Day 1 – Wednesday 1 July 2020

10:00 – 10:30 Opening session (Room: DoCEIS-A)

10:30 – 11:30 Keynote 1 (Room: DoCEIS-A)

*Interpretability, Privacy, and Ethics in Intelligent Systems*

Catarina Silva  
Assistant Professor  
Department of Informatics Engineering  
University of Coimbra  
Portugal

11:30 – 11:40 Break

11:40 – 13:00 Session A

**A1 – Decision Systems (Room: DoCEIS-A)**  
Chairs: Amineh Mazandarani, Paula Graça

Selecting Normalization Techniques for the Analytical Hierarchy Process  
Nazanin Vafaei, Rita A. Ribeiro and Luis M. Camarinha-Matos

ColANet: A UAV Collision Avoidance Dataset  
Dário Pedro, André Mora, João Carvalho, Fábio Azevedo and José Fonseca

A Decision-Making Tool to Provide Sustainable Solutions to a Consumer  
Ricardo Santos, J. C. O. Matias and António Abreu

A Risk Assessment Model for Decision Making in Innovative Projects  
Vitor Anes, Luis Reis, Elsa Henriques and António Abreu

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**A2 – Communication Systems (Room: DoCEIS-B)**  
Chairs: Helena Rico Pereira, Omid Nasrollahi

Cooperative Communication Mechanisms Applied to Wireless Sensor Network  
Suelen Laurindo, Ricardo Moraes and Carlos Montez

Probabilistic Network Coding for Reliable Wireless Sensor Networks  
Eman Al-Hawri, Faroq Al-Tam, Noelia Correira and Alvaro Barradas
Joint Channel and Information Estimation on Symbol Decomposition-based Secure Point-to-point Communications
Akashkumar Rajaram, David Borges, Paulo Montezuma, Rui Dinis, Dushnatha Nalin K. Jayakody and Marko Beko

Self-interference in Multi-tap Channels for Full-Duplex Wireless Systems
Ayman T. Abusabah, Rodolfo Oliveira and Luis Irio

13:00 – 14:00  Break

14:00 – 15:00  Session B

B1 – Collaborative Networks (Room: DoCEIS-A)
Chairs: Paulo Lourenço, Luis Alberto Estrada

Performance Indicators of a Collaborative Business Ecosystem – A Simulation Study
Paula Graça and Luis M. Camarinha-Matos

Towards a Reference Model for Mass Collaborative Learning
Majid Zamiri and Luis M. Camarinha-Matos

A Framework for Behavioural Change Through Incentivization in a Collaborative Virtual Power Plant Ecosystem
Kankam O. Adu-Kankam and Luis M. Camarinha-Matos

B2 – Energy Control (Room: DoCEIS-B)
Chairs: Leonardo Martins, Filipa Cardoso

Prospects for the Improvement of Energy Performance in Agroindustry Using Phase Change Materials
Carlos Simão, João Murta-Pina, Luis Coelho, João Pássaro, Rui Amaral Lopes, Fernando Reboredo, Tiago Jorge and Diogo Lemos

Modeling of Asymmetric Supercapacitor Cells Based on Electrode’s Laboratorial Test Data
Leonardo Malburg and Rita Pereira

Design of a SFCL with an Inductive Stage in Series with a Resistive Stage which Transits by Magnetic Field
Belén Rivera, Alfredo Álvarez and Belén Pérez

15:00 – 15:10  Break

15:10 – 16:10  Session C

C1 – Analysis & Synthesis Algorithms (Room: DoCEIS-A)
Chairs: Humberto Queiroz, João Pires

Reachability Graph of IOPT Petri Net Models Using CUDA C++ Parallel Application
Carolina Lagartinho-Oliveira, Filipe Moutinho, and Luis Gomes

Automatic Flat-Level Circuit Generation with Genetic Algorithms
Miguel Campilho-Gomes, Rui Tavares, and João Goes
Towards the Detection of Malicious URL and Domain Names Using Machine Learning
Nastaran Farhadi Ghalati, Nahid Farhady Ghalaty, and José Barata

C2 – Power Transportation (Room: DoCEIS-B)
Chairs: Ana Ferreira, Kankam O. Adu-Kankam

Study of Electrical Integrity of Low Voltage Nuclear Power Cables in Case of Plant Life Extension
Ehtasham Mustafa, Ramy S. A. Afia, Semih Bal and Zoltán Ádám Tamus

Investigating the Complex Permittivity of Low Voltage Power Cables Under Different Stresses
Ramy S. A. Afia, Ehtasham Mustafa, Semih Bal and Zoltán Ádám Tamus

Investigation of Power Line Sag Uncertainty in Day-Ahead DLR Forecast Models
Levente Rácz, Dávid Szabó, Gábor Gócsei and Bálint Németh

16:10 - 17:00 Tutorial Session (Room: DoCEIS-A)

Using Energy Flexibility to Improve the Grid Interaction of nearly Zero-Energy Buildings
Rui Amaral Lopes

