





## ◆ 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

## ◆ INTERNATIONAL PROGRAMME COMMITTEE

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Katalina Grigorova	Bulgaria	Tsvetozar Georgiev	Bulgaria
Kemal Tutuncu	Turkey	Ville Leppänen	Finland
Krassen Stefanov	Bulgaria	Zoltan Geler	Serbia
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Leoneed Kirilov	Bulgaria		
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Maria Jose Marcelino	Portugal		
Milan S. Dimitrijević	Serbia		
Mirjana Ivanovic	Serbia		
Murat Köklü	Turkey		
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### • Co-Chairs:

Galina Ivanova (Bulgaria)

Aneliya Ivanova (Bulgaria)

### • Secretary:

Eugenia Dimitrova (Bulgaria)

### • Members:

Tsvetozar Georgiev (Bulgaria)

Stoyanka Smrikarova (Bulgaria)

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).





## PROGRAMME SUMMARY

**Saturday, 19<sup>th</sup> June 2021**

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

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## Session A

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

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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

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11:30 – 12:00  
Coffee Break  
1.322

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**Session F**

Chair: **Adriana Borodzhieva**

Co-Chair: **Joana Neto**

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

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**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**

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**14:30**

**1.411.4**

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

**THE BEST PAPERS AWARDS**

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**Session G**

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Chair: **Petar Kenderov**

Co-Chair: **Syuzan Feimova**

Scientific Secretary: **Yuksel Aliev**

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**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**

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Saturday, 19<sup>th</sup> June 2021

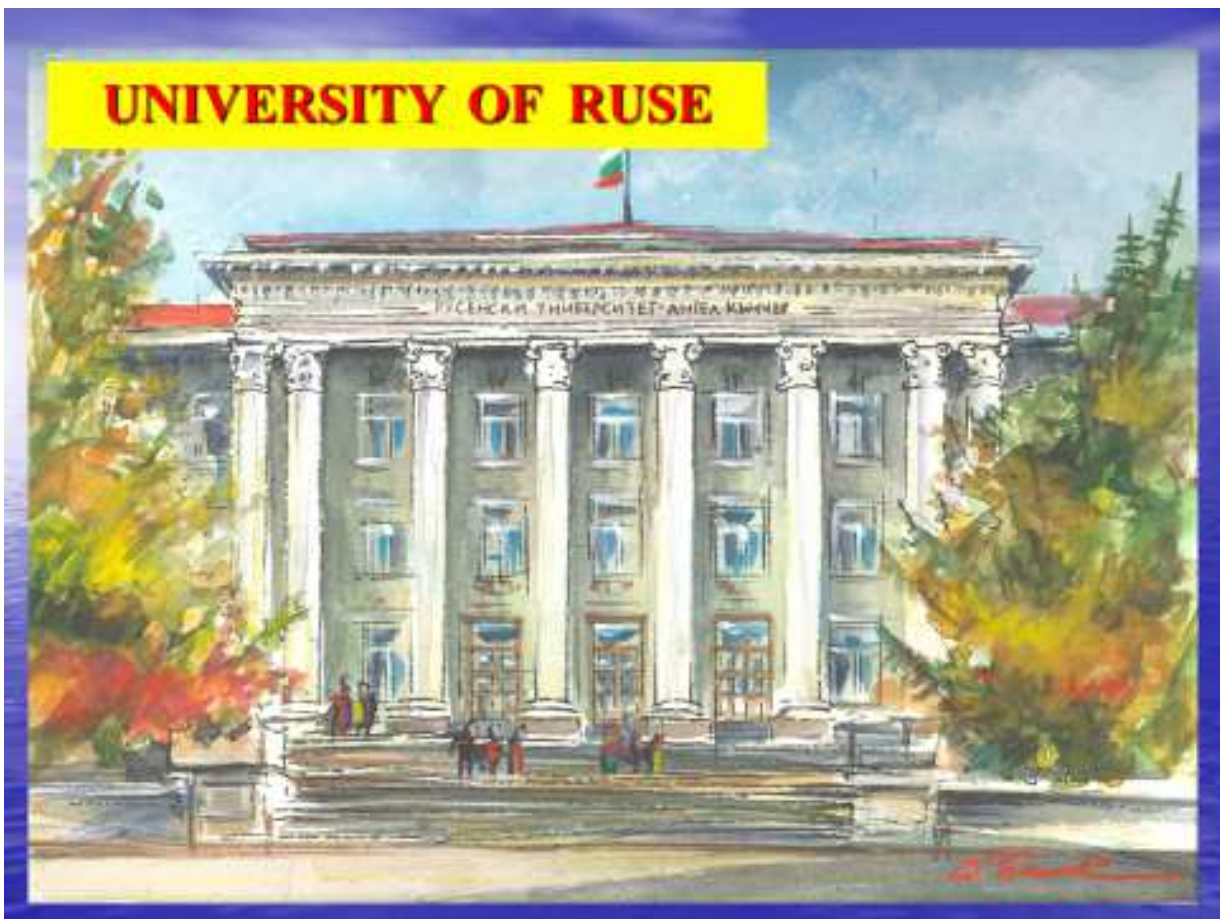
14:30

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.**

### Paintings from RUSE





**RUSE - LIBRARY**



**RUSE - MUSEUM**



**REMARKS**