Dear Participants,

University of Ruse is a member of Eduroam world project and if your University/Organization is a member too, you can use your credentials to access internet via our wireless network.

You can also use free WIRELESS INTERNET via access points named **CompSys** with password **compsys17**.

You can also use the COMPUTERS in the Centre for PhD students - main building, in the middle of the 3 floor 1.411-4.
♦ CONFERENCE OBJECTIVE

The CompSysTech'17 International Conference is organized by the Association for Computing Machinery, N.Y., USA via its Bulgarian Chapter – acmbul and by the Bulgarian Academic Society of Computer Systems and Information Technologies and its OBJECTIVE is to intensify the information exchange of results in theoretical research and practical developments in the field.

CompSysTech'17 is organized under the patronage of:
• Bulgarian Ministry of Education and Science;
• John Atanasoff Union of Automation and Informatics

♦ INTERNATIONAL PROGRAMME COMMITTEE

• Honorary Co-Chairs:
  Kiril Boyanov (Member of BAS, Bulgaria)
  Vasil Sgurev (Member of BAS, Bulgaria)

• Chair:
  Boris Rachev (Bulgaria)

• Scientific Secretary:
  Dimo Dimov (Bulgaria)

• Secretary:
  Yordan Kalmukov (Bulgaria)

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  Constantinos Pattichis (Cyprus)  Krassen Stefanov (Bulgaria)
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  Danail Dochev (Bulgaria)  Leon Rothkrantz (Netherlands)
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  Darina Dicheva (United States)  Lyudmil Dakovski (Bulgaria)
  Dimitris Karagiannis (Austria)  Marco Porta (Italy)
  Douglas Harms (United States)  Maria Koziri (Greece)
  Erika Nazaruka (Latvia)  Maria Marcelino (Portugal)
  Eugenijus Macienkas (Lithuania)  Marite Kirikova (Latvia)
  Francisca Losavio (Venezuela)  Markus Helfert (Ireland)
  George Mavrommatis (Greece)  Martin Llamas Nistal (Spain)
  Georgi Todorov (Bulgaria)  Melih İnal (Turkey)
  Grisha Spasov (Bulgaria)  Michael Vassilakopoulos (Greece)
  Hannu Jaakkola (Finland)  Mirjana Ivanovic (Serbia)
  Heinz-Dietrich Wuttke (Germany)  Neli Maneva (Bulgaria)
  Hilda Tellioglu (Austria)  Nicole Levy (France)
  Iliya Georgiev (United States)  Nikolay Mehandjiev (United Kingdom)
Nikos Konofaos (Greece)  Stavros Nikolopoulos (Greece)
Novruz Allahverdi (Turkey)  Stoicho Stoichev (Bulgaria)
Olegas Vasilecas (Lithuania)  Tadeusz Morzy (Poland)
Pavol Navrat (Slovakia)  Tanja Urbančič (Slovenia)
Peter Stanchev (United States)  Thanasis Loukopoulos (Greece)
Pino Caballero-Gil (Spain)  Timos Sellis (Australia)
Radi Romansky (Bulgaria)  Tzetomir Vassilev (Bulgaria)
Rebecca Bartlett (United Kingdom)  Ville Leppänen (Finland)
Roumen Nikolov (Bulgaria)  Vladimir Lazarov (Bulgaria)
Sebastiano Battiatò (Italy)  Yannis Manolopoulos (Greece)

♦ NATIONAL ORGANIZING COMMITTEE

- **Co-Chairs:**
  Angel Smrikarov (Bulgaria)
  Tzetomir Vassilev (Bulgaria)

- **Secretary:**
  Eugenia Dimitrova (Bulgaria)

- **Members:**
  Tsvetozar Georgiev (Bulgaria)
  Stoyanka Smrikarova (Bulgaria)
  Galina Ivanova (Bulgaria)
  Yuksel Aliev (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).**
5. **The Youth and the Computer Systems and Technologies**
   - PhD Students' Section;
   - Students' Section;
   - High-School Students' Section.
Friday, 23\textsuperscript{th} June 2017

