

23rd
INTERNATIONAL CONFERENCE
ON COMPUTER SYSTEMS
AND TECHNOLOGIES

CompSysTech'22

17-18 June 2022
University of Ruse
BULGARIA

P R O G R A M M E



**"WORK,
FINISH,
PUBLISH"**

Michael Faraday

◆ CONFERENCE OBJECTIVE

The CompSysTech'22 International Conference is organized by the Bulgarian Academic Society of Computing and its OBJECTIVE is to intensify the information exchange of results in theoretical research and practical developments in the field. Since 2007 all papers presented at the conference and published in the conference proceedings have been published in the ACM Digital Library, registered in the US Congress Library and indexed in SCOPUS, dblp, etc.

CompSysTech'22 is organized under the patronage of the:

- Bulgarian Ministry of Education and Science;
- John Atanasoff Union of Automation and Informatics;
- University of Ruse

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Dimo Dimov	Bulgaria	Peter Stanchev	USA
Domenico Tegolo	Italy	Plamen Zahariev	Bulgaria
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Galina Ivanova (Bulgaria)
Aneliya Ivanova (Bulgaria)

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◆ TOPICS

1. **Computer Hardware.**
2. **Computer Software.**
3. **Application Aspects of Computer Systems and Technologies.**
4. **Educational Aspects of Computer Systems and Technologies (ICT-based educational technologies).**

Friday, 17th June 2022

10:00

OPENING

WELCOME

Chair: **Galina Ivanova**

1.411.4, Future Education Space

<https://meet1.uni-ruse.bg/b/qfg-dmm-6y3>



PLENARY SESSION

Chair: Tzvetomir Vassilev

1.411.4, Future Education Space

<https://meet1.uni-ruse.bg/b/qfg-dmm-6y3>



Assoc. Prof. Dr. Dimiter Prodanov, MD, PhD
Associate professor, Institute of Information
and Communication Technologies, Bulgarian
Academy of Sciences

Keynote on:

**Active Segmentation: Differential Geometry
meets Machine Learning**



Bernhard Spanlang
Chief Technical Officer & Co-Founder, Virtual
Bodyworks

Keynote on:

**Virtual Reality Embodiment to Foster Positive
Behaviour**



Prof. Amar Ramdane-Cherif
Full Professor at the University of Versailles -
Paris Saclay

Keynote on:

**Dynamic Architecture for Multimodal
Applications to Reinforce Machine-
Environment Interaction**

DISCUSSIONS

PROGRAMME SUMMARY

Saturday, 18th June 2022

9:00 – 10:30	Session A Number of papers: 5	Session C Number of papers: 5	Session E Number of papers: 6
10:30 – 11:00	COFFEE BREAK		
11:00 – 12:30	Session B Number of papers: 4	Session D Number of papers: 5	Session F Number of papers: 5
17th June 14:30 – 16:00	17th June Session G Number of papers: 5 THE YOUTH AND THE ICT (School students)		
18th June 13:00	THE BEST PAPERS AWARDS 1.411.4, Future Education Space https://meet1.uni-ruse.bg/b/awu-zhk-ngm		

Session A

Chair: **Dimitar Tyanev**
Co-Chair: **Bayram Jumayev**
Scientific Secretary: **Anelya Ivanova**

Saturday, 18 June 2022

9:00 – 10:30

1.322 , <https://meet1.uni-ruse.bg/b/2nj-6pa-kmv>

COMPUTER HARDWARE

- 1. Fast Asynchronous Arbiters. Determining Final Delays**
Dimitar Tyanev, Yulka Petkova and Milen Angelov
- 2. Technology Development of Automated Contactless Hand Sanitizer Dispenser System with IR Sensor and Based on A PIC Microcontroller**
Suleyman Nokerov, Rovshen Ishangulyyev, Perman Hojagulyyev, Aravind Pitchai Venkataraman and Khalid Ali Khan
- 3. Modelling and testing multi-qubit universal control gate developed for quantum computing systems**
Bayram Ashyrmiradovich Jumayev
- 4. Conceptual design and implementation of a microcontroller for the projection of laser and lighting effects in smart environments**
Svetozar Ilchev and Ekaterina Otsetova-Dudin
- 5. Device model and communication protocol with low overhead for sensors and actuators in smart buildings**
Svetozar Ilchev and Ekaterina Otsetova-Dudin

