



Faculty of  
Telecommunications  
Technical University - Sofia  
Sofia, Bulgaria



Faculty of Electronic Engineering  
University of Niš  
Niš, Serbia



Faculty of Technical Sciences  
St. Kliment Ohridski University  
Bitola, North Macedonia

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2021 56th INTERNATIONAL CONFERENCE ON INFORMATION,  
COMMUNICATION AND ENERGY SYSTEMS AND TECHNOLOGIES

**ICEST**

June 16-18, 2021, Sozopol, Bulgaria

**CONFERENCE  
PROGRAM**



Technical co-sponsors:  
IEEE Bulgaria Section  
IEEE Serbia and Montenegro Section  
IEEE North Macedonia Section



**ICESTCONF.ORG**



Dear Colleagues and ICEST Friends,

The 56th International Scientific Conference on Information Communication and Energy Systems and Technologies – ICEST 2021 was held from June 16 to 18 in Sozopol, Bulgaria. The Conference is jointly organized by the Faculty of Telecommunications, Sofia, Bulgaria, the Faculty of Electronic Engineering, Niš, Serbia and by the Faculty of Technical Sciences, Bitola, N. Macedonia. As to the earlier ICEST conferences many authors from all over the world submitted their papers. This year 57 papers have been accepted for oral or poster presentation. The plenary lecture is given by Dr. Alessia Amelio, independent researcher from Italy. I am glad that, although in a hybrid environment, all participants took the opportunity to exchange their knowledge, experience and ideas, and also made contacts and established further cooperation. This year we have provided a calm atmosphere with the opportunity for meetings in accordance with the anti-epidemic requirements. I hope to meet at the next ICEST conference.

Assoc. Prof. Dr. Kalin Dimitrov,

ICEST 2021 Conference Chair

## **ICEST'2021 Program**

***June 16, 2021, Wednesday***

*09:00 – 12:00 Registration, Reception Hall*

*15:00 – 18:00 Registration, Reception Hall*

*10:00 – 11:00 – Opening Ceremony, Room A*

*11:00 – 11:30 Plenary Lecture – Amelio, A., Data science methods in healthcare: a research perspective, Room A*

*12:00 Welcome Party*

***15:00 – 16:45 Room A***

***Computer Systems, Internet Technologies, Digital Signal and Image Processing***

***Oral Presentations***

***Chairman:*** R. Mironov, Technical University of Sofia, Bulgaria

***Secretary:*** N. Christoff, Technical University of Sofia, Bulgaria

- 1. Jankovic, R., I. Mihajlovic, A. Amelio, I. Draganov, Predicting the Ecological Footprint: A Case Study for Italy, Pakistan and China*
- 2. Mitev, Y., D. Dimitrov, IT Service Management Challenges in Condition of Pandemic and Post-pandemic Environment*
- 3. Georgiev, G., O. Panagiev, Unsubscribe rate of chatbots users received broadcast messages for France, Germany, Russia, and the global market*
- 4. Vladimirov, I., D. Nikolova, Z. Terneva, Overview of Methods for 3D Reconstruction of Human Models with Applications in Fashion E-commerce*
- 5. Nikolova, D., I. Vladimirov, Z. Terneva, Human Action Recognition for Pose-based Attention: Methods on the Framework of Image Processing and Deep Learning*
- 6. Christoff, N., Improving a Digital Elevation Model of Mars Based on Principal Curvature Directions*
- 7. Mironov, R., I. Draganov, Local Adaptive LMS Filtration of Multidimensional Images*

**15:00 – 16:30 Poster Room**

***Engineering Education, Energy Systems and Efficiency***

***Poster Presentations***

***Chairman: V. Georgieva, Technical University of Sofia, Bulgaria***

***Secretary: V. Shterev, Technical University of Sofia, Bulgaria***

1. *Yordanova, M., An Approach to Application of the Event Tree Analysis for Electrical Safety Risk Assessment*
2. *Yordanova, M., Application of the Situational Teaching Method in the Electrical Safety Education*
3. *Sheiretsky, K., S. Antonov, Formal Method for Finding Asymptotic Approximations*
4. *Vasileva M., Using simulation modeling to study overvoltages in the electrical networks*
5. *Laskov, L., V. Georgieva, Analysis of Amplitude Modulation and Demodulation in MATLAB Simulink Environment*
6. *Mehmed-Hamza, M., A. Filipov, M. Ivanova, Research and Analysis of Faults in Medium Voltage Distribution Grids*
7. *Parushev, P., Study of Hydrogen Production by Electrolysis of Spring Waters from Bulgaria*
8. *Kalinkov, K., V. Markova, T. Ganchev, The Effect of Acute Stress on the Performance of Students in Engineering Education*
9. *Trushev, I., S. Sehati, D. Patil, On the Minimal Fire Power for Heat Detection*

