



The 25th *International Conference on Information and Software Technologies (ICIST 2019)* is taking place in Vilnius, the capital of Lithuania.

WELCOME

The scientific conference programme includes three 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, Information Systems, Business Intelligence for Information and Software Systems, Software Engineering, and Information Technology Applications. The papers on the aforementioned areas are further subdivided into nine special sessions that are to be held at the conference: (i) Innovative Applications for Knowledge Transfer Support, (ii) e-Health Information Systems, (iii) Intelligent Methods for Data Analysis and Computer Aided Software Engineering, (iv) Intelligent Systems and Software Engineering Advances, (v) Smart e-Learning Technologies and Applications, (vi) Language Technologies, (vii) Digital Transformations, (viii) Information Technology Security and (ix) Software and Model Metrics and Measurements.

For the eighth time already, the Conference Proceedings are 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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KEY NOTES & SPEAKERS

Prof. dr. **ROBERT NOWICKI** PhD, DSc, is an assistant professor of computer science at Institute of Computational Intelligence at the Czestochowa University of Technology and currently vice dean for the science of Faculty of Mechanical Engineering and Computer Science at the Czestochowa University of Technology. He earned M.Sc. degree in electrical engineering at Faculty of Electrical Engineering, PhD degree in computer science (AGH University of Science and Technology in Krakow) as well as DSc (System Research Institute at Polish Academy of Science). His research focuses on developing new methods in computational intelligence especially fuzzy inference systems and rough set theory. He authored approximately 100 research papers published inter alia as articles in IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Systems, Man, and Cybernetics--Part



B: Cybernetics, Journal of Nonlinear Analysis, Series A: Theory, Methods & Applications, Lecture Notes in Computer Science, Lecture Notes in Artificial Intelligence and as book chapters in World Scientific and Engineering Society Press, Silesian University Press, Academic Publishing House EXIT, IOS Press, Springer Physica-Verlag. He is also the author of monograph "Fuzzy decision systems in tasks with limited knowledge" (in Polish) published by Academic Publishing House EXIT in 2009. He is a member of the International Program Committee of the International Conference on Artificial Intelligence and Soft Computing and other science events. He is a member of the Institute of Electrical and Electronics Engineers, Computer Science Society and Polish Neural Network Society. He is a laureate of the Scientific Award of the Department of Technical Sciences of the Polish Academy of Sciences for work on research in the field of decision making in tasks with incomplete information in 2010.

Rough hybrid decision making

**Thursday, October 10th,
11.00 – 12.00**

The rough set theory proposed by Professor Pawlak divides the universe into the equivalence classes called atoms. The atoms grouping the elements of the universe which are indistinguishable in view of an assumed or available description of the element. The theory describes how to make decisions in such defined space of approximation. This idea can be adapted to many other techniques of decision making. There are various methods of hybridization, e.g. multistep data processing and merging of the methodologies. Thus, many hybrid solutions have been proposed. We have got rough neural networks, rough fuzzy systems, rough nearest neighbour classifiers etc. They conserve the original properties of neural networks, fuzzy systems and nearest neighbour classifiers and possibility of working in the approximation space defined in rough set theory.

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Violin playing robot – from finger to ear Thursday, October 10th, 12.30 – 13.30

The keynote speech is to determine how the violin playing robot can produce sounds qualified as “brilliant” by professional judgment. We begin our study with the basic physics of producing sound with a violin. Violinists learn to make better sounds by hearing and evaluating their own playing through numerous practices. This study proposes a new method of auditory feedback, which mimics this violinists’ step and verifies its efficiency using experiments. Also, we propose a robot hand for a violin playing robot and introduces a robot finger. The violin fingering plays an important role in determining the tone or sound when the violin is being played.



Prof. dr. **DONGHAN KIM** was appointed Associate Dean of College of Electronics and Information at the Kyung Hee University in 2017. He is a Professor in the Department of Electrical Engineering at Kyung Hee University (South Korea) since 2007. He founded the HRI Lab at Kyung Hee University, which performs research in Human-Robot interaction, service robotics, cooperative robotics, and multi-robot systems. He serves on the Board on International Robot-soccer Committee, Intelligent Robot Standards Forum and Institute of Control, Robotics and Systems. Prior to his position at Kyung Hee University, Prof. Kim was in industrial and commercial hardware development as a senior engineer at Samsung Electronics for 3 years. In that experience, he developed and lead numerous mobile phone projects. Prof. Kim has a Ph.D., M.S.E. and B.S. in Electrical Engineering from the Korea Advanced Institute of Science and Technology. He was a postdoctoral fellow at University of Illinois at Urbana-Champaign in 2003. His current research interests are in the area of a multi-agent robot systems.

