



IEEE Conference

2018 Cybernetics & Informatics (K&I)

31.1. – 3.2.2018, Lazy pod Makytou, Slovakia

PROGRAM

Wednesday – 31 January, 2018

13:00 – 14:30 Lunch

17:00 – 18:30 **Registration**

18:30 – 20:00 Dinner

Thursday – 1 February, 2018

7:30 – 9:00 Breakfast

8:30 – 9:00 **Registration**

9:00 - 9:10 **Conference Opening**

9:10 - 10:00 **Plenary lectures I**

Chair: M. Fikar

RESEARCH AND EDUCATION FOR INDUSTRY 4.0 - PRESENT DEVELOPMENT
Štefan Kozák et al.

MULTIMEDIA SUPPORT FOR EDUCATION IN MECHATRONICS
Oto Haffner et al.

INTERACTIVE AND VIRTUAL / MIXED REALITY APPLICATIONS FOR MECHATRONICS
EDUCATION DEVELOPED IN UNITY ENGINE
Erik Kučera et.al

10:00 - 10:20 **Coffee Break**

10:20 - 12:00 **A1 – Control Engineering Methods I**

Chair: T. Puleva

LQR POWER CONTROL OF WIND GENERATOR
Teofana Puleva and Tsonyo Slavov

ROBUST STABILITY AND DESIRED MODEL METHOD
Miluše Vítečková, Antonín Víteček and Dagmar Janáčková

COMPARISON OF INVERTED PENDULUM STABILIZATION WITH PID, LQ, AND MPC
CONTROL
Peter Bakaráč, Martin Klaučo and Miroslav Fikar

BALANCING ARM MODEL FOR EDUCATION
Martin Minár, Danica Rosinová

DISCRETE-TIME ROBUST LMI POLE PLACEMENT FOR MAGNETIC LEVITATION
Mária Hypiusová, Danica Rosinová

10:20 - 12:00 **B1 – Industrial Automation and Informatics**

Chair: C. Belavý

TRENDS IN INDUSTRIAL COMMUNICATION AND OPC UA
Peter Drahoš, Erik Kučera, Oto Haffner and Ivan Klimo

ANALYSIS OF CAPACITIVE MEMS SENSOR FOR SMALL ACCELERATIONS
Štefan Chamraz and Richard Balogh

CONNECTION BETWEEN 3D ENGINE UNITY AND MICROCONTROLLER ARDUINO: A
VIRTUAL SMART HOUSE
Erik Kučera, Oto Haffner and Štefan Kozák