08:00 – 18:00
New building, Hall 2Г.207
REGISTRATION

15:00
New building, Hall 2Г.204 SIEMENS

OPENING

WELCOME
Chair: Angel Smrikarov

MUSICAL GREETING
PLENARY SESSION
Chair: Boris Rachev

VLADIMIR KOYLAZOV
Chaos Group, Bulgaria, USA, South Korea and Japan
Keynote on:
Developing V-Ray: History and Lessons

MARITE KIRIKOVA
Department of Artificial Intelligence and Systems Engineering, Riga Technical University, Latvia
Keynote on:
Continuous Requirements Engineering

DARINA DICHEVA
Department of Computer Science, Winston-Salem State University, USA
Keynote on:
Gamification in Education: A Passing Trend or A Genuine Potential?

DISCUSSIONS

17:00
Walking tour of the University of Ruse
Visiting the multimedia museum of the University of Ruse
Friday, 23rd June 2017
19:30
SOCIAL EVENING IN THE RESTAURANT “RIGA”
22 PRIDUNAVSKI BLVD
2 floor
# PROGRAMME SUMMARY

**Saturday, 24th June 2017**

<table>
<thead>
<tr>
<th>Time</th>
<th>Hall 2.204</th>
<th>Hall 2.205</th>
<th>Hall 2.206</th>
<th>Hall 2.207</th>
</tr>
</thead>
</table>
| 9:00 – 11:30  | **Session A1**
Artificial Intelligence and Information Retrieval
Number of papers: 8 | **Session B**
Operating Systems and Network Security
Number of papers: 7 | **Session D**
Image Processing and Computer Vision
Number of papers: 5 | **Session F**
e-Learning
Number of papers: 6 |
| 11:30 – 12:00 | **COFFEE BREAK**                               |                                                |                                                |                                                |
| 12:00 – 14:00 | **Session A2**
Artificial Intelligence
Number of papers: 7 | **Session C**
Software Engineering
Number of papers: 6 | **Session E**
Hardware
Number of papers: 3 | **Session G**
The Youth and the ICT
Number of papers: 3 |
| 14:00 – 14:30 | **THE BEST PAPERS AWARDS**                     |                                                |                                                |                                                |
Session A1

Chair: Vladimir Lazarov
Co-Chair: Antonio Maratea
Scientific Secretary: Borislav Banchev

Saturday, 24th June 2017
9:00 – 11:30
New building, Hall 2.204

ARTIFICIAL INTELLIGENCE AND INFORMATION RETRIEVAL

1. Evaluating coherence of essays using sentence-similarity networks
   Kaja Zupanc, Miloš Savić, Zoran Bosnić, Mirjana Ivanović

2. Outlier detection via deep learning architecture
   Irina Kakanakova, Stefan Stoyanov

3. Is the Visitor Reading or Navigating?
   Peter Krátky, Tomáš Repiský, Daniela Chudá

4. Modelling of Educational Data Following Big Data Value Chain
   Dessislava Petrova-Antonova, Olga Georgieva, Sylvia Ilieva

5. A Conceptual Model of a Virtual Collaboration Space for Bat Scientists
   Angel Ivanov, Milena Georgieva, Stanimira Deleva, Daniela Orozova

6. Text classification based on enriched vector space model
   Tsvetanka Georgieva-Trifonova

7. Text Mining Based Adaptive Case Management Automation in the Field of Forensic Medicine
   Borislav Banchev

8. An algorithm for Micro-localization in Large Public Buildings
   Rosen Ivanov

DISCUSSIONS

11:30 – 12:00
Foyer
Coffee Break
Session A2

Chair: Tsvetozar Georgiev  
Co-Chair: Daniela Chudá  
Scientific Secretary: Borislav Banchev