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Prof. dr. **WEI WEI** is an associate professor of School of Computer Science and Engineering, Xi'an University of Technology. He is a senior member of *IEEE*, *CCF*. He received his Ph.D. and M.S. degrees from Xi'an Jiaotong University in 2011 and 2005, respectively. He ran many funded research projects as principal investigator and technical members. His research interest is in the area of wireless networks, wireless sensor networks Application, Image Processing, Mobile Computing, Distributed Computing, and Pervasive Computing, Internet of Things, Sensor Data Clouds, etc. He has published around one hundred research papers in international conferences and journals. He is an editorial board member of *FGCS*, *IEEE Access*, *AHSWN*, *IEICE*, *KSII*, etc. He is a TPC member of many conferences and regular reviewer of *IEEE TPDS*, *TIP*, *TMC*, *TWC*, *JNCA* and many other Elsevier journals.

Intelligent transportation systems based on wireless sensor networks

Saturday, October 12th, 9.30 – 10.30

Wireless sensor networks can support building and transportation system automation in numerous ways. An emerging application is to guide drivers to promptly locate vacant parking spaces in large parking structures during peak hours. This paper proposes efficient parking navigation via a continuous information potential field and gradient ascent method. Our theoretical analysis proves the convergence of a proposed algorithm and efficient convergence during the first and second steps of the algorithm to effectively prevent parking navigation from a gridlock situation. The empirical study demonstrates that the proposed algorithm performs more efficiently than existing algorithms.

Prof. dr. **ROLF ENGELBRECHT** directs the National Research Center for Environment and Health in Neuherberg, Germany. He is a past president of the European Federation for Medical Informatics and past vice president of the International Medical Informatics Association (IMIA) and Artificial Intelligence in Medicine, Europe. Dr. Engelbrecht has, over many years, investigated the use of “smart cards” as portable electronic medical records. He is a long-standing scholar, teacher, and author in biomedical informatics. Professor Engelbrecht is elected as an International Associate in recognition of the broad scope of impact of his efforts in advancing the art and science of biomedical informatics in Europe and worldwide.



- Discuss items for future and initiatives in the Baltic Region.

The short presentations will cover actual topics relevant to Health Information Management in Europe. The workshop will also provide topics for immediate work.

The workshop is subdivided in following sections: Medical Informatics good practice, education and capacity building; CrowdHealth: Holitics health records and big data analysis for health; CrowdHealthProject; Working on next steps on European health records, capacity management for health using results from CrowdHealth and EFMI working groups.

The workshop will demonstrate the value of international collaboration. Participants will work on HIM education requirements, capacity building and their realisation.

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Prof. dr. **JOHN MANTAS** graduated from the Department of Electrical and Electronic Engineering at the University of Manchester in 1979, and after a year he completed his Master's degree with specialization in Information Technology and Telecommunications. In 1983 he received his Ph.D. in Computer Science from the University of Manchester. Professor John Mantas



began his academic career firstly at the University of Manchester and then at the School of Health Sciences of the University of Athens (from 1986). From 1998 he is Full Professor of Health Informatics and Director of the Laboratory of Health Informatics. He served as a Dean of the School from 2001 to 2005. He was the Vice-President of the Board of Trustees

of the Cyprus University of Technology from 2009 to 2010. He has been President of the European Federation for Medical Informatics for the period 2010-2012, and Vice President of the International Medical Informatics Association from 2012 to 2014. He is coordinator in many Greek and European research programmes in the field of Health Informatics. He has published more than 250 papers in peer-reviewed international scientific journals and conferences. He is the author and editor of 12 books in the field of Biomedical Informatics and Technology.

