

21th
INTERNATIONAL CONFERENCE
ON COMPUTER SYSTEMS
AND TECHNOLOGIES

CompSysTech'21

18-19 June 2021
University of Ruse
BULGARIA

P R O G R A M M E



**"WORK,
FINISH,
PUBLISH"**

Michael Faraday

◆ CONFERENCE OBJECTIVE

The CompSysTech'21 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'21 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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Karl Jones	United Kingdom	Svetlana Stefanova	Bulgaria
Katalina Grigorova	Bulgaria	Tsvetozar Georgiev	Bulgaria
Kemal Tutuncu	Turkey	Ville Leppänen	Finland
Krassen Stefanov	Bulgaria	Zoltan Geler	Serbia
Leon Rothkrantz	The Netherlands		
Leoneed Kirilov	Bulgaria		
Levent Eren	Turkey		
Manolo Hina	France		
Marco Porta	Italy		
Margarita Todorova	Bulgaria		
Maria Jose Marcelino	Portugal		
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Mirjana Ivanovic	Serbia		
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Angel Smrikarov (Bulgaria)

Yuksel Aliev (Bulgaria)

Rumen Rusev (Bulgaria)

Desislava Baeva (Bulgaria)

◆ 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, 18th June 2021

15:00

OPENING

WELCOME

Chair: Galina Ivanova

Kaneff Centre, Hall 1

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



PLENARY SESSION

Chair: Tzvetomir Vassilev

Room: Kaneff Centre , Hall 1

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



Prof. Dr. Martin Vechev
ETH Zurich

Keynote on:
Certified Deep Learning



Prof. Dr. Roumiana Peytcheva-Forsyth
**University of Sofia, Director of the Bulgarian
National Centre of Distance Education**

Keynote on:
**The effect of the teachers' experience in online
education during the pandemic on their views
of strengths and weaknesses of e-learning**



Prof. Dr. Yiorgos L. Chrysanthou
**Research Director of the Centre on Interactive
Media, Smart Systems and emerging
Technologies, University of Cyprus**

Keynote on:
Data Driven Character Simulation

DISCUSSIONS

PROGRAMME SUMMARY

Saturday, 19th June 2021

9:00 – 11:30	Session A Number of papers: 6	Session C Number of papers: 8	Session E Number of papers: 7
11:30 – 12:00	COFFEE BREAK		
12:00 – 14:30	Session B Number of papers: 5	Session D Number of papers: 8	Session F Number of papers: 6
12:30 – 14:30	Session G Number of papers: 7 THE YOUTH AND THE ICT (School students)		
14:30	THE BEST PAPERS AWARDS 1.411.4, https://meet1.uni-ruse.bg/b/qfg-dmm-6y3		

Session A

Chair: **Svetozar Ilchev**
Co-Chair: **Yulka Petkova**
Scientific Secretary: **Galina Ivanova**

Saturday, 19 June 2021
9:00 – 11:30
1.411.4 , <https://meet1.uni-ruse.bg/b/c4j-qpv-23r>

COMPUTER HARDWARE

1. **Laser Projection System for Continuous Operation in Manufacturing and Educational Use Cases**
Svetozar Ilchev and Zlatoliliya Ilcheva
2. **Multi-input Asynchronous Arbiter with Parallel Connection of Input Signals. Arbitration in Conditions of Superscalarity**
Dimitar Tyanev and Yulka Petkova
3. **Asynchronous Arbitration. Synthesis of Multi-input Asynchronous Arbiter with Consecutive Connection of Input Signals**
Dimitar Tyanev and Yulka Petkova

NETWORK AND INFORMATION SECURITY

4. **Detection and Classification of Malicious Software based on Regional Matching of Temporal Graphs**
Helen Maria Dounavi, Anna Mpanti, Stavros D. Nikolopoulos and Iosif Polenakis
5. **Acoustic Event Detection and Sound Separation for security systems and IoT devices**
Alexander Iliev, Mayank Dewli, Muhsin Kalkan, Preeti Prakash Kudva and Rekha Turkar
6. **Technical cheating prevention in location-based games**
Samuli Laato, Sampsa Rauti, Lauri Koivunen and Jouni Smed