Saturday, 24th June 2017  
12:00 – 14:00  
New building, Hall 2.204

ARTIFICIAL INTELLIGENCE

1. Ant colony optimization algorithm for traffic flow estimation  
   Milena Karova, Nikola Vasilev, Ivaylo Penev

2. “Compatible” Fuzzy Cognitive Maps For Direct And Inverse Inference  
   Vadim Borisov, Alexander Fedulov, Yaroslav Fedulov

3. Situation calculus for multiple action representation  
   Michael Zernov

4. Extended Graph Backbone for Motif Analysis  
   Antonio Maratea, Alfredo Petrosino, Mario Manzo

5. Incremental Rerouting Algorithm for single-vehicle VRPPD  
   Roman Guralnik

6. Neural network application in financial area  
   Roumen Trifonov, Dilyana Budakova, Galya Pavlova

7. Smart multifunctional digital content ecosystem using emotion analysis of voice  
   Alexander I. Iliev, Peter Stanchev

DISCUSSIONS

14:00  
Hall 2Г.204 SIEMENS  
THE BEST PAPERS AWARDS
OPERATING SYSTEMS AND NETWORK SECURITY

1. Defending Hardware-based Attacks on Trusted Computing using a Hardware-Integrity Attestation Protocol  
   Stavros D. Nikolopoulos, Iosif Polenakis

2. A Comparison of Record and Play Honeypot Designs  
   Jarko Papalitsas, Sampsa Rauti, Ville Leppänen

3. A Survey on Application Sandboxing Techniques  
   Samuel Laurén, Sampsa Rauti, Ville Leppänen

4. Pass-the-Hash – one of the most prevalent yet underrated attacks for credentials theft and reuse  
   Dimo Dimov, Yuliyan Tsonev

5. Cyber Threat Hunting through the use of an Isolation Forest  
   Dimitar Karev, Chris McCubbin, Ruslan Vaulin

6. What should application developers understand about mobile phone position data  
   Oskari Jahkola, Ari Happonen, Antti Knutas, Jouni Ikonen

7. A Practical Approach to Spam Mitigation  
   Dobrin Tashev

DISCUSSIONS

11:30 – 12:00  
Foyer  
Coffee Break
Session C

Chair: Boris Novikov
Co-Chair: Aneliya Ivanova
Scientific Secretary: Slavina Ivanova

Saturday, 24th June 2017
12:00 – 14:00
New building, Hall 2.205

SOFTWARE ENGINEERING

1. Measuring software security from the design of software
   Marko Saarela, Shohreh Hosseinzadeh, Sami Hyrynsalmi, and Ville Leppänen

2. A Fine-Grained Access Control Model and Implementation
   Ekaterina Gorskova, Boris Novikov, and Manoj Kumar Shukla

3. Limited Resources Platform Implementation of Complex Event Processing System
   Ján Lang, Peter Gabaš

4. Requirements management in students’ software development projects
   Pekka Mäkiaho, Timo T. Poranen, Zheying Zhan

5. A system for website data management in a website building system
   Dimitar Dimitrov

6. Informatics Solutions for Smart Trading on Wholesale Electricity Markets Containing RES Bidders
   Adela Bara, Simona Vasilica Oprea, Adina Uta, Osman Bulent Tor, Mahmut Erkut Cebeci

DISCUSSIONS

14:00
Hall 2Г.204 SIEMENS
THE BEST PAPERS AWARDS
Session D

Chair: Milena Lazarova
Co-Chair: Tzvetomir Vassilev
Scientific Secretary: Yuksel Aliev

Saturday, 24th June 2017
9:00 – 11:30
New building, Hall 2.206

IMAGE PROCESSING AND COMPUTER VISION

1. An approach for mammography image segmentation
   Mariana Stoeva, Violeta Bozhikova

2. Image Based Steganography Using Modified LSB Insertion Method with Contrast Stretching
   Antoniya Tasheva, Zhaneta Tasheva, Plamen Nakov