**Health Information
Management (HIM) and
Crowds – Perspectives
for Baltic countries
– in cooperation with
CrowdHEALTH project**

**Friday, October 11th,
16.00 – 17.30**

The workshop will contribute to the Management of Health Information in an increasingly complex health care environment.

Goals of this workshop are to:

- Define possibilities of crowds in health care;
- Highlight the role of HIM (Health Information Management);
- Investigate the needs, opportunities and obstacles for health information management in daily use and education (capacity building);
- Disseminate results and experiences from the CrowdHealth project;

THURSDAY, OCTOBER 10th

09.30 – 10.30 **REGISTRATION.** Conference centre
Crowne Plaza Vilnius, M. K. Čiurlionio g. 84, Vilnius

10.30 – 11.00 **OPENING CEREMONY**
 Assoc. Prof. Dr. **Leonas Balaševičius**,
 Kaunas University of Technology
 Assoc. Prof. Dr. **Rita Butkienė**, Kaunas University of
 Technology, Faculty of Informatics
 Prof. Dr. **Robertas Damaševičius**, Kaunas University of
 Technology, Faculty of Informatics
Conference Hall "Koralinė A+B"

11.00 – 12.00 **KEY NOTE**
 Prof. Dr. **Robert Nowicki**
Rough Hybrid Decision Making
 Institute of Computational Intelligence at Częstochowa
 University of Technology, Poland
Conference Hall "Koralinė A+B"



12.00 – 12.30

12.30 – 13.30 **KEY NOTE**
 Prof. Dr. **Donghan Kim**
Violin Playing Robot – from Finger to Ear
 Kyung Hee University, South Korea
Conference Hall "Koralinė A+B"

13.30 – 15.00



*Restaurant "Sezonai" at Crowne
 Plaza Vilnius**** (1st floor)*

15.30 – 21.00 **CULTURAL PROGRAMME & DINNER**

Excursion to Vilnius Catacombs: catacombs and treasury
 of Vilnius Cathedral, dungeon of Church of St. Casimir and
 Jewish culture and information centre

*Welcome dinner at restaurant "Šventaragio sodas"
 (L. Stuokos-Gucevičiaus g. 1, Vilnius)*

FRIDAY, OCTOBER 11th

09.30 – 10.00

REGISTRATION

Conference centre

Crowne Plaza Vilnius, M. K. Čiurlionio g. 84, Vilnius

10.00 – 11.30

SESSIONS

SESSION 1

INFORMATION SYSTEMS

*Special Session on **Innovative Applications for Knowledge Transfer Support***

Chaired by Prof. Dr. *Justyna Patalas-Maliszewska*

Conference Hall "Koralinė A"

1

Forecasting the Level of Expert Knowledge Using the GMDH Method

Justyna Patalas-Maliszewska, Małgorzata Śliwa and Sławomir Kłos

3

Fuzzy Delphi Method with Z-numbers

Marcin Lawnik, Joanna Krakowczyk, and Arkadiusz Banasik

2

Declarative Model of Competences Assessment Robust to Personnel Absence

Eryk Szwarz, Grzegorz Bocewicz, Irena Bach-Dąbrowska and Zbigniew Banaszak

4

Use of Chatbots in Project Management

Dace Cīrule and Solvita Bērziša

5

Decision-making Algorithms for ERP Systems in Road Maintenance Work

Jānis Pekša

SESSION 2 INFORMATION TECHNOLOGY APPLICATIONS

*Special Session on **Information Technology Security***

Chaired by Prof. Dr. *Jevgenijus Toldinas*

Conference Hall "Koralinė B"

1

Investigation of Matrix Power Asymmetric Cipher Resistant to Linear Algebra Attack

Aleksejus Michalkovič and Matas Levinskas

2

Using R-indiscernibility Relations to Hide the Presence of Information for the Least Significant Bit Steganography Technique

Piotr Artiemjew, Aleksandra Kislak-Malinowska

3

LRC-256, an Efficient and Secure LFSR Based Stream Cipher Technique

Mohammadreza Ashouri

4

AbsoluteSecure: A Tri-Layered Data Security System

Oluwafemi Osho, Farouk A. Musa, Sanjay Misra, Andrew A. Uduimoh, Adewole Adewunmi, and Ravin Ahuja

