

The 30th International Conference on Information and Software Technologies (ICIST 2024) is taking place in Kaunas, Lithuania.

WELCOME

The scientific conference programme includes two invited talks, a workshop and research paper presentations in parallel sessions. The conference papers present recent results as well as discuss research challenges, propose methodologies and describe new applications in four major areas that are covered during the conference, namely:

- Intelligent Methods for Data Analysis and Computer Aided Software Engineering,
- Intelligent Systems and Software Engineering Advances,
- Smart e-Learning Technologies and Applications,
- Cyber Security

The papers on the areas mentioned earlier are further subdivided into four special sessions that are to be held at the conference:

- Special Session on Intelligent Methods for Data Analysis and Computer Aided Software Engineering;
- Special Session on Intelligent Systems and Software Engineering Advances;
- Special Session on Smart e-Learning Technologies and Applications;
- Special Session on Cyber Security Advances.

For the tenth time already, the Conference Proceedings will be published by Springer as a part of *Communications in Computer and Information Science (CCIS)* series and will be referred in Clarivate Analytics.

The conference was made possible due to the support of the *Faculty of Informatics*, Kaunas University of Technology, and *Research Council of Lithuania*, whose contribution is gratefully acknowledged.

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Audrius Lopata, Kaunas University of Technology, Lithuania

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Michał Wieczorek, Silesian University of Technology, Poland

Ramūnas Kubiliūnas, Kaunas University of Technology, Lithuania

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SPONSORS

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KEY NOTES & SPEAKERS



FLORENC DEMROZI, Ph.D. in Computer Science and IEEE and IFIP WG 10.5 member, received his B.Sc. (2014) and M.Sc. (2016) degrees in Computer Science and Engineering from the University of Verona, Italy. He also obtained his Ph.D. in Computer Science from the University of Verona in 2020. Currently, he serves as an Associate Professor in Medical Technology at the Department of Electrical Engineering and Computer Science, University of Stavanger, Norway. Dr. Demrozi is a cofounder of

the IoT4Care research group at the University of Verona and a member of the Biomedical Data Analysis Lab (BMDLab) and the Stavanger AI Lab (SAIL) at the University of Stavanger (Norway). He has also been a Visiting Researcher/Professor at the University of Florida (USA), TU Chemnitz (Germany), the University of Limerick (Ireland), and the University of Verona (Italy). In his current role, he focuses on research areas such as Artificial Intelligence of Things (AIoT), Human Activity Recognition (HAR), Active and Assisted Living (AAL), and the Internet of Medical Things (IoMT). Dr. Demrozi also serves as an Associate Editor of the IEEE Sensors Journal and is part of the organizing/review committee for various international journals and conferences.

ICIST 2024

The Synergy of Artificial Intelligence of Things (AIoT) and Sensor Technology in Human Activity Recognition (HAR) for Active and Assisted Living (AAL)

Thursday, October 17th, 10.00 – 11.00

The rapid advancements in Artificial Intelligence of Things (AIoT) and sensor technology are transforming the landscape of Active and Assisted Living (AAL). This talk explores the synergy between AIoT and Human Activity Recognition (HAR) systems to enhance personalized healthcare for aging populations and individuals with chronic conditions. By leveraging smart sensors and AI-driven models, HAR can monitor and analyze daily activities in real-time, offering unprecedented insights into users' behavior and well-being. This integration supports proactive and tailored interventions, improving quality of life and promoting independence. The presentation will delve into key applications, challenges, and future opportunities in combining AIoT and HAR for the next generation of personalized AAL solutions.

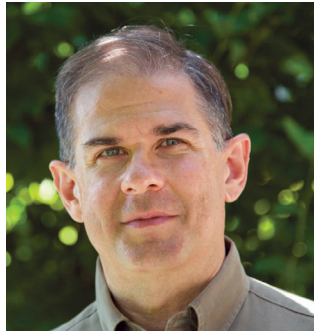


Cybersecurity for all?