ACCELERATED IMPLEMENTATION OF THE POWER METHOD FOR ANALYSIS OF ELECTROMAGNETIC FIELDS

Eugen Ružický, Juraj Štefanovič, Tomáš Páleník and Frank Schindler

LNS ALGORITHM FOR EMBEDDED CONTROL SYSTEMS

Peter Drahoš and Ivan Klimo

12:00

Lunch

13:00 – 17:00

Social Program

17:30 - 18:30

C1 – Posters

PI CONTROLLER IMPLEMENTATION BASED ON FPGA

Ivan Klimo, Peter Drahoš, Michal Kocúr

FEM BASED MODELLING AND CONTROL OF TEMPERATURE FIELD IN EXTRUDER BARREL

Cyril Belavý, Gabriel Hulkó, Dana Šišmišová and Milan Kubiš

TRAJECTORIES OPTIMIZATION OF MOBILE ROBOTIC SYSTEMS USING DISCRETE KALMAN FILTRATION

Juraj Slovák, Markus Melicher and Pavol Vašek

NUMERICAL ACCELERATION OF DATA PROCESSING USING MATLAB FOR THE NEEDS OF EXPERT SYSTEMS

Jan Vachálek, Markus Melicher, Pavol Vašek and Juraj Slovák

HARDWARE AND SOFTWARE DESIGN FOR ONE CHANNEL ECG MEASUREMENT USING MSP430 MICROCONTROLLER

Alek Lichtman and Peter Fuchs

INTELLIGENT ADAPTIVE FUZZY CONTROL

Zuzana Dideková, Štefan Kozák, Slavomír Kajan and Alena Kozáková

AUGMENTED REALITY AS AN INSTRUMENT FOR TEACHING INDUSTRIAL AUTOMATION

Martin Juhás and Bohuslava Juhášová

CONTROL AND POSITIONING OF ROBOTIC ARM ON CNC CUTTING MACHINES AND THEIR APPLICATIONS IN INDUSTRY

Michal Maťuga

19:00 - 22:00

Welcome Party

Friday – 2 February, 2018

7:30 – 10:00

Breakfast

8:30 – 12:30

Social Program

12:30

Lunch

13:20 - 14:00

Plenary lecture II

Chair: Š. Kozák

MODERN CONTAINER WASTE-WATER TREATMENT PLANT WITH MEMBRANE BIOREACTORS

Ján Cigánek

14:00 - 15:20

A2 – Control Engineering Methods II

Chair: M. Huba

EXTENDING SPECTRUM OF FILTERED CONTROLLERS FOR IPDT PLANT MODELS

Mikuláš Huba

TRAJECTORY TRACKING ROBUST CONTROL FOR TWO WHEELS ROBOT

Jakub Osuský and Ján Cigánek

TWO APPROACHES TO THE ADAPTIVE CRUISE CONTROL (ACC) DESIGN

Štefan Chamraz, Richard Balogh

THE TOOLS FOR VERIFYING THE CONTROL ALGORITHMS FOR SPEED AND POSITIONAL SERVO DRIVES

Igor Bélai and Mikuláš Huba

14:00 - 15:20

B2 – SW a HW systems

Chair: M. Gutten

PROPOSAL OF SYSTEM FOR VISUAL EVALUATION OF LEMNA MINOR BIOASSAYS

Oto Haffner, Erik Kučera, Barbora Urminská and Štefan Kozák

MEASURING AND DIAGNOSTIC SYSTEM OF TRANSFORMERS

Miroslav Gutten, Daniel Korenčiak and Róbert Záhoranský

ON RUN-LENGTH LIMITED ERROR CONTROL CODES CONSTRUCTED FROM BINARY SINGLE PARITY CHECK PRODUCT CODES

Peter Farkaš, Tomáš Janvars, Katarína Farkašová and Eugen Ružický

VIRTUAL LABORATORY WITH EXPERIMENT MANAGER IMPLEMENTED INTO MOODLE

Erich Stark, Pavol Bisták and Erik Kučera

15:20 - 15:40

Coffee Break

15:40 - 17:20

A3 – Information and Communication Technologies

Chair: D. Rosinová

A COMPARATIVE ANALYSIS OF CONSTRAINT PROGRAMMING AND METAHEURISTICS FOR JOB-SHOP SCHEDULING

Michal Gregor, Marián Hruboš and Dušan Nemec

HEALTHCARE DATA CLASSIFICATION - CLOUD BASED ARCHITECTURE CONCEPT

Martin Miškuf, Jozef Mocnej and Iveta Zolotová

AN EFFECTIVE FACE DETECTION ALGORITHM

Zuzana Képešiová, Štefan Kozák

VIRTUAL AND REMOTE LABORATORY FOR HYDRAULIC PLANT CONTROL

Romana Čápková, Pavol Bisták and Alena Kozáková

MPC CONTROLLER AS A SERVICE IN IoT ARCHITECTURE

Anton Pytel and Štefan Kozák

15:40 - 17:20

B3 – Soft Computing Methods

Chair: J. Cigánek

AN INCIDENT DETECTION ALGORITHM USING ARTIFICIAL NEURAL NETWORKS AND TRAFFIC INFORMATION

Yong-Kul Ki, Nak-Won Heo, Jin-Wook Choi, Gye-Hyeong Ahn and Kil-Soo Park

ARTIFICIAL NEURAL NETWORK FOR ADAPTIVE PID CONTROLLER

Frantisek Kudlačák and Tibor Krajčovič

HIGHLY NONLINEAR PROCESS MODEL USING OPTIMAL ANN

Peter Karas and Štefan Kozák

EFFICIENT FUZZY CONTROL OF A LABORATORY ABS

Michal Hlavatý, Alena Kozáková and Danica Rosinová

STRUCTURE OPTIMIZATION OF ARTIFICIAL NEURAL NETWORKS USING PRUNING METHODS

Jan Cigánek and Jakub Osuský

18:00

Dinner

19:00 – 21:30

Social Program

Saturday – 3 February, 2018

7:30 – 9:00

Breakfast

9:00

Conference Closing