5

Visual Analytics for Cyber Security Domain: State-of-the-Art and Challenges

Robertas Damaševičius, Jevgenijus Toldinas, Algimantas Venčkauskas, Šarūnas Grigaliūnas, Nerijus Morkevičius, and Vaidas Jukavičius

SESSION 3 (part 1)

SOFTWARE ENGINEERING

*Special Session on **Intelligent Systems and Software Engineering Advances***

Chaired by Assoc. Prof. Dr. *Marcin Woźniak*

Conference Hall "Malachitinė A"

1
Low-complexity Video Quality Assessment Based on Spatio-Temporal Structure

Yaqi Lu Mei Yu and Gangyi Jiang

3
Missing Values Absorption Based on Homogenous Granulation

Piotr Artiemjew and Krzysztof Ropiak

5
New Attempts in Solving Image Recognition Tasks

Catalina-Lucia Cocianu, Alexandru Stan, and Mihai Avramescu

2
Modification of Parallelization of Modified Merge Sort Algorithm

Zbigniew Marszałek and Giacomo Capizzi

4
Rule Set Complexity in Mining Incomplete Data Using Global and Saturated Probabilistic Approximations

Patrick G. Clark, Jerzy W. Grzymala-Busse, Teresa Mroczek, and Rafal Niemiec



11.30 – 12.00

12.00 – 13.30

SESSIONS

SESSION 4
(part 1)

BUSINESS INTELLIGENCE FOR INFORMATION AND SOFTWARE SYSTEMS

*Special Session on **Intelligent Methods for Data Analysis and Computer-Aided Software Engineering***

Chaired by Prof. Dr. Audrius Lopata

Conference Hall “Koralinė A”

1
TabbyXL: Rule-Based Spreadsheet Data Extraction and Transformation

Alexey Shigarov, Vasiliy Khristyuk, Andrey Mikhailov, and Viacheslav Paramonov

2
Directed Multi-Target Search Based Unit Tests Generation

Greta Rudžionienė, Šarūnas Packevičius, and Eduardas Bareiša

3
Motivational and Goal-Oriented Viewpoint for Architectural Modeling of Software Intensive Systems

Petr Sosnin

4
On Similarity Measures for a Graph-Based Recommender System

Zühal Kurt, Alper Bilge, Kemal Özkan, and Ömer Nezih Gerek

SESSION 5

INFORMATION TECHNOLOGY APPLICATIONS

*Special Session on **Language Technologies***

*Chaired by Prof. Dr. **Jurgita Kapočiūtė-Dzikiene***

Conference Hall "Koralinė B"

1
Identification of Age and Gender in Pinterest by Combining Textual and Deep Visual Features

Sandra-Pamela Bravo-Marmolejo, Jorge Moreno, Juan Carlos Gomez, Claudia Pérez-Martínez, Mario-Alberto Ibarra-Manzano, and Dora-Luz Almanza-Ojeda

2
Analysis of Dispersion and Principal Component Analysis of Babblings' Signals from Moderate Preterm and Term Infants

Ana-Catalina Muñoz-Arbeláez, Leonor Jaimes-Cerveleón, and Javier-Darío Fenández-Ledesma

3
A Graph-based Approach to Topic Clustering of Tourist Attraction Reviews

Nuttha Sirilertworakul and Boonsit Yimwadsana

4
Short Text Computing based on Lexical Similarity Model

Arifah Che Alhadi, Masita@Masila Abdul Jalil, Wan Nural Jawahir Wan Yussof, and Shahrul Azman Mohd Noah

SESSION 3
(part 2)

SOFTWARE ENGINEERING

*Special Session on **Intelligent Systems and Software Engineering Advances***

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

Conference Hall "Malachitinė A"

1
Parameter Identification of the Fractional Order Heat Conduction Model Using a Hybrid Algorithm

Rafał Brociek, Damian Słota, Giacomo Capizzi, and Grazia Lo Sciuto

2
Data Reduction via Stratified Sampling for Chance Constrained Optimization with Application to Flood Control Planning

Kiyoharu Tagawa

3
Extending an Anomaly Detection Benchmark with Auto-encoders, Isolation Forests, and RBMs

Mark Pijnenburg and Wojtek Kowalczyk

4
Prediction of poker moves using sequential model and TensorFlow

Raulis Radziukas, Rytis Maskeliūnas and Robertas Damaševičius

13.30 – 15.00



*Restaurant "Sezonai" at Crowne Plaza Vilnius**** (1st floor)*

15.00 – 16.00

SESSIONS

**SESSION 4
(part 2)**

BUSINESS INTELLIGENCE FOR INFORMATION AND SOFTWARE SYSTEMS

*Special Session on **Intelligent Methods for Data Analysis and Computer-Aided Software Engineering***

