



6th Conference on the Engineering of
Computer Based Systems

September 2nd – September 3rd, 2019
Bucharest, Romania



Foreword

The Sixth Conference on the Engineering of Computer-Based Systems (ECBS 2019) is organized by University POLITEHNICA of Bucharest – Faculty of Engineering in Foreign Languages and The Association of Romanian Electrical Electronics Engineers with ACM SIGAPP, in Bucharest, Romania.

ECBS 2019 is a continuation of the Eastern European Regional Conference on the Engineering of Computer Based Systems (ECBS-EERC). It was established in 2008 as an Eastern/Central European offspring of the Annual IEEE International Conference and Workshop on the Engineering of Computer Based Systems, which itself was discontinued in 2013. Previous edition of ECBS took place in: Larnaca, Cyprus (2017, as 5th European Conference on the Engineering of Computer-Based Systems), Brno, Czech Republic (2015, as 4th Eastern European Regional Conference on the Engineering of Computer Based Systems), Budapest, Hungary (2013, as 3rd Eastern European Regional Conference on the Engineering of Computer Based Systems), Bratislava, Slovakia (2011, as 2nd Eastern European Regional Conference on the Engineering of Computer Based Systems) and in Novi Sad, Serbia (2009, as 1st Eastern European Regional Conference on the Engineering of Computer Based Systems).

ECBS integrates software, hardware, and communication perspective of system engineering through its many facets that include system modeling, requirements specification, simulation, architectures, safety, security, reliability, human-computer interaction, system integration, verification and validation, and project management.

The theme of ECBS 2019 is Engineering for Interconnected World that stresses the importance of computer and software engineering to produce reliable and secure systems for new domains involving future technologies.

We thank all the authors of submitted papers for considering ECBS 2019 as a venue for presenting their work. We are grateful to the Program Committee members and additional reviewers for their efforts. Our sincere thanks go to our financial sponsors, which made this conference possible: University POLITEHNICA of Bucharest, The Faculty of Engineering in Foreign Languages, The Association of Romanian Electrical Electronics Engineers, Cognizant Softvision, ADP Software, DRUID and Alsys Travel. We thank also the student volunteers from ASAFF for their enthusiast and help.

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Moshe Goldstein, Program Co-Chair

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ECBS 2019: Engineering of Computer Based Systems

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2nd September 2019		3rd September 2019	
08:00 - 9:00	Registration, 4th Floor Hall	08:30 - 9:00	Registration, 4th Floor Hall
09:00 - 9:30	<p>Welcome message – Room 4.1.</p> <p>Mrs. Ecaterina ANDRONESCU, President of UPB Senate Mr. Mihnea COSTOIU, Rector of UPB Mr. Adrian Volceanov – Dean of Faculty of Engineering in Foreign Languages, UPB Mrs. Maria-Iuliana Dascalu – General Chair of ECBS 2019</p>	09:00 -10:30	<p>Security, privacy and trust in networking (chair: Ondřej Ryšavý) – Room 4.1.</p> <p>Jan Pluskal, Martin Vondráček and Ondrej Rysavy <i>Network Forensics in GSE Overlay Networks (full paper)</i></p> <p>Martin Holkovič, Ondřej Ryšavý and Jindřich Dudek. <i>Automating Network Security Analysis at Packet-level by using Rule-based Engine (full paper)</i></p> <p>Viliam Letavay, Jan Pluskal and Ondřej Ryšavý. <i>Network Forensic Analysis for Lawful Enforcement on Steroids, Distributed and Scalable (full paper)</i></p>
9.30 - 10.30	<p>Keynote - Cristina Seceleanu, Mälardalen University, Sweden (chair: Miroslav Popovic) – Room 4.1.</p> <p><i>Verifying Autonomous Systems as a Lifetime Sport</i></p>		
10.30-11.00	<p>Official Photo - Library Hall, Ground floor</p> <p>Refreshment Break- 4th Floor Hall</p>	10.30-11.00	Refreshment Break- 4th Floor Hall
11.00-12.00	<p>Keynote - Miroslaw Staron, University of Gothenburg, Sweden (chair: Maria-Iuliana Dascalu – Room 4.1.</p> <p><i>AI4SE: Challenges and opportunities of using machine learning and AI to improve software engineering practices</i></p>	11.00-12.00	<p>Parallel and Distributed Systems 2 (chair: Moshe Goldstein) – Room 4.1.</p> <p>Mihai Carabas and Costin Carabas <i>Instruction caching for bhyve (full paper)</i></p> <p>Branislav Kordic, Marko Popovic, Miroslav Popovic, Moshe Goldstein, Moshe Amitay and David Dayan <i>A Protein Structure Prediction Program Architecture Based on a Software Transactional Memory (full paper)</i></p>
12.00-13.00	<p>Parallel and Distributed Systems 1 (chair: Miroslav Popovic) – Room 4.1.</p> <p>Maghsood Salimi, Amin Majd, Mohammad Loni, Tiberiu Seceleanu, Cristina Seceleanu, Marjan Sirjani,</p>	12.00-13.00	<p>Industrial Speakers and Sponsors (chair: Mihai Maricarau) – open session</p> <p>Cognizant Softvision (<i>speaker Răzvan Prichici</i>) <i>Thread Concurrency vs Network A synchronicity: Rethinking IT Architecture</i></p>