**16:30 – 17:00 Coffee break**

**17:00 – 19:00 Room A**

***Engineering Education, Energy Systems and Efficiency***

***Oral Presentations***

***Chairman: D. Nikolov, Technical University of Sofia, Bulgaria***

***Secretary: D. Nikolova, Technical University of Sofia, Bulgaria***

1. *Atanasovski, M., M. Kostov, B. Arapinoski, M. Spirovski, Integration of New RES in Power System of North Macedonia*
2. *Anackovski, F., M. Kostov, R. Pasic, I. Kuzmanov, The Impact of Industry 4.0 on Education and Future Jobs*
3. *Popovski, P., G. Veljanovski, B. Arapinoski, M. Atanasovski, Electromagnetic analysis of synchronous generator*
4. *Strejovski, I., N. Acevski, M. Spirovski, Application of Matlab Tool for Analysis of Complex Grounding Systems of Overhead Power Line*
5. *Gade, S., R. Agrawal, D. Patil, S. Antonov, Optimal utilization of UPQC at different operating condition using TLBO*
6. *Valkovski, T., K. Dimitrov, Reception of audio signals received from different LEDs used in the low cost LI-FI systems*
7. *Terziev, V., T. Valkovski, K. Dimitrov, I. Damyanov, Monitoring of disk brakes vs drum brakes using infrared thermography*

**17:00 – 19:00 Poster Room**

**Computer Systems, Internet Technologies, Digital Signal and Image Processing**

**Poster Presentations**

**Chairman:** *V. Markova, Technical University of Varna, Bulgaria*

**Secretary:** *I. Vladimirov, Technical University of Sofia, Bulgaria*

1. *Dimitrova, E., D. Dimitrova, V. Dimitrov, V. Trifonov, Contemporary Authentication Access Approach for High Security Information Systems*
2. *Nikolov, N., Nakov, O., Gotseva, D., Operating systems for IoT devices*
3. *Nikolov, N., Nakov, O., Gotseva, D., Research of MQTT versus LwM2M IoT communication protocols for IoT*
4. *Yosifova, V., D. Chikurtev, Communication system for remote control of infrared heating*
5. *Kirilov, N., Kirilova, E., Classifying Dual-Energy X-ray Absorptiometry Images Using Machine Learning*
6. *Kurochka, K., K. Panarin, An algorithm of segmentation of a human spine X-ray image with the help of Mask R-CNN neural network for the purpose of vertebrae localization*
7. *Terneva, Z., I. Vladimirov, D. Nikolova, Accessing LinkedIn and Google E-mail Databases Using Kali Linux and TheHarvester*

**June 17, 2021, Thursday**

*09:00 – 12:00 Registration, Reception Hall*

*14:00 – 17:00 Registration, Reception Hall*

**14:00 – 15:45 Room A**

***Digital Signal and Image Processing 2***

***Oral Presentations***

***Chairman: B. Stošić, University of Niš, Serbia***

***Secretary: D. Tsvetkova, Technical University of Sofia, Bulgaria***

- 1. Stošić, B., Improved Classes of CIC Filter Functions: Design and Analysis of the Quantized-Coefficient Errors*
- 2. Kostić, I., G. Stančić, S. Cvetković, Sensitivity of notch filters realized by parallel connection of allpass subfilters*
- 3. Ivaylov, I., M. Lazarova, A. Manolova, Multimodal Motor Imagery BCI Based on EEG and NIRS*
- 4. Ziani, D., S. M. Meriah, F. Derraz, L. Merad, A planar MIMO UWB array design for high-resolution microwave imaging*
- 5. Pavlova, M., A Comparison of the Accuracies of a Convolution Neural Network Built on Different Types of Convolution Layers*
- 6. Georgieva, V., P. Petrov, D. Tsvetkova, L. Laskov, MRI/SPECT Image Fusion of Brain Based on Multi-Scale Wavelet Decomposition*
- 7. Draganov, I., R. Mironov, 3D SUSAN Filtering of CT Images with Adaptive Selection of the Brightness Threshold*

