Marius Kotlarz ↪ Server Administrator  
Erlend Åmdal ↪ Back-End Developer  
Torkil Vatne ↪ Project Manager



We envision a system where students do not drown in a sea of irrelevant and hard to navigate resources, but where the resources you need come to you. A program where you get suggested tasks and examples tailor made for your skills and experience in each of the course topics. A system that evolves over time, and where every user action and their resource suggestion will only make it better. Helping the students finding the right information both from instructor published texts and tasks, and from other sources online. This is what we wish to achieve. This is OnkiBot.

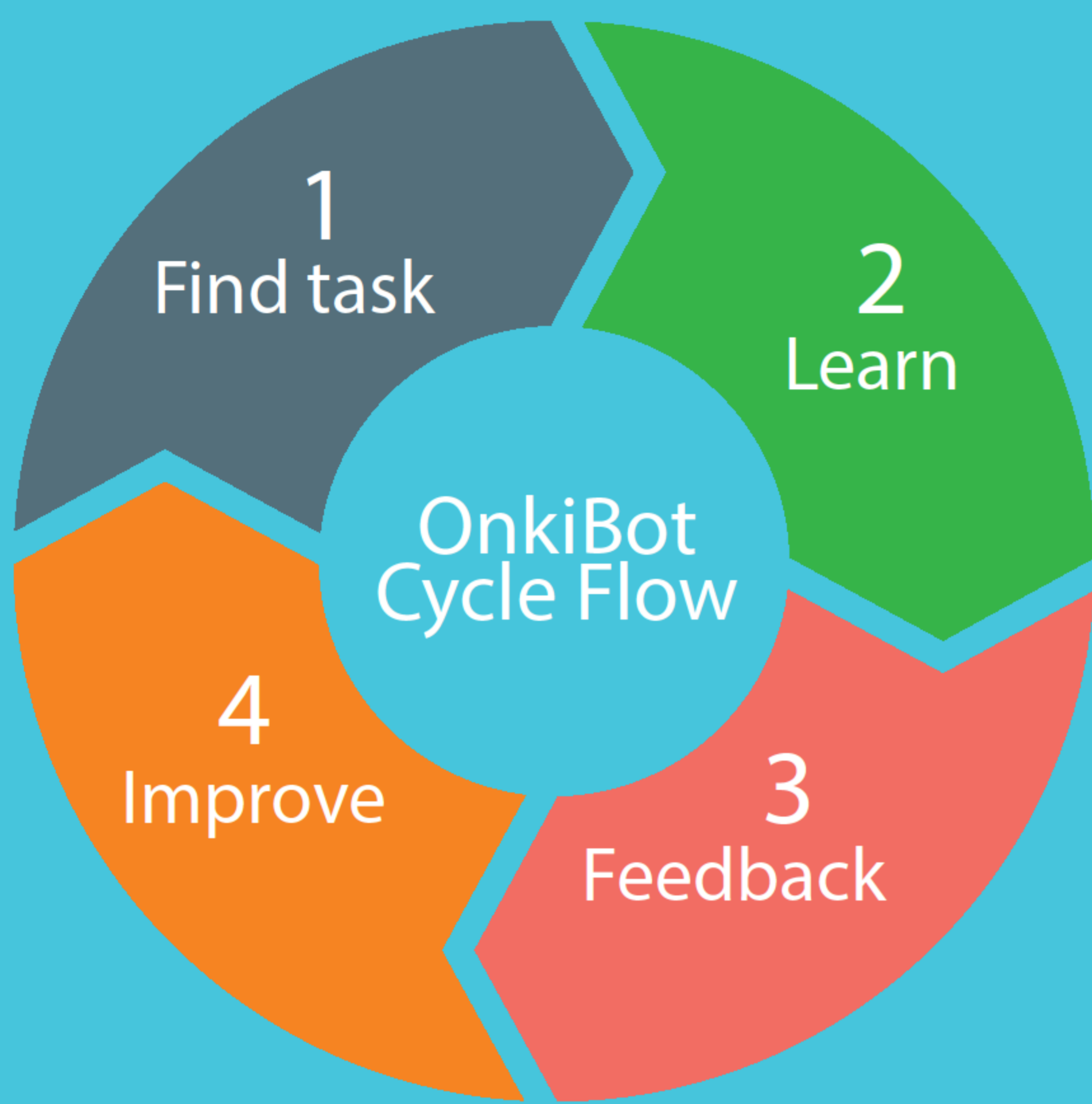


This is Hallvard Trætteberg. Hallvard has lectured in Object Oriented programming for over 10 years. He experiences many students who don't know where to start when looking for contextual resources. Students often end up being too dependent on the lecturer rather than getting used to using external resources.

«Making students use the learning tools and materials provided. Code examples are not tried out, wiki pages are not read, Eclipse commands are not used, and more.»

# OnkiBot

“Give a man a fish and you feed him for a day.  
Teach a man to fish and you feed him for a lifetime.”  
You can do the same with coding.



**1** Find a programming task suited for your skill level, with a curated set of relevant resources.

Use the provided resources to learn. Learn useful keywords and phrases to use with search engines. **2**

**3** Provide feedback and suggestions on the task and its resources.

Your feedback and suggestions helps with the improvement of tasks and resources. **4**

## Top user stories

1. As a course instructor I should be able to create course categories so that related resources can be put into a common context.
2. As an instructor I need to be able to create programming tasks inside a category so that students can complete them.
3. As an instructor I should be able to add initial resources to a task so that students can get started.
4. As a student I should be able to provide feedback on resources so that I can help improve the course.
5. As a instructor I should be able to view the feedback on tasks and resources so that I can improve my tasks and teaching techniques.

## Technologies

### Front-End

React  
Redux  
Twitter Bootstrap

### Back-End

Node Express  
Spring Boots  
MySQL

~ Wonder why it's called OnkiBot? Try using external resources to find out! ~

# DigiForm.

Thinking about doing a **semester abroad**? We simplify the internal application process at NTNU, so that you can spend your time on what really matters to you.



**SJUR AUGUST WAAGBØ**  
Lead tester



**Tobias Pettrem**  
Developer



**Aksel Reiten**  
Scrum master



**Fredrik Hausken**  
Product owner

## Meet Martin...



Martin Sommerseth (23)

«I am planning to take my exchange year in California. Right now, I am talking to the NTNU staff daily to get my classes approved. It is so hard to know where to start, and the process itself is a mess too.»

- 3rd year student at Industrial Economics and Technology Management, NTNU
- Heading over to California next semester, where he will be doing an exchange year at USCD.

## ...who wants to go exchange

However, before he can do this, he has to cross a barrier of **cumbersome and time-consuming bureaucracy**:

Key painpoints of the process



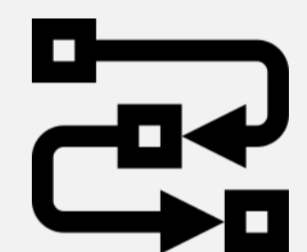
### Slow

Lack of streamlined communication with NTNU staff makes process slow



### No database

No formal database for preapproved course plans demand redundant work every year



### Not transparent

Lack of transparency makes it hard to know how far the process has come

## DigiForm can help Martin and thousands of students...

### DigiForm is a Web-platform

A web-platform designed to solve the painpoints of both students and faculty administrators through **three main goals**:



- 1 Automatization to speedup the process**  
We consolidate all information-streams at one place. No more emails.
- 2 Collecting data valuable to the users**  
All preapproved course plans are collected and analysed to provide users with valueable information.
- 3 Easy to follow the process**  
Make process transparent by showing progress along the entire journey to travel

DigiForm  
key impact  
area

## ...by reinventing the customer journey of course approval process



### Find destination

- Based on continent, country or city



### Find University

- Based on personal and academic preferences



### Find classes

- Based on mandatory and optional curriculum



### Get approval of classes

- From student advisors and faculty staff

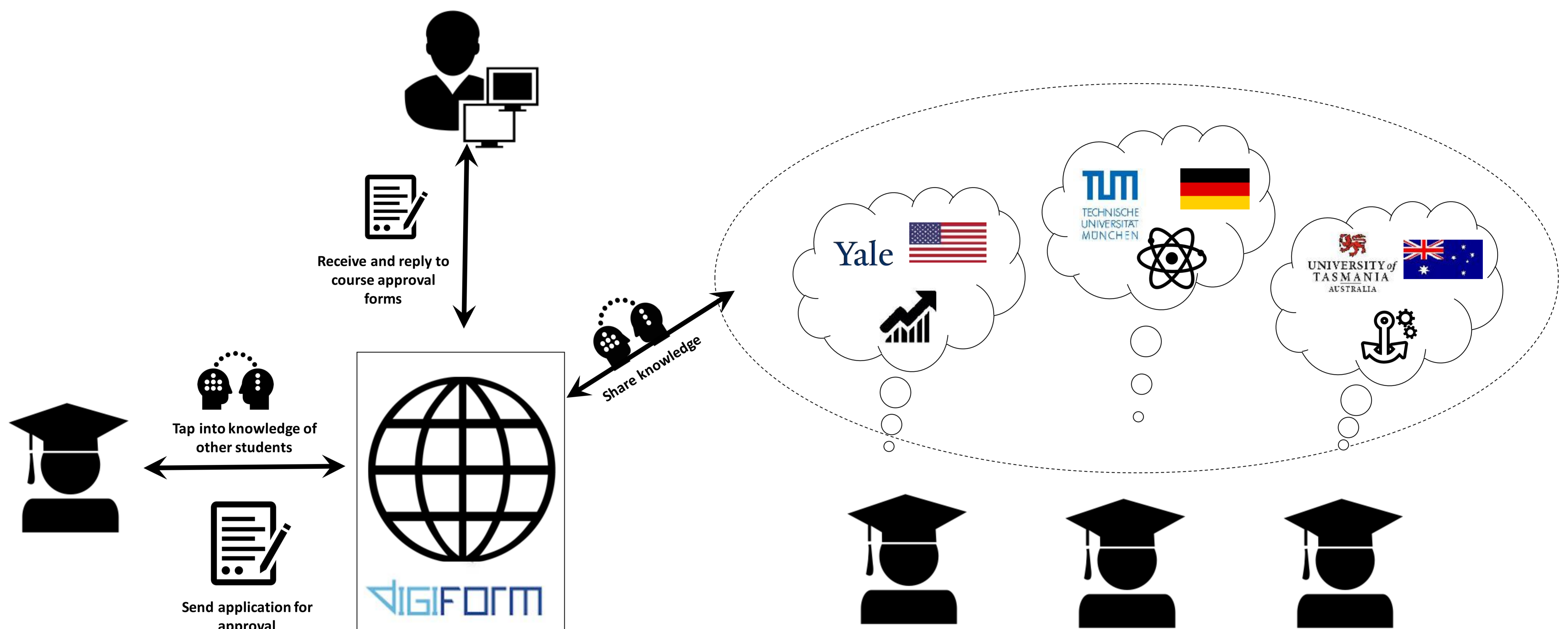


### Travel

- Then you should be all set – go!

# DigiForm.

## The system



## All you need in one place.

*Enjoy a seamless, fast and transparent application process for exchange course approval. Previously approved courses, contact with administration and reviews on subjects and universities from other students – **all at the tip of your fingers***

### Key features

- ✓ Compatible with FEIDE and Ephorte
- ✓ Apply for pre-approval of courses
- ✓ Seamless communication between staff and students
- ✓ Find previously approved course plans
- ✓ Find university and subject reviews from other students

## Technologies



# BRAVO

KEEP IT STRUCTURED

“Bravo is your organizer and gives you an overview over your daily tasks. The application finds your course information and exams from NTNU’s systems. It combines this data with user input to organize lectures, assignments and exams in a smart timeline.

## PERSONA



Marte Stamland is a second year student at NTNU. Being involved in many student activities, she finds it difficult to deliver her tasks in time. She would like to get a better overview of her workload. Bravo will help Marte reach her goals.

“I need to structure my day!

## BACKLOG ITEMS

- 1 Log in with Feide and Bravo gets information automatically.
- 2 Get an overview over the day, week, month and semester.
- 3 Get an overview over assignments, deadlines and exams.
- 4 Get time estimate for your tasks
- 5 Get recommendations on what to do and when to do it.

## TECHNOLOGIES

Bravo uses datasources from NTNU and bot technologies to analyze the students schedule, and recommend what to do when.

We are using the latest of SQL-technologies, machine learning from API.ai, and high class developer tools.

- |                 |                |
|-----------------|----------------|
| 1 Ruby on Rails | 5 DigitalOcean |
| 2 RubyMine      | 6 PostgreSQL   |
| 3 GitKraken     | 7 NTNU API     |
| 4 BitBucket     | 8 API.ai       |

## TEAM



- |                         |                             |
|-------------------------|-----------------------------|
| <b>Emil Verlo</b>       | System Architecture Manager |
| <b>Daniel Henriksen</b> | Team Leader                 |
| <b>Nora Line</b>        | Documentation Manager       |
| <b>Ragnhild Frøhaug</b> | Test Writer                 |

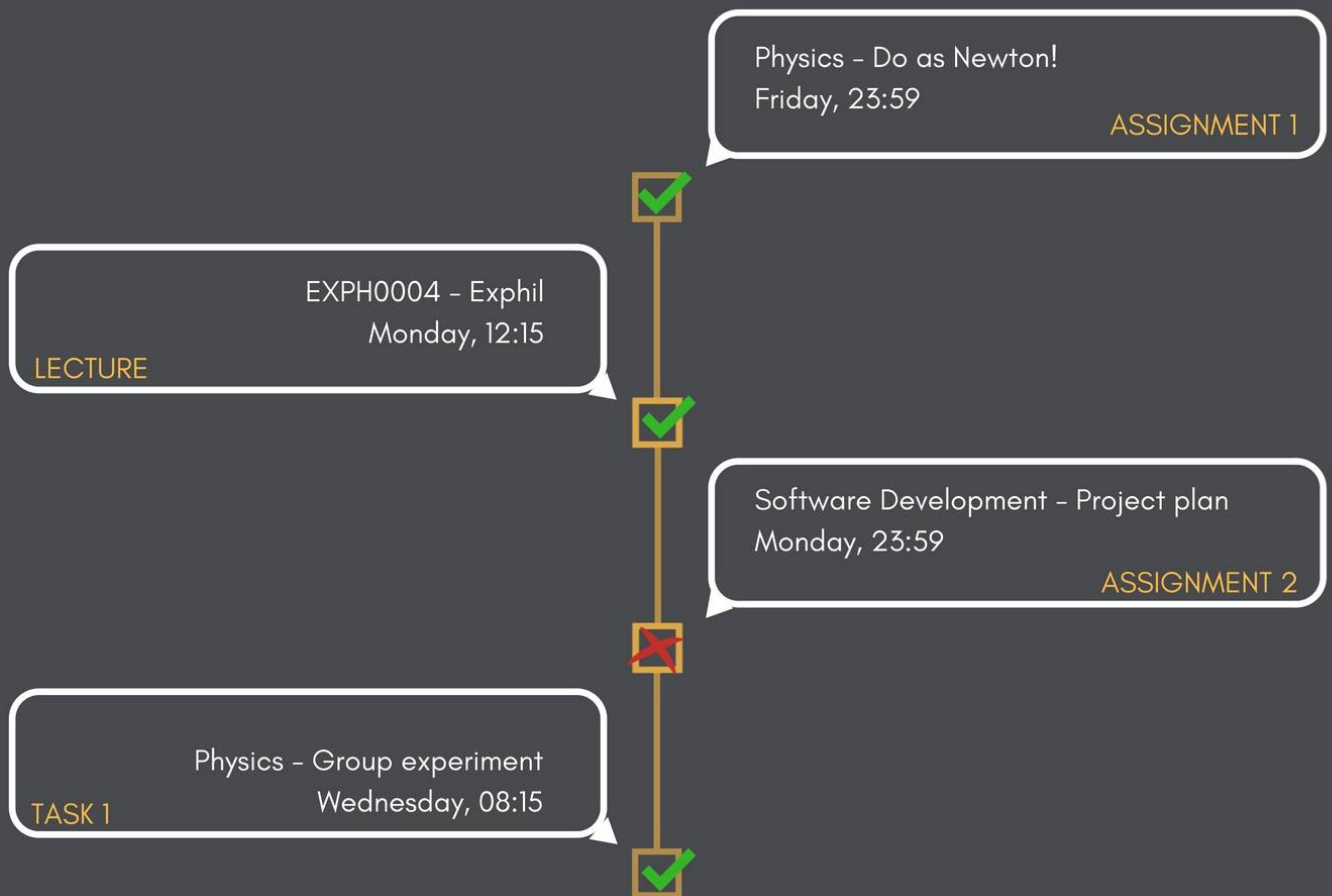


# BRAVO

KEEP IT STRUCTURED

## VALUE PROPOSITION

You prioritize your courses, and Bravo tells you what to do when, and keep you structured.



“Bravo, please free my day. Assignment 2 can wait!”

BRAVONTNU.NO



From left: Magnus Knærdal, Joakim Johansen, Anders Kampenes and Marius Løken.

Tired of waiting on your stud.ass?

## Problem

There is no queue system between students and student assistant. This comes to show particularly in the computer lab, where it almost takes longer time to physically stand in line to get your assignment approved, then to do the actual assignment.

## Solution

QueueMe easily lets you add yourself to a on-job stud.ass. It notifies you when its your turn, and you can always see how many is in front of you. Spend less time in line, and more time doing your assignments!

“The stud.ass queue system on NTNU is too time-consuming!”

Trond Aalberg is a Associate Professor in the Department of Computer and Information Science on NTNU. He has seen the problem first-hand and has always hoped someone would take on the task to create an efficient queuing system.





## CREATE QUEUES

Create queues as stud.ass and make yourself available for students



## STUDENT/STUDASS

Interact as a student, stud.ass or both.

You're queued!



## ADD YOURSELF

Add yourself to your stud.ass' queue



## YOUR TURN

Get notified when it's your turn



## APPROVE STUDENTS

Add approved students in a list with easy access

# An efficient queue system

### How does it work?

QueueMe provides a easy access queue to available student assistants through an online server and notifies you when its your turn. In the event time you can go on with your business.

### Instant Notification

Through powerful realtime database servers, QueueMe is able to offer instant updates. Keeping your queue experience swift and easy.

# Slidd.it

Personalize your lectures!



**Lead Developer**

Annette Giørtz

**Coordinator**

Morten Stulen

**Team leader**

Halvor Mundal

**Quality Assurance**

Konstantin Mathisen

Jonathan excels in the lecture hall, however, it can sometimes be hard to keep up.

