



Technical University of Sofia
Faculty of Computer Systems and
Technologies



P R O G R A M

9th International Scientific Conference

COMPUTER SCIENCE'2020

18-21 October 2020

CONFERENCE CHAIR

Prof. Milena Lazarova,

Technical University of Sofia, Bulgaria

HONORARY CO-CHAIR

Ognyan Nakov,

Technical University of Sofia, Bulgaria

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October 18th, 2020

17:00 – 19:00 Registration

Zdravets Hotel, Velingrad

October 19th, 2020

08:00 – 10:00 Registration

Zdravets Hotel, Velingrad

10:00 – 10:30

Official Conference Opening

Photo of the Conference Participants

Conference Hall, Zdravets Hotel

10:30 – 12:00

Roundtable

“Universities for Science, Informatics and Technologies in eSociety”

Workshop

“National Centre for High-Performance and Distributed Computing”

Chair: *Prof. Milena Lazarova*

Conference Hall, Zdravets Hotel

12:00 – 13:30 Lunch Break

October 19th, 2020

SECTION 1

COMPUTING METHODOLOGIES

13:30 – 15:30 ***Conference Hall, Zdravets Hotel***

Chair: ***Prof. Rumén Trifonov***

Co-chair: ***Assist. Prof. Galya Pavlova***

1. Virtual Agents, Learning How to Reach a Goal by Making Appropriate Compromises
Dilyana Budakova, Veselka Petrova-Dimitrova and Lyudmil Dakovski
2. Modern Approaches to Robots Control
Dilyana Budakova, Velya Vasilev, Roumen Trifonov and Galya Pavlova
3. Performance Study and Optimization Design for Gesture Controlled IoT Ecosystem Using Parallel Signal Processing with Thread Pool
Momchil Petkov, Elizabeth Mihaylova and Kamelia Raynova
4. Conducting a Cycle of Remote Laboratory Exercises on "High-Performance Computer Systems"
Valentin Hristov, Slavi Slavov and Radoslav Dimitrov
5. An Approach for Student' Knowledge Assessment in Virtual Learning Environment
Daniela Minkovska
6. Protocol Stack for Hybrid Short-Range Modular Wireless Transceiver
Antouan Anguelov, Roumen Trifonov and Ognian Nakov
7. Research and Modeling Network Denial of Service-Dos and Distributed Denial of Service-Ddos Assaults for the Cybersecurity Domain
Filip Krastev
8. Metaheuristics Multi-Agent System for Resource Planning Optimization
Milena Lazarova and Dimitar Nikolov

15:30 – 16:00 **Coffee break**

October 19th, 2020

SECTION 2

INFORMATION AND COMMUNICATION TECHNOLOGIES FOR UNIFIED DIGITAL MARKET IN SCIENCE, EDUCATION AND SECURITY

16:00 – 17:30

Conference Hall, Zdravets Hotel

Chair: ***Prof. Milena Lazarova***

Co-chair: ***Assoc. Prof. Antoniya Tasheva***

1. Some Recommendations for the Implementation of GDPR at the University
Georgi Tsochev, Roumen Trifonov, Dgnian Nakov, Slavcho Manolov and Galya Pavlova
2. A New Approach to Cyber Security Policy Development Using Artificial Intelligence Methods
Roumen Trifonov, Dgnian Nakov, Slavcho Manolov, Georgi Tsochev and Galya Pavlova
3. Application of Neural Networks in the Methodology of the Five Component Conceptual Model of Adaptive E-Learning Systems
Varbinka Stefanova-Stoyanova
4. Most Commonly Used Machine Learning Algorithms for Cybersecurity Incident Reports Classification
Veneta Yosifova, Antoniya Tasheva and Roumen Trifonov
5. Cyber Glove Gesture-based Drone Control for Automated Line Interruption Detection
Elizabeth Mihaylova, Momchil Petkov, Milena Lazarova and Dgnyan Nakov

19:00

Official Conference Dinner

Zdravets Hotel Restaurant

October 20th, 2020

SECTION 3 ONLINE PARTICIPATION

10:00 – 12:00 ***Conference Hall, Zdravets Hotel***

Chair: ***Prof. Milena Lazarova***

Co-chair: ***Assoc. Prof. Valentin Mollov***

1. CMOS Three-State Buffer Delay Optimization for High Speed Implementation
Valentin Mollov
2. A Convolutional Neural Network Software: LightNN
Grigor Gatchev
3. Combining Pre-Calculated Inference Lookup Tables in Convolutional Neural Networks
Grigor Gatchev and Valentin Mollov
4. Building a Model for Network Intrusion Detection with Artificial Neural Networks
Pavel Stoyanov, Daniela Gotseva and Rumen Trifanov
5. Diophantine Equations and Encryption Systems
Atakan Salimov, Peter Kopanov, Ognian Nakov, Byulbyul Zyulyamova and Adnan Redjeb

12:00 – 13:30 **Lunch Break**

October 20th, 2020

SECTION 4 ONLINE PARTICIPATION

13:30 – 15:30 ***Conference Hall, Zdravets Hotel***

Chair: ***Assoc. Prof. Antoniya Tasheva***

Co-chair: ***Prof. Milena Lazarova***

1. Authentication Mechanisms: A Literature Survey
Ivaylo Chenchev and Adelina Aleksieva-Petrova
2. Speech Recognition with Transformers
Maya Mateva and Maria Angelova
3. General Approaches for Fraud Detection
Vasil Angelov, Roumen Trifonov and Daniela Gotseva
4. Weight Based Model for Emotion Recognition in a Multimodal Agent Based Architecture
Ralitza Raynova
5. Classification of EEG Data for Motor Imagery Mental Tasks
Ivaylo Ivaylov, Agata Manolova and Milena Lazarova
6. An Activity-Dependent Model for the Evolution of an Artificial Nervous System for Autonomous Agents
Stefan Tsokov, Adelina Aleksieva-Petrova and Milena Lazarova

15:30 – 16:00 **Coffee Break**

October 20th, 2020

SECTION 5
ONLINE PARTICIPATION

16:00 – 18:00 *Conference Hall, Zdravets Hotel*

Chair: *Assoc. Prof. Adelina Aleksieva-Petrova*

Co-chair: *Assoc. Prof. Daniela Minkovska*

1. Artificial Intelligence Education System Applications
Hamit Can, Daniela Minkovska and Lyudmila Stoyanova
2. FPGA Based Development Boards for IoT. Considerations in Implementing an Algorithm – Actions and Programming
Momchil Petkov
3. An Automated Irrigation System Using Arduino
Kamelia Raynova and Radoslav Lagadinov
4. Early Detection of Multiple Sclerosis and the Improvement of Clinical Trials Recruitment Process with ML Methods
Violeta Todorova and Valeri Mladenov
5. Knowledge Management Information Systems in Education and Science
Ivan Stankov and Grozdan Hristov
6. Art of Accurate Computation: a Short Review
Ivan Petkovic and Djordje Herceg

19:00

Official Conference Closing Ceremony

Conference Hall, Zdravets Hotel