KES International

Conference Programme

KES-2021

25th International Conference on
Knowledge-Based and Intelligent
Information & Engineering Systems
Szczecin, Poland
8 - 10 September 2021

Contents

Chairs' Welcome

Welcome to the 25th International Conference on Knowledge - Based and Intelligent Information & Engineering Systems (KES 2021), organised by KES International and held in Szczecin, Poland and also in virtual form on the KESonline virtual conference platform, 8-10 September 2021.

KES2021 is something of a celebration among the KES community as the 25th event in a series of broad-spectrum intelligent systems conferences first held in Adelaide, Australia in 1997. A number of KES conferences over the past two years had to be held in virtual form because of the global Covid pandemic. Hence, we are now delighted to be able to give delegates the opportunity to attend KES2021 in person in Szczecin, while at the same time providing the option of virtual presentations for those that prefer it.

The main aim of this KES conference series is to provide an internationally respected forum for the dissemination of research results and the discussion of issues relating to the theory, technologies and applications of intelligent engineering and information systems.

This truly international conference has attracted submissions from a substantial number of researchers and practitioners from all over the world, who submitted their papers to five general track sessions, 48 special sessions and two workshops on specific topics. A large number of submissions was received and each paper was peer reviewed by at least two members of the International Program Committee. From them, 533 high - quality papers were accepted for oral presentation and publication in Procedia Computer Science, submitted for indexing in Conference Proceedings Citation Index (CPCI), Scopus and INSPEC.

The conference chairs would like to express their gratitude to the Keynote Speakers:
- Prof Maria Virvou, University of Piraeus, Greece, title of talk: *"Human-AI Interaction: New Horizons and Challenges"*
- Prof Janusz Kacprzyk, Polish Academy of Sciences, Poland, title of talk: *"Linguistic data summarization: a step towards human comprehensibility of static and dynamic data"*;
- Prof James F. Peters, University of Manitoba, Canada and Adiyaman University, Turkey, title of talk: *"Computational Geometry and Topology of Data Views of Brain Activation Regions in rs-fMRI Videos. Betti Numbers, Ghrist Pictographs in Tracking the Persistence of Brain Activations"*;
- Prof Andrzej Piegat, West Pomeranian University of Technology, Poland, title of talk: *"Why multidimensional fuzzy arithmetic in problem solving"*;

- Prof Edward Szczerbicki, Gdansk University of Technology, Poland and The University of Newcastle, Australia, title of talk: *"AI vs AI: intelligence amplification with Decisional DNA and its extension to idream.technology"*; and
Prof Valentina Balas, 'Aurel Vlaicu' University of Arad, Romania, title of talk: "*New Computational Intelligence-Based Research"*.

We would like to acknowledge the Programme Co-Chairs, the General Track chairs, and the International Programme Committee members and reviewers for their valuable efforts in the review process, helping us to guarantee the highest quality possible for the conference. We would also like to thank the organisers and chairs of the special sessions which make an essential contribution to the success of the conference. Lastly, we would like to thank all the authors, presenters and delegates for their valuable contribution and the Local Organising Committee for making arrangements in Szczecin which we are confident will make this an extraordinarily successful event.

KES International hopes and intends that KES2021 will make a significant contribution to international research collaboration and understanding, an essential task for the promotion of scientific joint work and excellence.

Prof. Robert J. Howlett, 'Aurel Vlaicu' University of Arad, Romania and Bournemouth University, UK
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KES Conference Series
KES2021 is part of the KES Conference Series.

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L.C.Jain and R.J.Howlett

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General Track Sessions

Code	Track Title	Track Chair
G01	Machine Learning, Artificial Neural Networks and Deep Learning	Prof Ahmed Samet
G02	Knowledge Based and Expert Systems	Prof Anne Hakansson
G03	Intelligent Information and Engineering Systems	Prof Ron Hartung
G04	Industry Applications	Dr Carlos Toro
T01	Knowledge-based Decision Makin	Prof Jaroslaw Watrobski, Dr. Wojciech Salabun

Invited Sessions

Code	Session	Session Chair
WS01	4th Symposium on Information Systems and Technologies for Management, and Economy	Artur Karczmarczyk, Prof. Ewa Ziemba, Prof. Witold Chmielarz
WS02	An International Robust Artificial Intelligence Workshop (RAW)	Dr. Aya Saad, Prof. Anne Håkansson, Haakon Robinson, Vilde Gjarum, Akhil S Anand, Katrine Seel
IS02	Networks for Innovation, Knowledge Creation and Sharing	Prof. Dr. Hironori Takeuchi
IS03	Knowledge Engineering in Large-Scale Systems	Prof. Dr. Sergey V. Zykov
IS04	Knowledge-Based Systems for e-Business	Prof. Kazuhiko Tsuda, Prof. Dr. Masakazu Takahashi, Prof. Nobuo Suzuki, Asst. Prof. Takumi Kato
IS05	Service-oriented Data Science	Prof. Katsutoshi Yada, Prof. Takahira Yamaguchi
IS06	Global and Constrained Optimization: Algorithms and Applications	Prof. Abdellah Chehri, Prof. Gwanggil Jeon, Prof. Paul Fortier
IS07	Interdisciplinary Approaches in Data Science and Digital Transformation Practice	Prof. Ralf-Christian Harting, Prof. Ivan Lukovic
IS08	Intelligent Information Processing for Educational Innovations	Assoc. Prof. Dr. Daocheng Hong
IS09	Recent Advances in Numerical Modelling and Recognition Techniques	Prof. Margarita N. Favorskaya, Prof. Lakhmi C. Jain
IS10	Cybercrime Investigation and Digital Forensics	Assist. Prof. Fuching Tsai, Dr. Da-Yu Kao, Assist. Prof. Chih Hung Shih
IS11	Bioengineering Applications	Dr. Milan Simic, Dr. Maria Spichkova
IS12	ICT based innovation and entrepreneurship of companies	Prof. Jaroslaw Korpysa

Code	Session	Session Chair
IS13	Innovative Supportive Systems for the Smart, Healthy, and Active Ageing at Home and in Local Community Environments	Dr. Eduardo Carrasco, Dr. Maria Jose Santofimia, Dr. Juan Carlos Lopez Lopez
IS14	Decision support systems, forecasting, classification	Prof. Wojciech Froelich
IS15	Internet-of-Things and Intelligent Decision Making	Prof. Xiangpei Hu, Assist. Prof. Mu Du
IS16	Recent Advances in Biometric Technology	Assoc. Prof. Dr. Dzati Athiar Ramli, Prof. Abdellah Chehri, Dr. Ng Theam Foo
IS17	Semantics-Driven Cyber-Physical Systems	Dr. Linda Elmhadhbi, Dr. Violeta Damjanovic-Behrendt, Prof. Hedi Karray
IS18	Collaboration in Software and System Engineering	Dr. Maria Spichkova, Dr. Milan Simic
IS19	Complex and dispersed classifiers	Dr. hab. Malgorzata Przybyla-Kasperek, Dr. Rafal Skinderowicz
IS20	Biosignal data acquisition and knowledge-based processing	Prof. Dr. Ralf Seepold, Juan Antonio Ortega
IS21	Data Cleansing, Selection and Pre-processing for Machine Learning	Prof. Antonio J. Tallon-Ballesteros, Prof. Ireneusz Czarnowski
IS22	Blockchain Applications in Iot: Principles and Practices	Assoc. Prof. Tanupriya Choudhury, Asst. Prof. Abhirup Khanna
IS23	Computational Intelligence System and its Application to Media Information Technology	Prof. Yuji Iwahori, Prof. Yoshinori Adachi, Prof. Nobuhiro Inuzuka, Assoc. Prof. Ryosuke Yamanishi
IS24	AI, Robotics, and Human Machine Systems (IROHMS) for Medical and Healthcare Applications	Dr. Yulia Hicks, Dr. Hiroharu Kawanaka, Prof. Rossi Setchi
IS25	Cyber Security and Big Data	Dr. Francesco Mercaldo
IS26	Intelligent Management Information Systems (IMIS)	Assoc. Prof. Marcin Hernes, Asst. Prof. Artur Rot
IS27	Reasoning-based Intelligent Applied Systems	Dr. Jair Minoro Abe

Code	Session	Session Chair
IS28	Chance Discovery and Market of Data	Prof. Akinori Abe, Prof. Yukio Ohsawa, Prof. Noriyuki Kushiro
IS29	Smart Education: Learning environment using technology	Prof. Nobuyuki Ogawa, Prof. Hideyuki Kanematsu, Prof. Kuniaki Yajima, Assoc. Prof. Katsuko T. Nakahira, Prof. Kazunori Nishino
IS30	Machine Learning and Knowledge Representation in Epidemic Modeling	Prof. Marek Niezgodka, Prof. Hung Son Nguyen, Prof. Andrzej Szalas
IS31	New Generation Computing in Engineering, Life Science and Economy	Prof. Piotr Nikonczuk, Prof. Elisabeth Rakus-Andersson
IS32	Neuroscience techniques and quantitative methods in supporting decision making	Prof. Kesra Nermend, Prof. Waldemar Tarczynski, Prof. Malgorzata Latuszynska
IS33	Eye Movement Data Processing and Analysis (EMDPA)	Assoc. Prof. Katarzyna Harezlak, Assoc. Prof. Pawel Kasprowski
IS34	Marketing in digital area – new methods, new challenges, new approaches, new research perspectives	Prof. Edyta Rudawska, Prof. Magdalena Grebosz-Krawczyk
IS35	LegalTech - Techology for Law and Law for Technology	Dr. hab. Kinga Flaga-Gieruszynska, Dr. hab. Joanna Studzinska, Dr. Wojciech Salabun
IS36	Interactive Linguistics for Agent and Multi-agent Systems	Prof. Radoslaw Katarzyniak, Prof. Em. Andre Wlodarczyk, Prof. Em. Helene Wlodarczyk, Prof. Velina Slavova, Prof. Yasuhiro Katagiri
IS37	Knowledge and data engineering in medicine and health care	Assoc. Prof. Krzysztof Pancerz, Asst. Prof. Wieslaw Paja, Assoc. Prof. Catalin Stoean, Assoc. Prof. Agnieszka Wosiak
IS38	Challenges and solutions for project knowledge management	Assoc. Prof. Tadeusz A. Grzeszczyk, Assoc. Prof. Jakub Swacha

Code	Session	Session Chair
IS39	Outlier detection in real data	Assoc. Prof. Agnieszka Nowak-Brzezinska, Assoc. Prof. Agnieszka Duraj
IS40	Skill Acquisition and Ubiquitous Human Computer Interaction	Assoc. Prof. Masato Soga, Assist. Prof. Hirokazu Miura, Prof. Hirokazu Taki
IS41	Immunity-Based Systems: Resilient System	Prof. Dr. Yoshiteru Ishida, Prof. Dr. Takeshi Okamoto, Assoc. Prof. Dr. Yuji Watanabe, Prof. Dr. Hiroshi Ueda
IS42	Intelligent systems in evaluation and performance measurement	Prof. Iga Rudawska, Prof. Malgorzata Porada-Rochon, Prof. Sebastian Majewski
IS43	Visual paradigm in engineering	Prof. Przemyslaw Rozewski, Prof. Roberto Theron, Dr. Katarzyna Lobacz
IS44	Aspects of intelligent learning systems: e-Learning across various educational contexts	Prof. Dr. Hiroshi Ueda, Assoc. Prof. Dr. Mohammad Nehal Hasnine, Mr. Hisashi Hatakeyama
IS45	Information, Innovation and Technology as a basis for sustainable business and society	Prof. Katarzyna Szopik-Depczynska, Prof. Giuseppe Ioppolo, Prof. Katarzyna Cheba, Prof. Izabela Dembinska, Prof. Joanna Wisniewska
IS46	The use of ICT in the power systems in the era of energy transition	Prof. Wojciech Drozdz, Dr. Marcin Rabe, Dr. Bartosz Pilecki
IS47	Computational learning theory and advances from Heuristics to Hyperheuristics : new trends and applications in hard optimization, in constraint reasoning and in and in real life problems	Prof. Sadok Bouamama, Dr. Moez Hammami

Plenary Talks

Prof Valentina Balas
'Aurel Vlaicu' University of Arad, Romania

New Computational Intelligence-Based Research

Abstract: The lecture will present some new computational intelligence techniques used by our research team in developing of complex systems. We are using these techniques to solve problems in control systems in a wide range of applications. We will present applications of intelligent complex systems in the field of automotive, green technology and sustainable development by assisting the design with simulations.