	<p>Masoud Daneshtalab and Elena Troubitsyna <i>Multi-objective Optimization of Real-Time Task Scheduling Problem for Distributed Environments (full paper)</i></p> <p>Miroslav Popovic, Marko Popovic, Silvia Ghilezan and Branislav Kordic <i>Formal Verification of Python Software Transactional Memory Serializability Based on the Push/Pull Semantic Model (full paper)</i></p>		<p><i>for cloud-native Java enterprise applications and distributed systems</i></p> <p><i>Concurrent Programming and Relational Databases: Show how to solve the async database access puzzle</i></p> <p>ADP Software (<i>speakers Alina-Daniela Oprea, Andrei Duma</i>)</p> <p>Druid - <i>Close the gap between human and system. Enhancing enterprise systems with cognitive and conversational skills (speaker Andreea Plesea)</i></p>
13.00-14.30	Lunch break - 4th Floor Hall	13.00-14.30	Lunch break - 4th Floor Hall
14.30-16.00	<p>Visit to University POLITEHNICA of Bucharest Center for Advanced Research on New Materials, Products and Innovative Processes (CAMPUS)</p> <p>Official meeting with</p> <p>Mr. Corneliu BURILEANU, Vice-president of UPB Senate, Scientific president of CAMPUS</p> <p>Mr. Bogdan IONESCU, General manager of CAMPUS</p> <p>CAMPUS tour</p>	14.30-16.00	<p>Data Analytics (chair: Iosif Nemoianu) – Room 4.1.</p> <p>Kamil Jeřábek and Ondřej Ryšavý <i>Big Data Network Flow Processing Using Apache Spark (full paper)</i></p> <p>Octavian Catrina <i>Optimization and Tradeoffs in Secure Floating-Point Computation: Products, Powers, and Polynomials (full paper)</i></p> <p>Iuliana Marin and Nicolae Goga <i>Hypertension Detection based on Machine Learning (short paper)</i></p> <p>Veronica Manescu Paltanea, Gheorghe Paltanea, Iosif-Vasile Nemoianu and Radu Mircea Ciuceanu <i>Scalar Preisach Hysteresis Model Algorithm (short paper)</i></p>
14.30-16.00	<p>Software modelling and design (chairs: Constanta-Nicoleta Bodea, George Dragoi) – Room 4.1.</p> <p>George Suciu, Mihaela Balanescu, Carmen Nadrag, Andrei Birdici, Cristina Mihaela Balaceanu, Marius Alexandru Dobrea, Adrian Pasat and Radu Ioan Ciobanu <i>IoT System for Air Pollutants Assessment in Underground Infrastructure (full paper)</i></p>	14.30-16.00	<p>Computer-based Algorithms and Systems for Efficiency and Optimization in RF Spectrum Detection and Estimation - special session (chairs and organisers: Simona Viorica Halunga, Octavian Fratu) - Room 4.2.</p> <p>Alexandru Boitan, Razvan Bărtusică and Simona Halunga <i>Electromagnetic Vulnerabilities of LCD Projectors (full paper)</i></p> <p>Ioana Manuela Marcu, Andrei Țigănuș and Ana Maria Dragulinescu</p>

	<p>Andrei Vasileanu, Alexandra Bolovan and Maria Fatu Multi-agent System Simulation for Smart Homes based on the i-Light framework (short paper)</p> <p>Iulia Stanica, Florica Moldoveanu, Maria Dascalu, Alin Moldoveanu, Paul Portelli and Constanta Bodea <i>VR System for Neurorehabilitation: Where Technology Meets Medicine for Empowering Patients and Therapists in the Rehabilitation Process (short paper)</i></p> <p>Mihail Cazacu, Constanța Bodea and Maria-Iuliana Dascălu <i>Connecting the Dots - Promising directions for developing a robotic cybersecurity analyst (short paper)</i></p>		<p><i>A new approach on Smart-Parking concept (full paper)</i></p> <p>Eugen Stancu, Cristian Capotă, Simona Halunga and Octavian Fratu <i>Mutual Electromagnetic Perturbations-RF Measurements in the VHF and UHF Frequencies in Bucharest (short paper)</i></p> <p>Alexandru Badea, Simona Viorica Halunga and George Luca <i>Energy optimization for the low data rate IoT devices by using Manchester's coded pseudo-random sequences (short paper)</i></p>
16.00-16.30	Refreshment Break- 4th Floor Hall	16.00-16.30	Refreshment Break- 4th Floor Hall
16.30-17.15	<p>Internet of Things Applications (chair: Mirosław Staron) – Room 4.1.</p> <p>Petr Matousek, Ondrej Rysavy and Matej Gregr <i>Security Monitoring of IoT Communication Using Flows (full paper)</i></p> <p>Branimir Pervan, Emanuel Guberovic and Filip Turcinovic <i>Hazelnut - An Energy Efficient Base IoT Module for Wide Variety of Sensing Applications (short paper)</i></p>	16.30-17.15	<p>Poster session (chair: Branislav Kordic) – open session with students</p> <p>Mihnea Alexandru Moiescu, Ioan Stefan Sacala, Ioan Dumitrache, Simona Iuliana Caramihai, Bogdan Barbulescu and Marius Danciu <i>Cyber-Physical Systems Oriented Redundant Network Node</i></p> <p>Cristina Balaceanu, Ioana Marcu, George Suci, Carina Dantas and Peter Mayer <i>Smart Toilet System for Ageing Well</i></p> <p>Muhammad Shah Jahan, Muhammad Talha Riaz, Kashif, Muhammad Abbas <i>Software Testing Practices in IT Industry of Pakistan</i></p> <p>Anam Amjad, Usman Qamar <i>UAMSA: Unified Approach for Multilingual Sentiment Analysis Using GATE</i></p>
17.15-18.00	SC & PC Meeting – Room 4.1.		
18.00-22.00	Bucharest Old Center Walking Tour & Dinner	17.15-17.30	Closing Session and Final Remarks