



IEEE

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Conference on Intelligent Systems**

Programme

EDITORS:

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and Mincho Hadjiski**

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CONTENTS

I. MAIN SESSIONS

- 1 **Plenary SESSION 1 (PL1)**
- 2 **Fuzzy Systems (FS)**
- 3 **Theoretical Aspects of IS (TH)**
- 4 **Intelligent Control 1 (IC1)**
- 5 **Data Science (DSc)**
- 6 **Poster SESSION 1 (P1)**
- 7 **Invited SESSION 1 (IS1)**
- 8 **Invited SESSION 2 (IS2)**
- 9 **Plenary SESSION 2 (PL2)**
- 10 **Intelligent Applications (APPL)**
- 11 **Plenary SESSION 3 (PL3)**
- 12 **Invited SESSION 3 (IS3)**
- 13 **ANN / Deep Learning (ANN)**
- 14 **Intelligent Control 2 & Robotics (IC2)**
- 15 **Plenary SESSION 4 (PL4)**
- 16 **Machine Learning (ML)**
- 17 **Poster SESSION 2 (P2)**
- 18 **Invited SESSION 4 (IS4)**

II. DETAILED SESSION INFORMATION

FRIDAY, AUGUST 28, 2020

STREAM 1

OPENING

10:00

Session Plenary 1

SESSION Chair: V. Jotsov (BG)

- 1 Forward Model Learning for Motion Control Tasks
Alexander Dockhorn, Rudolf Kruse (UK)

10:10-10:50 EET=8:10-8:50 GMT

Session Fuzzy Systems

SESSION Chair: M. Adda (UK)

- 2 Application of Extended IOWA Operator for Making Group Decision on Co-owned Contents in Online Social Networks
Gulsum Akkuzu, Benjamin Aziz, Mo Adda (UK) 11:00-11:20
- 3 A Dynamic Fuzzy Neural System for Time Series Classification
George Kandilogiannakis, Paris Mastorocostas, Costas Hilaras (GR) 11:20-11:40
- 4 Making Decision on Sharing Forensic Data with the Fuzzy Logic Approach
Nancy Scheidt, Gulsum Akkuzu, Mo Adda (UK) 11:40-12:00

Sessions Theoretical Aspects of IS

SESSION Chair: L. Holdon (RO)

- 5 Simulating State-Dependent Systems with Partial Aging in Standby
Natalia Nikolova, Guixin Fan, Mark Symes, Kiril Tenekedjiev (AU) 12:05-12:25
- 6 Novel Methods to Construct Empirical CDF for Continuous Random Variables using Censor Data
Natalia Nikolova et al. (AU) 12:25-12:45
- 7 Optical Character Recognition for Autonomous Stores
Petia Georgieva, Pei Zhang (PT) 12:45-13:05
- 8 A Method for Constructing a Complex Hierarchical Logic (HS – Logic)
Vassil Sgurev (BG) 13:05-13:25
- 9 Traffic Quality Aggregations of a Queuing System
Stoyan Poryazov, Velin Andonov, Emiliya Saranova (BG) 13:25-13:45
- 10 Conceptual Model of a Centralized System for Quality Assurance in Higher Education
Stanka Hadzhikoleva et al. (BG) 13:45-14:05
- 11 Comparative Study of Classifiers on Human Activity Recognition by Different Feature Engineering Techniques
Mahbuba Tasmin et al. (BD) 14:05-14:25
- 12 Generalized Net Representations of the Causal Structure of a Queuing System
Velin Andonov, Stoyan Poryazov, Emiliya Saranova (BG) 14:25-14:45
- 13 A Representation Theorem, Based on Ideals, for Stonean Residuated Lattices
Liviu-Constantin Holdon (RO) 14:45-15:05

Session Intelligent Control 1

SESSION Chair: G. Vachkov (AZ)

- 14 Intelligent Control of negative Emotions in a Computer-Based Learning System
Rossitza Kaltenborn, Mincho Hadjiski, Stefan Koynov (DE) 15:10-15:30
- 15 The IEC 63047 Standard for Data Transmission in Radiological and Nuclear Robotics Applications
Frank E. Schneider et al. (DE) 15:30-15:50
- 16 Detection of Anomalies in Operation of Continuous Plants and Systems
Gancho Vachkov (AZ) 15:50-16:10
- 17 Power Supply Map Discovering and Efficient Energy Distribution Method for Distributed Conveyor Systems
Ivaylo Andonov, Simeon Tsvetanov (BG) 16:10-16:30