Biography: Valentina E. Balas is currently Full Professor in the Department of Automatics and Applied Software at the Faculty of Engineering, "Aurel Vlaicu" University of Arad, Romania.

She holds a Ph.D. Cum Laude, in Applied Electronics and Telecommunications from Polytechnic University of Timisoara. Dr. Balas is author of more than 350 research papers in refereed journals and International Conferences. Her research interests are in Intelligent Systems, Fuzzy Control, Soft Computing, Smart Sensors, Information Fusion, Modeling and Simulation.

She is the Editor-in Chief to *International Journal of Advanced Intelligence Paradigms (IJAIP) and to International Journal of Computational Systems Engineering (IJCSysE)*, member in Editorial Board member of several national and international journals and is evaluator expert for national, international projects and PhD Thesis.

Dr. Balas is the director of Intelligent Systems Research Centre in Aurel Vlaicu University of Arad and Director of the Department of International Relations, Programs and Projects in the same university.

She served as General Chair of the International Workshop Soft Computing and Applications (SOFA) in nine editions organized in the interval 2005-2020 and held in Romania and Hungary.

Dr. Balas participated in many international conferences as Organizer, Honorary Chair, Session Chair, member in Steering, Advisory or International Program Committees and Keynote Speaker.

Prof Janusz Kacprzyk
Polish Academy of Sciences, Poland

Linguistic data summarization: a step towards human comprehensibility of static and dynamic data

Abstract: Our main concern is an attempt to make the "computer", in the sense of all kinds of tools and techniques that are inherently based on the use of computers, to be human consistent, in the sense of being based on, or using human specific faculties. More specifically, we take as a point of departure the fact that for the human being the only fully natural means of communication and articulation is natural language which is "strange" to the computer. Therefore, it might be a good solution to use natural language in the formulation of problems, and presentation of results obtained as this would make them more comprehensible to the human user. Traditionally, visualization is used with much success. Much less popular is verbalization in which the results are presented in (qusi)natural language though in many applications, e.g. in transportation or military, voice messages, commands, etc., are preferable as they do not distract attention.

We present a conceptually simple, yet powerful concept of a linguistic data(base) summary which constitutes a short sentence(s) in natural language that summarizes the contents (semantics) of even very large data sets. For instance, in a personel database, a linguistic summary may be "most young employees have low salaries". We use Yager's (1982) and Kacprzyk and Yager's (2001) approach that employs fuzzy logic with linguistic quantifiers. We present linguistic summarization of both static and dynamic (time series) data, and present main protoforms of such linguistic summaries. As an example of a real application we present the use of linguistic summaries for supporting decision making at a computer retailer that makes use of data from local and remote (Internet) sources of data, and yileds linguistic summaries comprehensible to a human user.

We conclude with some remarks on the role of linguistic data summaries in the broadly perceived explainable artificial intelligence (XAI), and the users' truist in results obtained.

Biography: Janusz Kacprzyk is Professor of Computer Science at the Systems Research Institute, Polish Academy of Sciences, WIT - Warsaw School of Information Technology, and Chongqing Three Gorges University, Wanzhou, Chinqgqung, China, and Professor of Automatic Control at PIAP - Industrial Institute of Automation and Measurements. He is Honorary Foreign Professor at the Department of Mathematics, Yli Normal University, Xinjiang, China. He is Full Member of the Polish

Academy of Sciences, Member of Academia Europaea, European Academy of Sciences and Arts, European Academy of Sciences, Foreign Member of the: Bulgarian Academy of Sciences, Spanish Royal Academy of Economic and Financial Sciences (RACEF), Finnish Society of Sciences and Letters, and Flemish Royal Academy of Belgium of Sciences and the Arts (KVAB). He was awarded with 5 honorary doctorates. He is Fellow of IEEE, IET, IFSA, EurAI, IFIP and SMIA.

His main research interests include the use of modern computation computational and artificial intelligence tools, notably fuzzy logic, in systems science, decision making, optimization, control, data analysis and data mining, with applications in mobile robotics, systems modeling, ICT etc.

He authored 7 books, (co)edited more than 150 volumes, (co)authored more than 650 papers, including ca. 100 in journals indexed by the WoS. His bibliographic data are: Google Scholar: citations: 29898; h-index: 76, Scopus: citations: citations: 8977; h-index: 41, Publons: citations: 9612, h-index=43, Web of Science: citations: 7168; h-index: 36. He is listed in 2020 "World's 2% Top Scientists" by Stanford University, Elsevier (Scopus) and ScieTech Strategies and published in PLOS Biology Journal.

He is the editor in chief of 7 book series at Springer, and of 2 journals, and is on the editorial boards of ca. 40 journals. He is President of the Polish Operational and Systems Research Society and Past President of International Fuzzy Systems Association.

Prof James F. Peters
University of Manitoba, Canada and Adiyaman University, Turkey

Computational Geometry and Topology of Data Views of Brain Activation Regions in rs-fMRI Videos. Betti Numbers, Ghrist Pictographs in Tracking the Persistence of Brain Activations

Abstract: In this talk, we consider the efficacy of the use of computational geometry and the topology of data in approximating, analyzing, comparing and measuring brain activation regions that appear in rs-fMRI videos.

Varying shapes of rain activation regions commonly occur during resting state (rs)-fMRI videos. In this paper, we demonstrate the utility of computational geometry combined with a topology of data approach in tracking the persistence of recurring blood oxygen level dependent (BOLD) signals in triangulated rs-fMRI video frames. This is accomplished by considering vortexes (nested, filled 1-cycles in a Whitehead Closure-finite Weak Topological Space) that cover brain activation regions with collections of path-connected vertexes with no end vertex. Measure of persistence of vortex shapes in BOLD signal propagation is carried out in terms of Betti numbers that rise and fall over time during spontaneous activity of the brain. Each vortex has a Rotman free group presentation, resulting from the presence of vertexes that serve as a basis for a free group (each vortex cycle vertex is represented by a linear combination of the basis elements. Consequently, each brain activation region vortex is represented by a Betti number equally the rank of its free group.

Betti numbers of free group presentations of brain activation region vortexes appear, disappear and sometimes reappear in the frames during a typical rs-fMRI video. It has been observed in 1999 by Edelsbrunner that a topology of data circumvents noise in data and focuses on those data that persist over time. Computational topology of data provides a practical method in isolating, measuring, and classifying persistent lag structures BOLD signals in each rs-fMRI video frame that are mapped to point clouds in a finite, bounded region in an n-dimensional Euclidean metric space. Brain activation region vortexes in triangulated rs-fMRI video frames make it possible to approximate, measure, track and compare brain activation region shapes. As stepping stones to understanding the proposed approach to tracking rs-fMRI brain activation regions, basic results and examples are given.

Biography: James F. Peters, B.Sc.(Math), M.Sc.(Math), Ph.D. (Proof Theory), Postdoctoral Fellow, Syracuse University and Researcher in the Rome AI Laboratory, Griffiss Air Force Base, New York (1991), Asst. Prof., University of Arkansas, 1991-1994, and Researcher in the Mission Sequencing and Deep Space Telecommunications Divisions at the Jet Propulsion Laboratory/Caltech, Pasadena,

California (1991-1994), Full Professor, ECE Department, University of Manitoba, 1995-present He is now a Full Professor in the Department of Electrical and Computer Engineering (ECE) at the University of Manitoba and a Professor in the Department of Mathematics at Adiyaman University, Turkey.

He started working on descriptively near sets in 2002 and formally introduced near sets in 2007, tolerance near sets in 2009, descriptive proximity spaces in 2011, topology and proximity spaces in 2012, computational proximity in 2016, computational geometry, topology and physics of digital images in 2017-2021.

He is author of books entitled

Computational Geometry, Topology and Physics of Digital Images with Applications. Shape Complexes, Optical Vortex Nerves and Proximities, 2020, Springer Nature, Switzerland AG.

Foundations of Computer Vision. Computational Geometry, Visual Image Structures and Object Shape Recognition}, 2017, Springer Int. Publishing, Switzerland.

Computational Proximity. Excursions in the Topology of Digital Images, 2016, Springer Int. Publishing, Switzerland.

Topology of Digital Images: Visual Pattern Discovery via Proximity Spaces, 2014, Springer, Berlin. He is co-author (with Prof. Som Naimpally),

Topology with Applications: Topological Spaces via Near and Far, 2013, published by World Scientific, Singapore.

He is co-Editor with S. Pal, Indian Statistical Institute, Kolkata, India, Rough Fuzzy Image Analysis: Foundations and Methodologies, published in 2010 by Chapman \& Hall/CRC Press, co-Editor with E. Orlowska, G. Rozenberg, A. Skowron, New Frontiers in Scientific Discovery Commemorating the Life and Work of Zdzislaw Pawlak, published in 2007 by IOS Press, author of over 100 articles published in refereed journals during the past 5 years. He is co-Editor-in-Chief of the Springer Transactions on Rough Sets, Associate Editor of two journals and Editorial Board member of a number of other journals. His main research interests are computational geometry, topology and proximity spaces in the mathematics of near sets and visual surface shape detection, presentation, and analysis.

Prof Andrzej Piegat
Westpomeranian University of Technology, Poland

Why multidimensional fuzzy arithmetic in problem solving

Abstract: The aim of the talk is to familiarize conference participants with fuzzy arithmetic (in a general sense) and with fuzzy multivariate arithmetic, in order to show what kinds of problems can and should be solved with its use. In this talk, the authors will try to answer the following questions:

- What do you need fuzzy arithmetic for?
- Are conventional arithmetic and math enough to solve practical problems?
- Precise (ideal) data and approximate (real) data.
- An example illustrating the need to use FA- control of movement of Boeing 747 aircraft.
- Gradual development of fuzzy arithmetic
- Examples of existing types of fuzzy arithmetic
- Fuzzy 2-dimensional and multidimensional arithmetic.
- Type 0, Type 1, and Type 2- multidimensional fuzzy arithmetic.
- Result of using multidimensional fuzzy arithmetic to simulate airplane motion and other examples.

Biography: Andrzej Piegat received a Ph.D. degree in 1979 at the Szczecin University of Technology in the field of discrete production processes control. He obtained a D. Sc degree at the University of Rostock, Germany, in 1988 in the field of control of unmanned underwater vehicles. The title of professor he received from the President of Poland in 2001. In 1991 he began studies and scientific work in the field of Artificial Intelligence, mainly Fuzzy Systems. In 2001, he published the book "Fuzzy Modeling and Control" in the Springer-Verlag publishing house, which was also published in Russia and Poland. During the last 12 years he has been mainly involved in fuzzy arithmetic - he is the creator of the concept of multidimensional fuzzy arithmetic. Together with his colleagues, Marcin Plucinski and Marek Landowski have prepared over 40 articles in this field. He is currently preparing to write a book on the multidimensional fuzzy arithmetic of Type 0, Type 1, and Type 2.