Day 2 – Thursday 2 July 2020

10:30 – 11:50 Session D

D1 – Digital Twins & Smart Manufacturing (Room: DoCEIS-A)
Chairs: Akashkumar Rajaram, Nazanin Vafaei

The Role of Digital Twins in Collaborative Cyber-Physical Systems
Artem A. Nazarenko and Luis M. Camarinha-Matos

Production Process Modelling Architecture to Support Improved Cyber-Physical Production Systems
Fábio A. Seixas-Lopes, Jose Ferreira, Carlos Agostinho and Ricardo Jardim-Goncalves

The Impact of Additive Manufacturing on Supply Chain Resilience
Bardia Naghshineh and Helena Carvalho

Big Data Acquisition Architecture: An Industry 4.0 Approach
Felipe A. Coda, Diolino J. Santos Filho, Fabrício Junqueira and Paulo E. Miyagi

D2 – Power Systems (Room: DoCEIS-B)
Chairs: Hugo Antunes, Sonia Hosseinpour

Study of Electric Field Emissions in Wireless Energy Transfer
Elena N. Baikova, R. Melicio, and S. S. Valtchev

Scenario Reduction for Stochastic Optimization Applied to Short-Term Trading of PV Power
Isaias L. R. Gomes, Rui Melicio, and Victor M. F. Mendes
Model Predictive Current Control of Switched Reluctance Motor Drive: An Initial Study
Manuel Pereira and Rui Esteves Araújo

A Simple Analysis to Determine the Limits of a CMOS Technology to Implement SC DC-DC Converters
Ricardo Madeira and Nuno Paulino

11:50 – 12:00  Break

12:00 – 13:00  Keynote 2 (Room: DoCEIS-A)

Activities of Daily Life (ADL) Recognition via Locomotion & Location Determination
Stefan Poslad
Associate Professor
School of Electronic Engineering and Computer Science
Queen Mary University of London
England

13:00 – 14:00  Break

14:00 – 15:00  Session E

E1 – Optimization Systems (Room: DoCEIS-A)
Chairs: Carolina Lagartinho-Oliveira, Nastaran Farhadi Ghalati

Distributed Approach to Traffic Management Automation Implemented according to IEC 61499
Dmitry Elkin and Valeriy Vyatkin

Formal Verification of IEC 61499 Enhanced with Timed Events
Viktor Shatrov and Valeriy Vyatkin

Thin Film Refractive Index and Thickness
Paulo Lourenço, Manuela Vieira and Alessandro Fantoni

E2 – Biomedical Analysis & Diagnosis (Room: DoCEIS-B)
Chairs: Dario Pedro, Fabio A. Seixas Lopes

Combination of Medical Imaging and Demographic Data for Parkinson’s Disease Diagnosis
Helena Rico Pereira, José Manuel Fonseca and Hugo Alexandre Ferreira

Ventricular Assist Device in Health 4.0 Context
Marcelo Barboza, Fabricio Junqueira, Eduardo Bock, Tarcisio Leão, Jeferson Dias, Jonatas Dias, Marcosiris Pessoa, José Ricardo Souza and Diolino dos Santos

RehabVisual: Application on Subjects with Stroke
Ana Ferreira, Patricia Santos, Pedro Dias, Amélia Alves, Beatriz Carmo, Filipe Vlhenha, Sofia Costa, Cláudia Quaresma and Carla Quintão
15:10 – 17:00  Panel Session (Room: DoCEIS-A)

“My Research for Life Improvement”

Hugo Gamboa  
Assistant Professor at Department of Physics  
FCT NOVA

Inês Oliveira  
Assistant Professor at Department of Electrical and Computer Engineering  
FCT NOVA

André Mora  
Assistant Professor at Department of Electrical and Computer Engineering  
FCT NOVA

Maria Marques  
Researcher at CTS UNINOVA

João Pires  
PhD Student at Department of Electrical and Computer Engineering  
FCT NOVA

João Rodrigues  
PhD Student at Department of Physics  
FCT NOVA

Moderator: Pedro Pereira

Day 3 – Friday 3 July 2020

10:30 – 11:50  Sessions F + YEF-ECE

F1 – Instrumentation & Health 1 (Room: DoCEIS-A)  
Chairs: Ricardo Madeira, David Borges

Algorithm for Automatic Peak Detection and Quantification for GC-IMS Spectra  
Jorge M. Fernandes, Valentina Vassilenko and Paulo H. Santos
Algorithm for Automated Segmentation and Feature Extraction of Thermal Images
Anna A. Poplavska, Valentina B. Vassilenko, Oleksandr A. Poplavskyi, Sergei V. Pavlov and Fernando M. Pimentel-Santos

Development and Validation of an Experimental Protocol to Evaluate Posture Control
Daniel Noronha Osório, Emanuela Teixeira, Fernando Pimentel-Santos, Hugo Silva, Hugo Gamboa and Cláudia Quaresma