DISCUSSIONS

11:30 – 12:00
Coffee Break
1.322

Session B

Chair: **Marin Fotache**
Co-Chair: **Stefan Tsokov**
Scientific Secretary: **Galina Ivanova**

Saturday, 19 June 2021

12:00 – 14:30

1.411.4, <https://meet1.uni-ruse.bg/b/c4j-qpv-23r>

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

1. **Evolving 1D Convolutional Neural Networks for Human Activity Recognition**
Stefan Tsokov, Milena Lazarova and Adelina Aleksieva-Petrova
2. **High-Level Machine Learning Framework for Sports Events Ticket Sales Prediction**
Marin Fotache, Irina-Cristina Cojocariu and Armand Bertea
3. **AHP enlargement in traditional Entropy-TOPSIS approach for selecting desktop personal computers for distance learning**
Iliyan Petrov
4. **Rule Based System Against Reinforcement Learning**
Bozhan Orozov and Daniela Orozova
5. **Preliminary Study on Motion Planning with Obstacle Avoidance for Hard Constrained Redundant Robotic Manipulators**
Lyubomira Miteva, Kaloyan Yovchev and Ivan Chavdarov

DISCUSSIONS

14:30

1.411.4

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

THE BEST PAPERS AWARDS

Session C

Chair: **Daniela Chuda**
Co-Chair: **Betim Çiço**
Scientific Secretary: **Pavel Zlatarov**

Saturday, 19 June 2021

9:00 – 11:30

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

COMPUTER SOFTWARE

1. **A Fault-Tolerant Real-Time System with Adjustable Reliability**
Edita Djambazova
2. **Creating Smart Home Environment Based on Open Source Home Automation Software**
Victor Danev, Leoneed Kirilov and Roumen Nikolov
3. **The effect of time drift in source code authorship attribution**
Juraj Petrik and Daniela Chuda
4. **Text Mining Approach for Identifying Research Trends**
Snezhana Sulova

IMAGE PROCESSING & VISUALIZATION

5. **GasHolesJ- a software tool for measurement of gas holes in cheese**
Angel Danev, Atanaska Bosakova-Ardenska, Petar Panayotov and Petya Boyanova
6. **A Mixed Reality Approach to Visualizing Cultural Heritage Artefacts**
Boyana Ivanova and Tzvetomir Vassilev
7. **Increasing quality in fingerprint images by Implementing wavelet transform based fusion technique**
Indrit Enesi, Betim Çiço and Miranda Harizaj

DISCUSSIONS

11:30 – 12:00

Coffee Break

1.322

Session D

Chair: **Leon Rothkrantz**
Co-Chair: **Teodora Petrova**
Scientific Secretary: **Pavel Zlatarov**

Saturday, 19 June 2021

12:00 – 14:30

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

APPLICATION ASPECTS OF COMPUTER SYSTEMS AND TECHNOLOGIES

1. **Temperature Distribution in Biotwarns Dynamics Modeling**
Teodora Petrova
2. **Personalized digital fitness coach**
Leon Rothkrantz
3. **Innovative Software System for Complex Application of Platelet Rich Plasma in Problematic Skin Wounds**
Aneliya Manukova, Tsvetan Sokolov and Matey Marinov
4. **Automatic analysis of ECG signals based on their fractal and multifractal properties**
Evgeniya Gospodinova, Penio Lebamovski and Mitko Gospodinov
5. **Electronic sensor system for registering ECG and PPG signals**
Krasimir Cheshmedzhiev, Evgeniya Gospodinova, Mitko Gospodinov and Penio Lebamovski
6. **Analysis of the kinematic characteristics of a 3D printed finger of robotic humanoid hand**
Ivan Chavdarov, Ivaylo Georgiev, Lyubomira Miteva, Roumen Trifonov and Galya Pavlova
7. **Improvement of the irrigation system for orchids**
Krum Videnov, Vanya Stoykova, Miroslav Vasilev, Zlatin Zlatev, Mariya Georgieva-Nikolova and Petya Yordanova
8. **Simulation of long-term Heart Rate Variability records with Gaussian distribution functions**
Galya Georgieva-Tsaneva