Prof Edward Szczerbicki

Gdansk University of Technology, Poland and The University of Newcastle, Australia

AI vs AI: intelligence amplification with Decisional DNA and its extension to idream.technology

Abstract: The rapidly evolving Cognitive Society of the 21st Century together with imminent cyber revolution of Industry 4.0 needs increasingly smarter and abler decision-making enhancement and explainability to make this evolvement sustainable and human-acceptable. We address this global challenge by proposing intelligence amplification with Decisional DNA and its extension into idream.technology, which could provide decision-makers with the tools to choose the best outcomes for cognitive society that would promote sustainability, wellbeing, and security to individuals and populations. In nature, deoxyribonucleic acid (DNA) contains the genetic instructions used in the development and functioning of all known living organisms. The idea behind our vision is to develop an artificial system, an architecture that would support discovering, adding, storing, improving and sharing information and knowledge among agents and organisations through experience. We propose a novel Knowledge Representation (KR) approach in which experiential knowledge is represented by Set of Experience (SOE), and is carried into the future by Decisional DNA (DDNA). The DDNA extension into idream.technology has enormous and exciting potential of opening entirely new and so far not conceptually conceived horizons in developing and using collective intelligence.

Biography:

Edward Szczerbicki has had very extensive experience in the area of intelligent systems development over an uninterrupted 40-year period, 30 years of which he spent in the top information science research centres in the USA, UK, Australia, and Germany. In this area, he contributed to the understanding of information and knowledge management/engineering in complex systems operating in changing environments characterised by informational uncertainties. He has published over 400 refereed papers which explore the importance and power of experiential knowledge in intelligence augmentation. His academic experience includes ongoing and visiting positions with Gdansk University of Technology, Gdansk, Poland; Strathclyde University, Glasgow, Scotland; The University of Iowa, Iowa City, USA; University of California, Berkeley, USA; Hannover University, Hannover, Germany; Chengdu University of IT, Chengdu, China; INSA Rouen Normandie, Rouen, France; TU Berlin, Germany; and The University of Newcastle, Newcastle, Australia.

Prof Maria Virvou
University of Piraeus, Greece

Human-AI Interaction: New Horizons and Challenges

Abstract: A new model of human -AI interaction emerges in the new era of Artificial Intelligence- empowered software which exhibits highly autonomous behaviour based on intelligent systems' decisions. AI off-loads human cognitive burden and resolves cyberspace navigation disorientation by performing dynamic adaptations on user personalisation, information filtering, hyperlink labelling, nudging and recommendation while employing user analytics on user preferences, personality, cognitive status, emotions, mood, goals and intentions of humans. The underlying reasoning of such behaviour includes machine learning, neural networks, decision technologies, data mining, fuzzy logic, cognitive and other mechanisms, all of which produce more human-like user interfaces but with a degree of uncertainty. As such, Human-AI interaction reforms significantly the classical human-computer interaction model that was primarily based on predictable computer behaviour rather than highly decision making, changeable and intelligently hypothesizing AI. Yet, human needs in the two-part interaction remain important concerning issues, such as ensuring and preserving usability, utility and explainability of AI.

This talk aims to explore AI and humans as parts of the newly established dialogue by highlighting the significant advancing benefits and discussing challenges. An overview of the state-of-the-art will be presented as well as the author's personal viewpoint on establishing and preserving principles and procedures in the new dialogue of Human-AI Interaction.

Biography: Professor - Dr. Maria Virvou was born in Athens, Greece. She received a B.Sc. Degree in Mathematics from the National and Kapodistrian University of Athens, Greece, a M.Sc. Degree in Computer Science from the University College London (UCL), U.K. and a Ph.D. Degree in Computer Science and Artificial Intelligence from the University of Sussex, U.K. funded by a scholarship obtained from the Greek State Scholarship Foundation.

She is currently a FULL PROFESSOR, HEAD OF THE DEPARTMENT, DIRECTOR OF POST-GRADUATE STUDIES and DIRECTOR OF THE SOFTWARE ENGINEERING LAB in the Department of Informatics, University of Piraeus, Greece. She is AUTHOR/CO-AUTHOR of over 350 research papers published in international journals, books and conference proceedings and of 7 books and monographs in Computer Science. She has been EDITOR of over 20 collections of papers in conference proceedings or books, published by major academic publishers, such as IEEE, Springer and IOS Press. She is currently

EDITOR-IN-CHIEF of the Springer book series "Learning and Analytics in Intelligent Systems". She has also been EDITOR-IN-CHIEF of the SpringerPlus Journal (Springer) for the whole area of Computer Science. Additionally, she has been an ASSOCIATE EDITOR of many other journals. She has been GENERAL CO-CHAIR of the yearly conference series of International Conference on Information, Intelligence, Systems and Applications (IISA 2013-2021), technically-sponsored by IEEE, which aims at promoting research in the area of interactive multimedia and major applications. She has been the GENERAL CHAIR / PROGRAM CHAIR of over twenty (20) International Conferences. She has been the PRINCIPAL INVESTIGATOR or CO-INVESTIGATOR of numerous national / international research projects. She has supervised 12 Ph.D. alumni and many of them currently hold academic positions in Universities. She has been teaching under-graduate and post-graduate courses in Educational Software, Software Engineering and Mobile Software, Human Computer Interaction, Programming Languages and Compilers, Software Personalization Technologies, User Modeling, Adaptive Tutoring Systems.

Prof.-Dr. Virvou has been a recipient of many best paper awards in international conferences. She has been an invited keynote speaker for many international conferences. She has received an honorary award by UNESCO in honour and recognition of her outstanding scholarly achievements and contributions to the field of Computer Science. She received the 1st Research Award from the Research Centre of the University of Piraeus for high quality international journal publications among Faculty Members of the University of Piraeus for the years 2004-2005 and 2005-2006 respectively. According to Microsoft Academic Search exploring entity analytics of 262,751,231 Authors she has been ranked as top 1st author in the Computer Science area of EDUCATIONAL SOFTWARE regarding citations and 2nd regarding publications. In addition, she has been ranked as top 1st author in publications in the Computer Science areas of MOBILE AUTHORING TOOLS, ADAPTIVE TUTORING, BI-MODAL AFFECTIVE COMPUTING, INTELLIGENT HELP, AUTOMATIC REASONING HELP, EDUCATIONAL GAME SOFTWARE, VIRTUAL REALITY EDUCATIONAL GAME, RUP LIFE CYCLE SOFTWARE. She has been ranked as 2nd top author regarding publications in the areas of SOFTWARE PERSONALIZATION STUDENT MODELING, INTELLIGENT HELP SYSTEMS FOR UNIX USERS, KNOWLEDGE ENGINEERING AFFECTIVE SYSTEMS, top 4th author in the area of UML INTELLIGENT COLLABORATIVE LEARNING and top 5th in the whole area of USER MODELING. Moreover she has been ranked among the top 40 researchers worldwide in publications for the Computer Science area of MULTIMEDIA (out of 979.432 publications, 8.626.011 citations, 1.600.000 authors), among the top 50 authors in the area of USER INTERFACE (out of 176.156 publications, 3.462.738 citations) and among the top 65 authors in HUMAN COMPUTER INTERACTION (out of 538.396 publications, 6.497.244 citations). She is among the top 2% of the most influential scientists worldwide in the area of ARTIFICIAL INTELLIGENCE, according to

Ioannidis, J. P., Boyack, K. W., & Baas, J. (2020) "Updated science-wide author databases of standardized citation indicators", PLoS Biology, 18(10), e3000918.

Timetable – Wednesday 8 September

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
9:00 - 9:15 CET	Opening Ceremony Prof Robert J Howlett & Prof Lakhmi Jain					
9:15 - 10:15 CET	Keynote Speaker 1 Prof Dr. Maria Virvou Human-AI Interaction: New Horizons and Challenges					
10:15-10:30 CET	Networking Break					
10:30 - 12:30 CET	G01-A: Machine Learning, Artificial Neural Networks and Deep Learning Chair: Prof Ahmed Samet	G02-A: Knowledge Based and Expert Systems Chair: Prof. Anne Hakansson	G03-A: Intelligent Information and Engineering Systems Chair: Prof Ron Hartung	G04-A: Industry Applications Chair: Dr. Carlos Toro	IS04-A: Knowledge-Based Systems for e-Business Chair: Prof. Kazuhiko Tsuda	IS09-A: Recent Advances in Numerical Modelling and Recognition Techniques Chair: Prof. Margarita N. Favorskaya
12:30 - 13:30 CET	Lunch Break					

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
13:30 - 14:30 CET	Keynote Speaker 2 Prof. James F. Peters Computational Geometry and Topology of Data Views of Brain Activation Regions in rs-fMRI Videos. Betti Numbers, Ghrist Pictographs in Tracking the Persistence of Brain Activations					
14:30-14:50 CET	Networking Break					
14:50 - 17:00 CET	G01-B: Machine Learning, Artificial Neural Networks and Deep Learning Chair: Prof Ahmed Samet	T01-B: Knowledge-Based Decision Making Chair. Prof. Jaroslaw Watrobski	G03-B: Intelligent Information and Engineering Systems Chair: Prof Ron Hartung	IS03: Knowledge Engineering in Large-Scale Systems Chair: Prof. Dr. Sergey V. Zykov	IS07: Interdisciplinary Approaches in Data Science and Digital Transformation Practice Chair: Prof. Ralf-Christian Harting	IS13: Innovative Supportive Systems for the Smart, Healthy, and Active Ageing at Home and in Local Community Environments Chair: Dr. Eduardo Carrasco
Time - TBC	Evening Social					

	Room 7	Room 8	Room 9	Room 10	Room 11	Room 12
9:00 - 9:15 CET	Opening Ceremony Prof Robert J Howlett & Prof Lakhmi Jain					
9:15 - 10:15 CET	Keynote Speaker 1 Prof Dr. Maria Virvou Human-AI Interaction: New Horizons and Challenges					
10:15-10:30 CET	Networking Break					
10:30 - 12:30 CET	IS40: Skill Acquisition and Ubiquitous Human Computer Interaction Chair: Assoc. Prof. Masato Soga	IS20-A: Biosignal data acquisition and knowledge-based processing Chair: Prof. Dr. Ralf Seepold	G01-C: Machine Learning, Artificial Neural Networks and Deep Learning Chair: Prof Cecila Zanni-Merk	T01-A: Knowledge-Based Decision Making Chair. Prof. Jaroslaw Watrobski	WS01-A: 4th Symposium on Information Systems and Technologies for Management, and Economy Chair: Artur Karczmarczyk	IS02: Networks for Innovation, Knowledge Creation and Sharing Chair: Prof. Dr. Hironori Takeuchi
12:30 - 13:30 CET	Lunch Break					

	Room 7	Room 8	Room 9	Room 10	Room 11	Room 12
13:30 - 14:30 CET	Keynote Speaker 2 Prof. James F. Peters Computational Geometry and Topology of Data Views of Brain Activation Regions in rs-fMRI Videos. Betti Numbers, Ghrist Pictographs in Tracking the Persistence of Brain Activations					
14:30-14:50 CET	Networking Break					
14:50 - 17:00 CET	IS14-A: Decision support systems, forecasting, classification Chair: Prof. Wojciech Froelich	IS21: Data Cleansing, Selection and Pre-processing for Machine Learning Chair: Prof. Antonio J. Tallon-Ballesteros	G01-D: Machine Learning, Artificial Neural Networks and Deep Learning Chair: Prof Cecila Zanni-Merk	G02-B: Knowledge Based and Expert Systems Chair: Prof. Anne Hakansson	WS01-B: 4th Symposium on Information Systems and Technologies for Management, and Economy Chair: Artur Karczmarczyk	IS20-B: Biosignal data acquisition and knowledge-based processing Chair: Prof. Dr. Ralf Seepold
Time - TBC	Evening Social					

	Room 13	Room 14	Room 15	Room 16	Room 17
9:00 - 9:15 CET	Opening Ceremony Prof Robert J Howlett & Prof Lakhmi Jain				
9:15 - 10:15 CET	Keynote Speaker 1 Prof Dr. Maria Virvou Human-AI Interaction: New Horizons and Challenges				
10:15-10:30 CET	Networking Break				
10:30 - 12:30 CET	IS08: Intelligent Information Processing for Educational Innovations Chair: Assoc. Prof. Dr. Daocheng Hong	IS32-A: Neuroscience techniques and quantitative methods in supporting decision making Chair: Prof. Kesra Nermend	IS10: Cybercrime Investigation and Digital Forensics Chair: Assist. Prof. Fuching Tsai	IS11: Bioengineering Applications	IS34-A: Marketing in digital area – new methods, new challenges, new approaches, new research perspectives Chair: Prof. Edyta Rudawska
12:30 - 13:30 CET	Lunch Break				