DISCUSSIONS

10:30 – 11:00

Coffee Break

1.311

Session B

Chair: **Lyubomira Miteva**
Co-Chair: **Ivan Chavdarov**
Scientific Secretary: **Anelya Ivanova**

Saturday, 18 June 2022

11:00 – 12:30

1.322 , <https://meet1.uni-ruse.bg/b/2nj-6pa-kmv>

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

1. **A Predictive Analytics Framework Using Machine Learning for the Logistics Industry**
Snezhana Sulova, Yanka Aleksandrova, Miglena Stoyanova and Mihail Radev
2. **Real-time Trajectory Replanning for Dynamic Obstacles Avoidance for Robotics Manipulators**
Kaloyan Yovchev and Lyubomira Miteva
3. **Planning Orientation Change of the End-effector of State Space Constrained Redundant Robotic Manipulators**
Lyubomira Miteva, Kaloyan Yovchev and Ivan Chavdarov

NETWORK AND INFORMATION SECURITY

4. **Security Aspects of Behavioral Biometrics for Strong User Authentication**
Vladimír Jančok and Michal Ries

DISCUSSIONS

13:00

1.411.4, Future Education Space

<https://meet1.uni-ruse.bg/b/awu-zhk-ngm>

THE BEST PAPERS AWARDS

Session C

Chair: **Edita Djambazova**
Co-Chair: **Metodi Dimitrov**
Scientific Secretary: **Pavel Zlatarov**

Saturday, 18 June 2022

9:00 – 10:30

1.422.4 , <https://meet1.uni-ruse.bg/b/pav-p2y-apt>

COMPUTER SOFTWARE

- 1. Achieving System Reliability Using Reliability Adjustment**
Edita Djambazova
- 2. Fractal Time Series Analysis by Using Entropy and Hurst Exponent**
Evgeniya Gospodinova

IMAGE PROCESSING & VISUALIZATION

- 3. An Approach to Predicting Human Body Measurements and Shape**
Tzvetomir Vassilev and Metodi Dimitrov
- 4. Image Compression, Achieved by Limiting the Color Variations in The RGB Color Model**
Metodi Dimitrov and Tzvetomir Vassilev
- 5. Linear Images Coprocessing in Environmental Monitoring**
Teodora Petrova and Zhivo Petrov

DISCUSSIONS

10:30 – 11:00

Coffee Break

1.311

Session D

Chair: **Anna Lekova**
Co-Chair: **Elitsa Ibryamova**
Scientific Secretary: **Pavel Zlatarov**

Saturday, 18 June 2022

11:00 – 12:30

1.422.4, <https://meet1.uni-ruse.bg/b/pav-p2y-apt>

APPLICATION ASPECTS OF COMPUTER SYSTEMS AND TECHNOLOGIES

1. **A Synonym-based Approach for the Semantic Indexing of Texts**
Georgios Grigoriadis Kotsalis, Stavros Nikolopoulos and Iosif Polenakis
2. **Ontology-driven detection of redundancy in short texts and its visualization**
Miroslav Borecký and Ján Lang
3. **Modeling A Business Intelligence System For Determining Investment Efficiency**
Angel Popgeorgiev and Elitsa Ibryamova
4. **A Novel Photoplethysmographic Noise Removal Method via Wavelet Transform to Effective preprocessing**
Galya Georgieva-Tsaneva
5. **A system for speech and language therapy with a potential to work in the IoT**
Anna Lekova, Anna Andreeva, Tanio Tanev, Miglena Simonska and Snezhana Kostova