Sessions Data Science

SESSION Chair: R. Rahman (BD)

- 18 Bengali Fake News Detection
Farzana Islam et al. (BD) 16:35-16:55
- 19 Analysis of Soil and Various Geo-Technical Properties using Data Mining Techniques
Suparna Biswas et al. (BD) 16:55-17:15
- 20 Eliciting Proximities between Terms of Ordered Qualitative Scales
José Luis García-Lapresta, David Pérez-Román (ES) 17:15-17:35
- 21 Software Hardware Combination for Data Gathering
Petri Rantanen, Mika Saari, Sami Hyrynsalmi (FI) 17:35-17:55
- 22 Intrusion Detection Using Extremely Limited Data Based on SDN
Matthew Banton et al. (UK) 17:55-18:05

- | | | |
|----|---|-------------|
| 23 | A Data-driven Methodology to Characterize the Dynamic Pattern of Human Motion Based on Plantar Pressure Measurements
Henrique Cabral et al. (BE) | 18:05-18:25 |
| 24 | Intelligent Analysis of City Residents Mobility Data for Transport Simulation
Evgeny Maiorov, Oleg Saprykin (RU) | 18:25-18:45 |
| 25 | Data-Driven Smart Handover in Mobile RF/Optical HetNets
Zi-Yang Wu, Muhammad Ismail, Erchin Serpedin (CN) | 18:45-19:05 |
| 26 | Log Files Analysis For Network Intrusion Detection
Andre Brandao, Petia Georgieva (PT) | 19:05-19:25 |

STREAM 3

Poster Sessions 1

14:00-14:30

SESSION Chair: B. Vatchova (BG)

- | | | |
|----|--|--|
| 27 | Artificial Intelligence Based E-Recruitments System
Abdulrahman Aljuaid, Maysam Abbod (UK,SA) | |
| 28 | A Survey on Applications of Neuro-Fuzzy Models
Raheleh Jafari et al. (UK) | |
| 29 | Intelligent Energy Management of Compressed Air Systems
Mohamad Thabet et al. (UK) | |
| 30 | An Intelligent Monitoring System for a Crude Oil Distillation Column
Peter Omoarebun et al. (UK) | |
| 31 | Identification of IoT Devices for Forensic Investigation
Nancy Scheidt, Mo Adda (UK) | |
| 32 | Navigation Route Mapping for Harvesting Robots in Vineyards Using UAV-based Remote Sensing
Eftichia Badeka et al. (GR) | |
| 33 | Deep Learning for Pipeline Damage Detection: an Overview of the Concepts and a Survey of the State-of-the-art
Raheleh Jafari et al. (UK) | |
| 34 | InterCriteria Analysis of the Financial System in the EU Countries
Slaviiana Danailova-Velva, Lyubka Doukovska, Vassia Atanassova (BG) | |
| 35 | Generalized Models for Varying Hydraulic Level Dynamics
Anjel Tzani Tzanev, Christian P. Tzvetkov (BG) | |
| 36 | An Aligned Reference Model for Digital Factories
Nuno Soares et al. (PT) | |
| 37 | Application of Deep Learning in Cardiovascular Medicine using Multiple Biomedical Data
Giovanah Gogi et al. (UK) | |
| 38 | Ophiophobia 3D – a Game for Treating Fear of Snakes
Eduard Toma et al. (RO) Identifying Critical Traffic Flow Time Slots Using <i>K</i> -Means and Decision Trees
Maria Viorela Muntean (RO) | |
| 39 | Identifying Critical Traffic Flow Time Slots using <i>K</i> -means and Decision Trees
Maria Viorela Muntean (RO) | |
| 40 | TouristHub: User Experience and Interaction Design for Supporting Tourist Trip Planning
Modestos Stavarakis et al. (GR) | |
| 41 | An Ontology-Based Model for Credit Scoring Knowledge in Microfinance: Towards a Better Decision Making
Khaoula Ben Addi, Nissrine Souissi (MA) | |