	Room 13	Room 14	Room 15	Room 16	Room 17
13:30 - 14:30 CET	Keynote Speaker 2 Prof. James F. Peters Computational Geometry and Topology of Data Views of Brain Activation Regions in rs-fMRI Videos. Betti Numbers, Ghrist Pictographs in Tracking the Persistence of Brain Activations				
14:30-14:50 CET	Networking Break				
14:50 - 17:00 CET	IS32-B: Neuroscience techniques and quantitative methods in supporting decision making Chair: Prof. Kesra Nermend	IS31-A: New Generation Computing in Engineering, Life Science and Economy Chair: Prof. Piotr Nikonczuk	IS04-B: Knowledge-Based Systems for e-Business Chair: Prof. Kazuhiko Tsuda	IS09-B: Recent Advances in Numerical Modelling and Recognition Techniques Chair: Prof. Margarita N. Favorskaya	IS34-B: Marketing in digital area – new methods, new challenges, new approaches, new research perspectives Chair: Prof. Edyta Rudawska
Time - TBC	Evening Social				

Timetable – Thursday 9 September

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
9:15 - 10:15 CET	Keynote Speaker 3 Prof Dr. Edward Szczerbicki AI vs AI: intelligence amplification with Decisional DNA and its extension to idream.technology					
10:15 - 10:30 CET	Networking Break					
10:30 - 12:30 CET	WS01-C: 4th Symposium on Information Systems and Technologies for Management, and Economy Chair: Artur Karczmarczyk	IS26-A: Intelligent Management Information Systems (IMIS) Chair: Assoc. Prof. Marcin Hernes	IS28: Chance Discovery and Market of Data Chair: Prof. Akinori Abe	IS29-A: Smart Education: Learning environment using technology Chair: Prof. Nobuyuki Ogawa	IS42-A: Intelligent systems in evaluation and performance measurement Chair: Prof. Iga Rudawska	IS30-A: Machine Learning and Knowledge Representation in Epidemic Modeling Chair: Prof. Andrzej Szalas
12:30 - 13:30 CET	Lunch Break					

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
13:30 - 14:30 CET	Keynote Speaker 4 Prof. Valentina Balas New Computational Intelligence-Based Research					
14:30 - 14:50 CET	Networking Break					
14:50 - 17:00 CET	WS01-D: 4th Symposium on Information Systems and Technologies for Management, and Economy Chair: Artur Karczmarczyk	IS26-B: Intelligent Management Information Systems (IMIS) Chair: Assoc. Prof. Marcin Hernes	IS31-C: New Generation Computing in Engineering, Life Science and Economy Chair: Prof. Piotr Nikonczuk	IS36: Interactive Linguistics for Agent and Multi-agent Systems Chair: Prof. Radoslaw Katarzyniak	IS42-B: Intelligent systems in evaluation and performance measurement Chair: Prof. Iga Rudawska	IS23: Computational Intelligence System and its Application to Media Information Technology Chair: Prof. Yuji Iwahori
19:00 CET	Gala Dinner					

	Room 7	Room 8	Room 9	Room 10	Room 11	Room 12
9:15 - 10:15 CET	Keynote Speaker 3 Prof Dr. Edward Szczerbicki AI vs AI: intelligence amplification with Decisional DNA and its extension to idream.technology					
10:15 - 10:30 CET	Networking Break					
10:30 - 12:30 CET	IS33-A: Eye Movement Data Processing and Analysis (EMDPA) Chair: Assoc. Prof. Katarzyna Harezlak	IS25-A: Cyber Security and Big Data Chair: Dr. Francesco Mercaldo	G01-E: Machine Learning, Artificial Neural Networks and Deep Learning Chair: Prof Ahmed Samet	G02-C: Knowledge Based and Expert Systems Chair: Prof. Anne Hakansson	G04-B: Industry Applications Chair: Dr. Carlos Toro	G03-C: Intelligent Information and Engineering Systems Chair: Prof Ron Hartung
12:30 - 13:30 CET	Lunch Break					

	Room 7	Room 8	Room 9	Room 10	Room 11	Room 12
13:30 - 14:30 CET	Keynote Speaker 4 Prof. Valentina Balas New Computational Intelligence-Based Research					
14:30 - 14:50 CET	Networking Break					
14:50 - 17:00 CET	IS38: Challenges and solutions for project knowledge management Chair: Assoc. Prof. Tadeusz A. Grzeszczyk	IS39: Outlier detection in real data Chair: Assoc. Prof. Agnieszka Nowak-Brzezinska	G01-F: Machine Learning, Artificial Neural Networks and Deep Learning Chair: Prof Ahmed Samet	G02-D: Knowledge Based and Expert Systems Chair: Prof. Anne Hakansson	G04-C: Industry Applications Chair: Dr. Carlos Toro	G03-D: Intelligent Information and Engineering Systems Chair: Prof Ron Hartung
19:00 CET	Gala Dinner					

	Room 13	Room 14	Room 15	Room 16	Room 17
9:15 - 10:15 CET	Keynote Speaker 3 Prof Dr. Edward Szczerbicki AI vs AI: intelligence amplification with Decisional DNA and its extension to idream.technology				
10:15 - 10:30 CET	Networking Break				
10:30 - 12:30 CET	IS14-B: Decision support systems, forecasting, classification Chair: Prof. Wojciech Froelich	IS32-C: Neuroscience techniques and quantitative methods in supporting decision making Chair: Prof. Kesra Nermend	IS31-B: New Generation Computing in Engineering, Life Science and Economy Chair: Prof. Piotr Nikonczuk	IS16: Recent Advances in Biometric Technology Chair: Assoc. Prof. Dr. Dzati Athiar Ramli	IS34-C: Marketing in digital area – new methods, new challenges, new approaches, new research perspectives Chair: Prof. Edyta Rudawska
12:30 - 13:30 CET	Lunch Break				

	Room 13	Room 14	Room 15	Room 16	Room 17
13:30 - 14:30 CET	Keynote Speaker 4 Prof. Valentina Balas New Computational Intelligence-Based Research				
14:30 - 14:50 CET	Networking Break				
14:50 - 17:00 CET	IS25-B: Cyber Security and Big Data Chair: Dr. Francesco Mercaldo	IS29-B: Smart Education: Learning environment using technology Chair: Prof. Nobuyuki Ogawa	IS30-B: Machine Learning and Knowledge Representation in Epidemic Modeling Chair: Prof. Andrzej Szalas	IS33-B: Eye Movement Data Processing and Analysis (EMDPA) Chair: Assoc. Prof. Katarzyna Harezlak	
19:00 CET	Gala Dinner				

Timetable – Friday 10 September

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
9:15 - 10:15 CET	Keynote Speaker 5 Prof Janusz Kacprzyk Linguistic data summarization: a step towards human comprehensibility of static and dynamic data					
10:15 - 10:30 CET	Networking Break					
10:30 - 12:30 CET	WS01-E: 4th Symposium on Information Systems and Technologies for Management, and Economy Chair: Artur Karczmarczyk	IS32-D: Neuroscience techniques and quantitative methods in supporting decision making Chair: Prof. Kesra Nermend	IS31-D: New Generation Computing in Engineering, Life Science and Economy Chair: Prof. Piotr Nikonczuk	IS35-A: LegalTech - Techology for Law and Law for Technology Chair: Dr. hab. Kinga Flaga-Gieruszynska	IS43: Visual paradigm in engineering Chair: Prof. Przemyslaw Rozewski	IS45-A: Information, Innovation and Technology as a basis for sustainable business and society Chair: Prof. Katarzyna Szopik-Depczynska
12:30 - 13:30 CET	Lunch Break					

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
13:30 - 14:30 CET	Keynote Speaker 6 Prof. Andrzej Piegat Why multidimensional fuzzy arithmetic in problem solving?					
14:30 - 14:50 CET	Networking Break					
14:50 - 17:00 CET	WS02-A: An International Robust Artificial Intelligence Workshop (RAW) Chair: Dr. Aya Saad	IS32-E: Neuroscience techniques and quantitative methods in supporting decision making Chair: Prof. Kesra Nermend	IS31-E: New Generation Computing in Engineering, Life Science and Economy Chair: Prof. Piotr Nikonczuk	IS35-B: LegalTech - Techology for Law and Law for Technology Chair: Dr. hab. Kinga Flaga-Gieruszynska	IS44: Aspects of intelligent learning systems: e-Learning across various educational contexts Chair: Prof. Dr. Hiroshi Ueda	IS45-B: Information, Innovation and Technology as a basis for sustainable business and society Chair: Prof. Katarzyna Szopik-Depczynska
17:00 - 17:15 CET	Closing Ceremony					

	Room 7	Room 8	Room 9	Room 10	Room 11	Room 12
9:15 - 10:15 CET	Keynote Speaker 5 Prof Janusz Kacprzyk Linguistic data summarization: a step towards human comprehensibility of static and dynamic data					
10:15 - 10:30 CET	Networking Break					
10:30 - 12:30 CET	IS46: The use of ICT in the power systems in the era of energy transition Chair: Prof. Wojciech Drozdz	IS47-A: Computational learning theory and advances from Heuristics to Hyperheuristics : new trends and applications in hard optimization, in constraint reasoning and in and in real life problems Chair: Prof. Sadok Bouamama	G01-G: Machine Learning, Artificial Neural Networks and Deep Learning Chair: Prof Ahmed Samet	G02-E: Knowledge Based and Expert Systems Chair: Prof. Anne Hakansson	IS37: Knowledge and data engineering in medicine and health care Chair: Assoc. Prof. Krzysztof Pancerz	G03-E: Intelligent Information and Engineering Systems Chair: Prof Ron Hartung
12:30 - 13:30 CET	Lunch Break					

	Room 7	Room 8	Room 9	Room 10	Room 11	Room 12
13:30 - 14:30 CET	Keynote Speaker 6 Prof. Andrzej Piegat Why multidimensional fuzzy arithmetic in problem solving?					
14:30 - 14:50 CET	Networking Break					
14:50 - 17:00 CET	IS12: ICT based innovation and entrepreneurship of companies Chair: Prof. Jaroslaw Korpysa	IS47-B: Computational learning theory and advances from Heuristics to Hyperheuristics : new trends and applications in hard optimization, in constraint reasoning and in and in real life problems Chair: Prof. Sadok Bouamama	G01-H: Machine Learning, Artificial Neural Networks and Deep Learning Chair: Prof Ahmed Samet	WS01-F: 4th Symposium on Information Systems and Technologies for Management, and Economy Chair: Artur Karczmarczyk	WS01-G: 4th Symposium on Information Systems and Technologies for Management, and Economy Chair: Prof. Ewa Ziemba	G03-F: Intelligent Information and Engineering Systems Chair: Prof Ron Hartung
17:00 - 17:15 CET	Closing Ceremony					

	Room 13	Room 14	Room 15	Room 16	Room 17
9:15 - 10:15 CET	Keynote Speaker 5 Prof Janusz Kacprzyk Linguistic data summarization: a step towards human comprehensibility of static and dynamic data				
10:15 - 10:30 CET	Networking Break				
10:30 - 12:30 CET	IS42-C: Intelligent systems in evaluation and performance measurement Chair: Prof. Iga Rudawska	IS06-A: Global and Constrained Optimization: Algorithms and Applications Chair: Prof. Abdellah Chehri	IS15-A: Internet-of-Things and Intelligent Decision Making Chair: Prof. Xiangpei Hu	IS19: Complex and dispersed classifiers Chair: Dr. hab. Malgorzata Przybyla-Kasperek	WS02-B: An International Robust Artificial Intelligence Workshop (RAW) Chair: Dr. Aya Saad
12:30 - 13:30 CET	Lunch Break				