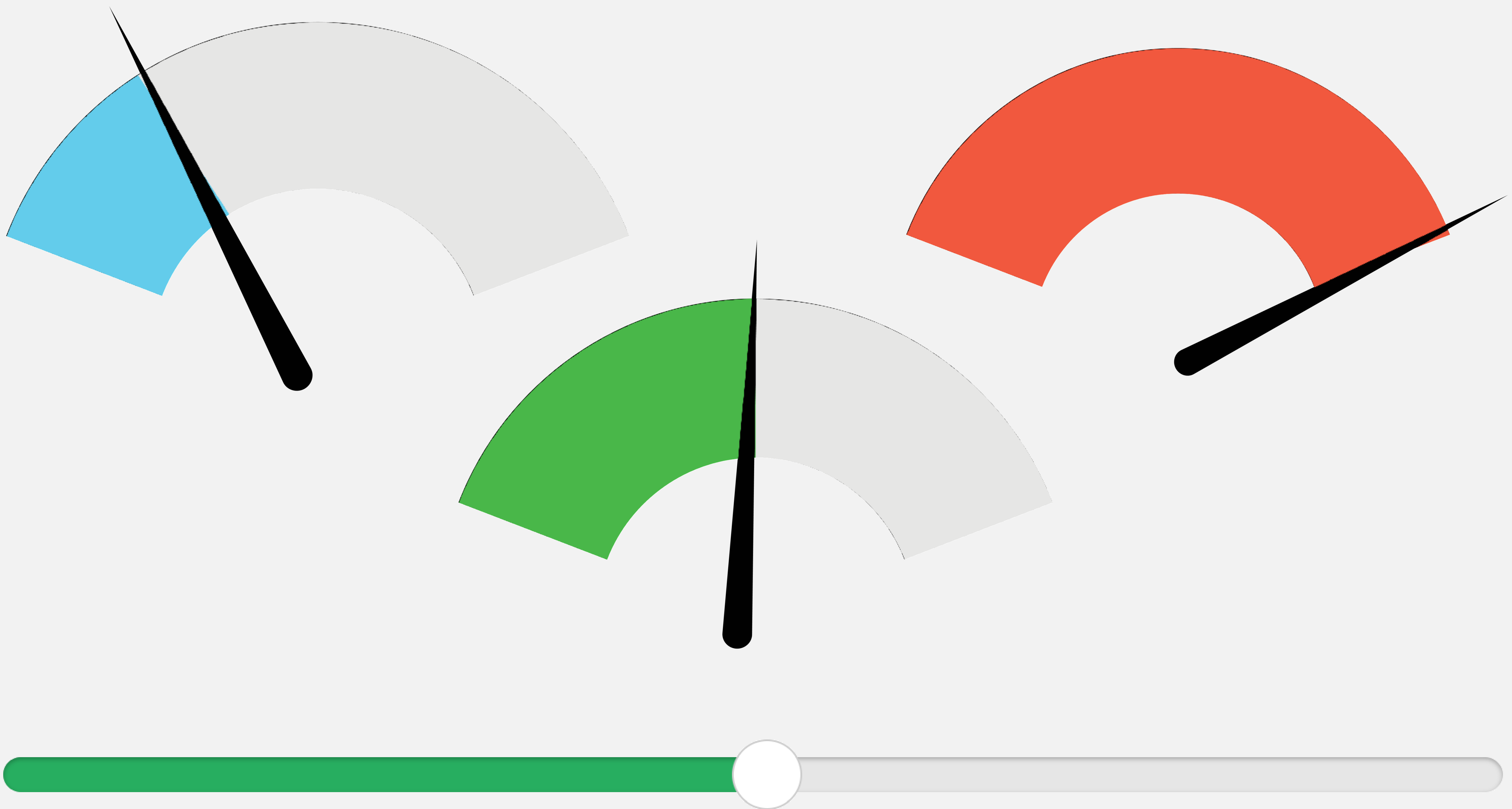
*«I'm not a shy person, but the threshold for interrupting the lecture to say things are moving too fast is very high.»*

Slidd.it lets **you** give input on how the lecture is going, without needing to disturb your peers.



**Jonathan Linnestad** is a 22 year old student from Trondheim. He is studying computer science at NTNU.

# Slidd.it



- A slider to set the speed of the lecture
- Rapid feedback to the lecturer
- Support for multiple courses
- A forum to ask questions
- Answer other people's questions

An easy and accessible way to customize your lectures

Students vote via a slider, which is set to the mean speed.

Meteor, React, Javascript, HTML5, CSS

# ExStat

Smart. Interactive. Revolutionary.

## THE TEAM

**Eirik Vale Aase**  
Team leader



**Tristan Kristoffer Cook**  
Front-end developer



**Sigmund Eggen Holm**  
Front- and back-end developer



**Amanda Borge Byrkjeland**  
Back-end developer



## THE USERS



**Magne Rettland (47)** professor at NTNU – wants better information about his students abilities to improve lectures.

*“I don’t know what my students really struggle with.”*



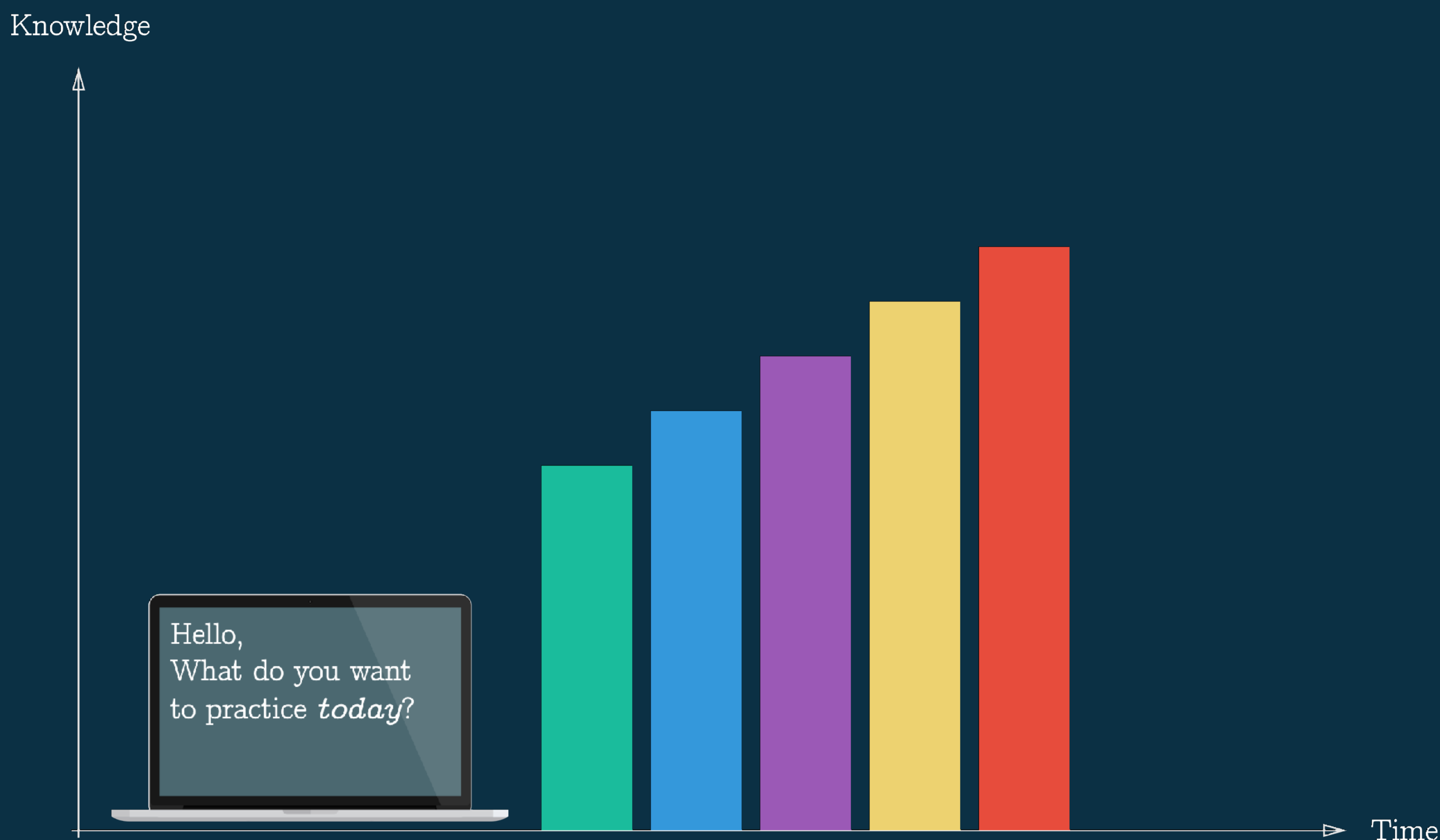
**Kari Dengerud (21)** computer science student at NTNU – currently spends too much time finding relevant exercises.

*“I want exercises that are relevant for ME to get better.”*

## THE SYSTEM

ExStat is an interactive assignment system that provides exercises for students that are relevant for them and displays statistics for both teachers and students regarding the students abilities to solve the exercises.

# ExStat



## VALUE PROPOSITION

- Relevant exercises for students.
- Information to teachers regarding students abilities.

## HOW DOES ExStat WORK?

The teacher adds exercises into ExStat together with metadata like type of exercise and what to measure. The students do the exercises, and the teacher gets the statistics about which exercises the students struggle with. The more exercises a student does, the more relevant exercise proposals the student gets.

## TOP FIVE BACKLOG ITEMS

- Provide relevant exercises for students.
- View the topics that students struggle with.
- Clean and meaningful statistics.
- Keep track of completed exercises.
- Access to relevant curriculum.

## TECHNOLOGIES

django

wit.ai

B

IME API

JS

HTML5

CSS



# TrumpBot

- Make lectures great again.



## The team:

Eskil Hognestad -  
Team leader

Silje Marie Tyrihjell -  
Design Leader

Petter Lohne -  
Developer

Tore Fadnes -  
System testing

When performing a great lecture for enormous groups it is extremely hard to get a feeling of how the students are doing, are they following?

“If you see that there is 70% who think it is slow, one should perhaps consider speeding up, or if 70% suddenly fall off the wagon, return to the previous slide and explain in a different / more thorough way.”  
- Guttorm Sindre

Our vision is to help professors to know what students are struggling with and what they think are easy. At the same time the students will have a more directly channel to the lecturers during the class, and not only after or before class.

Using our system, the lectures will become better for both students and professors, and the quality on the lectures will become even better.



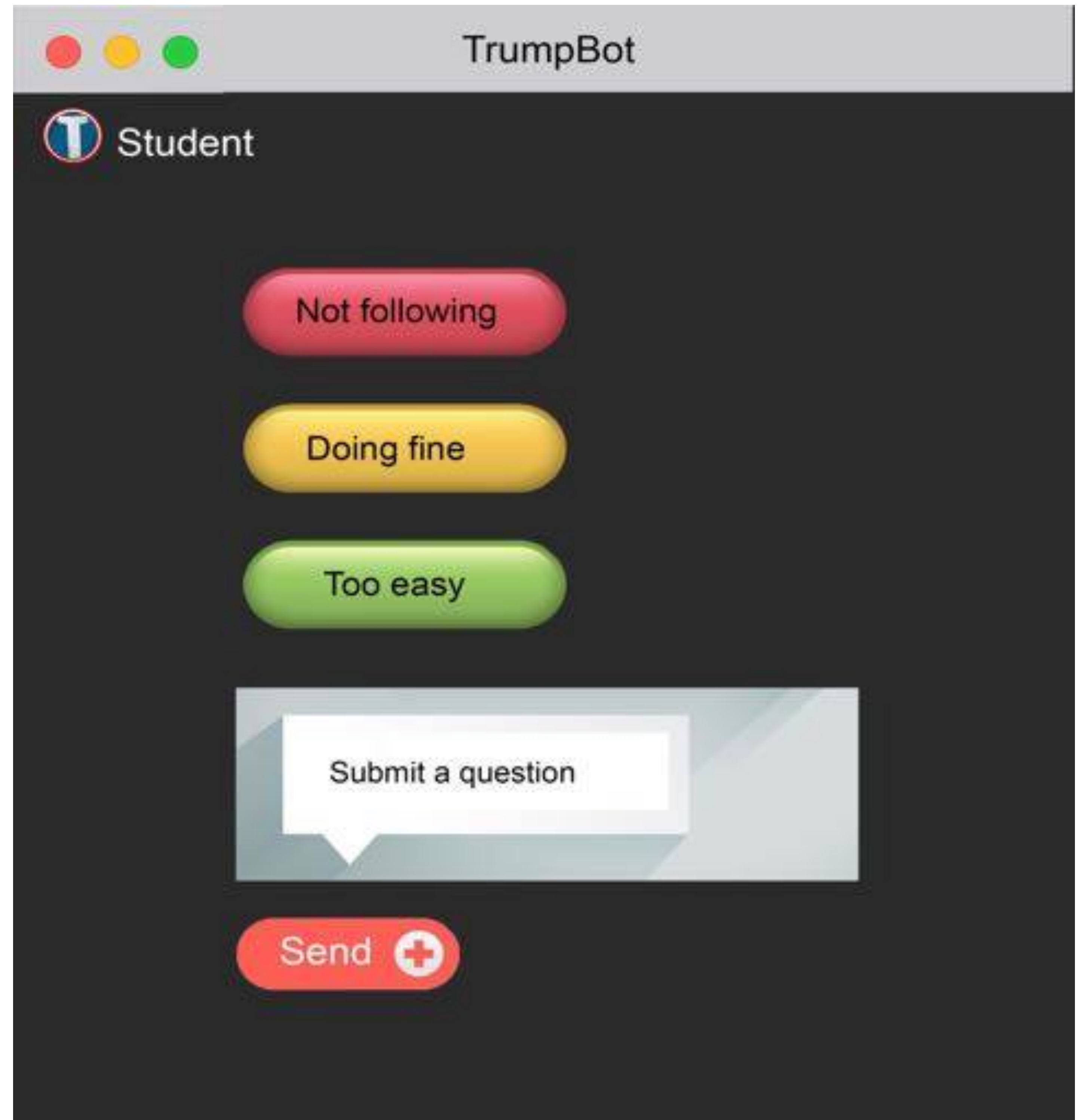
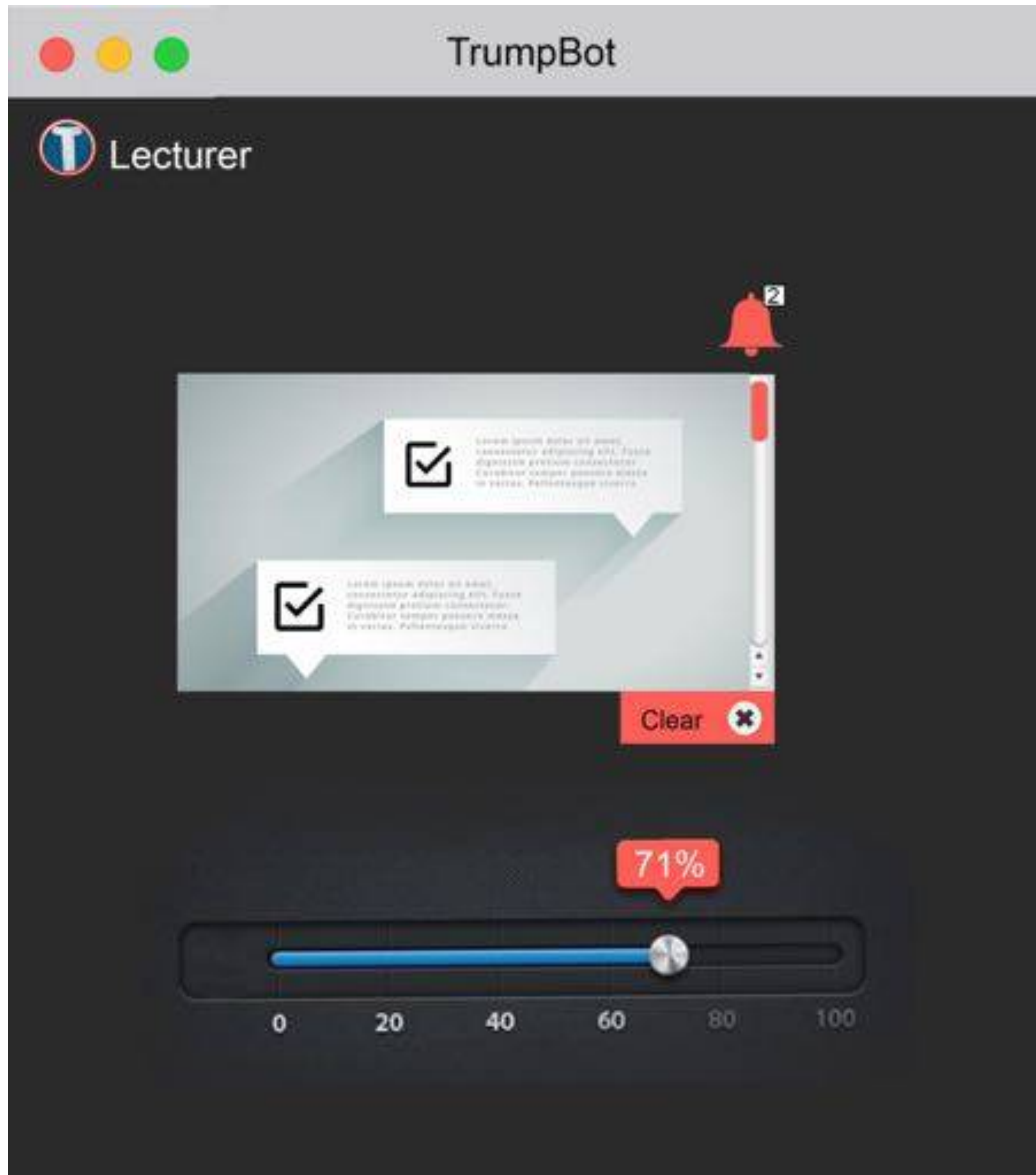
This is Donald Trump. He is a 70 year old President from the United States. Before he became President, he was lecturing in computer science at MIT.  
“Nobody came to my classes! I need a better system! TrumpBot can give me that!”





# TrumpBot

- Make lectures great again.



- As lecturer I want an overview of how the students are coping with the current pace.
- As a student I would like to notify the lecturer if the pace is too high/slow.
- As a student I would like to tell if the level during the class is too easy or too hard.
- As a user I would like a clean and simple GUI for easy usage.

TrumpBot will be a tool for all lecturers that wish to optimize the way to teach.

How does it work:

TrumpBot creates a connection between students and lecturers and enables live update of how the students are coping with the lecture speed and difficulty.

Potential Technologies:  
JavaScript, Photoshop, CSS

# Extrovert

it asks your questions, so you don't have to!



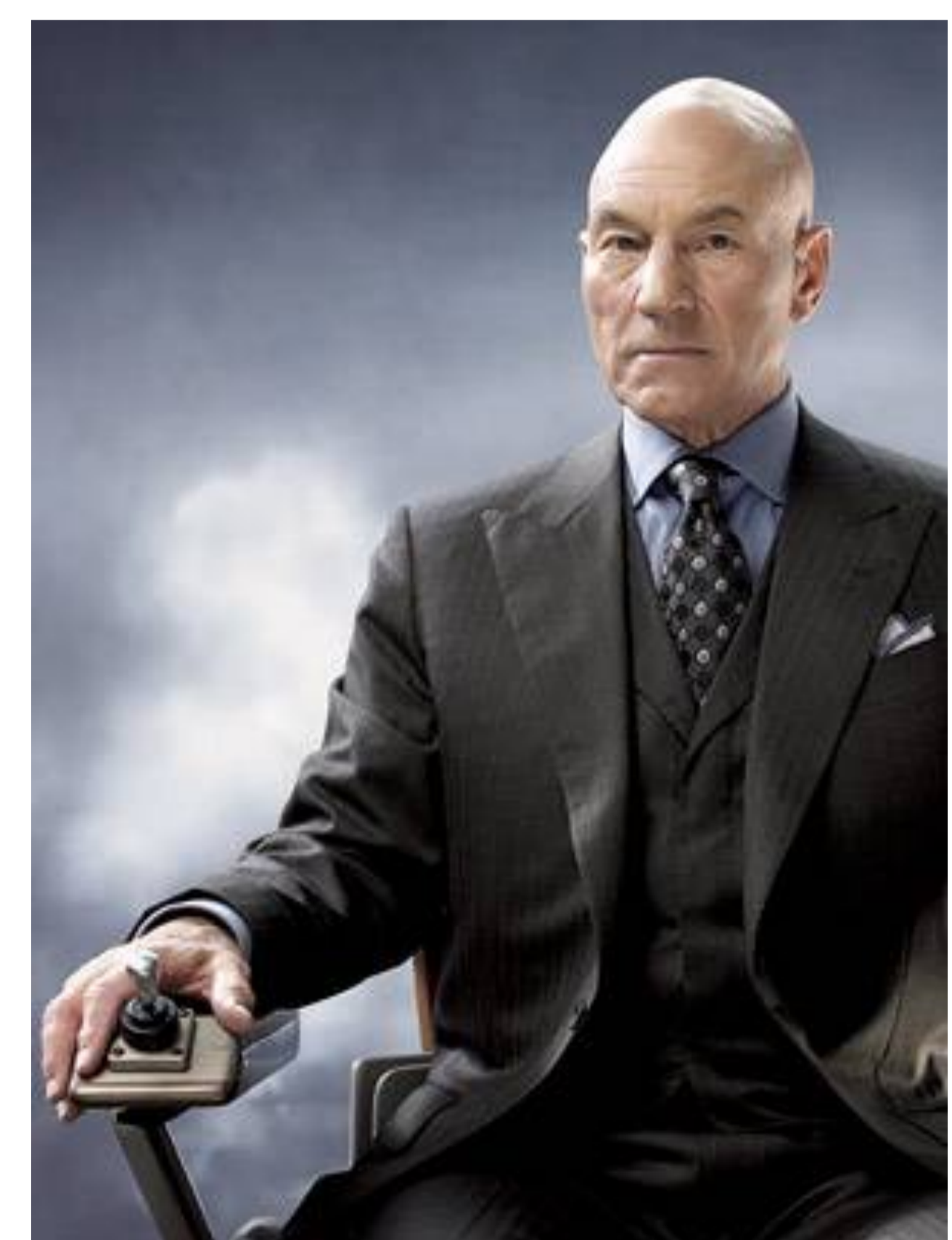
## Members:

Marie Hessen  
Erlend Walter Therkelsen  
Hugo Solheim Klævold  
Ola Lium

*Software developer*  
*Team Leader*  
*Software developer*  
*Software developer*

Professor Xavier is a lecturer at the SMART university and doesn't feel like he gets enough feedback from his students.