3. CutSurf – a software tool for cut surface evaluation of white cheese
   Atanaska Bosakova-Ardenska, Hristina Andreeva, Petya Boyanova, Peter Panayotov

4. Real Time GPU Accelerated Radar Scan Conversion and Visualization
   Vesselin Pezhgorski, Milena Lazarova

5. Mass-spring Cloth Simulation with Shape Matching
   Tzvetomir Vassilev

DISCUSSIONS

11:30 – 12:00
Foyer
Coffee Break
Session E

Chair: Svetozar Ilchev  
Scientific Secretary: Yuksel Aliev

Saturday, 24\textsuperscript{th} June 2017  
12:00 – 14:00  
New building, Hall 2.206

HARDWARE

1. Intelligent Planting  
   Ivan Ivanov, Vasilen Tsvetkov

2. Internet-of-Things Communication Protocol for Low-Cost Devices in Heterogeneous Wireless Networks  
   Svetozar Ilchev, Zlatoliliya Ilcheva

3. Fuzzy model of an intelligent agent behavior and method of fire extinguishing control  
   Aleksey Senkov, Aleksander Chepikov

DISCUSSIONS

14:00  
Hall 2Г.204 SIEMENS  
THE BEST PAPERS AWARDS
Session F

Chair: Leon Rothkrantz
Co-Chair: Galina Ivanova
Scientific Secretary: Yavor Stefanov

Saturday, 24th June 2017
9:00 – 11:30
New building, Hall 2.207

E-LEARNING

1. An Affective Distant Learning Model Using Avatars as user stand-in
   Leon Rothkrantz

2. A conceptual model of an electronic appendix called "Nursing file for palliative care", for training students from the speciality of Nurse.
   Greta Koleva, Despina Georgieva, Yavor Stefanov

3. Utility and Optimal Usage of ICT in Schools
   Valentina Terzieva, Katia Todorova, Yuri Pavlov, Petia Kademova-Katzarova

4. Designing a Virtual Laboratory for Teaching Programming
   Galya Shivacheva, Veselina Nedeva, Svetoslav Atanasov

5. 3D Augmented Reality Software Solution for Mechanical Engineering Education
   Yuksel Aliev, Vasil Kozov, Galina Ivanova, Aleksandar Ivanov

6. MATLAB-Based Software Tool for Implementation of Bifid Ciphers
   Adriana Borodzhieva

DISCUSSIONS

11:30 – 12:00
Foyer
Coffee Break
Session G

Chair: Peter Kenderov
Co-Chair: Yordan Kalmukov
Scientific Secretary: Yavor Stefanov

Saturday, 24th June 2017
12:00 – 14:00
New building, Hall 2.207

THE YOUTH AND THE ICT

1. Science Duels
   Viktor Toporov, Kristian Spasov, Syuzan Feimova

2. Financial Calculator
   Boyana Cholakova, Kalina Mateva, Syuzan Feimova

3. Artificial Immune System
   Yoanna Ilieva, Selin Shemsieva, Svetlana Valcheva, Syuzan Feimova

DISCUSSIONS

14:00
Hall 2Г.204 SIEMENS
THE BEST PAPERS AWARDS
Saturday, 24th June 2017
14:00
New building, Hall 2Г.204 SIEMENS

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

Saturday, 24th June 2017
14:30
New building, Hall 2Г.204 SIEMENS

Meeting of the PROGRAMME COMMITTEE and ORGANIZING COMMITTEE and the chairs of each sections of the CompSysTech’17
Saturday, 24th June 2017

In the center of the city
Especially for the participants in the conference

19:00
CARNIVAL

22:00
LIGHTSHOW
Paintings from RUSE

RUSE - CENTRE

UNIVERSITY OF RUSE
RUSE - LIBRARY

RUSE - MUSEUM