Friday, October 18th, 14.00 – 15.00

Cybersecurity has transformed from a niche subject to the mainstream in just a few years. The pandemic-era reliance on online tools only accelerated the process. Businesses have discovered the need to protect their information and data, legislators are rushing to produce ever-new regulations, nation-states play at cyber warfare, and even casual YouTube users are now daily exposed to VPN ads. But what did this trend do for actual information security on the Internet? Are the security priorities of the different actors aligned? What will cybersecurity look like in another decade? Let us see what the popularization of cybersecurity has brought with it and who will gain and lose.

ALESSANDRO GUARINO is a senior information security professional and founder and CEO of StAG, a consultancy firm in France offering cybersecurity, privacy, and data protection services to both the private and public sectors. He is an expert in digital forensics, an ISO contributor, Italy's representative in cybersecurity committees, and president of the International Work Group for Autonomous Intelligence Cyber-Defence Agents, with active involvement in Horizon EU Research and Innovation programs and a wide range of speaking engagements at international conferences on topics like cyber conflict, data protection, and digital investigations.



THURSDAY, OCTOBER 17th

09.00 – 09.30 REGISTRATION

KTU Campus Library

09.30 – 10.00 OPENING CEREMONY

Dr. **Jonas Čeponis**, Dean of Faculty of Informatics, Kaunas University of Technology.

Prof. **Kęstutis Baltakys**, Vice-rector for Research, Kaunas University of Technology

Prof. Dr. **Audrius Lopata**, Conference Chair, Faculty of Informatics, Kaunas University of Technology

10.00 – 11.00 KEY NOTE

Florenc Demrozi, Ph.D.

The Synergy of Artificial Intelligence of Things (AIoT) and Sensor Technology in Human Activity Recognition (HAR) for Active and Assisted Living (AAL)



11.00 – 11.30

11:30 – 13:00

SESSION 1 | *KTU Campus Library*

SOFTWARE ENGINEERING

Special Session on ***Intelligent Systems and Software Engineering Advances (Part 1)***

Chaired by Prof. Dr. **Michał Wieczorek**

1. Impact of Feature Standardization on Classification Process Using PCA and SVM Algorithms

Katarzyna Wiltos

2. Interactive bicycle route planning system using an efficient Dijkstra-based algorithm

Antoni Jaszcz, Szymon Hankus, Michał Bober and Bartosz Bugla

3. Fantastic fishes and how to classify them

Piotr Żerdziński

4. The research setup for measuring and recording the impact of power supply method on energy losses in a BLDC motor

Andrzej Sikora, Rafał Brociek, Adam Zielonka

13.00 – 14.30



14:30 – 15:30

SESSION 2 | KTU Campus Library

SOFTWARE ENGINEERING

Special Session on **Intelligent Systems and Software Engineering Advances (Part 2)**

Chaired by Prof. Dr. **Zbigniew Marszałek**

1. Assessing the Performance of NMF and GMM in the Soft Classification of Kidney Stones: Insights from FTIR Data
Aistis Raudys, Aušra Šubonienė and Arūnas Želvyš

2. GAN-CLAHE: Generative Adversarial Networks enhanced with CLAHE for image generation process
Tomasz Bury

3. The impact of different generators in Deep Convolutional GAN models on the quality of generated photos
Alicja Polowczyk and Agnieszka Polowczyk

4. Modeling the Intellectual Behavior of a Team of Robots Based on the Multi-Agent Simulation Model
Dzmitry Adzinets and Eugene Alooeff



15:30 – 16:00

16:00 – 17:30

SESSION 3 | KTU Campus Library

CYBER SECURITY

Special Session on **Cyber Security**

Chaired by Assoc. Prof. Dr. **Šarūnas Grigaliūnas**

1. FinTech Security Challenges in Control of Digital Trustworthy Against Money Laundering

Šarūnas Grigaliūnas, Algimantas Venčkauskas, Rasa Brūzgienė and Andrejs Romanovs, Ernestas Serkovas

2. Comparing Ensemble Learning and Deep Neural Network for Malware Detection: A Comprehensive Evaluation with Feature Optimization

Hajar Ouazza, Fadoua Khennou and Abderrahim Abdellaoui

3. Radio Hacking and Its Impact on Navigation Systems

Giorgi Tomadze, Ilia Lomidze, Mikheil Kurashvili, Giorgi Akhalaia and Vladimer Svanadze

4. A Neural Network Approach to Chess Cheat Detection

Maksim Iavich and Zura Kevanishvili



FRIDAY, OCTOBER 18th

09.00 – 09.30 **REGISTRATION**

KTU Campus Library

09.30 – 10.30 **KEY NOTE**

Alessandro Guarino

Cybersecurity for all?