	Room 13	Room 14	Room 15	Room 16	Room 17
13:30 - 14:30 CET	Keynote Speaker 6 Prof. Andrzej Piegat Why multidimensional fuzzy arithmetic in problem solving?				
14:30 - 14:50 CET	Networking Break				
14:50 - 17:00 CET	IS24: AI, Robotics, and Human Machine Systems (IROHMS) for Medical and Healthcare Applications Chair: Dr. Yulia Hicks	IS06-B: Global and Constrained Optimization: Algorithms and Applications Chair: Prof. Abdellah Chehri	IS15-B: Internet-of-Things and Intelligent Decision Making Chair: Prof. Xiangpei Hu	IS27: Reasoning-based Intelligent Applied Systems Chair: Dr. Jair Minoro Abe	
17:00 - 17:15 CET	Closing Ceremony				

Presentation Schedule – General Tracks

G01-A: Machine Learning, Artificial Neural Networks and Deep Learning
Chair: Prof Ahmed Samet

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 1

PROSE Paper No	Paper Title / Authors
k21gen-029	Quantification of the transferability of features between deep neural networks Mr. Romain Orhand, Mr. Amarin Hutt, Dr. Anne Jeannin-girardon, Mrs. Hiba Khodji
k21gen-032	BE-BLC: BERT-ELMO-Based Deep Neural Network Architecture for English Named Entity Recognition Task Msc Manel Affi, Pr Chiraz Latiri
k21gen-039	Active learning to measure opinion and violence in French newspapers Mr Paul Guélorget, Dr Guillaume Gadek, Dr Bruno Grilheres, Dr Titus Zaharia
k21gen-056	A Simple-Units Complex-Structure Neural Network model of the basal ganglia to simulate reinforcement learning tasks Phd Jaroslaw Drapala, Prof. Jerzy Swiatek, Prof. Dorota Frydecka
k21gen-073	Enhanced efficiency prediction of an electrified off-highway vehicle transmission utilizing machine learning methods B. Eng. Lukas Bauer, M. Sc. Patrick Beck, Prof. Dr. Markus Kley, M. Sc. Leon Stütz
k21gen-098	Integrating Iterative Machine Teaching and Active Learning into the Machine Learning Loop Prof. Eduardo Mosqueira-rey, Prof. David Alonso-ríos, Mr. Andrés Baamonde-lozano

G01-B: Machine Learning, Artificial Neural Networks and Deep Learning
Chair: Prof Ahmed Samet

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 1

PROSE Paper No	Paper Title / Authors
k21gen-066	{Extended Zernike invariants backed with complex-valued integral images for detection tasks Prof. Przemyslaw Klesk
k21gen-081	A Comparative Study of Different Machine Learning Tools in Detecting Diabetes Mr. Asif Karim, Dr. Sami Azam, Mr. Pronab Ghosh, Mr. Mehedi Hassan, Mrs. Mirjam Jonkman, Mr. Kuber Roy
k21gen-089	Generalized canonical correlation analysis for labeled data Mr. Kenta Sakamoto, Mr. Masaaki Okabe, Prof. Hiroshi Yadohisa
k21gen-103	Morphological Cross Entropy Loss for Improved Semantic Segmentation of Small and Thin Objects Msc René Pihlak, Dr Andri Riid
k21gen-142	Arabic text detection in news video using RetinaNet PHD Student Sadek Mansouri, Mr Dhaou Berchech, Student Samah Manita, Professor Mounir Zrigui
k21gen-191	Utilising Assured Multi-Agent Reinforcement Learning within Safety-Critical Scenarios Mr Joshua Riley, Dr Alec Banks, Dr Radu Calinescu, Dr Daniel Kudenko, Dr Colin Paterson

G01-C: Machine Learning, Artificial Neural Networks and Deep Learning
Chair: Prof. Cecilia Zanni-Merk

Wednesday 8 Sept: 10:30 - 12:30 CET
Room 9

PROSE Paper No	Paper Title / Authors
k21gen-044	Minimizing Number of Nodes in Decision Trees with Hypotheses Prof. Mikhail Moshkov, Dr. Igor Chikalov, Prof. Azad Mohammad, Prof. Hussain Shahid
k21gen-058	A Single-run Recognition of Nested Named Entities with Transformers Mr Michal Marcinczuk, Mr Jarema Radom
k21gen-062	Suspicious Person Retrieval from UAV-sensors based on part level deep features Ms Fatma Bouhlel, Mr Mohamed Hammami, Ms Hazar Mliki
k21gen-070	AutoAt: A deep autoencoder-based classification model for supervised authorship attribution Phd Student Anamaria Briciu, Professor, Phd Gabriela Czibula, Lecturer, Phd Mihaiela Lupea
k21gen-076	Creating herd behavior by virtual agents using neural networks Prof. Urszula Markowska-kaczmar, Msc Adrian Slimak
k21gen-080	Fuzzy c-Varieties Clustering for Vertically Distributed Datasets Professor Katsuhiro Honda, Mr. Kohei Kunisawa, Professor Akira Notsu, Associate Professor Seiki Ubukata

G01-D: Machine Learning, Artificial Neural Networks and Deep Learning
Chair: Prof. Cecilia Zanni-Merk

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 9

PROSE Paper No	Paper Title / Authors
k21gen-003	Towards learning transferable embeddings for protein conformations using Variational Autoencoders Phd Student Alexandra-Ioana Albu,
k21gen-009	Semi-Supervised Anomaly Detection in Business Process Event Data using Self-Attention based Classification Mr. Philippe Krajsic, Prof. Dr. Bogdan Franczyk
k21gen-010	Automatic Romanian lemmatization through a deep learning approach Mrs. Maria Nutu
k21gen-019	Deep Semantic Attributes for People Search Phd Doctor Mayssa Frikha, Associate Professor Emna Fendri, Professor Mohamed Hammami
k21gen-024	A study on using deep autoencoders for imbalanced binary classification Mr Vlad Tomescu, Prof Gabriela Czibula, Mr Stefan Nitica
k21gen-028	Transforming Domain Specific modelling Languages into Feature Models Assistant Maouaheb Belarbi, Professor Vincent Englebert

G01-E: Machine Learning, Artificial Neural Networks and Deep Learning
Chair: Prof Ahmed Samet

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 9

PROSE Paper No	Paper Title / Authors
k21gen-102	An Enhanced Randomly Initialized Convolutional Neural Network for Columnar Cactus Recognition in Unmanned Aerial Vehicle imagery Ms. Safa Ben Atitallah, Dr. Nesrine Atitallah, Prof. Henda Ben Ghézala, Prof. Wadii Boulila, Dr. Maha Driss, Prof. Anis Koubaa
k21gen-114	A Deep Learning Approach to Subject Identification Based on Walking Patterns Drd Cezara Benegui
k21gen-122	Convolution Neural Network Recognition of Epileptic Foci Based on Composite Signal Processing of Electroencephalograph Data.pdf Master Student Mo Xia, Professor Jianting Cao, Doctor Student Linfeng Sui, Professor Toshihisa Tanaka, Teaching Assistant Xuyang Zhao
k21gen-131	GC and Other Methods for Full and Partial Context Coverage Phd Ants Torim, Professor Sadok Ben Yahia, Msc Kristo Raun
k21gen-144	Arabic Text Documents Recommendation Using Joint Deep Representations Learning Mrs Ons Meddeb, Mr. Mohsen Maraoui, Prof. Mounir Zrigui
k21gen-147	Swapping Face Images with Generative Neural Networks for Deepfake Technology -- Experimental Study Ph.d., D.sc. Andrzej Rusiecki, Mr. Michal Zendran

G01-F: Machine Learning, Artificial Neural Networks and Deep Learning
Chair: Prof Ahmed Samet

Thursday 9 Sept: 14:50 - 17:00 CET
Room 9

PROSE Paper No	Paper Title / Authors
k21gen-150	Prediction Sentiment Polarity Using Past Textual Content and CNN-LSTM Neural Networks Mr Yassin Belhareth, Mrs Chiraz Latiri
k21gen-159	GA-PPI-Net Approach vs Analytical Approaches for CommunityDetection in PPI Networks Mrs Marwa Ben M'barek, Mrs Sana Ben Hmida, Mrs Amel Borgi, Mrs Marta Rukoz
k21gen-167	Student Behavior Recognition in Classroom using Deep Transfer Learning with VGG-16 Phd Student Taoufik Ben Abdallah, Phd Student Islam Elleuch, Phd Radhouane Guermazi
k21gen-169	Improved Algorithm for the Network Alignment Problem with Application to Binary Diffing M. Mengin Elie, M. Rossi Fabrice
k21gen-172	Attention-based network for effective action recognition from multi-view video Ms Thi-oanh Nguyen, Mr Hoang-thuyen Nguyen
k21gen-182	Thyroid Disease Treatment prediction with machine learning approaches Professor Lerina Aversano, Professor Mario Luca Bernardi, Professor Marta Cimitile, Phd Student Martina Iammarino, Professor Paolo Emidio Macchia, Student Chiara Verdone

G01-G: Machine Learning, Artificial Neural Networks and Deep Learning
Chair: Prof Ahmed Samet

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 9

PROSE Paper No	Paper Title / Authors
k21gen-109	DeePSat: A deep learning model for prediction of satellite images for nowcasting purposes Phd Vlad-sebastian Ionescu, Phd Gabriela Czibula, Mr Eugen Mihulet
k21gen-202	Multi-task Sequence Classification for Disjoint Tasks inLow-resource Languages None Jarema Radom, Dr Jan Kocon
k21gen-203	Comparing HMAX and BoVW Models for Large-Scale Image Classification Dr Jalila Filali
k21gen-217	Spatial Role Labeling based on Improved Pre-trained Word Embeddings and Transfer Learning Mr. Alaeddine Moussa, Pr. Bernard Espinasse, Pr. Sami Faiz, Mr. Sebastien Fournier, Ms. Khaoula Mahmoudi
k21gen-232	Comparison of Deep Neural Network-based Models for Estimating Distributed Representations of Compound Words Mr. An Dao, Dr. Ryutaro Ichise, Dr. Natthawut Kertkeidkachorn

G01-H: Machine Learning, Artificial Neural Networks and Deep Learning
Chair: Prof Ahmed Samet

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 9

PROSE Paper No	Paper Title / Authors
k21gen-214	Estimating the Number of Latent Topics Through a Combination of Methods Ph.d. Student Asana Neishabouri, Professor Michel Desmarais
k21gen-219	Graph pattern mining on top of a domain ontology: Preliminary results from a dairy production application Mr Tomas Martin, Mr Mounir Boukadoum, Mr Aboulaye Baniré Diallo, Mr Victor Fuentes, Mr René Lacroix, Mr Petko Valtchev
k21gen-231	Fact-checking: relevance assessment of references in the Polish political domain Inz. Albert Sawczyn, Mgr Inz. Lukasz Augustyniak, Inz. Jakub Binkowski, Inz. Denis Janiak, Prof. Tomasz Kajdanowicz
k21gen-233	Deep Neural Networks for Melanoma Detection from Optical Standard Images using Transfer Learning Dr Wiem Abbes, Pr Dorra Sellami
k21gen-236	Automated anonymization of text documents in Polish Dr Tomasz Walkowiak, Dr Marcin Oleksy, Mr Norbert Ropiak

G02-A: Knowledge Based and Expert Systems
Chair: Prof. Anne Hakansson

Wednesday 8 September 2021: 10:30 - 12:30 CET
Room 2

PROSE Paper No	Paper Title / Authors
k21gen-030	Logarithmic Least Squares criterion revisited for general matrices of pairwise comparisons Associate Professor Przemyslaw Klesk
k21gen-065	Mining Organizational Structures from Email Logs: an NLP based approach Dr Mahdi Abdelkafi, Dr Nader Mbarek
k21gen-075	A game theory-based approach to discourage fake reviews Dr Vincenzo De Angelis, Prof Francesco Buccafurri
k21gen-083	OntoRepliCov : an Ontology-Based Approach for Modeling the SARS-CoV-2 Replication Process Post-doctoral Wissame Laddada, Post-doctoral Ali Ayadi, Full Professor Claudia Frydman, Engineer India L'hote, Associate Professor Lina F. Soualmia, Professor Cecilia Zanni-merk
k21gen-084	Modeling and Querying Data in an Ontology-Based Data Access System Dr Hab. Tadeusz Pankowski
k21gen-087	Detecting Situations with Stream Reasoning on Health Data Obtained with IoT Phd Mathieu Bourgais, Phd Franco Giustozzi, Phd Laurent Vercouter

