# Preface

Information Technology and Interactions (IT&I-2021) provides a leading international conference that brings together researchers and practitioners in the field of computer science with the purpose of exploring the fundamental roles, interactions as well as practical impacts of information technology in modern world.

The purpose of the event is presentation and discussion of the latest scientific results in the field of computer science, information technology, research and development of methodologies, techniques and tools for digital transformations of society on this basis.

The collection includes papers peer-reviewed, selected by the program committee and presented at 4 workshops of the 8th International Research Conference Information Technology and Interactions (IT&I-2021, December 1-3, 2021, Kyiv, Ukraine). The following topics were considered at the workshops:

- Artificial Intelligence Technologies;
- Data Analytics. E-commerce, E-government and E-learning Technologies. Digital Project Management Technologies;
- Mathematical Foundations of Information Technology;
- Cyberspace Protection Technologies. Network and Internet Technologies;

The conference was held as a video conference using the Zoom platform on 1-3 December.


Anatoly Anisimov
Vitaliy Snytyuk
IT&I-2021 Conference Editors

# Program Committee of the Conference

**Anatoly Anisimov**, Professor, Taras Shevchenko National University of Kyiv, Ukraine.

**Vitaliy Snytyuk,** Professor, Taras Shevchenko National University of Kyiv, Ukraine.

**Aldrich Chris,** Professor, Western Australian School of Mines, Australia.

**Andreas Pester,** Professor, Fachhochschule Kärnten, Austria.

**Frederic Mallet,** Professor, Université Côte d'Azur, France.

**Hiroshi Tanaka,** Professor, Tokyo Medical and Dental University, Japan.

**Iurii Krak,** Professor, Taras Shevchenko National University of Kyiv, Ukraine.

**Karsten Henke,** Professor, Technische Universität Ilmenau, Germany.

**Mykola Nikitchenko,** Professor, Taras Shevchenko National University of Kyiv, Ukraine.

**Oleg Chertov,** Professor, National Technical University of Ukraine "Kyiv Polytechnic Institute", Ukraine.

**Oleksandr Marchenko,** Professor, Taras Shevchenko National University of Kyiv, Ukraine.

**Sándor Bozóki,** Professor, Computer and Automation Research Institute Hungarian Academy of Sciences, Hungary.

**Vitaliy Tsyganok,** Professor, Institute for Information Recording of the National Academy of Sciences of Ukraine.

**Vladimir Vovk,** Professor, Royal Holloway, University of London, United Kingdom.

## The conference is organized by

Taras Shevchenko National University of Kyiv (Faculty of Information Technology, Faculty of Computer Science and Cybernetics)

National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"

Viktor Glushkov Institute of Cybernetics of the National Academy of Sciences of Ukraine

Institute of Information Technology and Learning Tools of the National Academy of Educational Sciences of Ukraine

Institute for Information Recording of the National Academy of Sciences of Ukraine.

Institute of Software Systems of the National Academy of Sciences of Ukraine

The Council of Young Scientists of the Faculty of Computer Science and Cybernetics and the Faculty of Information Technology of Taras Shevchenko National University of Kyiv