

Final Program

Sunday – 11 September, 2022

17:00 – 18:30 **Registration**
18:30 – 20:00 Dinner

Monday – 12 September, 2022

7:00 – 8:30 **Breakfast**

8:00 – 8:40 **Registration**

8:40 – 8:50 **Conference Opening**

9:00 – 10:00 **P1 – Plenary Session**

Chair: M. Klaučo

P1.1 NEW TRENDS AND APPLICATION OF ADVANCED INTELLIGENT
METHODS IN MEDICINE
Gabriela Czanner

P1.2 AUTONOMOUS SYSTEMS CONTROL DESIGN USING NEURO-
EVOLUTION
Ivan Sekaj

10:00 – 10:20 **Coffee Break**

10:20 – 12:00 **A1 – Informatics and Virtual reality I**

Chairs: J. Lacko, E. Kučera

A1.1 USE OF VIRTUAL REALITY FOR STRESS REDUCTION IN
NANOARTHROSCOPY
Eugen Ružický, Ján Lacko, Ján Mašán and Miron Šramka

A1.2 MATLAB GUI-BASED TOOL TO DETERMINE PERFORMANCE METRICS
OF PHYSICAL UNCLONABLE FUNCTIONS
Husam Kareem, Khaleel Almousa and Dmitry Dunaev

A1.3 HIERARCHICAL MULTI-USER VIRTUAL REALITY IN SERIOUS
APPLICATIONS
Ján Lacko, Sławomir Gawroński and Łukasz Bis

A1.4 HOLOLENS 2 AND VIRTUAL REALITY AS A METHODS FOR
MANAGING PHOBIAS
Dominik Janecký, Erik Kučera and Oto Haffner

A1.5 VISUAL SYSTEMS FOR THE EXPERIMENTAL PLATFORM OF
AUTONOMOUS EV
Oto Haffner, Peter Drahoš, Frederik Valocký and Erik Kucera

10:20 – 12:00

B1 – Artificial Intelligence I

Chairs: G. Czanner, P. Papcun

- B1.1 COMPARATIVE ANALYSIS OF ADVANCED MACHINE LEARNING ALGORITHMS FOR EARLY DETECTION OF PARKINSON DISEASE
Zuzana Képešiová, Štefan Kozák, Eugen Ružický, Alfréd Zimmermann and Richard Malaschitz
- B1.2 EFFICIENT DEEP LEARNING METHODS FOR AUTOMATED VISIBILITY ESTIMATION AT AIRPORTS
Filip Pavlove, Andrej Lucny, Irina Malkin Ondík, Peter Krammer, Marcel Kvassay and Ladislav Hluchy
- B1.3 IMAGE PROCESSING IN INTELLIGENT SPACE FOR THE CREATION OF HEAT MAPS AND SAFE SOCIAL DISTANCE
Peter Hlivka, Peter Papcun and Iveta Zolotová
- B1.4 CONSTRUCTION OF ROBUST LOAD FORECASTING MODELS FOR THE PROCESS INDUSTRY
Roman Kohút and Michal Kvasnica
- B1.5 COMPARISON OF NEURAL MODELS FOR DYNAMIC CHANGES MODELING IN MICROGRIDS
Slavomír Kajan, Peter Mácsik, Ladislav Körösi, Jozef Goga and Jarmila Pavlovičová

10:20 – 11:40

C1 – Modelling and Control I

Chairs: M. Said Moteleb, D. Rosinová

- C1.1 IMPROVEMENT OF MEASUREMENT DYNAMICS BASED ON EXTENDED KALMAN FILTER
Miroslava Baraharska, Tsonyo Slavov and Ivan Markovsky
- C1.2 ROBUST LIQUID LEVEL CONTROL WITH UNCERTAIN FLOWS AND SPEED LIMITATION
Denis Vasko and Ján Kardoš
- C1.3 ANOMALY DETECTION IN CONTROL SYSTEMS WITH INTERVAL DISSIMILARITY
Marco Kemmerling, Maciej Combrzynski-Nogala, Marc Haßler, Chrismarie Enslin, Daniel Lütticke and Robert H. Schmitt
- C1.4 HYDRO TURBINE SPEED CONTROL BASED ON ADAPTIVE DISTURBANCE REJECTION
Teofana Puleva and Tsonyo Slavov
- C1.5 HYBRID INTELLIGENT MPC IN INDUSTRY
Peter Karas and Štefan Kozák

12:00

Lunch

13:00 – 17:00

Social Program (guided tour to Visegrád Castle)