10.30 – 11.00

11:00 – 12:30

SESSION 4 | *KTU Campus Library*

BUSINESS INTELLIGENCE FOR INFORMATION AND SOFTWARE SYSTEMS

Special Session on ***Intelligent Methods for Data Analysis and Computer-Aided Software Engineering (Part 1)***

Chaired by Assoc. Prof. Dr. *Audrius Lopata*

1. Development of a Decision-Making Support System for Website Selection

Irakli Basheleishvili, Giorgi Kapanadze and Sergo Tsiramua

2. OTE: A Tool For Extracting Tabular Purchasing Order Information From PDF Documents

Michael Scholz and Jörg Bauer

3. Visualization Examples in Financial Process Mining

Ilona Veitaitė, Audrius Lopata and Saulius Gudas

12.30 – 14.00



14:00 – 15:30

SESSION 5 | *KTU Campus Library*

INFORMATION TECHNOLOGY APPLICATIONS

Special Session on ***Intelligent Methods for Data Analysis and Computer Aided Software Engineering (Part 2)***

Chaired by aAssoc. Prof. Dr. *Ilona Veitaitė*

1. Risk Management Methodology in Agile Projects using Calculations based on Attributes

Adelė Nečionytė and Lina Bisikirskienė

2. Dating the Undated Manuscripts manually and automatically

Maksim Iavich and Maia Ninidze

3. Analysis of Field-Edge System Latency in Transport Monitoring Environment

Aistis Raudys, Lukas Baltramaitis and Robert Mackevič

4. Text Simplification for Lithuanian

Justina Mandravickaitė, Eglė Rimkienė, Danguolė Kotryna Kapkan and Danguolė Kalinauskaitė

5. Constructing simulated party lists from voter preference lists for use in elections based on single transferable vote

Martynas Patašius



15.30 – 16.00

16:00 – 17:30

SESSION 6 | KTU Campus Library

INFORMATION TECHNOLOGY APPLICATIONS

Special Session on **Smart e-Learning Technologies and Applications**

Chaired by Dr. *Ramūnas Kubiliūnas*

1. A Case Study on Specific Delivery Issues in Hybrid Learning Implementation

Evelina Stanevičienė, Edvinas Zinkevičius, Francisco Javier Morales Luque and Maciej Dymacz

2. Efficient Didactic Methods Used in Modern E-learning and Traditional Environments

Constantin Lucian Aldea, Delia Monica Duca Iliescu, Razvan Bocu and Anca Vasilescu

3. A Case Study on Big Data Course Design and Implementation

Rita Butkienė, Daina Gudonienė, Evaldas Vaičiukynas, Lina Čeponienė, Vitor Jorge Ramos Rocio, Jochen Dickel and Sirje Virkus

4. A Case on Artificial Intelligence Technologies Using for Tutoring and Achieving Learning Outcomes

Daina Gudonienė, Evelina Stanevičienė, Edgaras Dambrauskas, Justyna Janik, Yolanda E-Martín and Gerhard Fischerauer

17:30 – 17:45

BEST PAPER AWARDS AND CLOSING THE CONFERENCE | *University Library*

Awarded by Prof. Dr. *Audrius Lopata*

18:00 – 20:00



CONFERENCE VENUE

The University Campus Library is located in the Kaunas University of Technology, Building IX (Studentų str. 48). The library's collection (about 56,000 copies) consists of publications of the former Civil Engineering and Architecture Library, as well as the Library of Informatics and part of the library of the Faculty of Chemical Technology.