**«I want to get more feedback during my lectures, I am confident I can teach better if I get more input from my students»**



We provide a platform that handles live student input and process it before delivering it to the lecturer.



## top 5 backlog items

1. As a teacher I want to be able to get live feedback on the speed of the lecture.
2. As a student I want to be able to ask questions directly to the teacher through my computer or smartphone.
3. As a teacher, I want to be able to see at what point in the lecture students asked most questions.
4. As a student i want to vote on other people's questions.
5. As a student, I want to be able to see a log of questions I have asked in most recent lecture.

## how does it work?

Students can vote and ask questions on the application about things they don't understand or want the teacher to explain better. The bot sends the questions and result to the teacher to form a better understanding between the student and lecturer.

Student interaction  
lecture quality  
Living lectures

## potential technologies

User settings and customizable output for teacher.  
Live feedback  
Student interaction.

# COURSE TRACKER



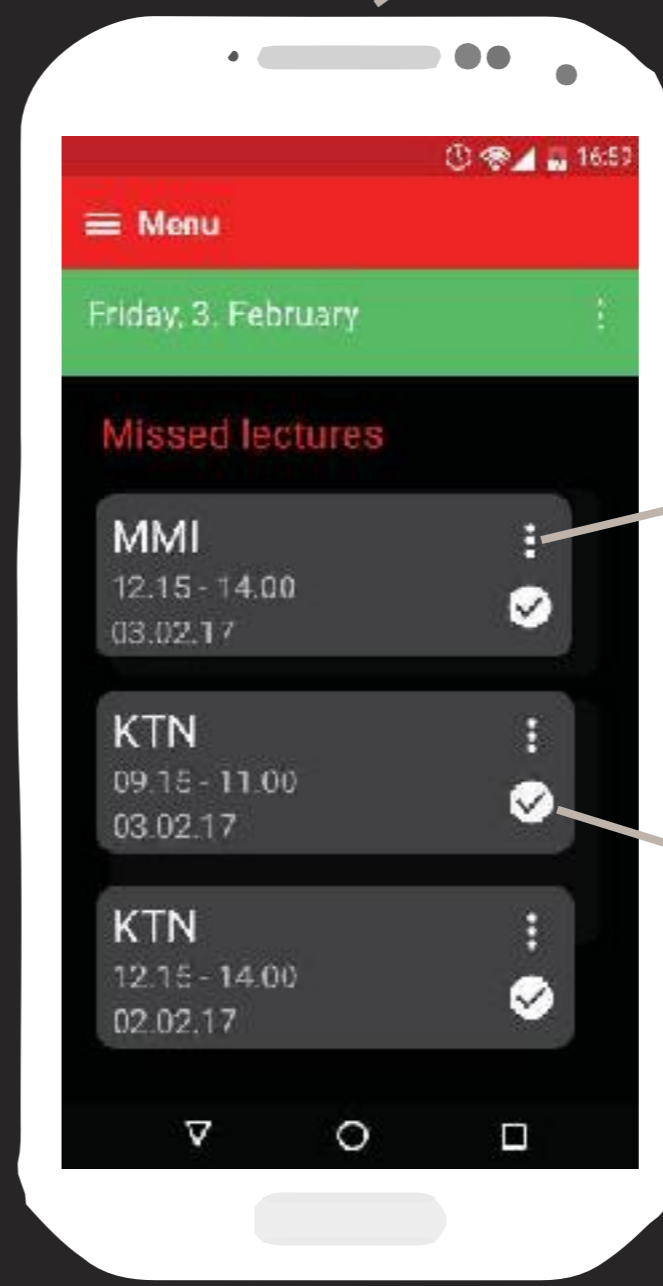
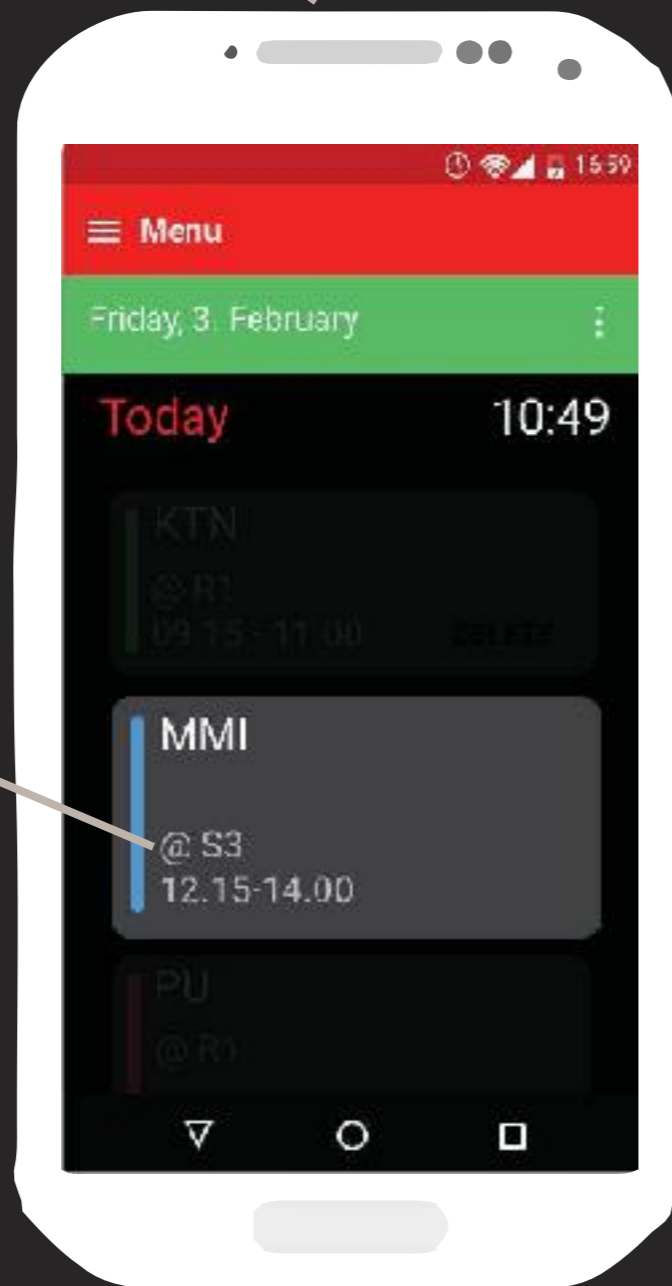
Overview of your day with upcoming lectures and necessary information

Tasks to catch up the curriculum that the course has been through in missed lectures

Tracking your location to register whether you participate in a lecture or not, and automatically generates a task if you miss a lecture

More information Curriculum, resources and notes from the lecture

Check out your tasks when they are completed



Android App

## What is Course Tracker?

It is an app that shows your daily lectures and generates tasks for your missed lectures with information about what you should catch up on.

## By Students for students

We know the typical student with a busy schedule. This is why we made Course Tracker - a great assistant that gives you all necessary information about your courses.

## How can Course Tracker know what lectures I have missed?

By using the position of your mobile, Course Tracker checks whether you are located in your lectures or not within the time the lecture is going on. Based on this information, the app generates tasks for the curriculum you missed in the lecture.

# COURSE TRACKER



## Project Team



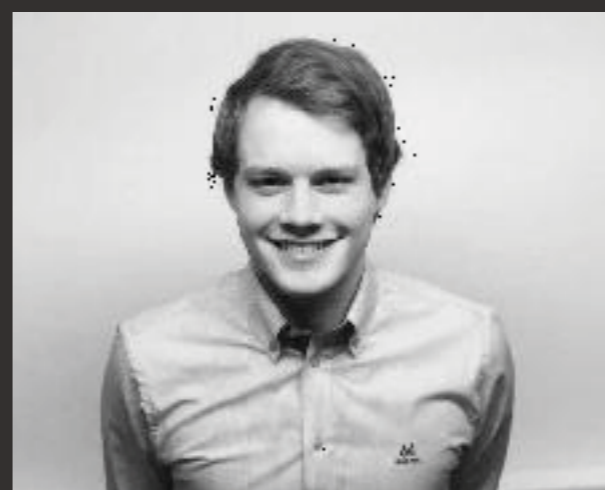
**Henrik Bossart**  
Project Manager



**Peter C. Bulukin**  
Lead Architect



**Målfrid H. Aaraas**  
Design Manager



**Aleksander Haarstad**  
Publication Manager

## Persona

### Rikke Kalbakk (22)



*Student at BI Trondheim*

*“Finally, I can be engaged in the student community without failing my exams!”*

Rikke is having a busy schedule as many other students. She is volunteering in BI's student community besides the studies. Occasionally, Rikke doesn't have time to attend all lectures and find it difficult to keep-up with the course schedule when she's not attending.

Course Tracker is designed for students in the same position as Rikke. By using her location, the app can keep track of whether she went to today's lectures or not. For the lectures she did not attend, the app automatically generates tasks to make sure she is informed of the missed curriculum during the lectures

# T.E.C.H.S

the Teaching Educating Computer Help System

## The team



Lead System Tester – Fritz-Olav Myrvang, Software Developer – Amalia Sambanis, Project Leader – Torgeir Slette, Software Developer – Martin Årvik

## Roger Midtstraum

Professor at NTNU and leader of the management committee for civil engineering programs.



«I want an easier way to provide feedback to students while it matters.»

## HOW WE HELP

Our system provides automated feedback on exercises and helps the user learn by dynamically adjusting difficulty on exercises, and provides statistics to help professors adjust his lectures to suit his students needs.

# T.E.C.H.S

*<Giving you a better, faster and easier introduction to the world of software>*

I love programming  
with TECHS!



## Top features:



A feedback system providing real time assistance



Easy access for professors to evaluate the students progress



A customized exercise system to optimize the learning experience



Connectivity through a chatroom , where fellow students can help you

## HOW THE SYSTEM WORKS

TECHS is a combined learning and exercise experience, by combining exercise data and relevant literature references, the user maximizes his learning benefits.

Starting with the easy questions, the system gauges how well the student is doing in each category, and saves this data. It interprets this and will suggest themed pages in the curriculum and Piazza posts. In addition, the lecturers will now be more informed by evaluating this data to see where his class struggles the most.

# LectureQ

Reshaping communication  
during lectures



## The team

Magnus (Chief executive officer)

Martin (Chief marketing officer)

Ole (Chief artificial intelligence officer)

William (Chief design officer)

## Personas

Ainsly is a 55 year old student. He is not a great planner, and as such he would like to have a platform where he can get quick and easy answers to all of the little questions that might pop into his minds. Even if it is at 03:00 in the morning.

*“I hate speaking up in class”*



LectureQ will be a platform to help both students and professors. It will give students the opportunity to get quick answers to any questions regarding the curriculum or dates. It will also let students ask questions during the lecture as they think of it, and through a simple voting system give the questions with the most votes the highest priority so that a professor can focus on what the students need.



# LectureQ

Hei! Hva kan jeg hjelpe deg med?

Hei! Når skal øving 1 leveres?

Øving 1 har frist 05.02 kl 23:59

Skriv noe her... 

## Pensum Spørsmål

Bacon, eggs and ham, and maybe an apple too. A good breakfast is important for a great day!	42 ▲
Bacon, eggs and ham, and maybe an apple too. A good breakfast is important for a great day!	23 ▲
Bacon, eggs and ham, and maybe an apple too. A good breakfast is important for a great day!	17 ▲
Bacon, eggs and ham, and maybe an apple too. A good breakfast is important for a great day!	9 ▲
Bacon, eggs and ham, and maybe an apple too. A good breakfast is important for a great day!	9 ▲
Bacon, eggs and ham, and maybe an apple too. A good breakfast is important for a great day!	7 ▲
Bacon, eggs and ham, and maybe an apple too. A good breakfast is important for a great day!	3 ▲
Bacon, eggs and ham, and maybe an apple too. A good breakfast is important for a great day!	1 ▲
Bacon, eggs and ham, and maybe an apple too. A good breakfast is important for a great day!	0 ▲
Bacon, eggs and ham, and maybe an apple too. A good breakfast is important for a great day!	0 ▲



## How it works

A student has a question he wants answered regarding a class that he is taking. The user can ask this question to the bot. The question can be anything from deadlines to information regarding a certain subject in the course. The bot will analyze the question, and choose the most relevant response. The professor lecturing in a course adds answers to FAQ in a first time survey. The bot will interpret the questions coming from students and match them to existing questions which has been answered by the professor.

## Technologies

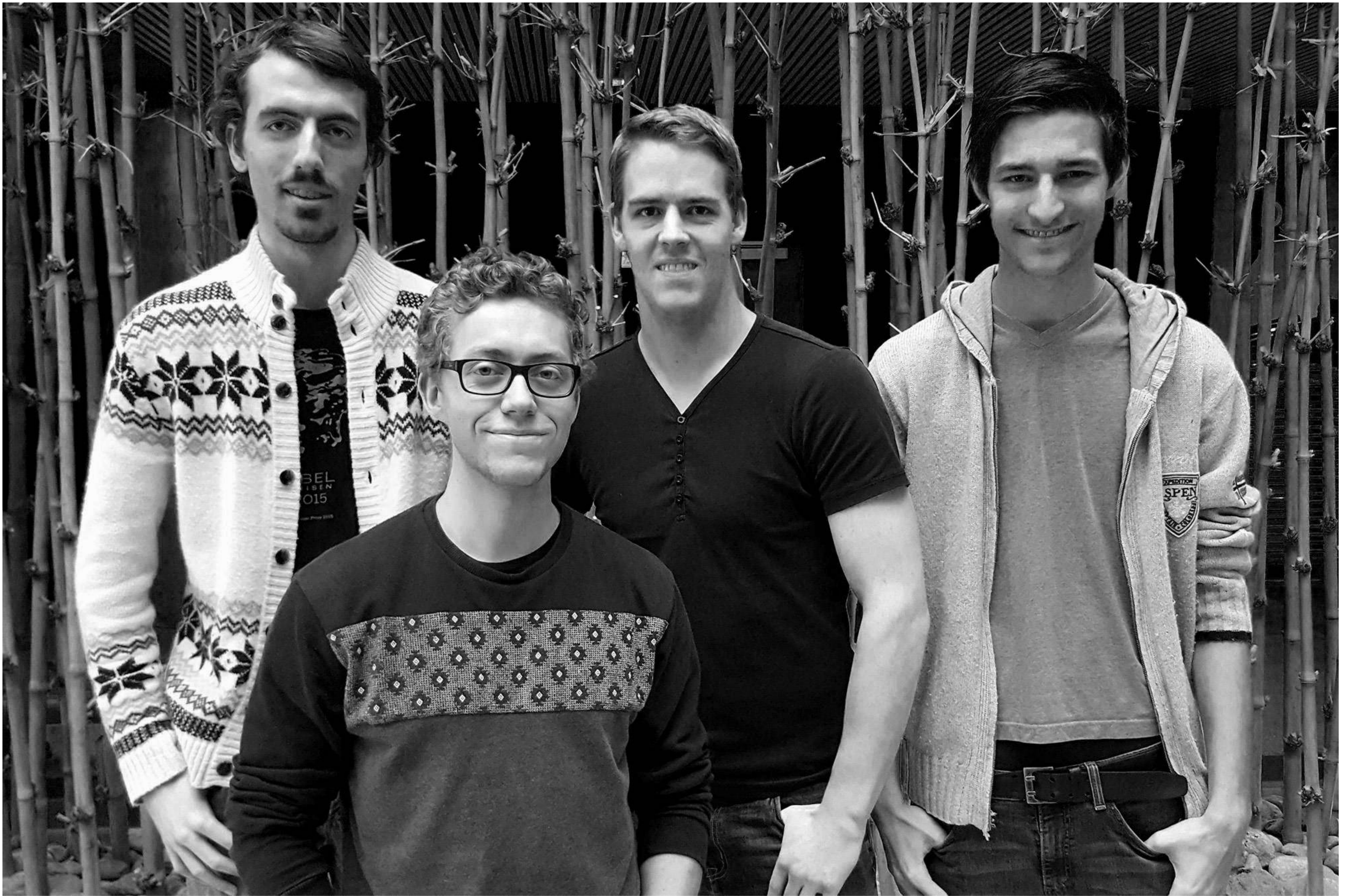
We will be using Angular 2.0 (JavaScript) and GitHub as well as techniques from human-computer interaction, artificial intelligence and graphic design by PhotoShop and Illustrator.

## Top 5 priorities

1. A Q&A Chatbot that can answer any FAQ.
2. The ability for professors to register FAQ answer for their specific subject.
3. Having questions unanswered by the bot go to the "Pensum questions"-tab.
4. Something I'm not sure about yet.
5. Being able to upvote questions that are relevant to the lecture.

# A personal study assistant

COCOA (Course Companion) will provide students with relevant information at all times



Håkon Flatval (Scrum Master), Tollef Jørgensen (Front-end), Morten Normann (API Integration), Tobias Kullblikk (Back-end)

Petter is 24 years old, currently in his first year of computer science at NTNU. He is a diligent student and attend most of his lectures. However, if he cannot attend a lecture, he finds it troublesome to catch up.

*"I'm extremely interested in most of my subjects, but sometimes I just don't know how to best study for them"*



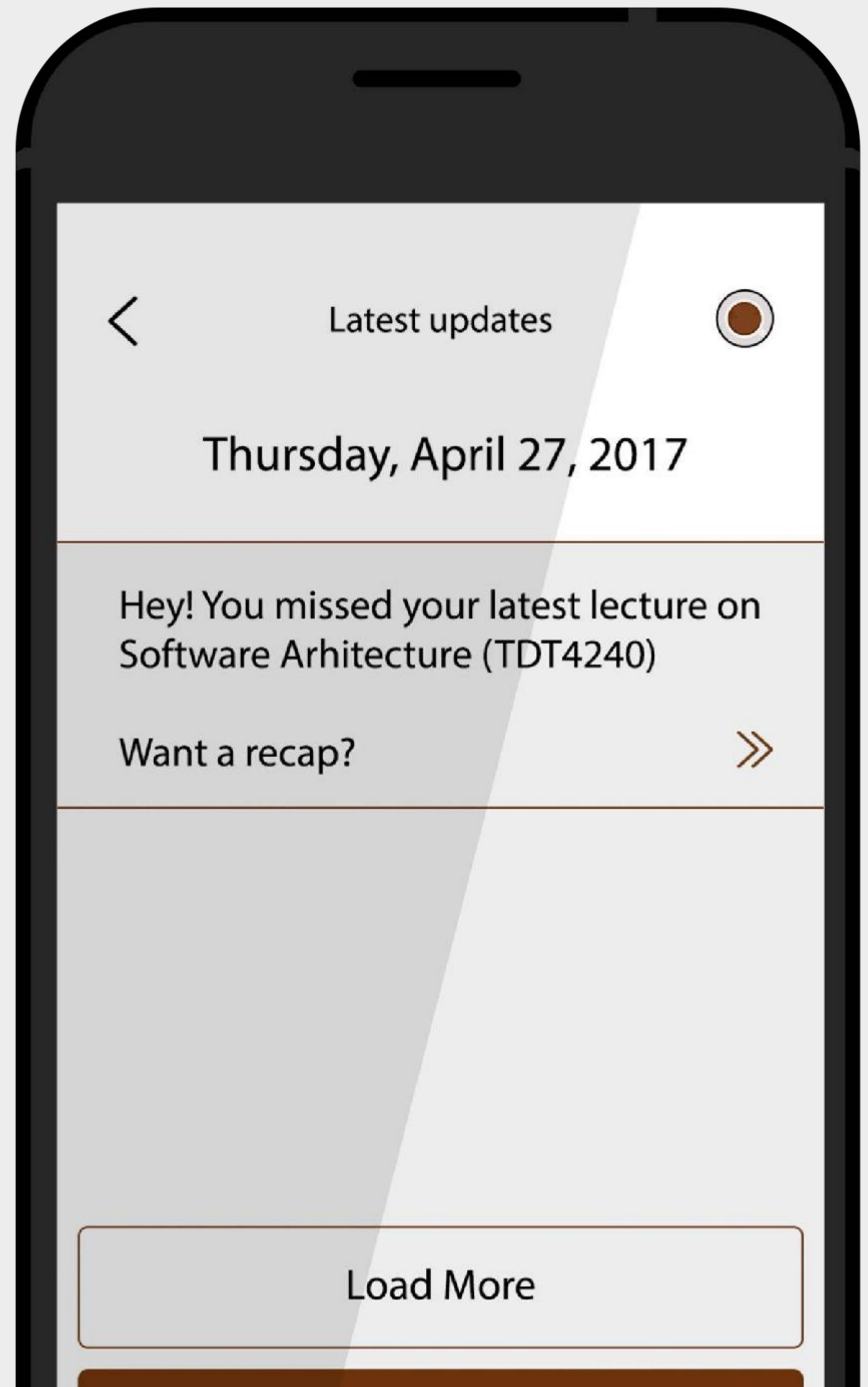
The amount of information available in a course can be troublesome to grasp. Intelligently gathering data, COCOA will continuously analyze available information and create a personalized learning experience for students.