Chaired by Prof. Dr. *Audrius Lopata*

Conference Hall "Koralinė A"

1
Modelling Patterns for Business Processes

Prima Gustienė and Remigijus Gustas

2
Design and Implementation of Rule Execution Mechanism for an eGuide Gamification Web Service

Artur Kulpa and Jakub Swacha

3
Gamified Evaluation in STEAM

Pavel Boytchev and Svetlana Boytcheva

SESSION 6

SOFTWARE ENGINEERING

*Special Session on **Software and Model Metrics and Measurements***

*Chaired by Prof. Dr. **Robertas Damaševičius***

Conference Hall “Koralinė B”

1

A Novel Unsupervised Learning Approach for Assessing Web Services Refactoring

Guillermo Rodriguez, Cristian Mateos, Luciano Listorti, Brian Hammer, and Sanjay Misra

2

Comparing Static and Dynamic Weighted Software Coupling Metrics

Henning Schnoor and Wilhelm Hasselbring

3

Empirical Study on the Distribution of Object-oriented Metrics in Software Systems

Muthukumaran Kasinathan, N. L. Bhanu Murthy, and Janani Padmanaban

16.00 – 17.30

WORKSHOP

Prof. Dr. **Rolf Engelbrecht**, ProRec-DE, Germany

Prof. Dr. **John Mantas**, Kapodistrian University Athens, Greece

Health Information Management (HIM) and Crowds – Perspectives for Baltic Countries – in Cooperation with CrowdHEALTH project

Conference Hall “Koralinė A+B”

18.00 – 21.00

*Fourchette at Restaurant “Horizontas” at Crowne Plaza Vilnius **** (16th floor)*

SATURDAY, OCTOBER 12th

09.00 – 09.30 **REGISTRATION.** Conference centre
Crowne Plaza Vilnius, M. K. Čiurlionio g. 84, Vilnius

09.30 – 10.30 **KEY NOTE**
Prof. Dr. *Wei Wei*
***Intelligent Transportation Systems Based on
Wireless Sensor Networks***
Xi'an University of Technology, China
Conference Hall "Koralinė A+B"



10.30 – 11.00

11.00 – 12.30 **SESSIONS**

SESSION 7 **INFORMATION SYSTEMS**
Special Session on e-Health Information Systems
Chaired by Prof. Dr. *Rolf Engelbrecht*
Conference Hall "Koralinė A"

1
***Investigation on the Dependencies
between HRV, Physical Training,
and Focus of Attention in Virtual
Environment***
*Edgaras Ščiglinas, Aurimas
Mačiukas, Aušra Vidugirienė, and
Tomas Krilavičius*

2
***Mobile Platform for
Fatigue Evaluation:
HRV Analysis***
*Eglė Butkevičiūtė, Matīss
Eriņš and Liepa Bikulčienė*

3
***The Stress Level Assessment Based on Socio-demographic and
Gender Factors Among Polish and Taiwanese Female and Male
Junior Dental Students***
*Katarzyna Mocny-Pachońska, Rafał Doniec, Agata Trzcionka,
Marta Lang, Marek Pachoński, Natalia Piaseczna, Szymon
Sieciński, Henryk Twardawa, and Marta Tanasiewicz*

SESSION 8

INFORMATION SYSTEMS

Special Session on **Digital Transformation**

Chaired by Prof. Dr. *Christian Reimann* and Prof. Dr. *Carsten Wolff*
Conference Hall "Koralinė B"

1

**Constrained Software
Distribution for Automotive
Systems**

*Robert Höttger, Burkhard
Igel, and Olaf Spinczyk*

2

**Mobile River Navigation
for Smart Cities**

*Witold Kazimierski,
Natalia Wawrzyniak, Marta
Włodarczyk-Sielicka, Tomasz
Hyla, Izabela Bodus-Olkowska,
and Grzegorz Zaniewicz*