DISCUSSIONS

14:30

1.411.4

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

THE BEST PAPERS AWARDS

Session E

Chair: **Aneliya Ivanova**
Co-Chair: **Bayram Jumayev**
Scientific Secretary: **Desislava Baeva**

Saturday, 19 June 2021
9:00 – 11:30
1.416, <https://meet1.uni-ruse.bg/b/pv2-7qf-jzv>

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

1. **Concept of a model for distance practical training in a real clinical environment and time for nurse and midwife specialties**
Ivan Ralev, Despina Georgieva, Greta Koleva, Irinka Hristova and Cveta Hristova
2. **Modern technologies and e-learning – present and future**
Tatyana Ivanova
3. **A study on Vietnamese undergraduates' level of digital skills and the frequency of using digital tools in the EFL context**
Lan Anh T. Nguyễn and Anita Habók
4. **Intelligent Technologies in E-Learning: Personalization and Interoperability**
Tatyana Ivanova, Valentina Terzieva and Malinka Ivanova
5. **Introducing innovative educational technologies into the undergraduate curricula to promote individual work of students: Case of Turkmenistan**
Serdar Nazarov and Bayram Jumayev
6. **Programming-based laboratory assignments for undergraduate students of power engineering fields**
Serdar Nazarov and Bayram Jumayev
7. **Solving Classical Problem in New Context as Constructive Model of Training**
Milen Loukantchevsky

DISCUSSIONS

11:30 – 12:00
Coffee Break
1.322

Session F

Chair: **Adriana Borodzhieva**

Co-Chair: **Joana Neto**

Scientific Secretary: **Aneliya Ivanova and Desislava Baeva**

Saturday, 19 June 2021

12:00 – 14:30

1.416, <https://meet1.uni-ruse.bg/b/pv2-7qf-jzv>

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

- 1. Attitudes of primary and secondary students towards online lessons during Covid-19**
Mirjana Ivanovic and Stefan Stajic
- 2. Planning and Developing Courses in Distance Learning Environments: a training course for HiEdTec Project**
Joana Neto, Sílvia Nolan and António Mendes
- 3. Exploring Learning Analytics on YouTube: a tool to support students' interactions analysis**
Daniele Schicchi, Benedetto Marino and Davide Taibi
- 4. Project-Based Learning Approach Applied in the Course “Digital Electronics” for Studying the Topic “Binary Multipliers”**
Adriana Borodzhieva, Ivanka Tsvetkova, Snezhinka Zaharieva, Dimitar Dimitrov and Valentin Mutkov
- 5. Online Interactive Timeline to Improve Learning of History in School Education**
Aneliya Ivanova
- 6. Innovations in Doctoral Students Education and Training**
Hristo Beloev, Diana Antonova, Angel Smrikarov, Galina Ivanova, Pavel Zlatarov and Desislava Baeva

DISCUSSIONS

14:30

1.411.4

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

THE BEST PAPERS AWARDS

Session G

Chair: **Petar Kenderov**

Co-Chair: **Syuzan Feimova**

Scientific Secretary: **Yuksel Aliev**

Saturday, 19 June 2021

12:30 – 14:30

1.322, <https://meet.uni-ruse.bg/b/zad-yam-2qq>

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

1. **Magic Forest**
Arzu Teykova, Esra Teykova, Syuzan Feimova
2. **The Mathematics in the Music**
Nikol Georgieva, Svetlozara Kirova, Syuzan Feimova
3. **History of Measurement**
Simeon Nedelkov, Syuzan Feimova
4. **Physics in the Sky**
Raya Hristova, Niya Neykova, Syuzan Feimova
5. **Innovative Logo**
Denica Draganova, Syuzan Feimova
6. **Financial Literacy for Children**
Aleksandar Nyagolov, Syuzan Feimova
7. **3D AI Robot**
Maria Kirilova, Syuzan Feimova