G02-B: Knowledge Based and Expert Systems
Chair: Prof. Anne Hakansson

Wednesday 8 September: 14:50 - 17:00 CET
Room 10

PROSE Paper No	Paper Title / Authors
k21gen-006	Knowledge Management Process for Air Quality Systems based on Data Warehouse Specification Mr Mohamed Saifeddine Hadj Sassi, Prof Sadok Ben Yahia, Prof Lamia Chaari Fourati, Prof Manel Zekri
k21gen-007	Text Detection and Recognition using Augmented Reality and Deep Learning Phd.student Imene Ouali, Prof mohamed benhlima, Prof ali wali
k21gen-014	Arabic factoid Question-Answering system for Islamic sciences using normalized corpora Ph.d student Hajer Maraoui, Professor Kais Haddar, Professor Laurent Romary
k21gen-016	Conditional dependencies in imprecise data handling Associate Prof. Wlodzimierz Filipowicz
k21gen-038	Interventions Recommendation System for Preventing future Falls in Older Adults Mrs Salma Chaieb, Dr Ali Ben Mrad, Dr Brahim Hnich
k21gen-042	Core-Concept-Seeded LDA for Ontology Learning Master Hao Huang, Full Professor Fabrice Guillet, Associate Professor Mounira Harzallah, Doctor Ziwei Xu

G02-C: Knowledge Based and Expert Systems
Chair: Prof. Anne Hakansson

Thursday 9 September: 10:30 - 12:30 CET
Room 10

PROSE Paper No	Paper Title / Authors
k21gen-101	A Platform and Algorithms for Interoperability Between Clinical Coding Systems Dr Damir Juric, Dr David Geleta, Dr Gregory Mckay, Dr Giorgos Stoilos
k21gen-120	Leveraging commonsense reasoning towards a smarter Smart Home Ms. Ana Rubio Ruiz, Mr. Rubén Cantarero Navarro, Mr. Javier Dorado Chaparro, Mr. Juan Carlos López López, Ms. María José Santofimia Romero, Mr. David Villa Alises
k21gen-124	Extending R2RML-F to support dynamic datatype and language tags Ms Aparna Nayak, Dr Bojan Bozic, Dr Luca Longo
k21gen-126	A Memetic Algorithm for Concurrent Project Scheduling, Materials Ordering and Suppliers Selection Problem Mr. Md. Asadujjaman, Dr. Ripon K. Chakrabortty, Dr. Humyun Fuad Rahman, Dr. Michael J. Ryan
k21gen-130	Analysing State-based Models for AI Problems Phd Ionut Cristian Pistol, Phd Andrei Arusoaie
k21gen-141	Towards Use of OntoClean for Ontology Contextualization Dr Wojciech Waloszek

G02-D: Knowledge Based and Expert Systems
Chair: Prof. Anne Hakansson

Thursday 9 September: 14:50 - 17:00 CET
Room 10

PROSE Paper No	Paper Title / Authors
k21gen-151	Using Process Mining for Learning Resource Recommendation: A Moodle Case Study Phd Student Wiem Hachicha, Professor Ikram Amous, Associate Professor Ronan Champagnat, Doctor Leila Ghorbel, Associate Professor Corinne Amel Zayani
k21gen-155	Towards Accessibility in Education through Smart Speakers. An ontology based approach Phd Student Ioana Todericiu, Professor Phd. Laura Diosan, Lecturer Phd. Camelia Serban
k21gen-180	Overview of GFO 2.0 Functions: An ontology module for representing teleological knowledge Dr. Patryk Burek, Prof. Dr. Hab. Heinrich Herre, Dr. Frank Loebe
k21gen-187	Evaluation of Data Integration Plans based on Graph Data Dr. Ana-maria Ghiran, Dr. Robert Andrei Buchmann, Msc Diana Anca Vasiliev
k21gen-195	Throughput-based Service Composition Mr. Alexandru Oloieri, Mr. Paul Diac
k21gen-199	HyRa: An Effective Hybrid Ranking Model Mrs. Sameh Neji, Prof. Leila Ben Ayed, Dr. Tarek Chenaina, Dr. Abdullah Shoeb

G02-E: Knowledge Based and Expert Systems
Chair: Prof. Anne Hakansson

Friday 10 September: 10:30 - 12:30 CET
Room 10

PROSE Paper No	Paper Title / Authors
k21gen-200	Recommenders in improving students engagement in large scale open learning Doctoral Student Marwa Harrathi, Professor Rafik Braham
k21gen-210	Probabilistic causal model for the detection of obsolete personal information to prevent falls in the elderly Mrs Salma Chaieb, Dr Ali Ben Mrad, Pr Brahim Hnich
k21gen-211	A new Query Reformulation Approach using Web Result Clustering and User Profile Mr Abd El Heq Silem, Pr Faouzi Moussa, Dr Hajer Taktak
k21gen-215	Inferring the Number and Order of Embedded Topics Across Documents Ph.d. Student Asana Neishabouri, Professor Michel Desmarais
k21gen-216	Towards a Semantic Knowledge Base for Competency-based Training of Airline Pilots Mr. Ruben Dapica, Ph.d. Federico Peinado

G03-A: Intelligent Information and Engineering Systems
Chair: Prof Ron Hartung

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 3

PROSE Paper No	Paper Title / Authors
k21gen-011	Using the MGB-2 challenge data for creating a new multimodal Dataset for speaker role recognition in Arabic TV Broadcasts Phd Student Mohamed Lazhar Bellagha, Full Professor Mounir Zrigui
k21gen-022	Embedding Rasa in edge Devices: Capabilities and Limitations PhD Student Nikolaos Malamas, Asst. Prof. Andreas Symeonidis
k21gen-031	A Tool to Explore the Population of a CIDOC-CRM Ontology Bsc. Davide Varagnolo, Dr. Dora Melo, Dr. Irene Rodrigues
k21gen-061	Mammography Lesion Detection Using an Improved GrowCut Algorithm Ms. Cristiana Moroz-Dubenco, Prof. Anca Andreica, Prof. Laura Diosan
k21gen-063	Reversible Data Hiding Scheme for Images Using Gray Code Pixel Value Optimization Dsc. Phd. Eng. Jerzy Pejas, Msc. Eng. Lukasz Cierocki
k21gen-047	Towards a terminology for a fully contextualized XAI Mr Matthieu Bellucci, Doctor Nicolas Delestre, Doctor Nicolas Malandain, Professor Cecilia Zanni-merk

G03-B: Intelligent Information and Engineering Systems
Chair: Prof Ron Hartung

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 3

PROSE Paper No	Paper Title / Authors
k21gen-077	Reliability assessment of CubeSat nanosatellites flight software by high-order Markov chains Dr Vitaliy Yakovyna, - Ivan Symets
k21gen-107	An algorithm for modeling an environment and creating a semantic model of its topology Mr Daniel Figurowski, Dr Pawel Dworak
k21gen-110	Towards feature selection for digital mammogram classification Ms. Adél Bajcsi, Prof, Anca Andreica, Prof. Camelia Chira
k21gen-127	Romanian Lexical Resources Interconnection Phd Student Scutelnicu Liviu Andrei
k21gen-135	An objective evaluation of the effects of recording conditions and speaker characteristics in multi-speaker deep neural speech synthesis Ms Beáta Lorincz, Prof Mircea Giurgiu, Phd Adriana Stan
k21gen-190	WebT-IDC : A Web Tool for Intelligent Dataset Creation. A Use Case for Forums and Blogs Ms. Maroua Boudabous, Asst. Prof Anna Pappa

G03-C: Intelligent Information and Engineering Systems
Chair: Prof Ron Hartung

Thrusday 9 Sept: 10:30 - 12:30 CET
Room 12

PROSE Paper No	Paper Title / Authors
k21gen-069	Tweet Contextualization Approach Using a Semantic Query Expansion Phd Amira Dhokar, Professor Lotfi Ben Romdhane, Phd Lobna Hlaoua
k21gen-071	Fixing nondeterminism in large discrete-event knowledge Prof. Gianfranco Lamperti, Ing. Michele Dusi
k21gen-117	Chest X-Ray Image Preprocessing for Disease Classification Dr. Iren Valova, Mr. Guy Caseneuve, Mr. Nathan Leblanc, Ms. Melanie Thibodeau
k21gen-121	Binary Giza Pyramids Construction For Feature Selection Phd Student Maha Nssibi, Professor Ouajdi Korbaa, Assistant Professor Ghaith Manita
k21gen-123	A Modified Jellyfish Search Optimizer With Orthogonal Learning Strategy Dr Ghaith Manita, Dr Aymen Zermani
k21gen-115	Honey sources: neural network approach to bee species classification Dr. Iren Valova, Mr. Ojonukpemi Ameh, Mr. Jacob Bader, Mr. Douglas Bell, Mr. William Kelley

G03-D: Intelligent Information and Engineering Systems
Chair: Prof Ron Hartung

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 12

PROSE Paper No	Paper Title / Authors
k21gen-036	Extended intelligent Su-Field analysis based on fuzzy inference Dr. Wei Yan, Prof. Denis Cavallucci, Prof. Jihua Wang, Prof. Cecilia Zanni-merk, Dr. Liang Zhang
k21gen-041	Prediction Algorithm of Characteristic K-Line charts based on Multi Factor Attention LSTM Dr Jianming Li, Dr Xiangpei Hu, Mr Rui Zhang
k21gen-049	Quantitative Modalities, Possible Applications to Information Analysis Professor Vladimir Rybakov
k21gen-053	Keypoint Selection Algorithm for Palmprint Recognition with SURF Dr. Anca Ignat, Mr. Ioan Pavaloi
k21gen-064	Indicator Weighted Based Multi-Objective Approach using Self-Adaptive Neighborhood Operator Phd Imen Ben Mansour, Phd Ines Alaya, Prof Moncef Tagina
k21gen-067	Edge-based Active Contours for Microarray Spot Segmentation Phd Bogdan Belean, Phd Student Carmen Costea, Phd Bogdan Gavrea, Phd Mihaela Streza

G03-E: Intelligent Information and Engineering Systems
Chair: Prof Ron Hartung

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 12

PROSE Paper No	Paper Title / Authors
k21gen-143	Verification of Usefulness of Student Modeling with Real Educational Data using Convex Factorization Machines Dr. Shinichi Oeda, Mr. Daiki Shimizu
k21gen-146	Secure architecture for Cloud/Fog computing based on firewalls and controllers Doctor Ferdaous Kamoun-abid, Doctor Amel Meddeb-makhloufc, Doctor Malek Rekik, Professor Faouzi Zarai
k21gen-156	REDUCE: a semi-supervised scalable approach for REsult DUplication detection in Search Engines Dr. Hussein Hazimeh, Prof. Omar Abou Khaled, Ms Zahraa Chreim, Dr. Hasan Harb, Prof. Elena Mugellini, Mr Ali Noureldine
k21gen-160	BiMPeR: A Novel Bi-Model Person Re-identification Method based on the Appearance and the Gait Features Phd Doctor Mayssa Frikha, Phd Doctor Imen Chtourou, Professor Emna Fendri, Professor Mohamed Hammami
k21gen-177	New approach to the chunk recoginition in Polish Phd Marcin Oleksy, M.sc. Eng. Wiktor Walentynowicz, Phd Jan Wieczorek
k21gen-178	Cybersecurity Ontology for Dynamic Analysis of IT Systems Dr. Patryk Burek, Prof. Dr. Hab. Bogdan Ksiezopolski, Msc Jakub Pastuszuk