Visitors to the University Campus Library can use the library's areas and reading rooms, borrow books for reading at home, reserve individual and group work rooms, and access the amphitheater. A kitchen is available on the ground floor for visitors' convenience.

There are 443 workplaces, including 33 computer workplaces, three workplaces for people with special needs, 11 group work rooms, four individual work rooms, 64 leisure spaces, and an amphitheater for events.



<https://library.ktu.edu/>

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ABOUT KAUNAS



Kaunas is Lithuania's second-largest city, and it keeps the authentic spirit of the country's national character alive. The city is located at the confluence of the two largest Lithuanian rivers, surrounded by hills, and at the crossroads of the most important roads in Lithuania. Due to its geographical position,

Kaunas is Lithuania's most important communication center today.

Kaunas is a colorful city famous for its street art. It is probably the only square in the world you can't get into—George Maciunas Square, inspired by the FLUXUS movement.

Discover Kaunas as an excellent meeting place, experience the city's unique ambiance, and get introduced to many modern conference facilities, quality services, and exciting leisure activities. The unique atmosphere of Kaunas can be explored, distinguished by the heritage of the painter and composer M. K. Čiurlionis.

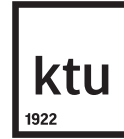
Kaunas is a city of old traditions and a large center of business and industry. It can also claim to be a city of young people, with over 35,000 students (the most significant number in Lithuania) studying at one of the seven universities here. Our city offers businesses and investors a friendly, open, and creative space for partnerships and cooperation.

Green streets, tree-lined avenues, and wide-open squares create surroundings to match everybody's moods. Kaunas is proud of its many museums, theatres, universities, colleges, fine hotels, restaurants, cafes, and bars. Guests can try a range of cuisines from many European and Asian countries and an abundance of traditional Lithuanian food, drink, and hospitality.

For more information about Kaunas, please visit

<https://visit.kaunas.lt/en/>

ABOUT KAUNAS UNIVERSITY OF TECHNOLOGY



Kaunas University of Technology, with its eight faculties, a branch in Panevėžys, high school (gymnasium), middle school, and nine research centers, is the second-largest university in Lithuania. About 80% of Lithuania's industrial engineers have graduated from KTU. In 1990, KPI was restructured and aligned with most Western universities. Under a Parliamentary decision, it was then granted its present university status and name. Now, Kaunas University of Technology is the largest technical university in Lithuania. More information about Kaunas University of Technology can be found at <http://ktu.edu/>

FACULTY OF INFORMATICS

The Faculty of Informatics of Kaunas University of Technology was established in 1977. The faculty currently consists of five departments:

*Department of Multimedia Engineering,
Department of Information Systems,
Department of Computer Science,
Department of Software Engineering,
Department of Applied Informatics,*

and two research centers:

*Centre of Real-Time Computer Systems,
Centre of Information Systems Design
Technology.*



The faculty offers bachelor's degree programs in Informatics, Informatics Engineering, Multimedia Technologies, Information Systems, and Software Systems. Those pursuing a Master's degree can choose accordingly from five study programs:

*Informatics,
Information and Information Technology Security,
Information Systems Engineering,
Information Technologies of Distance Education,
Software Engineering.*



Graduates of master's degree studies can pursue an academic career by choosing Informatics or Informatics Engineering doctoral studies.

Each year, the Faculty of Informatics accepts around 500 new students seeking a Bachelor's or Master's degree. In 2019, we had more than 2100 Bachelor's, 190 Master's, and 40 Doctoral students.

The faculty also publishes a scientific journal, **INFORMATION TECHNOLOGY AND CONTROL** (indexed by Clarivate Analytics, www.itc.ktu.lt, e-mail: itc@ktu.lt)

USEFUL INFORMATION

Lithuanian Time

Lithuania is located in the Eastern European Time Zone, GMT+2.

Currency Euro (€).

Useful Phone Numbers

Emergency call: 112

Information: 118

Kaunas Airport

Information: +370 612 44442

Kaunas Bus Station

Information: (+370 37) 40 90 60

Kaunas Railway Station

Information: +370 700 55111

Taxi in Kaunas



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