DISCUSSIONS

Saturday, 19th June 2021

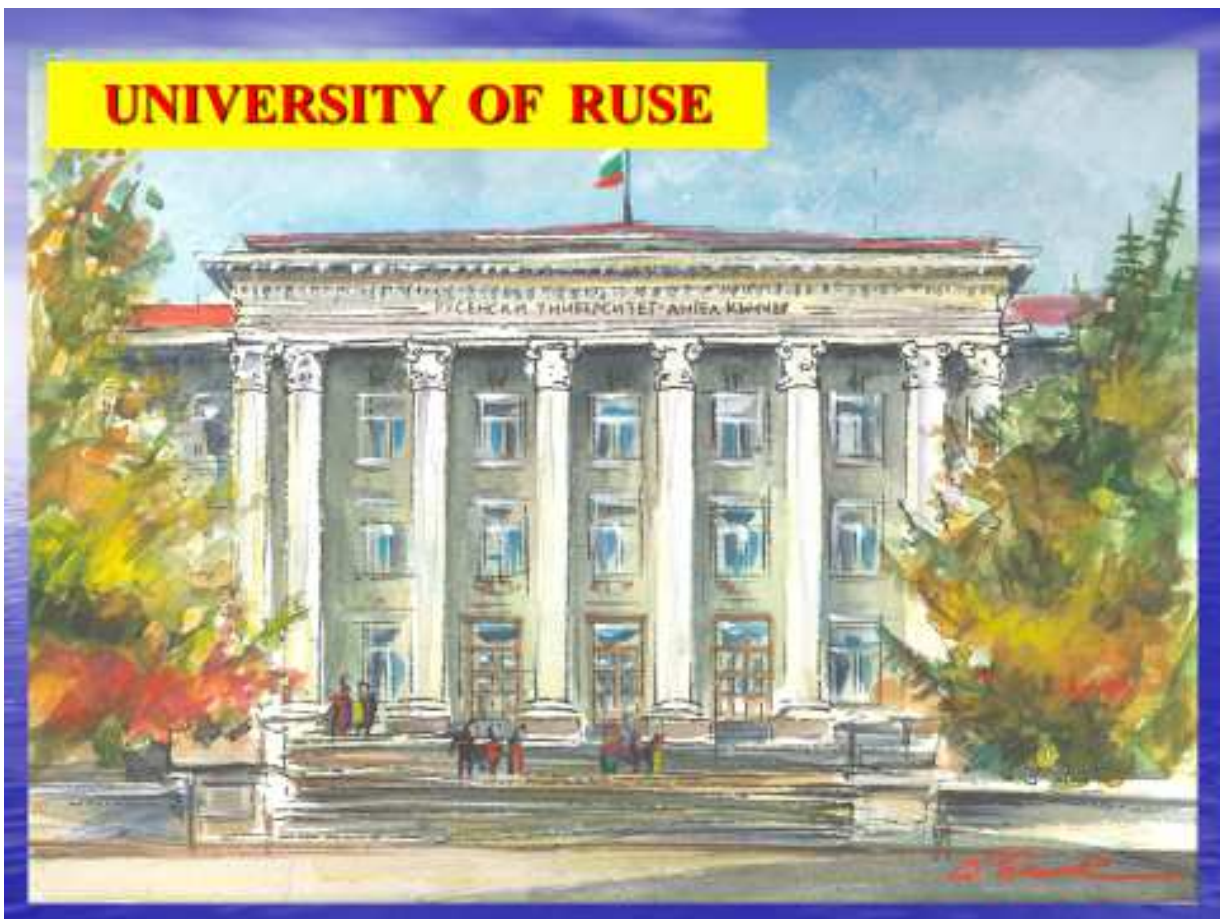
14:30

1.411.4

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

**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