G03-F: Intelligent Information and Engineering Systems
Chair: Prof Ron Hartung

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 12

PROSE Paper No	Paper Title / Authors
k21gen-137	Generating multi depot vehicle scheduling problems with known optimal tours Dr. Cristian Frasinaru, Dr. Emanuel Florentin Olariu
k21gen-193	Literary Genre Recognition among Polish Blog Posts Prof. Maciej Piasecki, Msc Tomasz Naskret, Msc Edyta Rogula
k21gen-204	ORVIPO: An Ontological Prototype for Modeling 3D Scenes in Operating Rooms Phd Student Rim Messaoudi, Doctor Jonathan Courbon, Doctor Faouzi Jaziri, Phd Student Rim Messaoudi, Doctor Achraf Mtibaa, Doctor Antoine Vacavant
k21gen-206	Pseudo-labeling with transformers for improving Question Answering systems Dr. Karolina Kuligowska, Mr. Bartlomiej Kowalczuk
k21gen-222	SemLinkWS: Collaboration Social Network of Web Services to Aid Service Discovery Ph.d Amal Hafsi
k21gen-229	An adaptable human fatigue evaluation system Ms. Egle Butkeviciute, Assoc. Prof. Dr. Liepa Bikulciene, Mr. Erins Matiss

G04-A: Industry Applications
Chair: Dr. Carlos Toro

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 4

PROSE Paper No	Paper Title / Authors
k21gen-026	Collaboration and knowledge exchange possibilities between industry and construction 4.0 research Miss Pia Schönbeck, Professor Anders Ansell, Phd Malin Löfsjögård
k21gen-104	Cascade Optimisation of Battery Electric Vehicle Powertrains Mr Matheus Torquato, Dr Fawzi Belblidia, Ms Kayalvizhi Lakshmanan, Ms Natalia Narozanska, Mr Ryan Potter, Mr Alexander Williams
k21gen-148	Fault detection of jet engine heat sensor B.eng Malgorzata Wachulec, Phd Marcin Luckner
k21gen-161	SODA: A Real-time Simulation Framework for Object Detection and Analysis in Smart Manufacturing Mr Piotr Lasek
k21gen-166	Question Answering Chatbot for Troubleshooting Queries based on Transfer Learning Mr. Zeeshan Haque Syed, Mr. Vincent Bailleau, Mr. Emmanuel Helbert, Mr. Christian Muths, Dr. Asma Trabelsi
k21gen-194	A New Blockchain-Based trust management model Phd Student Mariam Masmoudi, Professor Ikram Amous, Professor Florence Sèdes, Dr Corinne Amel Zayani

G04-B: Industry Applications

Chair: Dr. Carlos Toro

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 11

PROSE Paper No	Paper Title / Authors
k21gen-136	Knowledge-Based Management of Virtual Training Scenarios Phd Jakub Flotynski, M.a. Adam Galazkiewicz, M.a. Pawel Sobocinski, Prof. Krzysztof Walczak
k21gen-152	Evaluation of a deterministic real-time path planning algorithm for autonomous ships using radar data Dr. Agnieszka Lazarowska
k21gen-154	Anomaly detection for sensor data of semiconductor manufacturing equipment using a GAN Ms. Miki Hashimoto, Ph.d. Masayoshi Aritsugi, Mr. Yusuke Ide
k21gen-164	Multiple Response Optimization of Abrasive Water Jet Cutting Process using Response Surface Methodology (RSM) Dr. Andrzej Perec
k21gen-173	Train delay prediction in Tunisian railway through LightGBM model Phd Student Laifa Hassiba, Professor Ben Ghezalaaa Henda Hajjami, Doctor Khcherif Raoudha
k21gen-174	Contributions for risk assessment of IoT-aware business processes at different granularity levels Dr. Ana Respicio, Msc. Pedro Cardoso, Dr. Dulce Domingos

G04-C: Industry Applications
Chair: Dr. Carlos Toro

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 11

PROSE Paper No	Paper Title / Authors
k21gen-040	Model Predictive Temperature and Humidity Control of Greenhouse with Ventilation Prof. Kazuhisa Ito, B.e. Tsubasa Tabei
k21gen-060	Using Deep Autoencoders for In-vehicle Audio Anomaly Detection Mr. Pedro Pereira, Mr. Gabriel Coelho, Assoc. Prof. Paulo Cortez, Dr. André Ferreira, Mr. Luís Matos, Mr. André Pilastri
k21gen-082	Automatic tarmac crack identification application Ph.d Lucia-georgiana Coca, Ph.d Ciprian-gabriel Cusmuliuc, Prof. Adrian Iftene
k21gen-097	MAU-Net: Multiple Attention 3D U-Net for Lung Cancer Segmentation on CT Images Dr. Wei Chen, Prof. Xu Qiao, Prof. Xin Xu, Dr. Fengchang Yang, Ms. Xianru Zhang
k21gen-198	Stress detection and monitoring based on low-cost mobile thermography M.Sc.Eng. Katarzyna Baran

T01-A: Knowledge-Based Decision Making
Chair: Prof. Jaroslaw Watrobski

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 10

PROSE Paper No	Paper Title / Authors
k21gen-184	Learning Analytics to Identify the Socio-Affective Scenarios in a Virtual Learning Environment Master Jacqueline Akazaki, Doctor Patricia Alejandra Behar, Doctor Leticia Machado
k21gen-226	Standard vs. non-standard cross-validation: evaluation of performance in a space with structured distribution of datapoints Dr Urszula Stanczyk, Dr Grzegorz Baron
k21gen-227	Weighting factor for attributes based on reduct cardinality Dr Urszula Stanczyk,
k21gen-228	Modeling Inconsistent Data for Reasoners in Web of Things Dr. Jose Miguel Blanco, Prof. Mouzhi Ge, Prof. Tomas Pitner
k21gen-235	Are the results of MCDA methods reliable? Selection of materials for Thermal Energy Storage Mr. Bartosz Paradowski, Phd Wojciech Salabun
k21gen-240	Towards Sustainable Energy Consumption Evaluation in Europe for Industrial Sector Based on MCDA Methods Phd Student Aleksandra Baczkiewicz, Mr. Bartlomiej Kizielewicz
k21gen-244	Towards proper consumer choices - MCDM based product selection Student Bartosz Paradowski, Phd Student Aleksandra Baczkiewicz, Prof. Jaroslaw Watrobski

T01-B: Knowledge-Based Decision Making
Chair: Prof. Jaroslaw Watrobski

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 2

PROSE Paper No	Paper Title / Authors
k21gen-004	Cybersecurity and Sustainable Development dr inz. Adam Sulich, mgr Jaroslaw Jezierski, mgr Agnieszka Krawczyk-Jezierska, dr hab. inz. Malgorzata Rutkowska, inz. Tomasz Zema
k21gen-021	An Approximated Shapley Value for Partially Defined Cooperative Games Dr. Satoshi Masuya
k21gen-051	Multi-criteria analysis of urban policy for sustainable development decision-making: A case study for Warsaw city, Poland Dr. Paulina Stachura, Dr. Karolina Kuligowska
k21gen-068	How to determine complex MCDM model in the COMET method? Automotive sport measurement case study Mr Jakub Wieckowski, Prof Jaroslaw Watrobski
k21gen-093	Universal algebraic solution of the interval linear system: AX + BX = Y Phd. Eng. Marcin Plucinski, Prof. Andrzej Piegat
k21gen-094	Application of the multidimensional RDM-arithmetic for verification of nestedness of the solution of the linear fuzzy equation system Phd. Eng. Marcin Plucinski, Prof. Andrzej Piegat
k21gen-105	A fuzzy approach for sarcasm detection in social networks Ph.d. Student Amina Ben Meriem, Professor Lotfi Ben Romdhane, Ph.d. Lobna Hlaoua

Presentation Schedule – Invited Sessions

WS01-A: 4th Symposium on Information Systems and Technologies for Management, and Economy
Chair: Artur Karczmarczyk

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 11

PROSE Paper No	Paper Title / Authors
k21is-051	iPhone 11 premium mobile device offers on e-commerce auction platform in the context of Marketing Mix framework and COVID-19 pandemic Ph.D. Dariusz Grabara
k21is-066	ICT as a tool for gaining and sharing knowledge Dr. Monika Eisenbardt
k21is-193	Piloting Industry 4.0 in SMEs with RAMI 4.0: an enterprise architecture approach Mr Luís Baptista, Dr João Barata
k21is-265	Dataset shift assessment measures in monitoring predictive models Phd Aneta Becker, prof. AJP, dr hab. Jaroslaw Becker
k21is-350	The use of IT systems in financial and accounting services for enterprises in the conditions of the COVID-19 pandemic Phd Magdalena Wiercioch, Prof., Phd Halina Buk
k21is-392	Determinants of microentrepreneurs' decision to start work on their own ERP software for the SME sector Dr Dariusz Zoltowski

WS01-B: 4th Symposium on Information Systems and Technologies for Management, and Economy
Chair: Artur Karczmarczyk

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 11

PROSE Paper No	Paper Title / Authors
k21is-034	Revenue recognition in achieving consensus on analysts' forecasts for revenue, operating income and net earnings: the role of implementing IFRS 15. Evidence from Poland Professor Andrzej Piosik
k21is-041	An experimental study of the effect of AIS automation and customization on project recommendation decision M.sc. Maciej Tuszkiewicz, M.sc. Olga Grzybek, Post Ph.d., D.sc. Ewa Wanda Maruszewska
k21is-125	Sustainability Driven by ICT Adoption within Households, Enterprises, and Government Units Prof. Ewa Ziemba
k21is-130	Expectations for the use of Intelligent Transport Systems applications in the management of freight transport enterprises Eng. Ph.d. Marta Kadlubek
k21is-154	Economic factors influencing the health behavior changes during COVID-19 pandemic: multiple correspondence analysis results Associate Professor Anna Saczewska-Piotrowska
k21is-191	Managing Customer Relations and Value in Organizations with the Use of IT Tools: Customer Segmentation on the Market of Eco-Innovative Services Dr hab. inz. Waldemar Jedrzejczyk

WS01-C: 4th Symposium on Information Systems and Technologies for Management, and Economy
Chair: Artur Karczmarczyk

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 1

PROSE Paper No	Paper Title / Authors
k21is-002	Smartphone and Mobile Applications Usage. Comparison Poland-Turkey Professor Witold Chmielarz, Professor Mesut Atasever, Doctor Alicja Fandrejewska, Doctor Marek Zborowski
k21is-072	Algorithms effectiveness comparison in solving Nonogram boards. Mr Jakub Wieckowski, Mr Andrii Shekhovtsov
k21is-160	Simulations of the relationship between the experience level of e-commerce customers and the adopted variables - implications for management in the area of online shopping Phd Paula Bajdor
k21is-161	The use of information systems to support the management of reverse logistics processes Prof Marta Starostka-patyk
k21is-354	A fuzzy assessment model for freestyle swimmers - a comparative analysis of the MCDA methods Mr. Jakub Wieckowski, Phd Larisa Dobryakova
k21is-370	A new multi-criteria model for ranking chess players Student Aleksandra Kaczynska, Phd Joanna Kolodziejczyk, Phd Wojciech Salabun

WS01-D: 4th Symposium on Information Systems and Technologies for Management, and Economy
Chair: Artur Karczmarczyk

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 1

PROSE Paper No	Paper Title / Authors
k21is-397	Towards objective multi-criteria drone evaluation based on VIKOR and COMET methods Mr. Kozlov Volodymyr, Phd Tomasz Norek
k21is-406	How strongly do rank similarity coefficients differ used in decision making problems? Mr. Andrii Shekhovtsov
k21is-418	Particle Swarm Optimization and Levy Flight integration Phd Joanna Kolodziejczyk, Student Yuliia Tarasenko
k21is-420	Areas of Integration of GIS Technology and Smart City Tools. Research findings Dr Tomasz Turek, Dr Cezary Stepniak
k21is-428	Customer segmentation based on activity monitoring applications for the recommendation system Ms Ilona Paweloszek
k21is-450	Challenges in reliable solar panel selection using MCDA methods Student Volodymyr Kozlov, Phd Wojciech Salabun