STREAM 2

Invited Session 1

SESSION Chair: M. Langner (UK)

- | | | |
|----|---|-------------|
| 42 | Simple Expert System for Intelligent Control and HCI for a Wheelchair fitted with Ultrasonic Sensors
David Sanders et al. (UK) | 14:40-15:00 |
| 43 | Analysis of Reaction Times and Time-Delays Introduced into an Intelligent HCI for a Smart Wheelchair
David Sanders et al. (UK) | 15:00-15:20 |

- 44 Intelligent HMI and Control for Steering a Powered Wheelchair Using a Raspberry Pi Microcomputer
Malik Haddad et al. (UK) 15:20-15:40
- 45 Steering Direction for a Powered-Wheelchair Using the Analytical Hierarchy Process
Malik Haddad et al. (UK) 15:40-16:00
- 46 Creation of a NFC Reading System for University Attendance Monitoring with Accessibility Considerations for Powered Wheelchair Users
Giles Tewkesbury et al. (UK) 16:00-16:20
- 47 Initial Results from Using an Intelligent System to Analyse Powered Wheelchair Users' Data
Malik Haddad et al. (UK) 16:20-16:40

Invited Session 2

16:45-17:15

SESSION Chair: L. Doukowska (BG)

- 48 Development of an Ontology in Plant Genetic Resources
Asya Stoyanova-Doycheva et al. (BG)
- 49 Decision Making Model for Disruptive Technologies in AgTECH
Ivan Popchev, Irina Radeva (BG)
- 50 Architecture of Intelligent Guard System in the Virtual Physical Space
Borislav Toskov et al. (BG)
- 51 Making Optimal Intelligent Solutions with Risks in Transportations Networks for Haulage of Agricultural Products
Vassil Sgurev, Lyubka Doukowska, Stanislav Drangajov (BG)
- 52 Recognition of Wheat Pests
Asya Toskova et al. (BG)

Tutorial 1

Foundations of Fuzzy Networks
A. Gegov (UK)

17:20-17:55

SATURDAY, AUGUST 29, 2020

STREAM 1

Session Plenary 2

SESSION Chair: A. Gegov (UK)

- 53 Brain-Inspired Spiking Neural Network Architectures for Deep, Incremental Learning and Knowledge Evolution
N. Kasabov (NZ) 10:00-11:00
- 54 Coping with hard decisions via decision aid, decision advice and decision support
J. Kacprzyk (PL) 11:15-11:45
- 55 Intuitionistic Fuzziness and Modality
Krassimir Atanassov (BG) 11:50-12:30

Session Intelligent Applications

SESSION Chair: R. Jafari (UK)

- 56 Towards the Utilization of Cost-Effective Off-the-Shelf Devices for Achieving Energy Savings in Existing Buildings
Petri Rantanen, Mika Saari (FI) 12:35-12:55
- 57 Towards an Intelligent Neural System for Economic and Business Forecasting
George Mengov, Iliyan Nenov (BG) 12:55-13:15
- 58 The VINERS Neuromarketing System
Arturas Kaklauskas, Vytautas Bucinskas, Arune Binkyte-Veliene (LT) 13:15-13:35

- 59 Data Science Modeling for EEG Signal Filtering Using Wavelet Transforms
Ivan Garvanov, Magdalena Garvanova, Vladimir Jotsov (BG) 13:35-13:55
- 60 An Approach for Embedding Intelligence in a System for Automatic Test Generation and a 3D Result Model
Pepa Petrova, Iva Kostadinova (BG) 13:55-14:15

Tutorial 2

14:40-15:55

Automating Discovery of Intelligent Strategies

- Part 1: "Rediscovering Grammar of Shortest Trajectories"
B. Stilman (US)

Session Plenary 3

SESSION Chair: D. Sanders (UK)

- 61 Applied Artificial Intelligence-Based Systems as Competitive Advantage
Arthur Kordon (UK) 16:00-16:45
- 62 Manual Robotic Intelligence -and the Success of Assistant Robots
Angel de Pobil (ES) 16:45-17:35