DISCUSSIONS

13:00

1.411.4, Future Education Space

<https://meet1.uni-ruse.bg/b/awu-zhk-ngm>

THE BEST PAPERS AWARDS

Session E

Chair: **Galina Ivanova**
Co-Chair: **Adriana Borodzhieva**
Scientific Secretary: **Yuksel Aliev**

Saturday, 18 June 2022

9:00 – 10:30

1.411.4, <https://meet1.uni-ruse.bg/b/awu-zhk-ngm>

**EDUCATIONAL ASPECTS
OF COMPUTER SYSTEMS AND TECHNOLOGIES
(ICT-based Educational Technologies)**

- 1. Impacts of IT-related group tasks on capacity building of young scholars**
Bayram Jumayev and Serdar Nazarov
- 2. How University Students in "Informatics and Computer Sciences" would like to Use Video Games for Learning**
Albena Antonova, Boyan Bontchev and Yavor Dankov
- 3. Experiential Learning Approach for Teaching the Topic "Arithmetic Circuits for Fast Addition: Carry Propagation–Look-Ahead Carry Generator"**
Adriana Borodzhieva and Ivanka Tsvetkova
- 4. Virtual Laboratory for Teaching Coding Theory**
Yuksel Aliev, Galina Ivanova and Adriana Borodzhieva
- 5. MathCient - An Innovative Solution for Flipped Learning in Higher Education**
Yuldashbay Kurambayev, Begench Yazov, Hatyja Annacharyyeva and Rovshen Ishangulyyev
- 6. Extrapolating the Digital Readiness – Are Turkmen Undergraduate Students Competent for Online Learning?**
Begench Yazov, Rovshen Ishangulyyev, Ogulnabat Kakayeva and Yoldash Kurambayev

DISCUSSIONS

10:30 – 11:00

Coffee Break

1.311

Session F

Chair: **Leon Rothkrantz**
Co-Chair: **Zhanat Nurbekova**
Scientific Secretary: **Galina Ivanova**

Saturday, 18 June 2022

11:00 – 12:30

1.411-4 , <https://meet1.uni-ruse.bg/b/awu-zhk-ngm>

EDUCATIONAL ASPECTS OF COMPUTER SYSTEMS AND TECHNOLOGIES (ICT-based Educational Technologies)

1. **The impact of Covid-19 Epidemic on Teaching and Learning**
Leon Rothkrantz
2. **Troubleshooting Combinational Logic Circuits Web-based Learning System for Improving Students Engagement**
Barish Yumerov and Galina Ivanova
3. **Using Virtual Learning Objects in the Content of Education**
Zhanat Nurbekova, Bakyt Nurbekov, Mira Maulsharif, Dinara Naimanova and Aigerim Baimendinova
4. **Optimization of training through the use of digital technologies (Serious game in health care training)**
Ivan Ralev, Greta Koleva-Petkova, Despina Georgieva and Irinka Hristova
5. **Green Inspires Students (GIS.edu): A STEM educational project combining a Mobile Data Collection application with ArcGIS Online platform, towards carbon neutrality in school**
Christos Samaras, Evaggelos Malkakis, Vaso Barouti and Vassilios Verykios

DISCUSSIONS

13:00

1.411.4, Future Education Space

<https://meet1.uni-ruse.bg/b/awu-zhk-ngm>

THE BEST PAPERS AWARDS

Session G

Chair: **Petar Kenderov**
Co-Chair: **Syuzan Feimova**
Scientific Secretary: **Desislava Baeva**

Friday, 17 June 2022
14:30 – 16:00
1.411.4 , <https://meet1.uni-ruse.bg/b/awu-zhk-ngm>

**THE YOUTH AND THE ICT
(School students)**

1. **Sunset Diary**
Raya Hristova, Niya Neykova, Syuzan Feimova
2. **Mathematics in Ballet Art**
Nikol Georgieva, Svetlozara Kirova, Syuzan Feimova
3. **Multiplication with Fun**
Simeon Nedelkov, Syuzan Feimova
4. **TiHub – Automated Assessment Platform**
Anakin Ali, Syuzan Feimova
5. **History of Computer Science and Math**
Esra Teykova, Arzu Teykova, Syuzan Feimova

