ICARAI'2023

16-18.06.2023, SOZOPOL, BULGARIA

FULL PROGRAMME

VENUE: HALL A, TUS RECREATION HOTEL (Hotel 'Lazur")

16.06.2023 (Friday)
OPENING CEREMONY 16:00 – 16:25
Prof. Ivan Kralov – Rector of TU-Sofia
Prof. Kiril Aleksiev – IEEE Bulgarian Section
Prof. Valentina Markova - IEEE Bulgarian Section
Prof. Valeri Mladenov – ICARAI PC co-chair
Assoc. prof. Nikolay Nikolov - Scientific and research sector at TU-Sofia
Assoc. prof. Nina Nikolova - ICARAI PC co-chair & Dean of FA

PLENARY SESSION – 16:30-18:00
Chair: DSc Kamen Perev
Technical support and assurance: Bozhidar Rakov, Vladislav Slavov

3973 - Beatriz Costa, Petia Georgieva, Explainable Artificial Intelligence in healthcare applications: a systematic review, ***in person***

Petko Petkov, Matrices Depending On Parameters, ***in person***

WELCOME COCKTAIL - 18:00 -18:45   - Hotel Lazur, Sozopol (conference venue)

17.06.2023 (Saturday)

SESSION 1: CONTROL SYSTEMS ENGINEERING - 9:00 – 10:30
Chair: Assoc. Prof. Tsonyo Slavov
Technical support and assurance: Bozhidar Rakov

3984 - Anjana Ranjan, Utkal Mehta- Improved Control for Fractional-order and Non-minimum Phase Integrating Plants Using a Fractional IMC and SP Structure, **remotely**

3992 - Tsonyo Slavov, Alexandar Mitov, Jordan Kralev, LQ/H∞ Filter Control of Axial-Piston Pump, ***remotley***

3969 - Andrey Yonchev, Local Perturbation Limits of the Discrete Matrix Inequality Linear Quadratic Regulator Task for Differential-algebraic Systems, *remotely*

4010 - Tsonyo Slavov, Miroslava Barharska, Ivan Markovsky, A model-free method based on Kautz functions for dynamic measurement improvement, *in person*

COFFEE BREAK - 10:30 – 10:55

SESSION 2: CONTROL SYSTEMS ENGINEERING - 10:55 – 12:30
Chair: Prof. Alena Kozakova
Technical support and assurance: Vladislav Slavov

4006 - Bozhidar Rakov, Georgi Ruzhekov, H∞ Reduced Order Control of a Thermal Plant, *in person*

4007 - Bozhidar Rakov, Georgi Ruzhekov, H∞ Multivariable PID Control of a Thermal Plant, *in person*

3996 - Kamen Perev, PID Control of the Inverted Pendulum, *in person*

4008 - Alexander Hotmar, Algorithm for Predicting Daily Volatility of FOREX Markets, *in person*

LUNCH BREAK - 12:00 – 13:30

SESSION 3: APPLICATIONS OF ARTIFICIAL INTELLIGENCE - 13:30 – 15:00
Chair: Prof. Petia Georgieva
Technical support and assurance: Bozhidar Rakov

4023 - Angel Marchev, An Implementation of Self-Organizing Multi-Stage Selection Procedure. *in person*

3972 - Asparuh Markovski, Tsanislava Genova, Victoria Mircheva, Skin diseases diagnosis by use of optical biopsy and Neural Networks in case of insufficient or low-quality data, *in person*

3978 - Boris Kirov, Artificial Intelligence in Creation of Scientific Written Works: Weighing the Benefits and Ethical Dilemmas - Should We Use It? *in person*

4016 – Zuzana Képešiová, Štefan Kozák, Eugen Ružický, Alfréd Zimmermann, Richard Malaschitz, Application of Advanced Machine Learning Algorithms for Early Detection of Mild Cognitive Impairment and Alzheimer's Disease, *in person*

SESSION 3A: APPLICATIONS OF ARTIFICIAL INTELLIGENCE – POSTER SESSION - 13:15 – 15:15

3970 - Ivan Ivanov, Borislava Toleva, An algorithm to predict Hepatitis diagnosis

3988 - Zhivko Georgiev, Ivan Trushev, Atanas Chervenkov, Laplace Transform Method to Transient' Analysis in Magnetically Coupled Electircal Circuits

COFFEE BREAK - 15:00 – 15:30

WORKSHOP ON DEEP LEARNING FOR MEDICAL IMAGE PROCESSING - 15:30 – 18:30

Seminar "Challenges in Scientific Research" - 18:30 - 19:30

18.06.2023 (Sunday)

SESSION 4: APPLICATIONS OF ARTIFICIAL INTELLIGENCE - 8:30 – 10:00
Chair: prof. Stefan Kozak
Technical support and assurance: Bozhidar Rakov

3998 - Filip Zemla, Jan Ciganek, Vehicle assistance system using convolutional neural networks, *in person*

4004 - Michal Hlavatý, Alena Kozáková, Developlent of Advanced Control Strategy Based on Soft Actor-Critic Algorithm, *in person*

4005 - Danail Slavov, Vladimir Hristov, Anastasiya Slavova, Distributed Machine Learning through Transceiver Competitive Connectivity of Remote Computing Systems, *in person*

3976 - Ali Sabra, Nehmeh Rmeiti, Mirna Atieh, Using Machine Learning Techniques to Detect Cyberattacks in Smart Homes: A Survey, *in person*