A Genetic Algorithm to Design Job Rotation Schedules with Low Risk Exposure
João Rodrigues, Hugo Gamboa, Nafiseh Mollaei, Daniel Osório, Ana Assunção, Carlos Fujão and Filomena Carnide

Opening YEF-ECE 2020 (Room: YEF-ECE)

Y1 – Image Processing (YEF-ECE 2020) (Room: YEF-ECE)
Chairs: André Mora

Pixel-based and object-based change detection methods for assessing fuel break maintenance
João E. Pereira-Pires, Valentine Aubard, João M. N. Silva, Rita A. Ribeiro, José M. C. Pereira, José Manuel Fonseca, Manuel L. Campagnolo and André Mora

FPGA-based Satellite Image Classification for Water Bodies Detection
Carlos Garcia, Rui Tavares, André Mora, José Fonseca, Henrique Oliveira and Luís Oliveira

Infrared Fire Alarm for Vehicle Protection
José Curva, Nuno Paulino, João Pedro Oliveira, Luís Oliveira and Henrique Oliveira

Assessment of Using Superconducting Magnetic Energy Storage for Current Harmonic Compensation
Francisco Luís Simões, Victor Fernão Pires and João Murta Pina

11:50 – 12:00 Break

12:00 – 13:00 Keynote 3 (Room: DoCEIS-A)

Trends in Renewable Energy Integration in Smart Grids
Theo Tryfonas
Associate Professor
University of Bristol
England

13:00 – 14:00 Break

14:00 – 15:00 Sessions G and Y

G1 – Instrumentation & Health 2 (Room: DoCEIS-A)
Chairs: Pedro C. Moura, Anna A. Poplavskva

Real Time Mental Stress Detection through Breath Analysis
Paulo Santos, Peter Roth, Jorge M. Fernandes, Viktor Fetter and Valentina Vassilenko
Multi-Sensor Synchronization Model for Sensor Fusion Applied to Innovative Cardiovascular Markers
Paulo Bonifacio, Valentina Vassilenko, Andreia Serrano, Filipa Cardoso and Stanimir Valtchev

Device Development for Evaluation of Gingiva Microcirculation
Hojat Lotfi, Valentina Vassilenko, Paulo Bonifacio and Bibiana Falcao

Y2 – Power Electronics (YEF-ECE 2020) (Room: YEF-ECE)
Chairs: Anabela Pronto

A Novel Topology of Modular Multilevel Bidirectional Non-Isolated dc-dc Converter
Vitor Monteiro

Modular Multilevel Converter in Electrified Railway Systems: Applications of Rail Static Frequency Converters and Rail Power Conditioners
Mohamed Tanta, Luis Barros, Gabriel Pinto, Antonio Martins and João Afonso

Power-Train ECU programming using Rapid Prototyping through Matlab/Simulink
Carmen Romero-Saiz, Maria Isabel Milanês-Montero, Enrique Romero-Cadaval and Jaime Pando-Acedo

Fault Diagnosis in DC-DC Power Converters Based on Parity Equations
Willer Jorge Mattos and Rui Araújo

Grid-Connected PV System Using a T Type qZS Inverter with an Integral Time Derivative Approach to Ensure MPP and Decoupled Current Control
Manuel Pina and Vitor Pires

15:00 – 15:10 Break

15:10 – 16:10 Sessions H + Y

H1 – Instrumentation & Health 3 (Room: DoCEIS-A)
Chairs: Leonardo Malburg, Ricardo Santos

Arterial Stiffness and Central Hemodynamic Assessment by Novel Portable Device
Andreia Serrano, Valentina Vassilenko, Beatriz Ramalho, Paulo Bonifácio and Anna Poplavska

Indoor & Outdoor Air Profiling with GC-IMS
Pedro C. Moura, Valentina Vassilenko, Jorge M. Fernandes and Paulo H. Santos

Idle Tone Detection in Biomedical Signals Using Time-Frequency Techniques
Filipa E. Cardoso, Arnaldo Batista, Valentina Vassilenko, Andreia Serrano and Manuel Ortiguedia

Y3 – Industry & Buildings (YEF-ECE 2020) (Room: YEF-ECE)
Chairs: André Rocha

A New Risk Assessment and Management Approach for Agile Projects
Vitor Anes, António Abreu and Ricardo Santos
Industrial Network Topology Generation with Genetic Algorithms
Christoph Fischer, Maximilian Berndt, Dennis Krummacker, Janis Zemitis, Daniel Fraunholz and Hans Dieter Schotten

Forecasting Heating and Cooling Energy Demand in an Office Building using Machine Learning Methods
Xavier Godinho, Hermano Bernardo, Joao C. Sousa and Filipe Oliveira

Demand Response Model for Hardware Implementation
Bruno Capitão, João Lagarto, Rita Pereira, Pedro Fonte and Paulo Almeida

16:10 – 16:20  Break

16:20 – 16:50  Closing Session & Awards (Room: DoCEIS-A)