DISCUSSIONS

Saturday, 18th June 2022

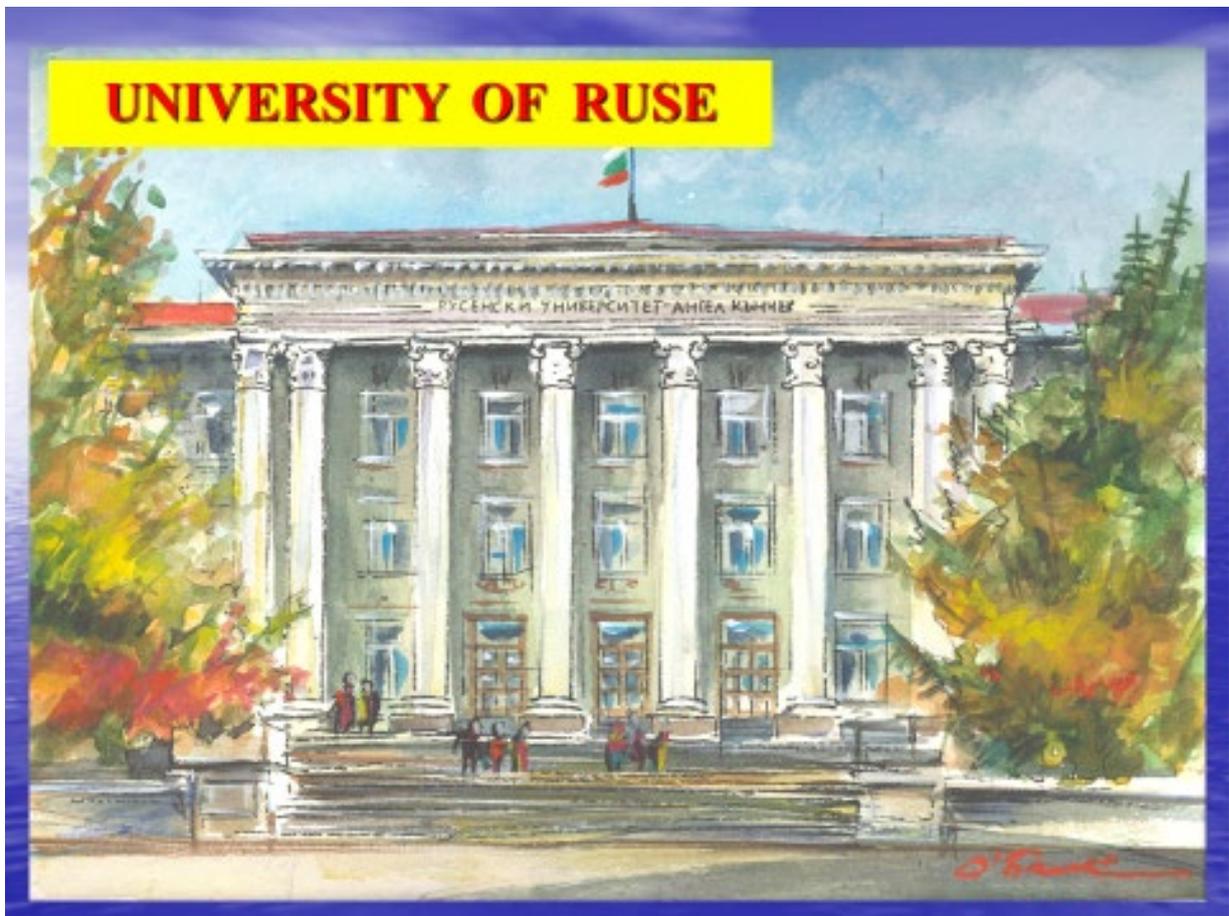
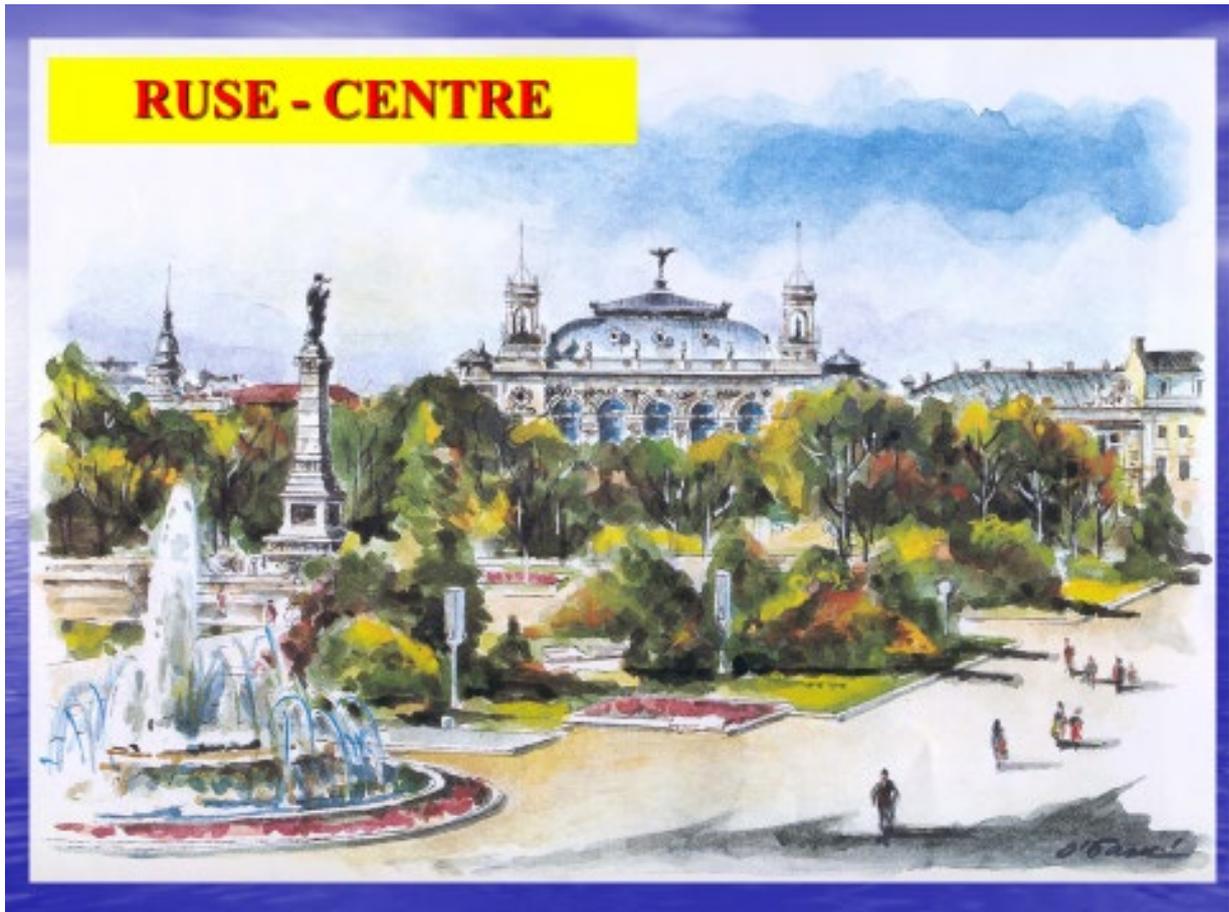
13:00

1.411.4, Future Education Space

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**The CHAIRS
of the PROGRAMME COMMITTEE
and
the ORGANIZING COMMITTEE
will bestow
a CRYSTAL PRIZE
to the authors of the best papers.**

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REMARKS