17:30 – 18:30

D1 – Posters

Chair: K. Žáková, J. Štefanovič

D1.1 DESIGN AND IMPLEMENTATION OF THE APPLICATION
FOR THE IRRIGATION SYSTEM

Filip Žemla and Ján Cigánek

D1.2 LOW LEVEL MODELING OF DISCRETE SYSTEMS

Juraj Štefanovič

D1.3 VALIDATION OF VEHICLE MODEL

Dávid Mikle, Martin Baňa and Kristián Ondrejčíka

D1.4 INTERACTIVE 3D MODEL OF BALL AND PLATE SYSTEM

Hanna Hryharouskaya, Katarina Zakova, Jakub Matisak and Jan Sefcik

D1.5 ADVANCED INTELLIGENT PLATFORM FOR SMALL AUTONOMOUS
VEHICLES

Michal Kocúr, Peter Ťapák, Zuzana Képešiová and Štefan Kozák

D1.6 HOLOGRAM IN CONTROL APPLICATIONS

Jakub Matišák, Katarína Žáková and Matej Rábek

D1.7 CONTROL OF A CHEMICAL REACTOR WITH HIGH PRECISION
ENCRYPTION FRAMEWORK

Matúš Furka, Karol Kiš and Martin Klaučo

D1.8 MULTIPLATFORM SUPPORT FOR UDAQ28/LT THERMO-OPTICAL
PLANT

Ján Šefčík and Katarína Žáková

D1.9 VIRTUALIZATION AS A MODERN TOOL FOR DESIGN AND
IMPLEMENTATION OF ROBOTIC APPLICATIONS

Bohuslava Juhásová, Martin Juhás and Eduard Nemlaha

D1.10 IMPLEMENTATION OF HETEROGENEOUS MULTIROBOTIC CELL
CONTROL USING VISUALIZATION TECHNIQUES

Martin Juhás, Bohuslava Juhásová and Pavel Važan

D1.11 CONTROL DESIGN FOR A NONLINEAR REACTORS-SEPARATOR
PLANT

Michaela Horváthová, Lenka Galčíková and Juraj Oravec

D1.12 SERVO SYSTEM CONTROL USING GESTURES

Ladislav Körösi, Slavomír Kajan, Jana Paulusová and Peter Štefaňák

19:00 – 22:00

Gala Dinner

Tuesday – 13 September, 2022

7:30 – 10:00 Breakfast

8:30 – 12:30 **Social Program (guided visit to Esztergom Basilica)**

12:30 Lunch

13:15 – 13:45 **P2 – Plenary Session II**

Chair: J. Cigánek

P2.1 INTERNET OF VEHICLES – A FUSION OF TECHNOLOGIES AND CONCEPTS FOR TRANSPORTATION SYSTEM

Ján Vaščák

14:00 – 15:40 **A2 – Modelling and Control for Electromobility**

Chair: P. Ťapák, P. Drahoš

A2.1 EXPERIMENTAL ELECTRIC VEHICLE PLATFORM FOR AUTONOMOUS VEHICLE DEVELOPMENT

Igor Bélaï and Tibor Sedlár

A2.2 PREDICTIVE THERMAL MANAGEMENT OF AN INDUSTRIAL BATTERY ENERGY STORAGE SYSTEM

Kristína Fedorová and Michal Kvasnica

A2.3 MODEL OF AUTONOMOUS VEHICLE WITH FUNCTION TO IDENTIFY ROAD SIGNS

Gábor Katona and Štefan Bucz

A2.4 AUTONOMOUS CONTROL OF A SMALL VEHICLE MODEL FOR INDOOR ORIENTATION

Rastislav Tvarožek and Štefan Bucz

A2.5 MODELLING OF BATTERY ENERGY STORAGE SYSTEMS FOR PREDICTIVE CONTROL IN MICROGRID APPLICATIONS

Tereza Ábelová and Michal Kvasnica

14:00 – 15:40 **B2 – Informatics I**

Chair: M. Juhás, E. Ružický

B2.1 REMOTE DATA ACQUISITION USING CLOUD DATABASE

Filip Žemla and Ján Cigánek

B2.2 SERVERLESS COMPUTING AND FAAS FOR AIRPORT METEOROLOGY

Ladislav Hluchý, Ondrej Habala, Martin Bobák, Viet Tran and Lukáš Ivica

B2.3 DIGITAL TWIN PROPOSAL USING THE MATLAB-STATEFLOW MODEL AND DOCKER CONTAINERS

Lenka Halenárová, Igor Halenar and Pavol Tanuška

B2.4 MICRO SOFTWARE DEVELOPMENT PROJECTS IN PRACTICE FROM CLIENT-DELIVERY PARTNER PERSPECTIVE
Kamil Kušnirák, Ondrej Kolimár, Erik Kučera and Oto Haffner