# COCOA

## COURSE COMPANION

A personal assistant that intelligently keeps track of everything related to your courses



### Intelligent assistance

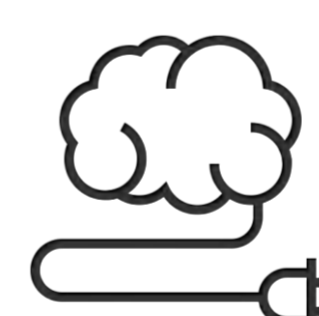
Automatically generates exercises tailored to the user

Analysis of lecture notes provides the user with concise summaries, which ensures that students come prepared to class

Easily access additional information related to the syllabus

Frequent queries from the students lets the lecturer understand what the students find difficult

Using techniques from gamification will keep students engaged and boost learning retention



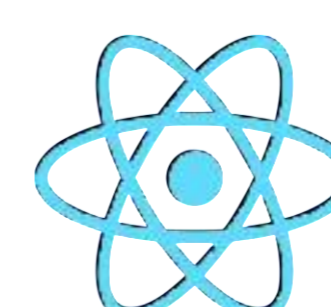
### A motivator

It learns how (and when) you study and what lectures you attend. Using this data, we want to make students feel motivated to study correctly!



### Modern technology

Developed with the latest technologies using React, ASP.NET Core and C#





# nquire

-the interactive lecture



Lars Møster  
Team leader, developer and designer

Eivind Lie Andreassen  
Lead developer

Lavrans Grønseth  
Lead designer, developer

Lisa Sørum  
Leader QA-team, developer



Professor Guy wants the students to learn as much as possible, but communication between students and professor in a lecture can be quite challenging.

“Providing help without knowing the current state of progress or knowing what the student has done, is difficult.”

How we help:

“Giving both student and teacher feedback on difficulty and pacing. Bridging the communicative gap between student and professor.”



This is professor A. Guy.

He has been giving lectures in computer science for 25 years and he loves it.

But sometimes he wishes the students were more vocal about their problems.

# NQUIRE



## Top 5 backlog items:

1.

As a lecturer, I want to be able to upload a powerpoint presentation to the service so that it is available for students.

2.

As a student, I want to be able to view the presentation and mark difficult material so that the lecturer can be kept informed about what is challenging.

3.

As a student, I want to be able to ask questions, so that the lecturer can view them.

4.

As a lecturer I want to be able to see if there are any unaddressed questions so that I may answer them.

5.

As a student, I want to be able to give feedback on whether the lecture is going too fast or too slow so that the lecturer can adjust the pace accordingly.

## Value proposition:

Being able to ask questions in lectures with ease, and communicating with the professor, so the lecture moves at your pace!

## How does it work?

“You simply put in the lecture ID on the webpage, and you can follow the presentation on your own computer”

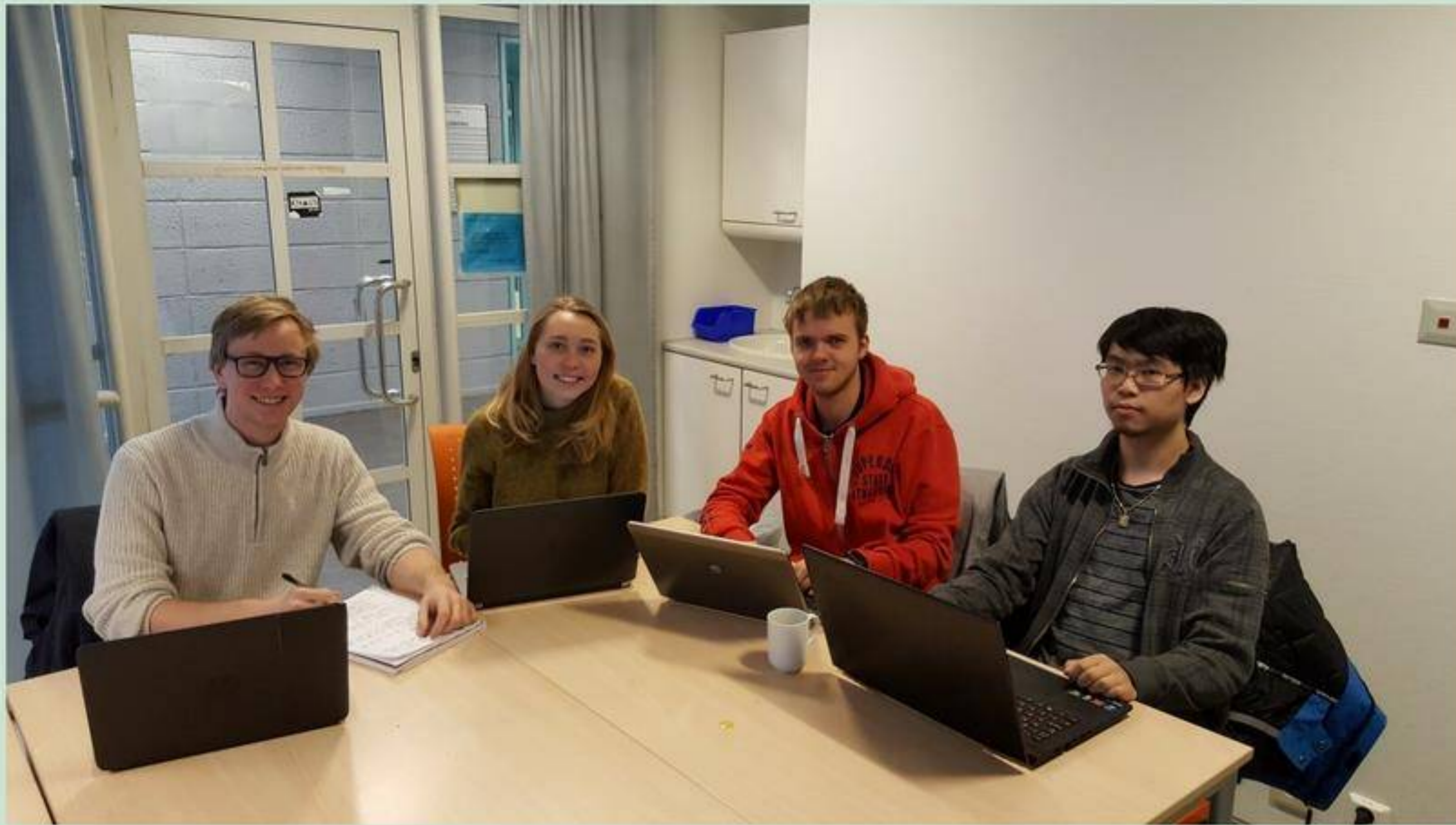
“Post questions, the lecturer can answer them in real time!”

“If the lecture is going too slow or too fast, you can let the lecturer now!”

## Potential technologies:

Java  
JavaScript  
HTML / CSS  
Powerpoint

# BRAND NEW LEARNING ASSISTANT



## The Team

From left to right

Herleik J. L. Holtan : Team Leader

Mette Liset : Developer

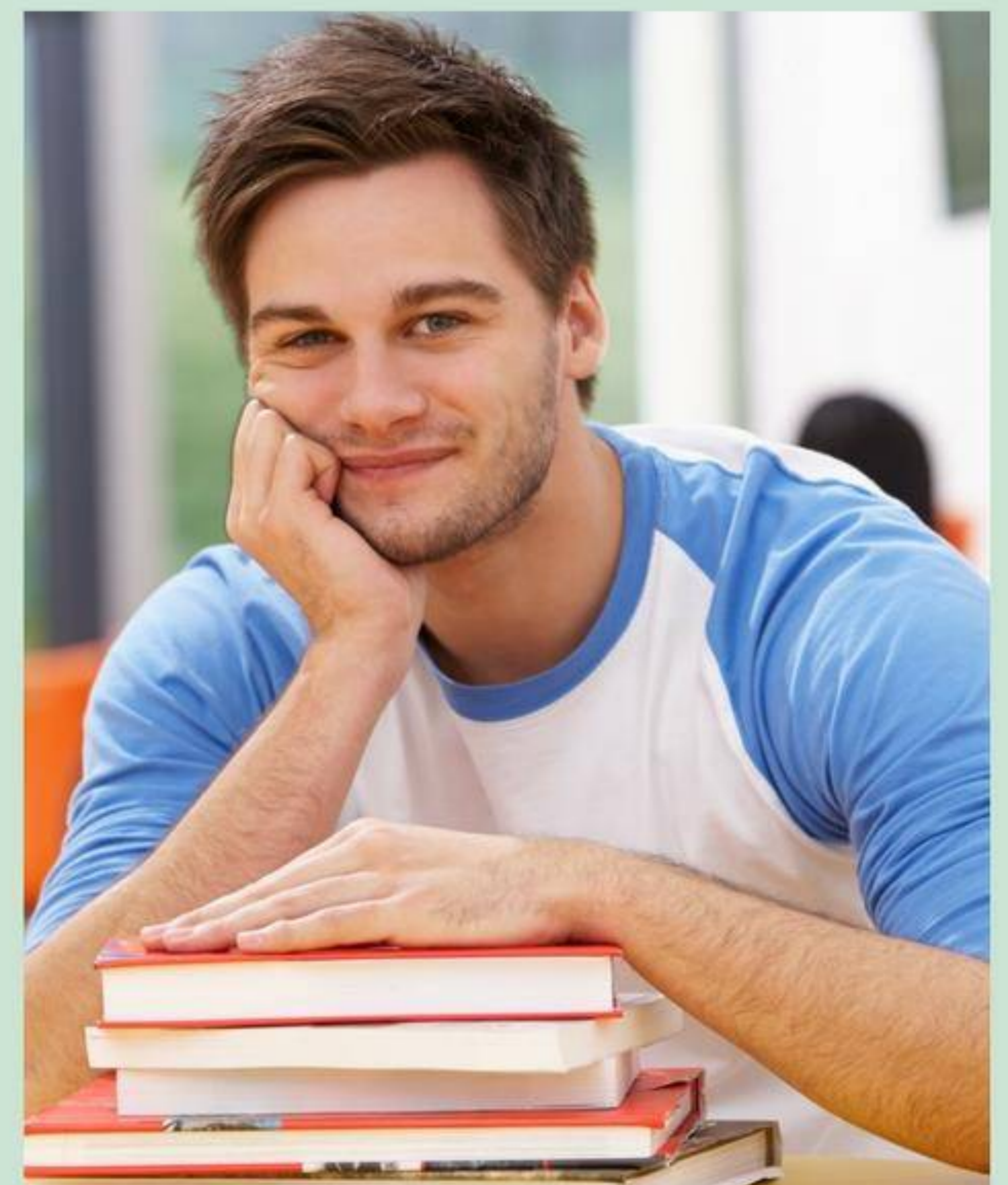
Torstein Molland : Developer

Danny Duy Nguyen : Developer

## Håvard Moen

Håvard has been a teaching assistant in multiple courses over the past couple of years. According to Moen, the questions asked by students are often repetitive.

**“I receive the same questions, and have to answer them over and over again”**



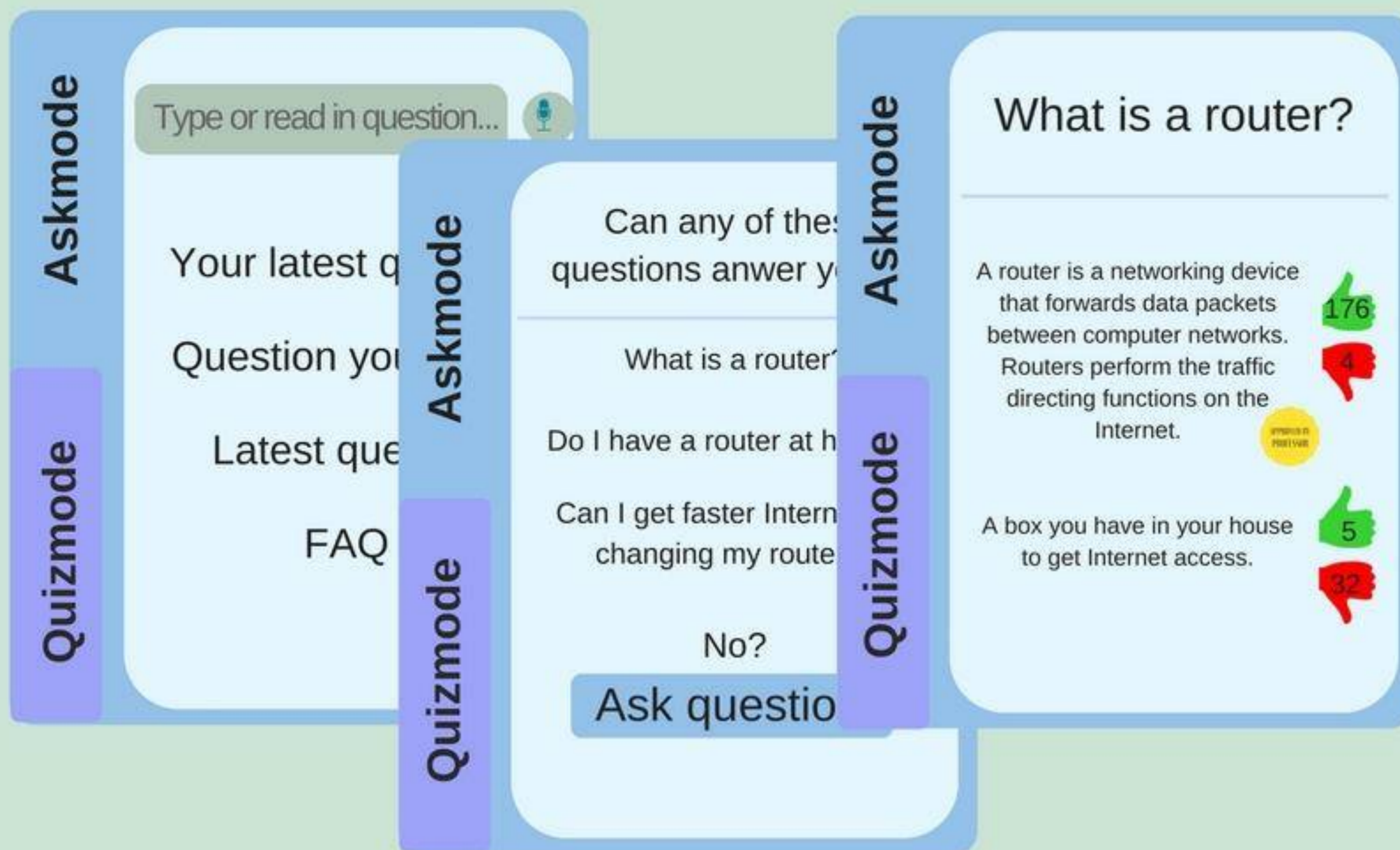
Håvard Moen, a 23-year-old teaching assistant at NTNU.

## We can help!

We want to make a bot that can recognize previously asked question, in an effort to help Håvard. This way, Håvard, the other teaching assistants and the professors won't need to waste precious time answering similar questions repeatedly.