***14:00 – 15:30 Poster Room***

***Radio Communications, Microwaves, Antennas***

***Poster Presentations***

***Chairman: B. Bonev, Technical University of Sofia, Bulgaria***

***Secretary: D. Petkova, Technical University of Sofia, Bulgaria***

1. *Kumar, V., H. Singh, K. Saxena, B. Bonev, R. Prasad, Approximations for ITU Rain Model using Machine Learning*
2. *Singh, H., V. Kumar, K. Saxena, B. Bonev, R. Prasad, Prediction of Radio Wave Attenuation due to Cloud using Machine Learning Techniques*
3. *Stojanovic, N. Sekulovic, A. Panajotovic, P. Popovic, M. Protic, Wireless channel prediction using ensemble of Extreme Learning Machines*
4. *Lubih, L., I. Dochev, L. Docheva, S. Manev, Development and study of a small radar*
5. *Panagiev, O., Investigation of the interference in signal transfer between different cable operators in CATV/HFC interlaced cable distribution networks*

***15:30 – 16:00 Coffee break***



**16:00 – 17:15 Room A**

***Antennas and Control Systems***

***Oral Presentations***

***Chairman: P. Petkov, Technical University of Sofia, Bulgaria***

***Secretary: I. Nachev, Technical University of Sofia, Bulgaria***

1. *Nachev, I., I. Iliev, Improving an antenna radiation pattern using photonic band gap structure*
2. *Arslan, I. A., G. Altin, A Novel Deep Neural Network Based Antenna Selection Architecture for Spatial Modulation Systems*
3. *Marinkovic, Z., G. Gugliandolo, G. Campobello, G. Crupi, N. Donato, Application of Artificial Neural Networks for Modeling of the Frequency-Dependent Performance of Surface Acoustic Wave Resonators*
4. *Mladenov, G., I. Damyanov, T. Valkovski, Research and selection of parameters determining the efficiency of the braking system of cars to improve traffic safety and environmental performance*
5. *Petkova, D., P. Petkov, Aperture-Coupled Microstrip Patch Antenna Design using FEM Simulation Technique*

**16:00 – 18:30 Poster Room**

***Informatics, Computer Science, Electronics, Control Systems, Digital Signal and Image Processing 2***

***Poster Presentations***

***Chairman: R. Miletiev, Technical University of Sofia, Bulgaria***

***Secretary: D. Kireva-Mihova, Technical University of Sofia, Bulgaria***

1. *Iliev, D. N. Madjarov, R. Ilarionov, Methods to Increase Distance in Wireless Power Transfer Systems*
2. *Kireva-Mihova, D., K. Mirchev, B. Boyadjiev, Authorization Concept in the 4th Railway Package*
3. *Brusev, T., Buck-Boost DC-DC Converter Designed for PCB Applications*
4. *Rusev, R., G. Angelov, B. Tzaneva, M. Aleksandrova, Electrophoretic Deposition of Rochelle Salt on Cu<sub>2</sub>O Plate*
5. *Kolev, S., Designing a NFC system*
6. *Miletiev, R., E. Iontchev, R. Yordanov, Design of navigation system with multiband GNSS receiver with RTK and DR algorithms*
7. *Genchev, P., Analysis of changes in the probability of an incident with information security*
8. *Rogan, I., O. Pronić-Rančić, Forecasting the volume of postal services using Savitzky-Golay filter modification*
9. *Sheiretsky, K., S. Antonov, Criteria for the Existence of a Sustainable Limit Cycle. Application of the Criteria in the First Approximation for the Van der Pol Equation*
10. *Angelevska, B., I. Andreevski, V. Atanasova, Crowd-sourcing: Citizens as scientists for air pollution monitoring*

**20:00 Official Dinner**

***Lazur Summer Holiday House Restaurant***