3

**New Paradigm of Model-
Oriented Control in IoT**

*Volodymyr Kazymyr,
Olga Prila, Anna Usik, and
Dmytro Sysa*

4

**Surf Algorithm with
Convolutional Neural Network
as Face Recognition Technique**

*Alicja Winnicka, Karolina
Kęsik, Dawid Połap and
Marcin Woźniak*

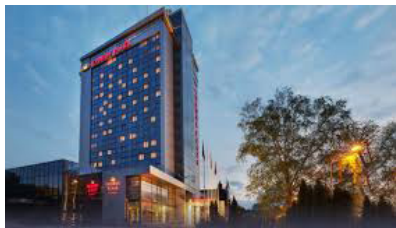
12.30 – 14.00

LUNCH AND CLOSING THE CONFERENCE

*Restaurant "Sezonai" at Crowne Plaza Vilnius**** (1st floor)*

CONFERENCE VENUE

Crowne Plaza Vilnius hotel, located in the city centre, makes you perfect possibilities to explore city sites or relax in the green area of the city – the most popular leisure place – Vingis park. Hotel is within the easy access to the center and Old Town, “Litexpo” exhibition center, Vilnius International airport and train station.



The “heavenly” restaurant “Horizontas” is located on the top floor of the hotel. Enjoy the executive chef’s creations from the new a la carte menu



while watching the views of the city from the „heaven“. The casually stylish Restaurant “Sezonai” will offer guests and visitors tastes of European Cuisine. Cosy lobby bar with the summer terrace will offer a wide choice of a snacks, beverages and home-made pastry. Would you like to treat yourself at the beginning of the day or relieve stress after a day? You are welcome to recover

yourself in Wellness centre equipped with gym and a massage room. Take your time to treat your body and soul in sauna or steam bath, get a refreshing swim in a waving heated swimming pool or relax in Jacuzzi. A warm welcome by the hotel’s professional staff is guaranteed during your stay in Crowne Plaza Vilnius hotel!

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ABOUT VILNIUS

Vilnius, as the capital of Lithuania, is the home of the President, the Seimas, the Government and the Supreme Court. Diplomatic missions, educational, cultural, financial, research, and healthcare institutions are based here.

Vilnius is an outstanding example of a medieval foundation which exercised a profound influence on architectural and cultural developments in a wide area of Eastern Europe over several centuries. In the townscape and the rich diversity of buildings that it preserves, Vilnius is an exceptional illustration of a central European town which evolved organically over a period of five centuries.

For more information about Vilnius see

<http://www.vilnius-tourism.lt/en/information/about-vilnius/>



THIS YEAR'S CULTURAL EVENT

The Secrets of Vilnius Catacombs

Vilnius, the baroque beauty of the Baltic, is a city of immense allure. Almost every style of architecture can be found: from Gothic, Renaissance, Baroque, Classicism to Post-Modernism. Discover the underground Vilnius and get inspired by breath taking

stories about pagan heritage, hidden treasures and secrets of royal tombs. According to the legend, the underground city of Vilnius was used by Lithuanian Grand Dukes as an emergency exit and as a secret dating place.

Duration: 2 hours on foot

For the event the participants of the conference will be invited to disclose the secrets of the best-known Vilnius catacombs, find out more about the Jewish history and tradition in Lithuania and have a fine dinner at restaurant „Šventaragio sodas“ (L. Stuokos-Gucevičiaus g. 1, Vilnius).



ABOUT KAUNAS UNIVERSITY OF TECHNOLOGY

Kaunas University of Technology, with its eight faculties, a branch in Panevėžys, high school (gymnasium), progymnasium and nine research centres, is the second largest university in Lithuania. About 80% of Lithuania's industrial engineers have graduated from KTU. In 1990, KPI was restructured and brought into line with most Western universities. Under 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>



ICIST 2019

10 01 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 centres:

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

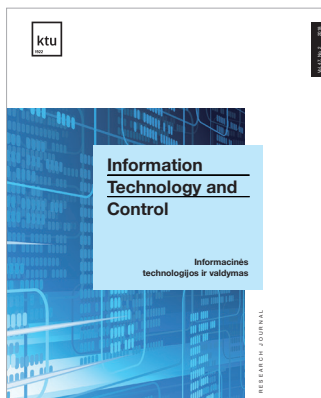


The faculty offers the choice of Informatics, Informatics Engineering, Multimedia Technologies, Information Systems, and Software Systems Bachelor degree programmes. Those pursuing Master's degree can choose accordingly from five study programmes:

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



Graduates of master's degree studies can pursue the academic career by choosing Informatics or Informatics Engineering doctoral studies. Each year the Faculty of Informatics accepts around 500 new students seeking Bachelor's or Master's degree, respectively. In 2019, we have more than 2100 Bachelor, 190 Master, and 40 Doctoral students.



The Faculty also publishes a scientific journal,

**INFORMATION TECHNOLOGY
AND CONTROL**

(indexed by Clarivate Analytics)

www.itc.ktu.lt

itc@ktu.lt

USEFUL INFORMATION

Lithuanian Time

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

Currency Euro (€).

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Information: 118

Vilnius Airport

Information: (+370 5) 230 66 66

Vilnius Bus Station

Information: (8900) 1661

Vilnius Railway Station

Information: (8700) 55 111

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CALL FOR PAPERS

26th International Conference on
Information and Software Technologies

October 15th – 17th, 2020,
Kaunas, Lithuania

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ICIST
2020

PROCEEDINGS AND PUBLICATION

The paper's size should be 10–12 pages (fee for extra pages is 10 EUR per page) in Springer Template. Accepted papers will be published as a volume of Springer-Verlag CCIS. CCIS is indexed in Scopus, Clarivate Analytics Web of Science.

LOCATION

ICIST is organised by Kaunas University of Technology, a leading technical university of the Baltic States. In 2020, the conference will be organised in Kaunas, the second largest Lithuania's city, which keeps the authentic spirit of the country's national character alive.

ORGANIZATION

General Chair
Rita Butkienė, Kaunas, Lithuania

PC Chair
Audrius Lopata, Kaunas, Lithuania

Local Organising Committee Chair
Giedrė Vasiljevienė, Kaunas, Lithuania

Local Organising Committee:
icist@ktu.lt

DEADLINES

16 03 2020 – Full paper submission.

17 04 2020 – Notification of acceptance.

19 06 2020 – Print ready paper submission.

15 10 2020 – 17 10 2020 – Conference. Research sessions.

The International Conference on Information and Software Technologies (ICIST) is an international annual event, organized by Kaunas University of Technology. In 2020, the University will organize the 26th ICIST Conference from 15th to 17th October in Kaunas, Lithuania.



SCOPE AND TOPICS

INFORMATION SYSTEMS

Special Sessions on

- Innovative Applications for Knowledge Transfer Support;
- e-Health Information Systems;

Information Systems Development; Conceptual Modelling, Ontologies, and Databases; Business Processes and Business Rules; Enterprise Architecture and Enterprise Modelling; Distributed Information Systems and Semantic Web; Quality of Information Systems; Health Care Management Systems.

BUSINESS INTELLIGENCE FOR INFORMATION AND SOFTWARE SYSTEMS

Special Session on

- Intelligent Methods for Data Analysis and Computer-Aided Software Engineering

Data Mining and Knowledge Discovery; Decision Support Systems; Big Data Analytics; Expert Systems; Intelligent Web Mining; Knowledge-Based System Engineering.

SOFTWARE ENGINEERING

Special Session on

- Intelligent Systems and Software Engineering Advances
- Software and Model Metrics and Measurements
- Cloud Gamification

Software and Systems Engineering Methodologies; Model-Driven Development, SOA; Component-Based Development; Distributed, Mobile, and Open Architectures; Cloud Computing; Software Quality and Testing; CASE Tools for Software Development; Computational Intelligence; Security and Trust.

IT APPLICATIONS

Special Sessions on

- Smart e-Learning Technologies and Applications;
- Digital Transformation;
- Language Technologies

STEAM Education; IT in Teaching and Learning; Internet of Things and Smart Environments; Wireless and Mobile Applications; Computational Linguistics; Learning Objects and MOOCs; Natural Language Processing; Computer Graphics and Multimedia.

More information and registration on <http://icist.ktu.edu/>