# StudyBuddy

Date

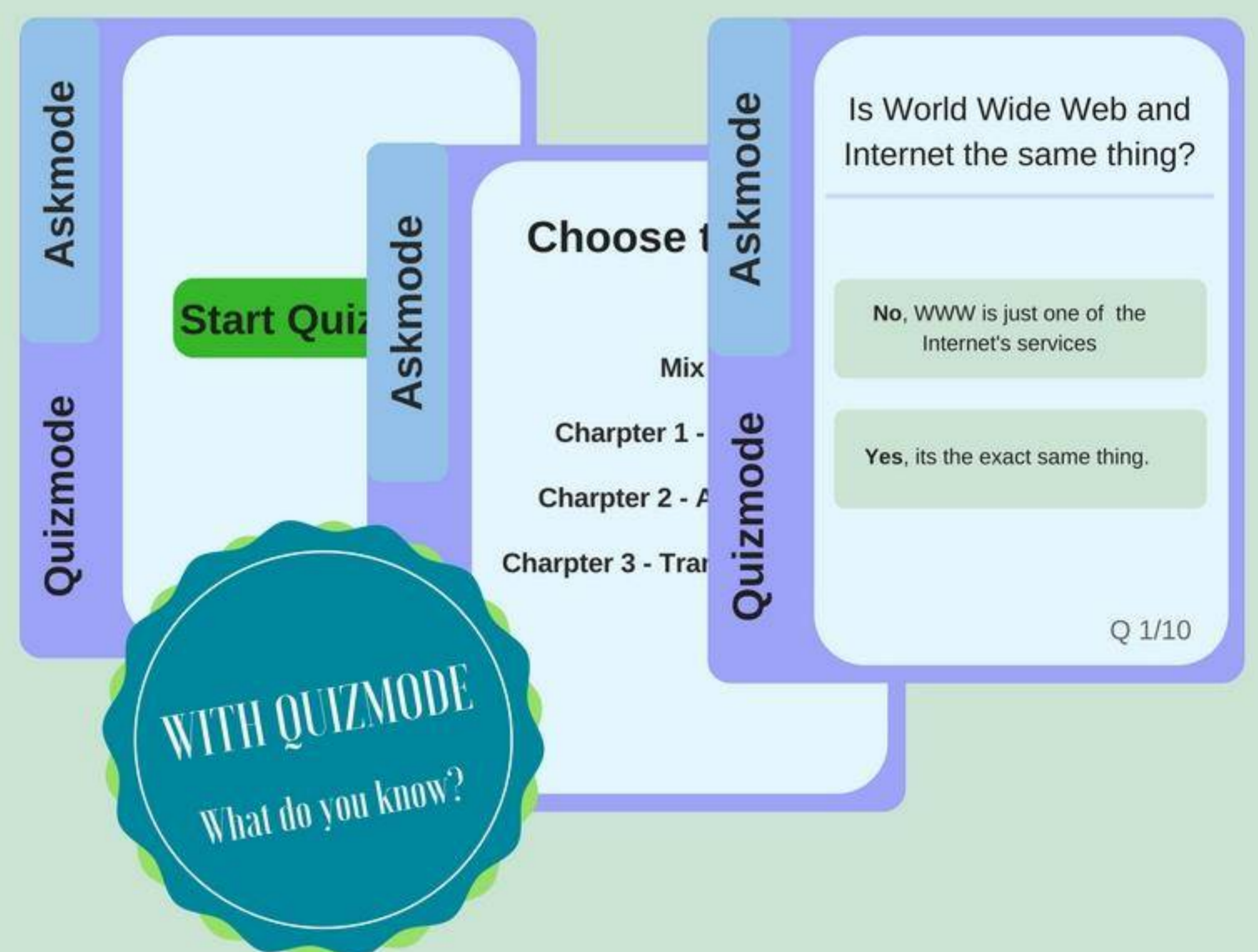


## Technology

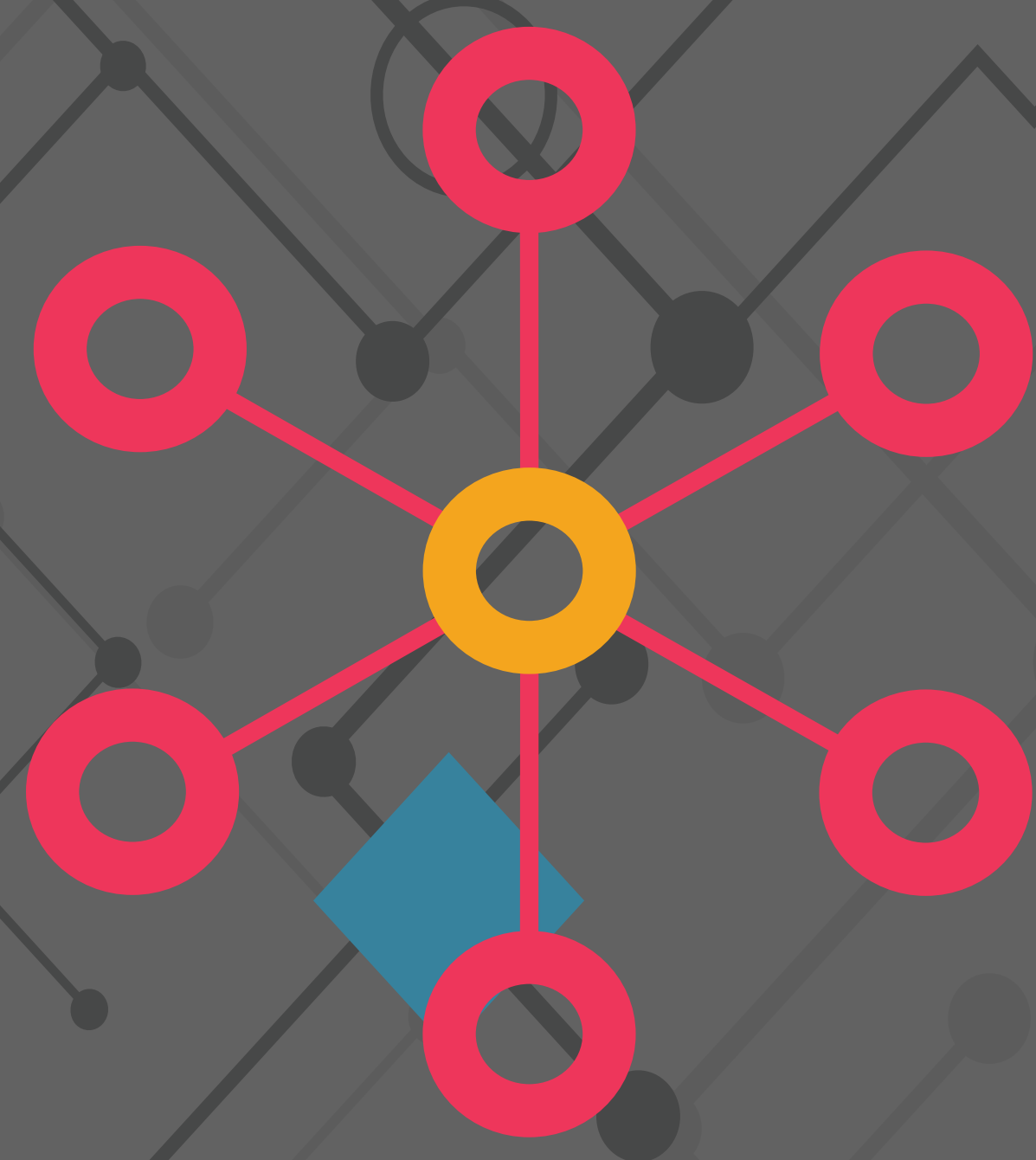
- Voice recognition
- Natural language learning
- Advanced software for learning and recognizing similar questions
- Separate login for students and teachers

## Product backlog

- The same question won't need to be answered multiple times by the teachers
- Students get answers in a timely manner
- Students get to learn in fun and exciting ways
- Both students and professors can help each other
- Minimalistic and intuitive GUI for all users



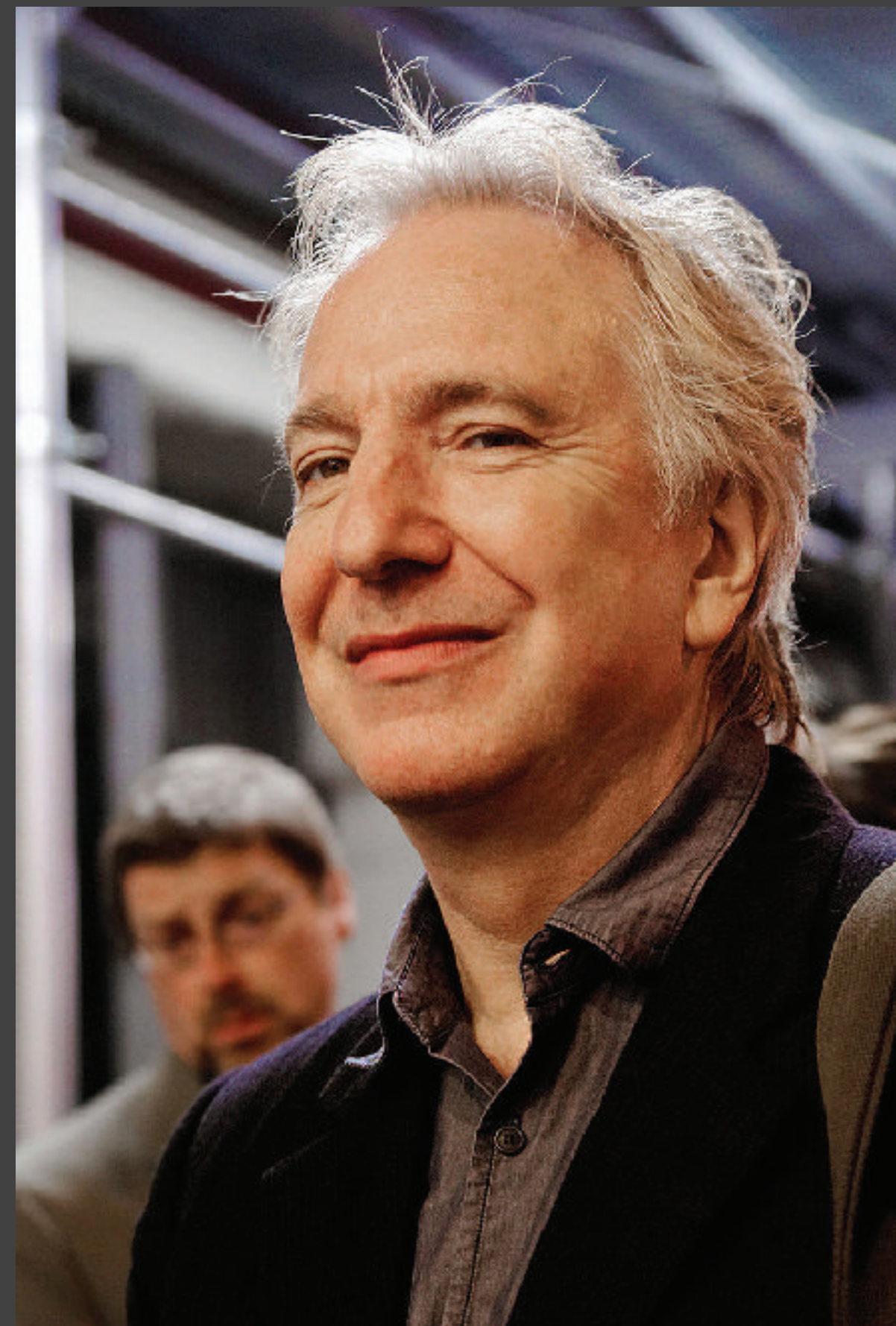
StudyBuddy is a Q&A platform. It recognizes previously asked questions and provides quick and easy access to answers for students, teachers and teaching assistants. It also includes a voting system to ensure credible information.



# LAid

Lecture Aid

## The Professor



“It is difficult for a professor to know how many of the students have prepared for the lecture and at what level you should teach.”

Professor Sneep is a professor of Computer Science. He is 58 years old and has taught in university the last 30 years.

When Sneep holds lectures with a lot of students, he finds it difficult to know what level to hold to make sure the lecture is interesting for most of the students. He lacks feedback from students during lecture, so he doesn't know whether the students keep track or not. He would like a software application that will assist him in keeping track of how useful the lectures are for his students.

## How we help

With LAid he will be able to know what topics the students struggle with before the lectures, so that he can focus on this material. He is also able to know whether students are able to follow him during the lecture itself by continuously getting feedback from the students. The students can also more easily prepare for lecture, and repeat the lecture material after the lecture.

## Developed by



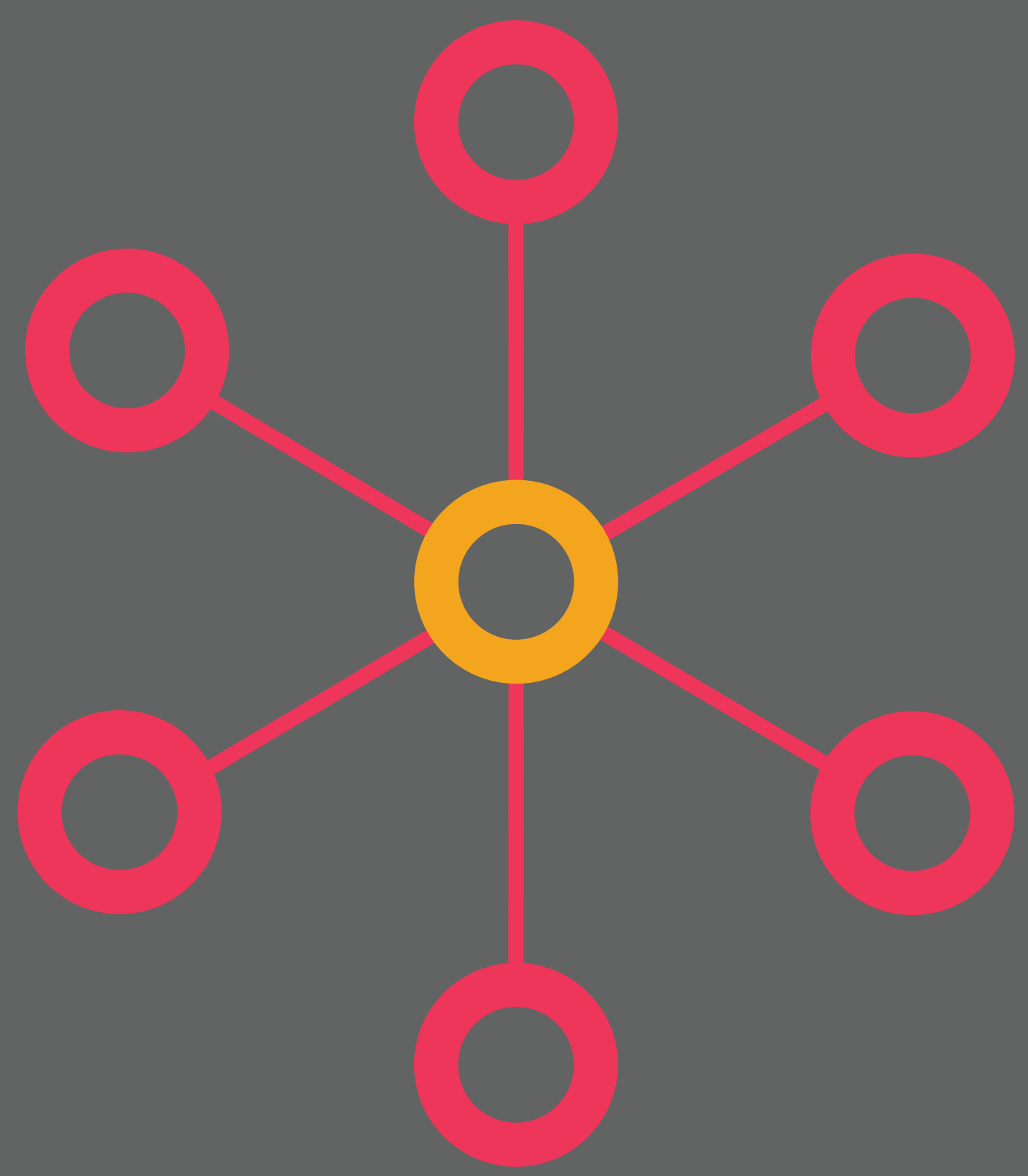
**Edvard Gjessing Bakken**  
Team leader/front-end developer

**Ludvig Lilleby Johansson**  
Front-end developer

**Ole Alexander Hole**  
Back-end developer

**Carl Emil Hattestad**  
Back-end developer





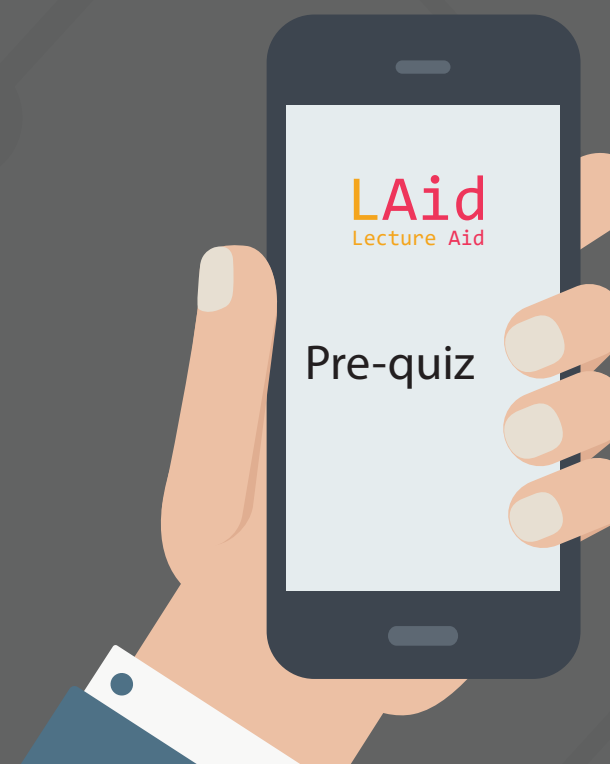
# LAid

## Lecture Aid

### How it works

#### Before lecture

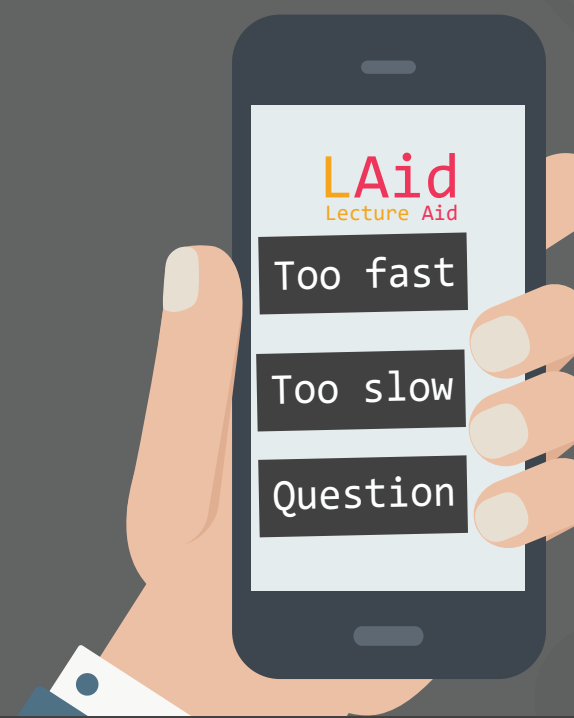
Students prepare for lecture by taking a pre-quiz.



Lecturer gets statistics on which topics students understand, and which topics must be explained in more detail.

#### During lecture

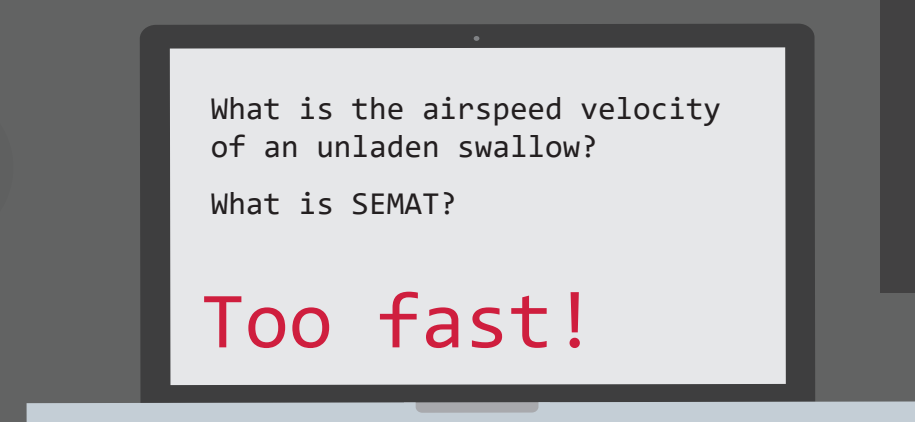
Students ask questions and give feedback on the pace interactively through the application.



Lecturer sees questions from students and gets notified when many students loose track of the lecture.

#### After lecture

Students repeat the lecture material by taking a post-quiz.



Lecturer gets statistics on the post-quiz to get an overview of what was clear and unclear from the students' perspective.

## Important user stories

As a user, I want a login system so that the system differentiate the students from the professor and give them different privileges and tools.

As a student, I want a visualization of the classes I participate in, and the possibility to join a lecture.

As a professor, I want to make sure the students have some knowledge of the subject before the lecture.

As a professor, I want to see statistics of the students in my lectures so that I can keep track of what they know.

As a professor, I want to have knowledge of the level of the students before the lecture.

## Technologies

The system is a web application that consists of a back-end written with Django, and a client written with Angular. Users access the system with any modern browser.

django



# CAMPAL

## Automatic recording of lectures

### Persona

Jørgleiv is a mechanical engineering student at NTNU. Due to his volunteer work as a UN student ambassador, he is often traveling and consequently misses a lot of lectures. Unfortunately, only one of his four subjects this year is being filmed and published by NTNU. Also, the one video is mostly a static image of his lecturer talking in front of the blackboard.

“I really wish NTNU could produce engaging videos of all my lectures, with focus on the relevant information I need!”

### The Solution

We need to find a way to make video recordings more easily available to students at the university. To do this, we first eliminate the capacity problem - the need for a human to be filming the lectures manually.

Secondly, we need to present the students with the relevant information while watching the lectures. This include, but may not be limited to, electronic slides, video of the blackboard and live discussion boards.

The video lectures should also be published as soon as possible after the lecture.