STREAM 2

Invited Sessions 3

SESSION Chair: R. Yoshinov (BG)

- 63 Model of Adaptive Management of Personalized Notifications in Corporate Information Providing System
Roman Iakovlev, Irina Vatamaniuk (RU) 12:25-12:45
- 64 Personalization of User Interaction with Corporate Information Providing System Based on Analysis of User Preferences
Irina Vatamaniuk, Roman Iakovlev (RU) 12:45-13:05
- 65 Methods of Multimodal Data Fusion and Forming Latent Representation in the Human Aggression Recognition Task
Mikhail Uzdiaev (RU) 13:05-13:25
- 66 A Multilevel Intelligent Assistant for Multilevel Social Network Analysis
Man Tianxing, Nataly Zhukova, Georgi Tsochev (RU) 13:25-13:45
- 67 The Research on Intelligent DNS Security
Georgi Tsochev, Radoslav Yoshinov (BG) 13:45-14:05
- 68 Managing Pepper's Ghost Illusion Using Intelligent Methods
Toni Chehlarova, Koya Chehlarova (BG) 14:05-14:25
- 69 Fog Oriented Model for Data Collection in the Networks of Mobile Devices
Alexander Vodyaho et al. (RU) 14:25-14:45
- 70 Quantum Algebraic Machine Learning
Dmitrii Malov (RU) 14:45-15:05

Tutorial 3

17:40-19:30

Automating Discovery of Intelligent Strategies

- Part 2: "Rediscovering No-Search Approach "
B. Stilman (US)

SUNDAY, AUGUST 30, 2020

STREAM 1

Session ANN/Deep Learning

SESSION Chair: B. Lőrincz (RO)

- | | | |
|----|---|-------------|
| 71 | Universal Adversarial Perturbation Generated by Attacking Layer-wise Relevance Propagation
Zifei Wang et al. (CN) | 10:00-10:20 |
| 72 | An Evaluation of Postfiltering for Deep Learning Based Speech Synthesis with Limited Data
Beáta Lőrincz, Maria Nuțu, Adriana Stan, Mircea Giurgiu (RO) | 10:20-10:40 |
| 73 | Predicting Early Neonatal Sepsis using Neural Networks and Other Classifiers
Redwan Hasif Alvi et al. (BD) | 10:40-11:00 |
| 74 | An Extended NRBF Model for the Detection of Meat Spoilage
Vassilis S. Kodogiannis, Abeer Alshejari (UK) | 11:00-11:20 |
| 75 | Generation of Two Turbine Hill Chart Using An Artificial Neural Network
Arlindo R. Galvão Filho et al. (BR) | 11:20-11:40 |

Session Intelligent Control & Robotics 2

SESSION Chair: Y. Sakuhara (JP)

- | | | |
|----|---|-------------|
| 76 | Climbing Soft Robot Inspired by Octopus
Yusei Sakuhara, Hiroaki Shimizu, Kazuyuki Ito (JP) | 11:45-12:05 |
| 77 | Autonomous Robot Exploration and Measuring in Disaster Scenarios Using Behavior Trees
Francisco Garcia Rosas, Frank Hoeller, Frank E. Schneider (DE) | 12:05-12:25 |
| 78 | Reference Tracking LQG Control of Electrohydraulic Servo System for Mobile Machines
Alexander Mitov et al. (BG) | 12:25-12:45 |
| 79 | Intelligent Hybrid Control of Thermal Treatment Processes of Wood
Mincho Hadjiski, Nencho Deliiski, Natalia Tumbarkova (BG) | 12:45-13:05 |

Session Plenary 4

SESSION Chair: V. Jotsov (BG)

- | | | |
|----|--|-------------|
| 80 | Discoveries – on Demand
Boris Stilman (US) | 14:40-15:50 |
| 81 | Control Systems – Concepts and Insights for Managerial Decision Making
Tariq Samad (US) | 15:50-16:30 |

Session Machine Learning

SESSION Chair: S. Razvarz (MX)