COFFEE BREAK - 10:00 – 10:30

SESSION 5: THEORETICAL ELECTRICAL ENGINEERING; INFORMATION MEASUREMENT TECHNOLOGY - 10:30 – 12:30
Chair: Assoc. prof. Georgi Tsenov
Technical support and assurance: Vladislav Slavov
Remote participants link:
https://technicaluniveristyofsofiatechnologyeood.my.webex.com/technicaluniveristyofsofiatechnologyeood.my/j.php?MTID=m7491717da9bfd1e6cd631291d36e382a

Meeting number:2634 544 7741

Password: eGUXJJKf347 (34895553 from phones and video systems)

3975 - Hristina Nikova, Radoslav Deliyski, Binary Regression Model for Automated Wildfire Early Prediction and Prevention, *remotely*

4099 – Antonia Pandelova, Nikolay Stoyanov, Bojidar Dhzudzhev, Determination of Limit of Detection of Electrochemical Biosensor, *remotely*

3977 - Galina Cherneva, Simona Filipova-Petrakieva, Numerical Study on the Electircal Circuit Represented by the Duffing's Equation, *in person*

3981 – Simona Petrakieva, Equivalent Transformations of a Cube-like Passive Linear One-port Networks with Equal Impedances in their Branches, *in person*

4002 - Georgi Tsenov, Stanimir Andonov, Valeri Mladenov, Stiliyan Georgiev, Neurophysiological test with use of EEG, GSR and Pulse measurements data for focus group beverage preference aggregation, *in person*

4003 - Stoyan Kirilov, Georgi Tsenov, Valeri Mladenov, A simplified analog neuron model with modified memristor-based positive synaptic weights, *in person*

4011 - Stoyan Kirilov, Non-Volatile Memories Based on Memristors, *in person*

4020 - Elissaveta Gadjeva, Ilona Iatcheva, Nikolina Petkova, Stability Analysis of Electronic Circuits Using LTSPICE, *in person*

SESSION 5A: THEORETICAL ELECTRICAL ENGINEERING – POSTER SESSION - 10:15 – 12:45

3979 - Zhivko Georgiev, Atanas Chervenkov, Ivan Trushev, Classical Approach to Transient' Analysis in Magnetically Coupled Electircal Circuits

LUNCH BREAK - 12:30 – 14:00

SESSION 6: ROBOTICS SYSTEMS; ELECTRICAL DRIVES AND MACHINE AUTOMATION - 14:00 – 15:45
Chair: Assoc. prof. Vladimir Hristov
Technical support and assurance: Bozhidar Rakov

Remote participants link:
https://technicaluniveristyofsofiatechnologyeood.my.webex.com/technicaluniveristyofsofiatechnologyeood.my/j.php?MTID=mc9ff89beedf4a33a550f11eee9887065
Meeting number: 2634 951 7607
Password: frKD5mCuc57 (37535628 from phones and video systems)

3995 - Radovan Peter, Martin Juhás, Bohuslava Juhásová, Implementation of Digital Shadow Concept in the Field of Industrial Automation, *remotely*

3983 - Boris Kostov, Vladimir Hristov, Research of the performance of industrial robots with electric and pneumatic grippers, *in person*

4009 - Aykut Ismailov, Vladimir Hristov, Simulating a robot's movement using game/physics engine, *in person*

4019 - Kamen Hristov, Vladimir Hristov, Servo Drive Control System, *in person*

SESSION 6A: ELECTRICAL DRIVES AND MACHINE AUTOMATION -POSTER SESSION - 13:45 – 15:55

4013 - Metody Georgiev, Kostadin Milanov, Dilyana Gospodinova, Methodology for Joint Work of Industrial Robots and Processing Centers

COFFEE BREAK - 15:45 – 16:15

SESSION 7: INDUSTRIAL ENGINEERING AND AUTOMATION; BIOELECTRICAL ENGINEERING - 16:15 – 18:15
Chair: Assoc. prof. Nina Nikolova
Technical support and assurance: Bozhidar Rakov
Remote participants link:
https://technicaluniveristyofsofiatechnologyeood.my.webex.com/technicaluniveristyofsofiatechnologyeood.my/j.php?MTID=mca5fa040bc55601061a07062b263f559
Meeting number: 2630 659 7356
Password: gVAfsD5J8B4 (48237355 from phones and video systems)

3999 - Antoniy Petrov, Albena Taneva, Algorithm Development for Pneumatic Actuator Control and Diagnostics, *remotely*

3974 - Snejana Yordanova, Milen Slavov, Desislava Stoitseva-Delicheva, Load-bound Fuzzy Logic Control of Industrial Nonlinear Plant, *remotely*

4018 - Emil Grigorov, Novel approach for passive mixing in micorlfuidics utilizing porous PDMS sponge, *in person*

SESSION 7A: INDUSTRIAL ENGINEERING AND AUTOMATION; BIOELECTRICAL ENGINEERING POSTER SESSION - 16:00 – 18:00

3991 - Nina Nikolova, Georgi Stefanov, Robust Control Of A Multi-Operational Robotic System

3993 - Margarita Neznakomova, Fabien Salaün, Dilyana Gospodinova, Preparation And Characterization Of Electrospun Nutraceptic Nanofibers From Poly(Vinyl Alcohol)/Beeswax

4015 - Vesela Karlova-Sergieva, Boris Grasiani, Alexander Marinchev, Robust Control of a Technological Module

CLOSING CEREMONY AND OFFICIAL DINNER – 20:00 – 22:30

Restaurant "The Windmill", 27A "Morski skali" str. Sozopol, https://goo.gl/maps/SDfBhe7d4zyh1JhR9

Official dinner is an ICARAI2023 event. All participants must bring their badges to be served!