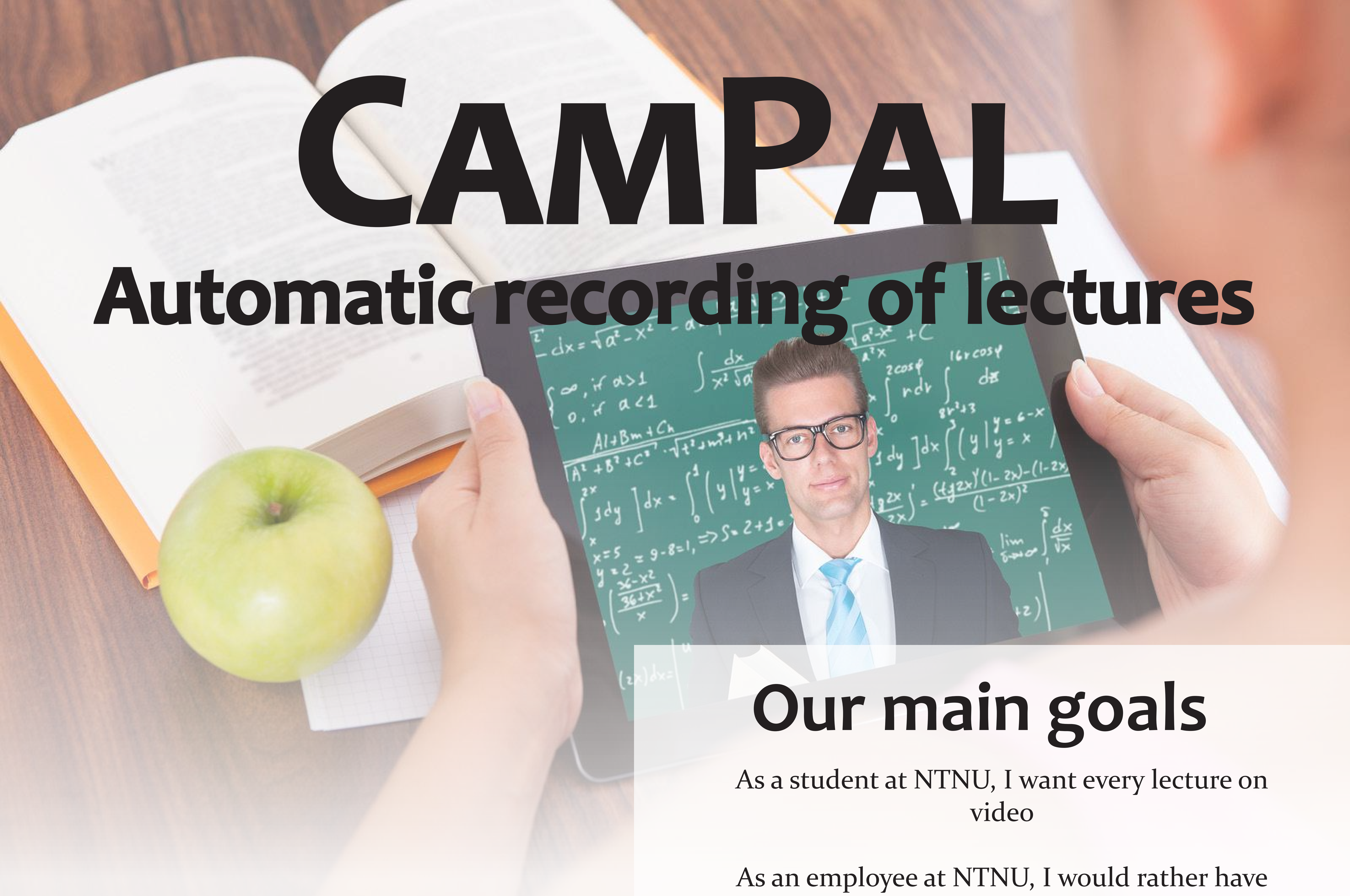
### The team

*From left to right:*

Kristofer Henrichsen  
Morten Rostad  
Jostein Kjærstad  
Sigvart Hovland

# CAMPAL

## Automatic recording of lectures



### Our main goals

As a student at NTNU, I want every lecture on video

As an employee at NTNU, I would rather have a Tracker Software to focus on the teacher than me doing it manually

As an employee at NTNU, I would like to have a Servo platform to move the Camera for me

As a lecturer, I want automatic uploading and publishing of videos

As a student, I want to simultaneously see the lecturer, the blackboard, and the powerpoint slides.



### Automatic Tracking

Our solution uses a tracking algorithm based on input from the camera. It recognises the lecturer in front of the lecture hall, and gives input to a set of servo controllers that adjusts the camera such that the lecturer is in focus all the time.

This greatly improves video recording availability, as the university AV-department no longer need a manned camera to film each lecture.

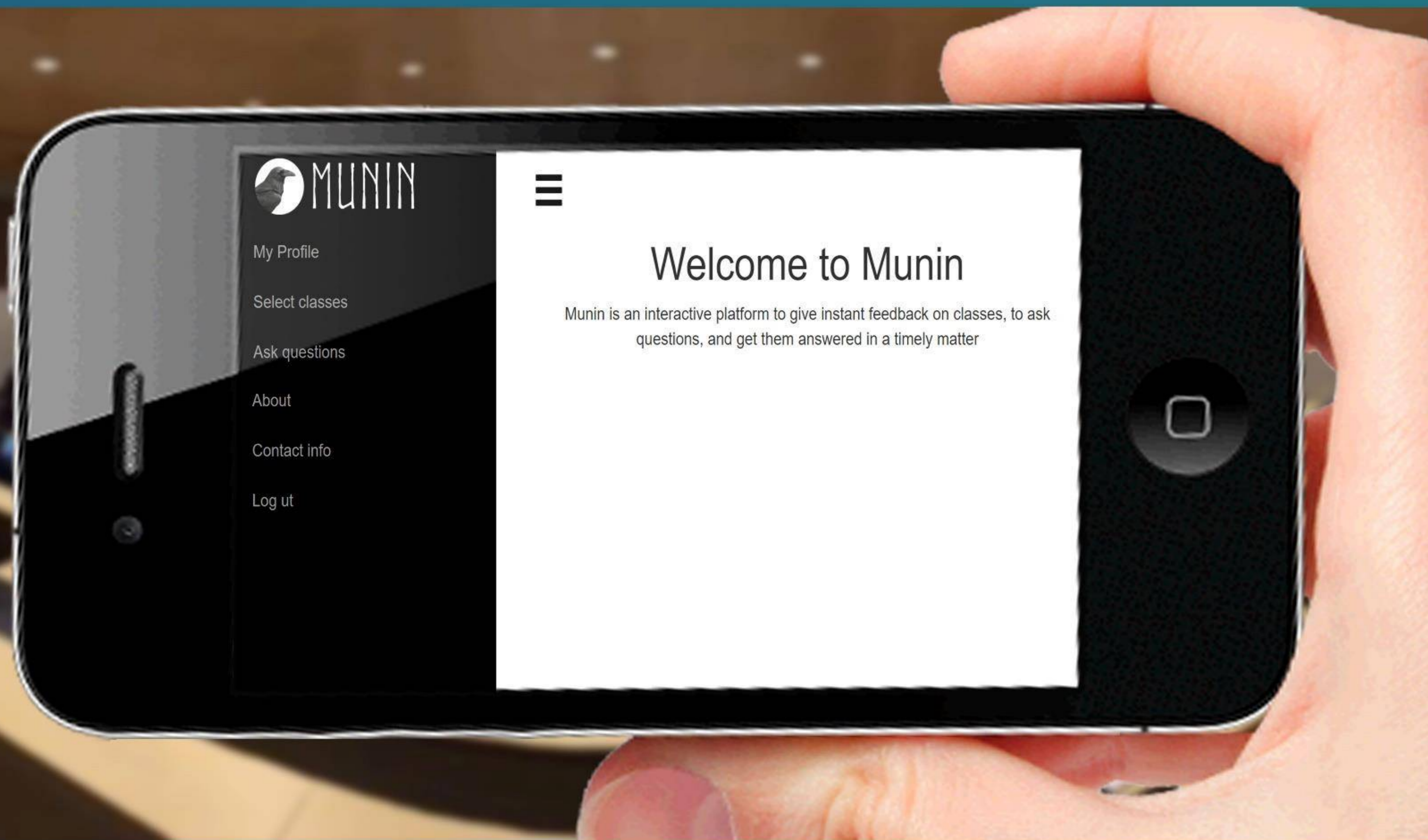
### Publishing and viewing platform

To further enhance the viewing and learning experience, we want to make the videos available to the students as soon as the lecture is finished. It should be possible to interactively choose between viewing the lecturer, the blackboard, the slides, or everything simultaneously.

# MUNIN



- CONNECTING KNOWLEDGE | NO QUESTION IS TOO STUPID -



## TOP 5 BACKLOG ITEMS

- Works on neither iOS nor Android but operates through your favorite web browser, so you can reach it anywhere, anytime and anyhow
- Upvote the most popular questions
- Filter and merge similar questions
- Personally choose what classes you want to showcase
- Ask questions directly to the course staff and get quick answers

We are connecting students' lack of knowledge to teachers' lack of knowledge about students' lack of knowledge.



OUR NAME IS INSPIRED BY ODIN'S RAVEN, MUNIN WHO FLEW OVER MIDGARD AND ASGARD, AND COLLECTED KNOWLEDGE. WHEN HE RETURNED HE WHISPERED ALL THE KNOWLEDGE TO ODIN'S EAR.

Available on your favourite browser, anywhere, anytime, on all platforms soon

(listed left to right)



TEAM: HUGIN

ANDREAS STRAND  
- TEAM LEADER -

ØYVIND SÆBØ  
- GRAPHIC DESIGNER -

HERMANN VILLANGER  
- DEVELOPER -

TRULS ELGAAEN  
- DEVELOPER -

## HOW WE HELP:

One of the major problems in today's methods of teaching at universities, is the lack of feedback from the students to the teacher. A professor may have problems seeing what topics are difficult for the students to understand, and how to efficiently teach it to them. Our concept is to revolutionize the way students bring feedback to the lecturers.

"ITS HARD TO GET AN OVERVIEW OF WHAT THE STUDENTS KNOW BASED ON QUESTIONS RECIEVED IN CLASS. THE LECTURER GETS THE IMPRESSION THAT THE STUDENT ASKING THE QUESTION IS SPEAKING FOR EVERY STUDENT."

- REIDER KRISTOFFERSEN, LECTURER AT NTNU

## PERSONA



Bartosz J. Zarosa is a 24 year old student at NTNU. In his free time, he likes to read sorting algorithm memes. He also likes to read course material to not fall behind on his studies. He is, however, often frightened to ask questions out loud, in fear of appearing stupid in class. He would like for it to be easier to get questions answered in class. He believes that Munin can change the way he learns at school.



# StatBackr



Ole Håkon K. Ødegaard	–	Head of Development
Magnus L. Lian	–	Head of Design
Øyvor S. Haldorsen	–	Scrum Master
Magnus Lyngedal	–	Head of Business



Martha, 21 years old, from Kristiansand. Studies psychology @NTNU.

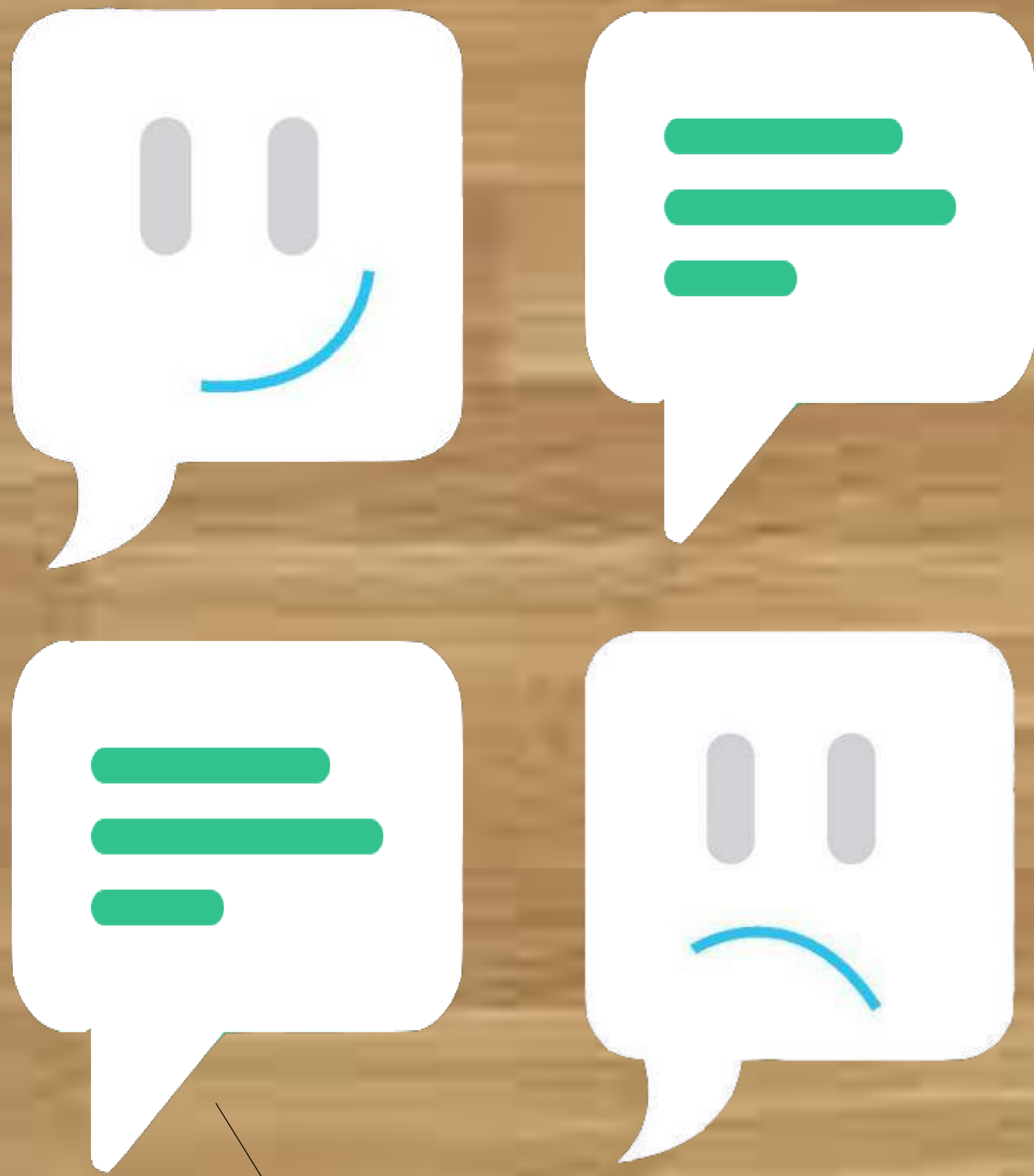
This is Martha. She thrives as a student at NTNU. She doesn't regard herself as a quiet or introverted person, nevertheless she is reluctant to raise her hand in class.

“I wish there was a way to give feedback and ask questions in crowded auditoriums in a way that seems more natural to me - effectively and anonymously.”

Comprehensive statistics and feedback are integral for us here in the StatBackr family. Always on the hunt for tools to better the student-professor dialogue, we aim to offer cutting edge solutions for teaching situations.



# StatBackr



The Learn-o-Meter is a handy little invention: In real-time, it lets you mark your understanding of the current topic. The session average is displayed on the lecturers device.



Want to leave a comment or a question? Here at StatBackr, we let you do just that.

The Learn-o-Meter: How fast are **you** going?

Story ID	Backlog Item
T1	As a user, I want to be able to give feedback to my teacher on how much I understood from the lecture
T2	As a user, I want to be able to give feedback to my teacher on how much I understood from the lecture
T3	As an administrator, I want to create sessions for students to log on to, using a pin
T4	As a user, I want to remain anonymous
T5	As a user, I want the option to leave a comment as a part of my feedback

Have you ever hesitated to participate orally in large crowds, or felt that a lecture was too easy or hard? StatBackr provides the tools for solving these issues through your computer and phone.

- Engages the students and enables the teacher to adjust his or her teaching in real time
- Allows your teacher to create a session, such that you simply can log on using the browser on your computer or phone
- Give live feedback on how much of the lecture you understand to the teacher!

We plan to implement our bot as a web based application, with full compatibility across the entire specter of devices in mind. The application will be supported by a folk.ntnu backend server.

# GRAVITAS

## OUR TEAM



Steffen Helgeland

*Gravitas role:* Creative Manager,  
Programmer



Julie Davidsen

*Gravitas role:* Referent,  
Programmer



Bendik Harto Seim

*Gravitas role:* Project Manager,  
Programmer



Siri Ulltveit-Moe

*Gravitas role:* Text editor, HR,  
Programmer



### Persona

Trond Karlstad (23) is a NTNU-student from Oslo, Norway. He does well in school, but he often lacks the motivation needed to go to lectures. Hence, he is struggling to keep up to date on the subjects before lectures.

‘I wish it was simpler to access course-material and more fun to consume it.’

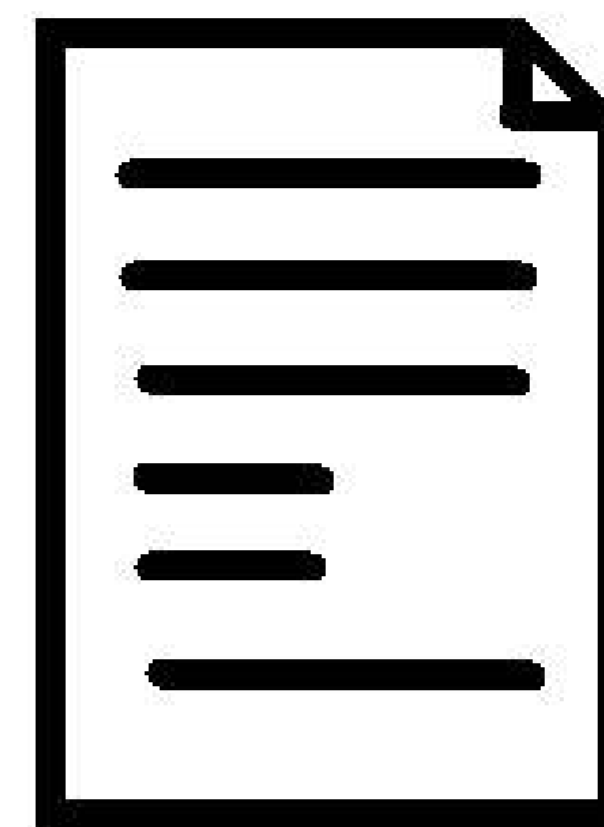
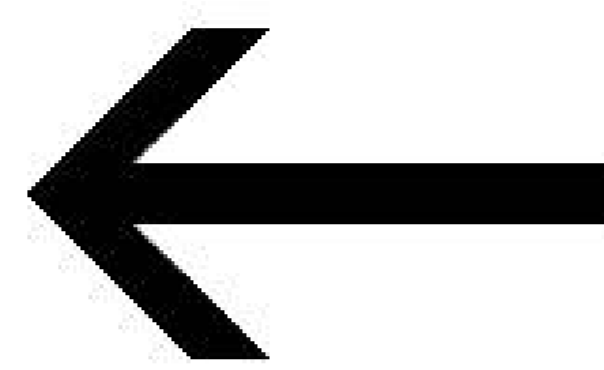
### How we help

Our intention is to help students like Trond and to give them motivation through easier access of course material and something fun, like a quiz. We also intend to give well-timed reminders of deliverables and lectures so that they won't forget a lecture or deliver an assignment late.

