

**INTERNATIONAL INFORMATION TECHNOLOGY
UNIVERSITY JSC**

**DIGITAL TECHNOLOGIES IN
EDUCATION, SCIENCE AND INDUSTRY
DTESI 2024**

Proceedings of the 9th International Conference
October 16-17, 2024

Almaty, Kazakhstan

Preface

The 9th International Conference on Digital Technologies in Education, Science and Industry (DTESI 2024) was successfully held on October 16-17, 2024 in Almaty, Kazakhstan at the International Information Technology University in an offline format.

The conference's purpose was to discuss the latest scientific results in the digital development of society, formulate research problems and outline approaches and tools for their solution.

DTESI 2024 hosted six outstanding keynote speakers:

- Dr. Fulvio Mastrogiovanni, University of Genoa, Genoa, Italy
- Zakaria Maamar, University of Doha for Science and Technology, Doha, Qatar
- Viktoriia Khrutba, National Transport University, Kyiv, Ukraine
- Bohdan Haidabrus, Riga Technical University, Riga, Latvia
- Marat Nurtas, International Information Technology University, Almaty, Kazakhstan
- Batyrkhan Omarov, International Information Technology University, Almaty, Kazakhstan

Within the Conference four workshops were declared:

- Workshop on Software and Knowledge Engineering
- Workshop on Smart Technologies and IoT
- Workshop on Data Science and Artificial Intelligence
- Workshop on Cybersecurity, Infocommunication Systems and Networks

The Conference received 60 submissions, and 45 of them were selected for publication. Scientists from all over Kazakhstan, as well as representatives of the industry, took an active part in the event. In addition, researchers from such countries as Ukraine, USA, UK, Sweden, Germany, South Korea, India, Bosnia and Herzegovina and Oman also made their contributions.

We would like to express our gratitude and appreciation to all the participants of DTESI 2024 and the Organizing and Program Committee.

Editors

Assylbek Issakhov

Kateryna Kolesnikova

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Committee

Conference Chair

A.A. Issakhov, International Information Technology University, Almaty, Kazakhstan

Workshop on Software and Knowledge Engineering

Members of the Program Committee:

Zakaria Maamar, University of Doha for Science and Technology, Doha, Qatar

Shadi Aljavarneh, Jordan University of Science and Technology, Jordan

Madina Mansurova, Al-Farabi Kazakh National University

Kateryna Kolesnikova, International Information Technology University

Workshop on Smart Technologies and IoT

Members of the Program Committee:

Fulvio Mastrogiovanni, University of Genoa, Genoa, Italy

Sergey Bushuyev, Kyiv National University of Construction and Architecture

Andrii Biloshchytskyi, Astana IT University

Yevgeniya Daineko, International Information Technology University

Workshop on Data Science and Artificial Intelligence

Members of the Program Committee:

Batyrkhan Omarov, International Information Technology University

Pakizar Shamo, Kazakh-British Technical University

Anatoliy Tryhuba, Lviv National Agrarian University

Oleksii Yehorchenkov, Institute of Management, Slovak University of Technology, Bratislava

Workshop on Cybersecurity, Infocommunication Systems and Networks

Members of the Program Committee:

Abdul Razaque, Gachon University, South Korea

Noorita Tahir, Universiti Teknologi MARA, Malaysia

Valery Tikhvinskiy, International Information Technology University

Vladimir Jotsov, University of Library Studies and Information Technologies, Bulgaria

Members of the Organizing Committee:

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