B2.5 COMPLEX MECHATRONIC SYSTEM FOR THE MOTION CONTROL OF A GARAGE DOOR
Ján Cigánek and Filip Žemla

15:40 – 16:00

Coffee Break

16:00 – 17:20

C2 – Control Applications I

Chairs: T. Puleva, A. Kozáková

C2.1 IMPLEMENTATION OF FUZZY LOGIC CONTROLLERS ON LABORATORY SYSTEM OF HEAT EXCHANGERS
Diana Dzurková, Monika Bakošová and Anna Vasičkaninová

C2.2 FUZZY CONTROLLER FOR ABS
Martin Košícký and Danica Rosinová

C2.3 TOWARDS TEMPERATURE MONITORING IN LONG-TERM GRAIN STORAGE
Rastislav Fáber, Richard Valo, Miloš Roman and Radoslav Paulen

C2.4 IOT HATCHERY CONTROLLED BY WEB APPLICATION
Peter Ťapák and Katarina Zvarová

C2.5 ROBUST CONTROLLER DESIGN FOR A BOILER-TURBINE UNIT
Alena Kozáková, Teofana Puleva and Romana Čápková

16:00 – 17:20

D2 – Informatics II

Chairs: B. Juhásová, O. Haffner

D2.1 DESIGN OF DIGITAL TWIN FOR PLC SYSTEM
Ján Cigánek and Filip Žemla

D2.2 DELIVERY TEAM MANAGEMENT ON SMALL SOFTWARE DEVELOPMENT PROJECTS IN PRACTICE
Ondrej Kolimár, Kamil Kušnirák, Erik Kučera and Oto Haffner

D2.3 FUEL CELLS AS BACKUP POWER SUPPLY FOR PRODUCTION PROCESSES
Kristián Ondrejčíčka, Rastislav Putala and Dávid Mikle

D2.4 MONITORING OF DISCRETE-EVENT SYSTEM CONTROLLED BY REVOLUTION PI USING 3D ENGINE
Erik Kučera, Oto Haffner and Dominik Janecký

D2.5 ACTIVE VIBRATION DAMPING OF CANTILEVER BEAM USING LABVIEW
Šimon Berta, Vladimír Goga and Justín Murín

18:00 Dinner
19:00 – 21:30 **Social Program**

Wednesday – 14 September, 2022

7:30 – 9:00 Breakfast

9:00 – 10:40 A3 – Information & Communication Technologies

Chair: L. Körösi, M. Bobák

A3.1 ON SOFT DECODING OF SOME BINARY RLL-TRANSMISSION CODES
IN SYSTEMS WITH COHERENT BPSK MODULATION
Peter Farkaš and Tomáš Páleník

A3.2 OPEN PLATFORM FOR INNOVATION IN LOGISTICS - AGENT
OPTIMIZATION
Ladislav Körösi, František Duchoň and Pavol Lukáč

A3.3 EDUCATIONAL-DEVELOPMENT WORKPLACE FOR DIGITAL TWINS
USING THE OPC UA AND UNITY 3D
Martin Pajpach, Peter Drahoš, Rudolf Pribiš and Erik Kučera

A3.4 TRENDS IN INDUSTRIAL NETWORKS INCL. APL, TSN, WIFI-6E AND 5G
TECHNOLOGIES
Peter Drahoš, Erik Kucera, Oto Haffner, Rudolf Pribiš and Lukaš Beňo

A3.5 MODULAR E-COMMERCE DATA WAREHOUSE USING
MICROSERVICES
Adam Žák and Martin Bobák

9:00 – 10:40 B3 – Applications

Chair: M. Kocúr, J. Vaščák

B3.1 SYSTEM MODELLING OF A PROTON EXCHANGE MEMBRANE FUEL
CELL AND ITS COMPARISON AT EXTREME LOADS
Michal M. Uličný and Vladimír Kutíš

B3.2 BASIC CONTROL COURSE WITH DC MOTOR
Mária Hypiúsová, Martin Minár and Danica Rosinová

B3.3 APPLICATION FOR PYTHON PROGRAMMING LANGUAGE EDUCATION
DEVELOPED BY UNITY ENGINE
Michal Hlavatý, Alena Kozáková and Oto Haffner

B3.4 AUTOTUNED CONTROLLER FOR A DC MOTOR
Jaroslav Hajda and Danica Rosinová

11:00 **Conference Closing**

12:00 Lunch