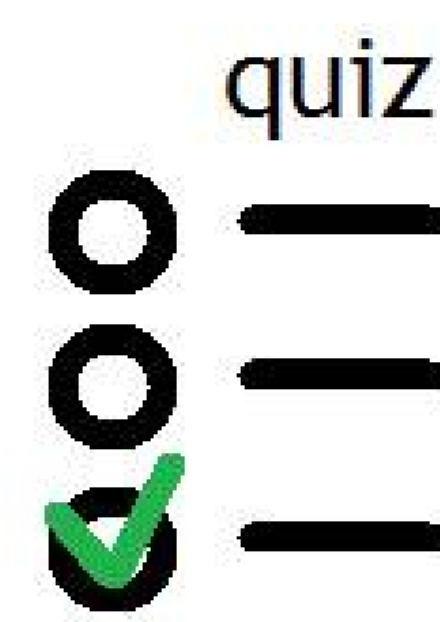
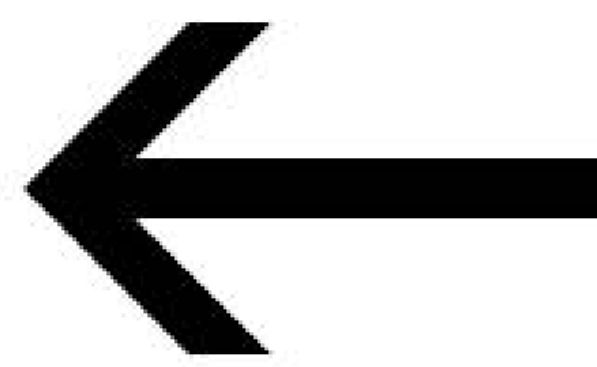


# GRAVITAS

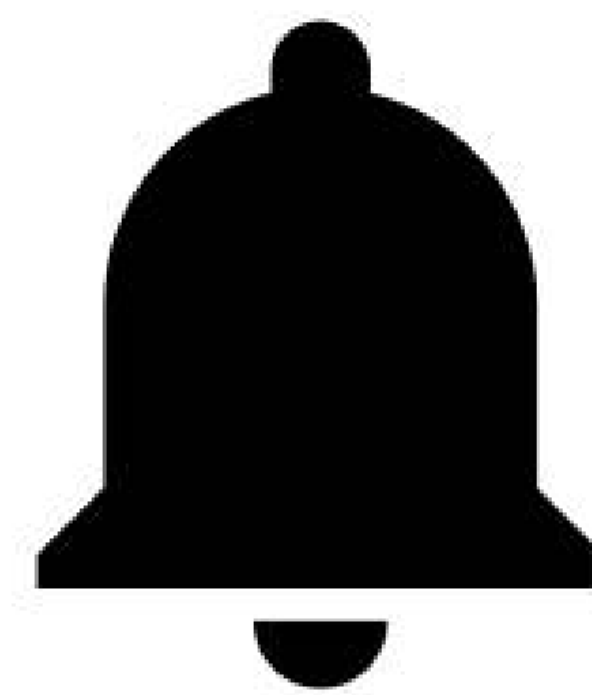
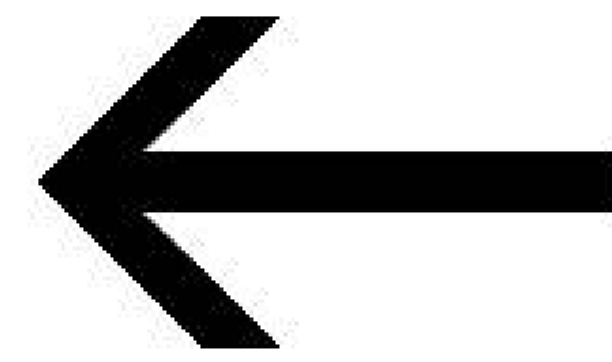
- The pull in education



Course material and notes from lecturers



Quizzes on upcoming lecture material - getting you ready for more learning



Reminding and notifying you on upcoming lectures and deliverables

## WHY USE GRAVITAS?

Gravitas targets students that need or want a little help throughout the school day. Students that are busy in their study day or new to the study-situation, as well as being eager to excel at school. The 'GRAVITAS' application will be a much needed and sought after helper that will provide daily support in enhancing and streamlining students school day.

## What are the benefits?

Gravitas will give students increased value of their time, making a busy student day easier and more effective.

## How does it work?

By combining students schedules with their courses, it will create a platform that will make it easier for students to be informed and up-to-date on their academic courses.

## Powered by

- Python
- Django
- HTML5
- CSS

# Questplan

Questplan is an app where students can check their schedule and upcoming events. Students has a tight schedule and often simple questions about their courses, Questplan is a fast way to answer your questions.



Alfred Sollie Rønning - Developer  
Olav Skogen - Scrummaster

Wei Wei - Tester  
Tharald Stray - Developer



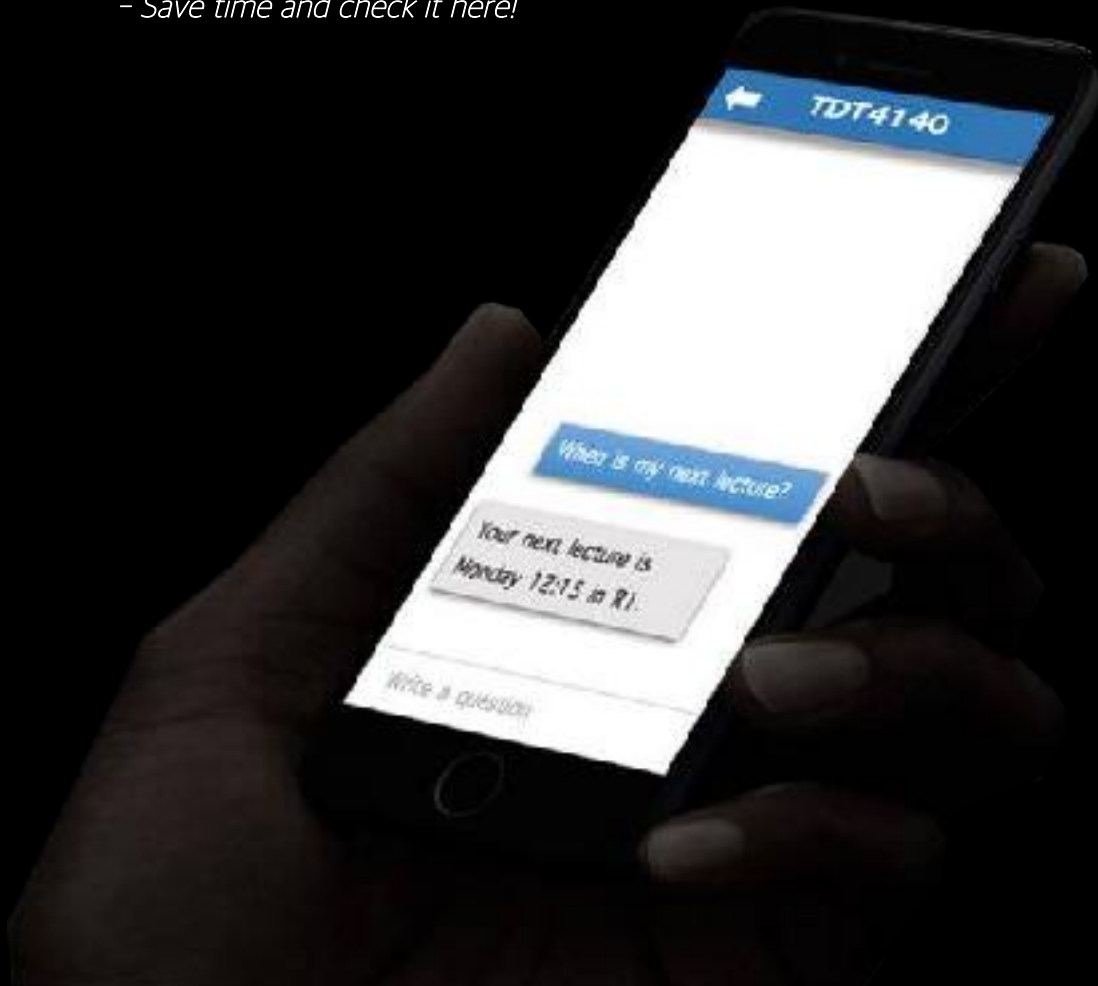
Sander Nordeide is a 21 year old student from Høyanger. He is studying Industrial Economics and Technology Management at NTNU. Sander is also a football player, and does training sessions seven times a week.

Because of his tight schedule, Sander thinks Questplan is an interesting concept that will make his day easier. With Questplan keeping track of his upcoming engagements, he saves energy and time.

”I don´t have to plan my day anymore”

# Questplan

- Save time and check it here!



Questplan is an app, where students can ask questions and get instant answers. No need to contact the professor or search It`s learning to get answers anymore.

## Technology

Some of the most advanced artificial intelligence communication system is used building Questplan. The system will also have the best analytic system ever seen in a chatbot before.

## Features

Questplan lets the user to log in to the app, add courses to their profile and see their calendar. The user can also ask questions in the chat generator and get information gathered from the information sites.

TDT4140 Software Engineering course, Spring 2017



INNOVU

Software Processes  
Agile Software Development  
Project Management and Planning  
Architectural Design  
Software Design

System Modelling and Unified Modeling Language  
Software Process Improvement  
Configuration Management  
Software Testing  
Concepting

Security  
Software Reuse  
Software Evolution  
Service Oriented Architecture  
Software Quality Improvement

Concept poster "Student's workstation"  
Lecturer: Pekka Abrahamsson, Anh Nguyen Duc  
Coaches: Henry Sjøen, Kari Eline Strandjord, Audun Liberg,  
Evelyn Saxegaard, Hung Quang Thieu, Jie Li, Håvard Estensen

201

# Revolutionizing teaching

By automatically generating quizzes and linked statistics from PowerPoint presentations, Feedy will give lecturers a refreshing way of getting accurate and insightful feedback from their students.



From left to right: Alexander Wennevold Silva | **Front-end developer**, Magnus Kunnas | **Designer and developer**, Eivind Reime | **Product team leader**, Eivind Kløvjan | **Back-end developer**



## Persona

Lisa Johanne Kaspersen is a 42 year old professor at a medium-scale university in Norway who teaches liberal arts.

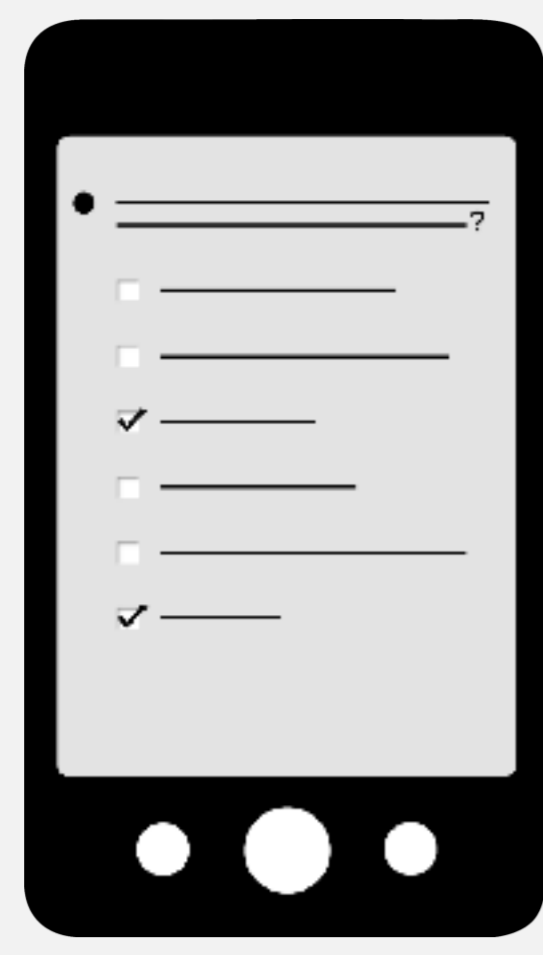
## Pain points

Her courses consist of between 50 and 100 students, and while she receives *some* feedback on student progression in regular meetings with a small selection of them, she wishes to receive a more thorough lecture-by-lecture analysis of how well her students are grasping the topics presented. She has many obligations outside of teaching, and cannot take the time to create quizzes and statistics for each topic in her lectures. Because the students are required to deliver monthly obligatory assignments in order to attend the course exam, she fears that some students may fall behind on the coursework too early.

## How we help

By creating a tool that automatically generates quizzes that are easily accessible via a web application, Lisa will be able to spend more time tailoring her lectures to be the best they can be. The neatly presented statistics that Feedy generates, will allow Lisa to have no ambiguity as to how well her students are following along with the course material.

*” Providing help without knowing the current state of progress or knowing what the student has done, is difficult.*



Eivind Kløvjan, Magnus Kunnas, Eivind Reime, Alexander Wennevold Silva

# FEEDY



## Top 5 user stories

1. As a lecturer, I want to be able to automatically generate a quiz from a PowerPoint file.
2. As a user, I should be able to access the system through a web application.
3. As a student, I need to answer a quiz at the end of each lecture.
4. As a lecturer, I want to view an aggregate of the quiz results from each lecture in the form of statistics, so that I can see how well my students understood each lecture topic.
5. As a lecturer, I need to be able to log in to the system.

## Value proposition

Feedy introduces a brand new way of gathering relevant statistics regarding students' progress in and opinions about a course. This will in turn better the experience of both lecturers and students by allowing more tailored lectures.

## How does it work?

By using an advanced algorithm, Feedy generates quizzes from PowerPoint slides. The quizzes will then be available to everyone via a web application, easily accessible both on PC/Mac and mobile devices. The lecturer will in turn be able to view statistics and feedback based on what students have answered.

## Technologies

Feedy utilizes a back-end written in Python, and front-end written in Javascript (with HTML/CSS). MySQL is used for database management.



Steinar Kollerud, Mattis Araya, Håkon Halldal, Erik Wike

Steinar Kollerud  
Back-end developer

Mattis Araya  
Front-end developer

Erik Wike  
Team leader

Håkon Halldal  
Designer

### Our vision

- Combine theoretical lecture with practical coding for the students.
- Make an interactive and enjoyable learning experience
- Revolutionize the way students learn programming



### Ida Hansen

- Full time student
- Studies informatics
- 20 years old

Ida is a first time informatics student at NTNU. Ida's brother started at NTNU in 2010 and has had some programming classes which made Ida interested in programming. While in class Ida find that it's hard to follow along with the code examples the professor explains on the blackboard. Aurora will help Ida with a more interactive learning experience

“ I wish it was possible to relate theory from the lectures to its modern world application ”

## Top five backlog items

1. As a user I should be able to see the training exercises and write and test code in browser.
2. As a user I should be able to see the PowerPoints slides relevant to the training exercise and easily switch between PowerPoint slides and the text editor.
3. As a lecturer I should be able to add a courses with PowerPoints, training exercises and test code.
4. As a user I should be able to select a course and start or continue the course.
5. As a lecturer I should be able to log in to an admin account.

## How does it work?

The main function of the roBot is to encourage students to participate more in lectures in the means of programming. It will enable the professors to publish training exercises that can be solved live in a web browser. When delivering, the bot will test the code approve or decline the delivery accordingly.

## Potential Technologies

Javascript	Firebase
jQuery	Socket.io
Node.js & express	Chai

# eduBOT

*“An automatic feedback system”*



## Top user stories

- *As a lecturer I want to see general feedback from lectures*
- *As a lecturer I want to see feedback from a specific lectures*
- *As a student I want to send feed back on a specific lecture*
- *As a student I want to send feedback on a subjects lectures in general*
- *As a student I want to see the feed back I have sent*

## Key concepts

*eduBOT will make the feedback process quicker and easier*

*eduBOT makes it possible to continuously gather feedback and can pinpoint feedback to spesific lectures*

## How does it work?

*Students will send in feedback on a specific lecture or the subject in general and our system will store and sort the feedback in a database and show it in an orderly manner to the lecturer*

## Technologies

*React    MySQL*  
*HTML    Git*  
*CSS    Stormpath*



# Team Members



- Hans Chang  Project Manager
- Joachim Eivindsen  Programmer
- Lars Snellingen  Scrum Master
- Alexander Zobel  Programmer

“We will make an automatic feedback system to collect and sort feedback.”



## eduBOT:

An appropriate system that supports the administrative processes tied to a subject: study plan, planning, execution, exam, complaint, justifications and more.

*“Lecturers are seeking feedback from students about their lectures which can be time consuming to do manually.”*

Roger is an 55 year old associate professor and lecturer in TDT4145. He is the dean of Engineering Education at NTNU and a chairman of the national council of technological education in Norway (NRT).



# StuddyBuddy

- Your personal assistant

## THE TEAM



**From left to right:**

**Petter Jørgensen Narvhus** – Quality ambassador

**Espen Røvik Larsen** – Software Architect

**Mahamud Hussein** – Scrum-master

**Ole Viktor Ravna** – Product owner

## PERSONA



This is Jens Nikolai Alfsen. He is 21 years old and is now halfway through his masters degree in engineering and ICT. Throughout his soon to be three years at NTNU he has experienced a couple of pains regarding how NTNU is running things. In particular the unnecessary annoyance the various platforms used in different subjects causes. After browsing It's learning, Blackboard and various wiki-pages you might have covered most of your schedule. Since he started at NTNU Jens has longed for one simple, transparent solution that keeps track of everything.

*"If there was a solution that could keep track of all my deadlines and events, I'm certain I would use it."*

- J. N. Alfsen

## StuddyBuddy

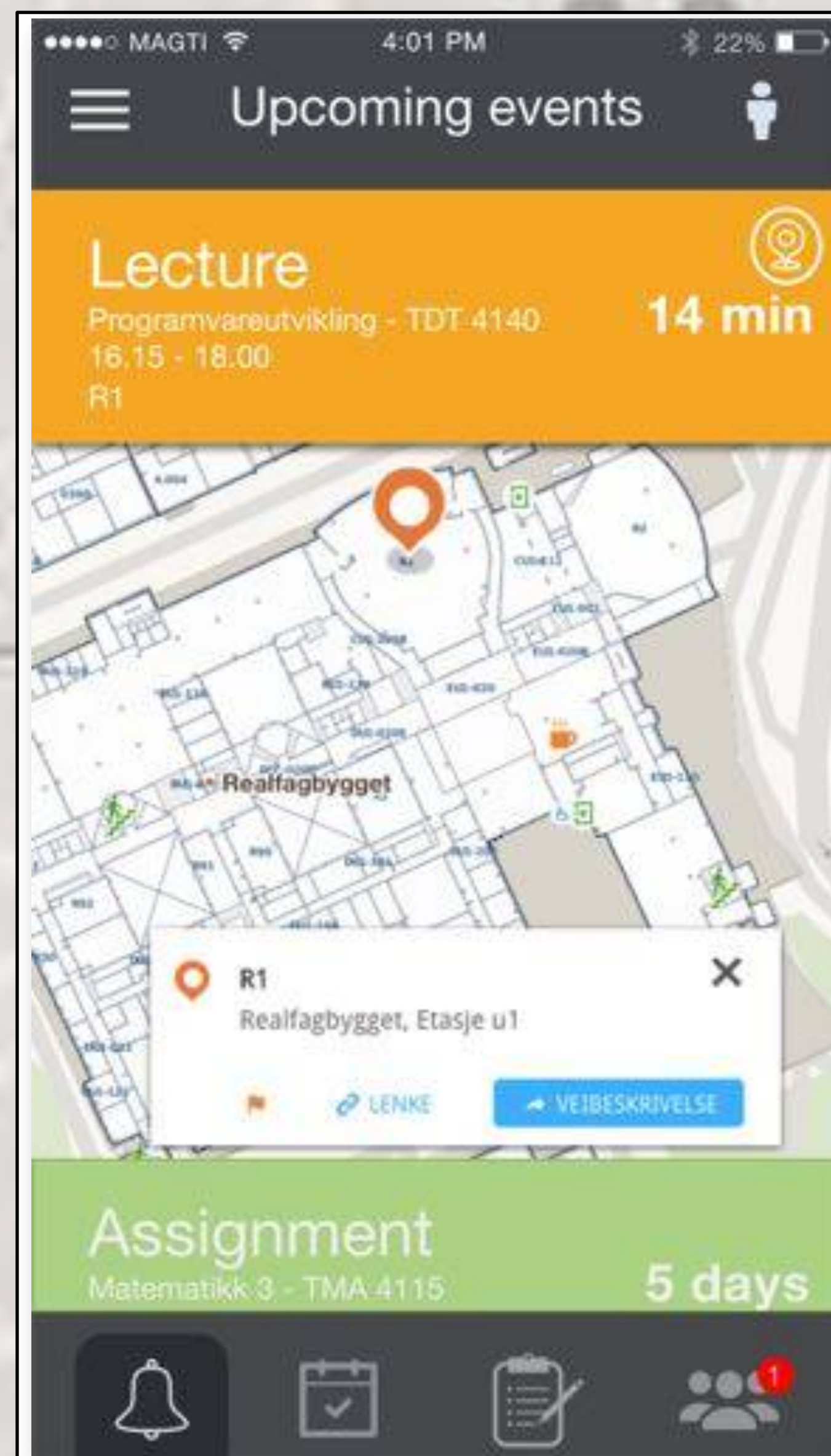
This is where StuddyBuddy comes to the rescue. It gathers all your upcoming events, assignments and tests on one platform, and tells you exactly what you are supposed to do, when you are supposed to do it and where it takes place. No more missing classes, no more getting lost and no more late submissions.