- | | | |
|----|---|-------------|
| 82 | User Independent Human Stress Detection
Ramanathan Murugappan et al. (IN) | 16:35-16:55 |
| 83 | A Multiple Smart Device-based Personalized Learning Environment
Masashi Katsumata (JP) | 16:55-17:15 |
| 84 | An Automatic Clustering Algorithm Using Multi-Objective Genetic Algorithm with Gene Rearrangement
Hongchun Qu, Li Yin (CN) | 17:15-17:35 |
| 85 | Forecasting Sales of Truck Components: A Machine Learning Approach
Venishetty Sai Vineeth et al. (SE) | 17:35-17:55 |

STREAM 3

Poster Sessions 2

10:30-11:00

SESSION Chair: R. Yoshinov (BG)

- | | |
|----|--|
| 86 | Intuitionistic Fuzzy Two-Factor Analysis of COVID-19 Cases in Europe
Velichka Traneva, Deyan Mavrov, Stoyan Tranev (BG) |
| 87 | Virtual Reality and Using the Unity 3D Platform for Android Games
Nurdaulet Nuryim et al. (KAZ) |
| 88 | Automated Diagnosis of Skin Lesions
Fábio Santos, Filipe Silva, Petia Georgieva (PT) |

- 89 Threshold Optimized Strategy Based on Improved Flower Pollination Algorithm for Unbalanced Data
Hongchun Qu, Geng Liu (CN)
- 90 Recognition of Bulgarian Embroidery with Recurrent Neural Network
Asya Toskova (BG)
- 91 Intelligent Failure Forecast and Preventive Maintenance System
Georgi Penchev, Asya Toskova (BG)
- 92 Application of Data Mining Techniques on Air Pollution of Dhaka City
Al-Sadman Chowdhury et al. (BD)
- 93 Computer-Aided Laser Projection System for Flexible Manufacturing
Svetozar Ilchev et al. (BG)
- 94 SWOT Analysis in the Strategic Planning Process – Meta-modelling Approach
Željko Dobrović, Martina Tomičić Furjan (HR)
- 95 A Genebank Architecture. A Distributed System for Management of Plant Genetic Resources
Emil Doychev et al. (BG)
- 96 A Personal Assistant Supporting Agriculture Operators
Ivan Stoyanov et al. (BG)
- 97 Modelling Distributed Fault-Tolerant High Availability Storage Cluster Based on Block-Chain Concepts for Tracking Scientific-Research Progress
Vladimir Valkanov et al. (BG)
- 98 Text Mining in the Domain of Plant Genetic Resources
Ivan Popchev, Daniela Orozova (BG)
- 99 Mobility Factor in New Generations Wireless Networks
Ekaterina Otsetova-Dudin, Krasimir Markov (BG)
- 100 A Blockchain-Based Model of GenBank Store System
Irina Krasteva et al. (BG)
- 101 Ambient-Oriented Modelling in an Intelligent Agriculture Infrastructure
Todorka Glushkova et al. (BG)
- 102 From Simulation to Reality: CNN Transfer Learning for Scene Classification
Jordan J. Bird et al. (UK)
- 103 Generalized Net Model of the First Phase of the General Claim Process
Hristo Blidov, Lyubka Doukovska, Krassimir Atanassov (BG)

STREAM 2

Invited Session 4

SESSION Chair: S. Sotirov (BG)

- | | | |
|-----|--|-------------|
| 104 | Generalized Net Model for Creating and Evaluating of Educational Content
Anthony Shannon et al. (AU,BG,PL) | 11:00-11:20 |
| 105 | Generalized Nets as Tools for Modelling of the Neural Networks
Krassimir Atanassov, Sotir Sotirov (BG) | 11:20-11:40 |
| 106 | Generalized Net Model of the Network for Automatic Turning and Setting the Lighting in the Room
Tihomir Videv, Georgi Hristov, Boris Bozveliev (BG) | 11:40-12:00 |
| 107 | Generalized Net Modeling of the Payment Process Workflow
Boris Bozveliev, Tihomir Videv (BG) | 12:00-12:20 |

Tutorial 4

16:35-18:30

Implementing Intelligent Strategies in Real World Systems

- Part 1: " From Ancient Warfare to Modern Adversarial Reasoning "
- Part 2: "Turning University Research into the Real World Systems "
B. Stilman (US)

CLOSING

18:35