# StuddyBuddy

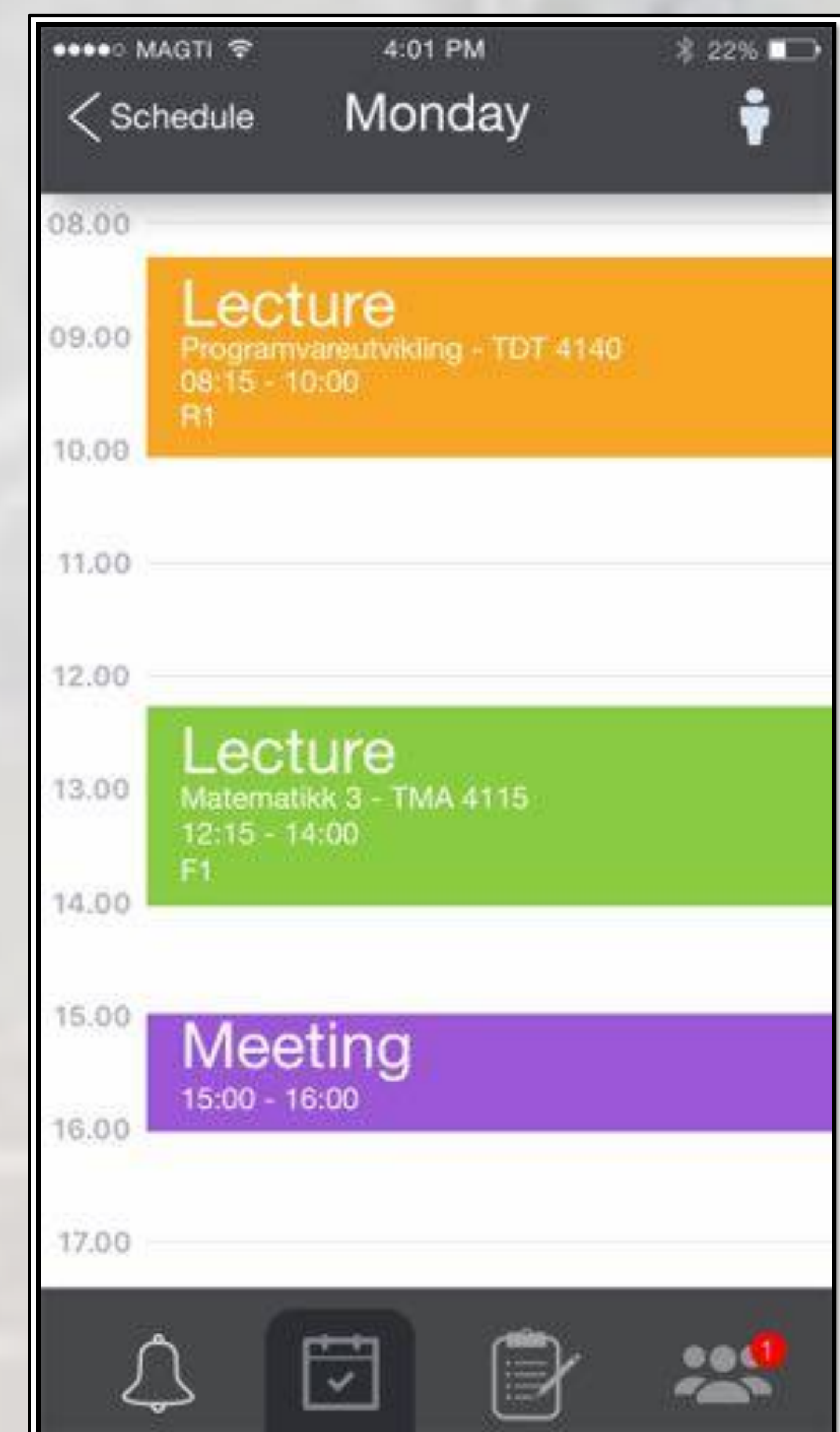
## - Your personal assistant



Always stay on top of all your upcoming events and deadlines to better distribute your time.



Never get lost in the great halls of NTNU again. An embedded MazeMap will guide you to all your events.



Add or remove whatever is important to you to achieve a person specified experience that assists you in your needs.

### Top five backlog items

- As a student, I want to see my next lecture/assignment when launching the app so I quickly can see what to do/where to go.
- As a user I want to be able to use the application in Android, iOS and Windows phone.
- As a user I want to have a user account so that I can see my schedule on different devices.
- As a lecturer I want to have some admin rights on my courses.
- As a user I want to be able to hide cards that are not relevant to me.

### Potential Technologies

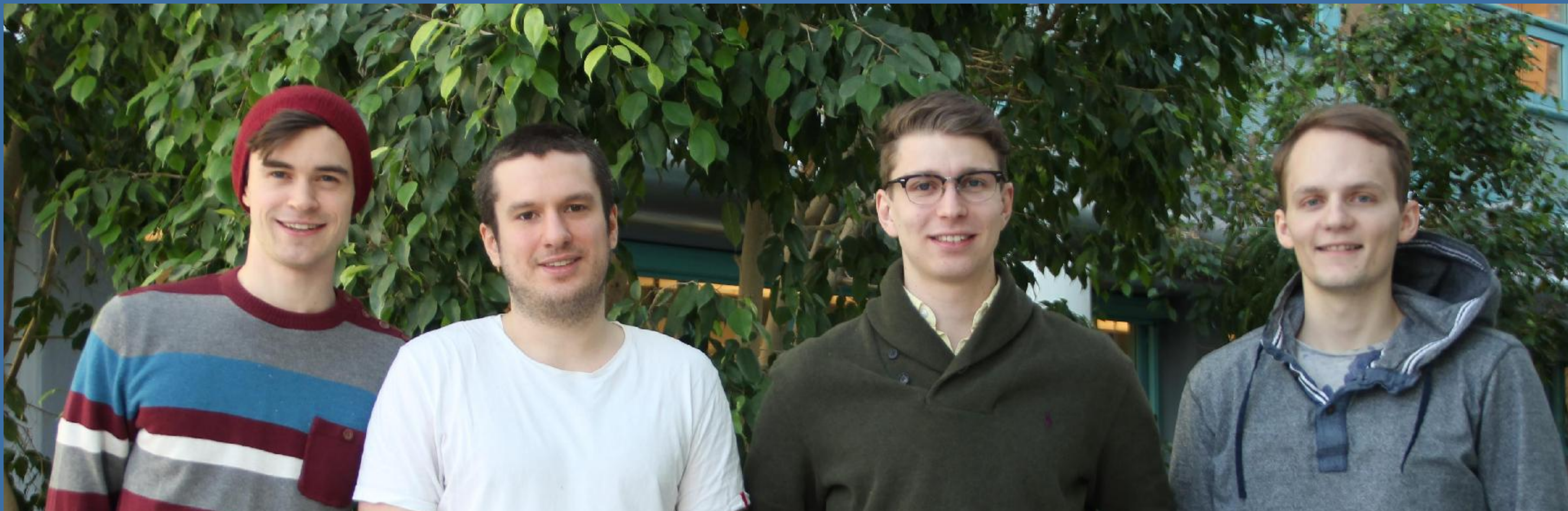
Software will be delivered open source and hosted on GitHub. The repository will consist of code documentation in Markdown format, build scripts and scripts for deployment to cloud environment.

The technologies found in preplanning is centered around .NET ecosystem.

- Xamarin mobile apps
- Azure cloud environment
- ASP.NET Core for web services

# Kolab

## The interactive revolution



Tobias Stene Hansteen  
Chief of Design/Developer

Ruben Hansen  
Developer

Hans Edvard Hafskolt  
Meeting master/Developer

Tor August Hødnebø  
Metric master/Developer



“It’s scary to ask questions during the lectures” - Tom

This is Tom, he’s a 20 year old student at NTNU. He likes to attend lectures, but he would like to ask more questions during class. This can be very difficult as there are large numbers of students in the auditorium during lectures, which makes it hard for the lecturer to see or even hear any questions from anywhere but the front row. He would like an easier way of interacting with the lecturer during class.

This is Bob, he is a lecturer at NTNU. He would like to receive more feedback during lectures. When Bob asks if the students have any questions or if they understood the last topic Bob usually receives blank stares. Bob would like a way to facilitate more feedback between student and lecturer in large classes.

“The students don’t give me enough feedback” - Bob



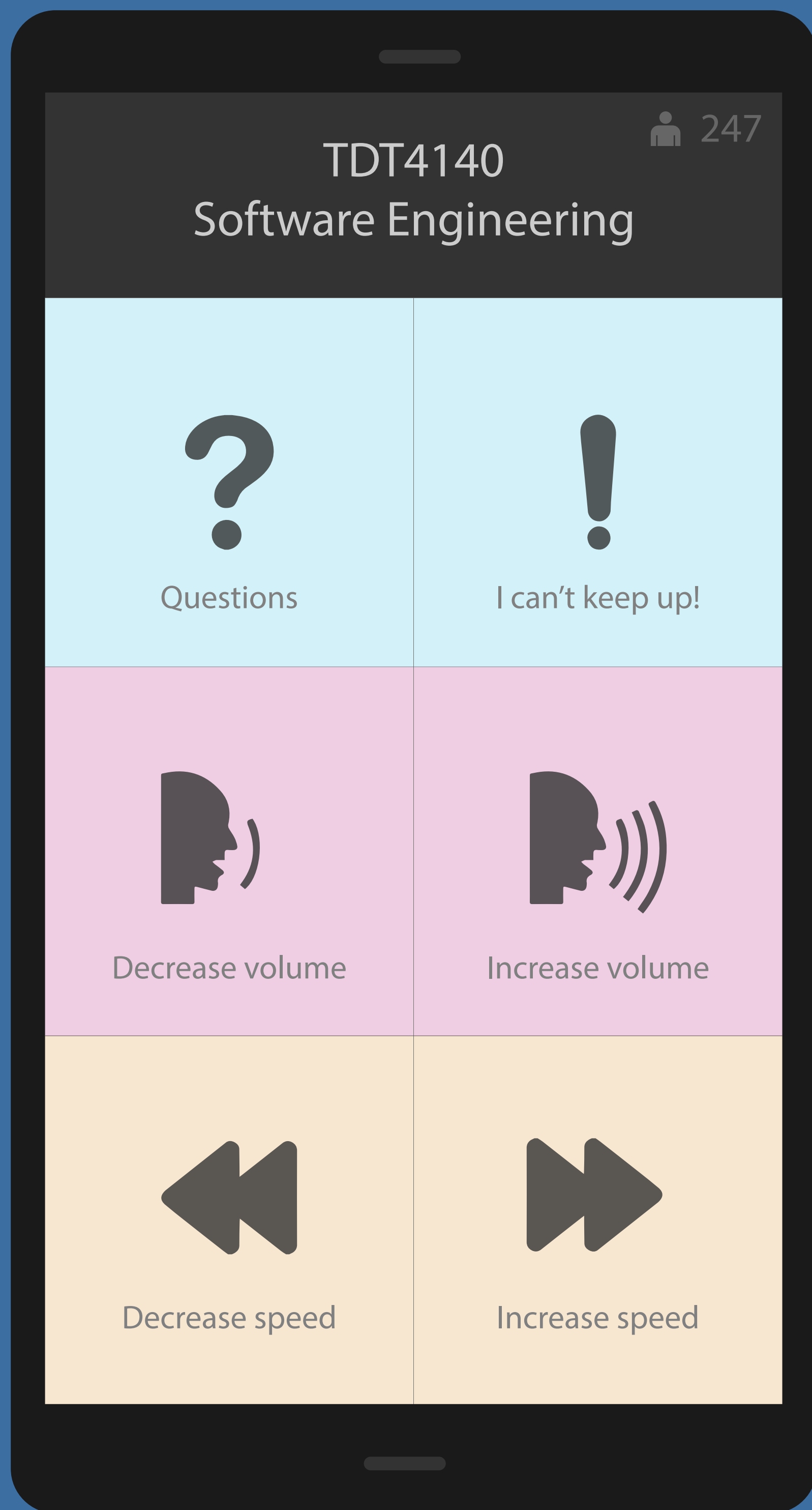
### How can we help?

Kolab lowers the threshold to ask questions in large classrooms, and makes it easy to give the lecturer the feedback he deserves.

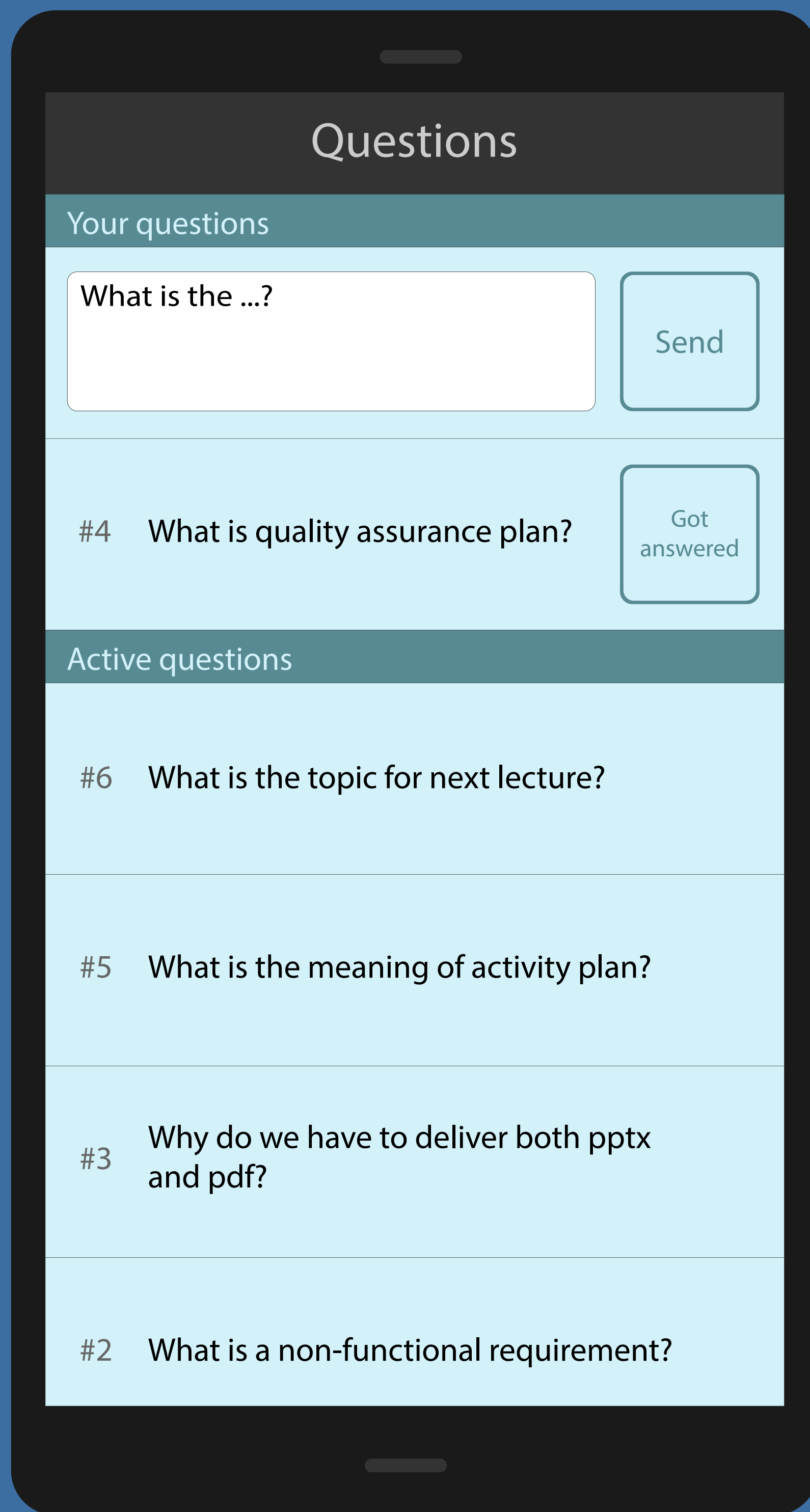
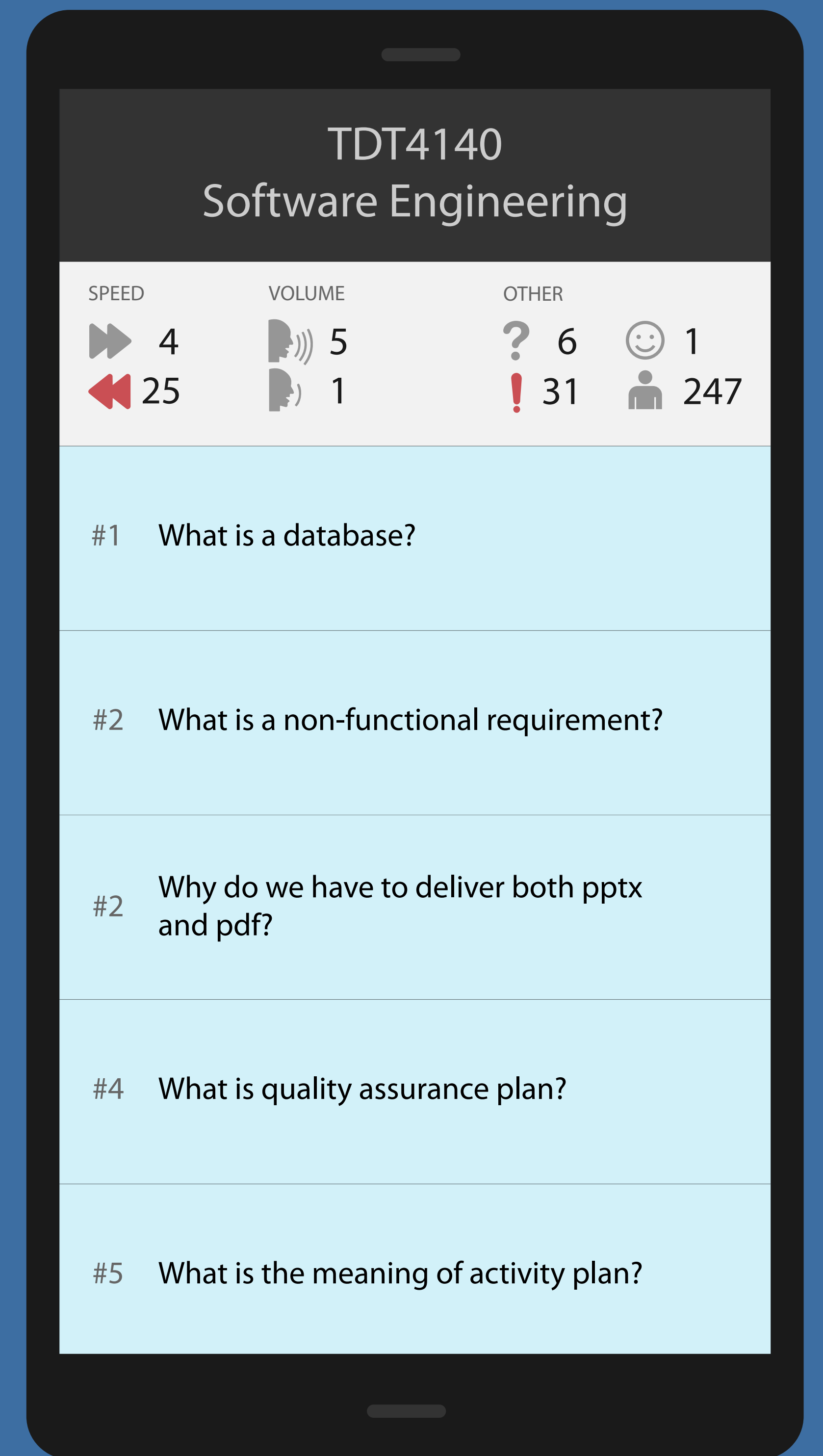
# Kolab

Hødnebo, Hansteen, Hafskolt, Hansen

Student's phone



Lecturer's phone



## Product backlog items

Close to native browser application

Anonymous questions in real-time

Feedback in real-time

Lightweight and responsive backend

Intuitive user experience

## Value proposition

We want to engage students during lectures, keep attendance, lower the threshold for feedback and participation, and allow for all questions to be heard in a large lecturing environment.

## How does it work?

Our web-application connects the lecturer with all of their students during a lecture, and provides means to give feedback and ask questions.

## Technologies