WS01-E: 4th Symposium on Information Systems and Technologies for Management, and Economy
Chair: Artur Karczmarczyk

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 1

PROSE Paper No	Paper Title / Authors
k21is-456	Comparison of MCDA methods based on distance to reference objects - a simple study case Student Mykhailo Yelmikheiev, Phd Tomasz Norek
k21is-463	The impact of Internet on marketing activity in R&D departments in Poland Prof. Katarzyna Szopik-depczynska, Prof. Katarzyna Cheba
k21is-468	Study on objectivity of mobile phone preferences: the MCDA analysis Phd Student Aleksandra Baczkiewicz, Student Aleksandra Kaczynska, Prof Jaroslaw Watrobski
k21is-469	Application of MDCM model for sustainable supplier selection - steel industry enterprise case study Msc, MBA Radoslaw Depczynski
k21is-478	Towards VES Function for Creating a Sustainable Method for Evaluating e-Banking Websites Quality Prof Witold Chmielarz, Dr Marek Zborowski
k21is-479	Video games as digital entertainment during the lockdown among Polish students Phd Oskar Szumski

WS01-F: 4th Symposium on Information Systems and Technologies for Management, and Economy
Chair: Artur Karczmarczyk

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 10

PROSE Paper No	Paper Title / Authors
k21is-408	Comparison of Fuzzy TOPSIS, Fuzzy VIKOR, Fuzzy WASPAS and Fuzzy MMOORA methods in the housing selection problem Mr. Bartlomiej Kizielewicz, Phd Student Aleksandra Baczkiewicz
k21is-409	Can weighting methods provide similar results in MCDA problems? Selection of energetic materials study case Mr. Jakub Wieckowski, Phd Dsc Patrycja Zwiech
k21is-416	Factors important for the selection of goods and services on the Internet in the opinion of students of the management faculties - current status and dynamics Ph.D. Jacek Wachowicz
k21is-435	Analysis of factors of software development effort and productivity Dr. Lukasz Radlinski
k21is-458	MCDM based e-commerce consumer decision support tool Phd Student Aleksandra Baczkiewicz

WS01-G: 4th Symposium on Information Systems and Technologies for Management, and Economy
Chair: Prof. Ewa Ziemba

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 11

PROSE Paper No	Paper Title / Authors
k21is-417	Perception of Justice in Performance Appraisal: Empirical Findings from Enterprises from the West Pomeranian Voivodeship in Poland Phd Dsc Patrycja Zwiech
k21is-419	Benefits of and Obstacles to RPA Implementation in Accounting Firms Phd. Associate Prof. Arkadiusz Januszewski, Msc Natalia Buchalska-sugajska, Phd Jaroslaw Kujawski
k21is-423	Developing e-business competencies among business students - research and opportunities Phd Kinga Krupcala
k21is-424	The benefits of connected vehicles within organizations Ph. D. Anna Karmanska
k21is-473	Improving User Attention to Chatbots through a Controlled Intensity of Changes within the Interface Master Of Science Kamil Bortko, Student Kacper Fornalczyk, Professor Jaroslaw Jankowski

WS02-A: An International Robust Artificial Intelligence Workshop (RAW)
Chair: Dr. Aya Saad

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 1

PROSE Paper No	Paper Title / Authors
k21is-331	Dynamic path finding method and obstacle avoidance for automated guided vehicle navigation in Industry 4.0 Mr. Yigit Can Dundar
k21is-332	Integrating Experience-Based Knowledge Representation and Machine Learning for Efficient Virtual Engineering Object Performance Dr Syed Shafiq, Dr Cesar Sanin, Prof Edward Szczebicki
k21is-334	Robust reasoning for autonomous cyber-physical systems in dynamic environments Dr. Aya Saad, Mr Akhil Anand, Ms Vilde Gjarum, Prof Anne Håkansson, Mr Haakon Robinson, Ms Katrine Seel
k21is-336	Safe Learning for Control using Control Lyapunov Functions and Control Barrier Functions: A Review Phd Katrine Seel, Phd Akhil Anand, Phd Vilde Gjærum, Professor Anne Håkansson, Phd Haakon Robinson, Postdoc Aya Saad
k21is-345	Robustness of Sparse Neural Networks Mr. Mehdi Ben Amor, Prof. Dr. Michael Granitzer, Mr. Julian Stier

WS02-B: An International Robust Artificial Intelligence Workshop (RAW)
Chair: Dr. Aya Saad

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 17

10:30 - 11:30 CET

Model-Based Optimal Control and Reinforcement Learning: a Path to Safe Data-Based Policies?

Professor Sebastien Gros

Abstract: Reinforcement Learning and MPC have natural connections that we will explore in this talk. We will discuss a recent, fundamental result in learning-based MPC, which formally explains how RL and MPC can be combine, and clarifies the role of the (inaccurate) model in MPC. One of the key motivations for using MPC in the context of Reinforcement Learning is the possibility to introduce formalism and guarantees on the behavior of the resulting policy. In particular, stability and safety guarantees can be formally discussed in the context of MPC-based RL. We will discuss recent results on that topic.

Bio: Sebastien Gros got his PhD degree from EPFL in 2008 in the field of control and optimization. After a journey by bicycle from Lausanne to the Everest base camp, he worked for a short while in the energy industry before returning to academia as a post-doc in KU Leuven, in the field of numerical optimization. In 2013, he joined Chalmers University of Technology in Sweden as an assistant Prof., where he was promoted to associate. He joined NTNU in 2019 as a full Prof. He is currently leading a research group working on the combination of formal optimal control methods with Reinforcement Learning methods.

11:30 - 12:30 CET

Role of case-based reasoning for explainable AI

Prof Nirmalie Wiratunga

Abstract: A right to obtain an explanation of the decision reached by a machine learning model is now an EU regulation. Different stakeholders may have different background knowledge, competencies and goals, thus requiring different kinds of interpretations and explanations. In this talk I will present an overview of explainable AI (XAI) methods with particular focus on the role of case-based reasoning (CBR) for XAI. Specifically, we will look at recent work in post-hoc exemplar-based explanations that use CBR for factual, near-factual and counterfactual explanations.

An alternative role of CBR involves reasoning with end-users' explanation experiences to enable the sharing and reusing of experiences by users for users.

Here I will present our initial work towards creating the iSee XAI experience reuse platform (https://isee4xai.com/) where our aim is to capture and reuse explanation experiences.

Bio: Nirmalie Wiratunga is a research professor at RGU's School of Computing, with over 20 years' experience in computer science and Artificial Intelligence (AI) research and education. She is also adjunct IDUN professor at the Norwegian University of Science and Technology, and best known for her work on case-based reasoning for **personalised** decision support systems. Her recent work funded through EU's Horizon2020 and ERA-NET schemes explores learning with **few-data** and **explainable** AI for neural computation models. She serves on numerous AI programme committees and has senior and advisory roles on the international joint conference on AI and International conference on CBR respectively.

IS02: *Networks for Innovation, Knowledge Creation and Sharing*
Chair: Prof. Dr. Hironori Takeuchi

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 12

PROSE Paper No	Paper Title / Authors
k21is-030	Proposal of an Evaluation Method of Individual Contributions using the Function Points in the Implementation Phase in Project-Based Learning of Software Development Prof. Atsuo Hazeyama, Mr. Kiichi Furukawa, Mr. Koyo Tanabata, Mr. Yuki Yamada
k21is-038	Assessment Method for Identifying Business Activities to be Replaced by AI Technologies Prof. Hironori Takeuchi, Ms. Azuki Ichitsuka, Mr. Taketo Iino, Mr. Shoki Ishikawa, Mr. Saito Keito
k21is-042	Tools for logging and analyzing goal dependency modeling Prof. Kaiya Haruhiko, Mr Hayashi Kouta, Ms Sato Yu
k21is-043	Proposal of Extracting State Variables and Values from Requirement Specifications in Japanese by using Dependency Analysis Mr. Masanosuke Ohto, Mr. Hiroya Ii, Prof. Shinpei Ogata, Prof. Kozo Okano
k21is-062	A Research Creation Model Professor Shuichiro Yamamoto
k21is-064	An EA Application Approach using Business Modularization for Management to Understand DX Prof. Yuko Tahara, Dr. Shuichiro Yamamoto

IS03: Knowledge Engineering in Large-Scale Systems
Chair: Prof. Dr. Sergey V. Zykov

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 4

PROSE Paper No	Paper Title / Authors
k21is-120	Process-oriented Knowledge Representation of the Requirement Management Phase of TOGAF-ADM: an Empirical Evaluation Doctor Elena Kornyshova, Professor Judith Barrios
k21is-405	Exploring the Eolang-Java Integration and Interoperability Professor Hadi Saleh, M.sc Joseph Attakorah, Professor Alexander Legalov, Professor Sergey Zykov
k21is-443	Validating new method for counting cohesion in object-oriented projects Mr Sergey Zykov, Mr Dmitry Alexandrov, Mr Maqsudjon Ismoilov, Mr Artem Kozlov, Mr Anton Savachenko

IS04-A: Knowledge-Based Systems for e-Business
Chair: Prof. Kazuhiko Tsuda

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 5

PROSE Paper No	Paper Title / Authors
k21is-008	Factors of loyalty across corporate brand images, products, dealers, sales staff, and after-sales services in the automotive industry Dr. Takumi Kato
k21is-026	Redundancies as a factor in positive evaluations by call center customers Ms. Kiyoko Yoshimura, Assoc. Professor Yasunobu Kino, Professor Kazuhiko Tsuda
k21is-047	A Study of a Method to Understand the Intention of Taste Expressions of Sake through Text Mining Ph.d. Student Shinichi Tachibana, Prof. Kazuhiko Tsuda
k21is-050	Analysis of recognition of inter-organizational conflict and actions to address it using dependency expressions Mr. Hidekazu Kondo, Mr. Yasunobu Kino, Mr. Kazuhiko Tsuda
k21is-052	Study on the Relationship Between Employee Satisfaction and Corporate Performance in Japan by Text Mining Ms. Eri Uchida, Dr. Yasunobu Kino

IS04-B: Knowledge-Based Systems for e-Business
Chair: Prof. Kazuhiko Tsuda

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 15

PROSE Paper No	Paper Title / Authors
k21is-106	Realization and countermeasures for current location spoofing attacks Prof. Nobuo Suzuki, Mr. Takuya Fujihata, Mr. Taiga Harada
k21is-128	A Study on the Measurement Method of Educational Ability of High School Teachers Dr. Prof. Masakazu Takahashi, Mr. Kenji Kido
k21is-135	A Method of Classification Twitter Posting Location for a Specific Space Mr. Hiroki Hara, Prof. Yoshikatsu Fujita, Dr. Tomohiko Harada, Prof. Kazuhiko Tsuda
k21is-179	Cognitive load measurement during navigation and information retrieval in digital text Ms Tatiana Ledneva, Mr Artem Kovalev
k21is-228	Knowledge learning of replacement judgment using word-of-mouth data Dr. Yuko Taniguchi, Mr. Daisuke Kobayakawa, Mr. Ryo Tanaka, Prof. Kazuhiko Tsuda

IS06-A: Global and Constrained Optimization: Algorithms and Applications
Chair: Prof. Abdellah Chehri

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 14

PROSE Paper No	Paper Title / Authors
k21is-021	Feasibility-Preserving Genetic Operators for Hybrid Algorithms using TSP solvers for the Inventory Routing Problem Dr Krzysztof Michalak
k21is-023	Evolutionary Algorithm Using Random Immigrants for the Multiobjective Travelling Salesman Problem Dr Krzysztof Michalak
k21is-150	Reconfigurable Intelligent Surfaces Supported Wireless Communications Phd Student Mohammed Saber, Professor Abdellah Chehri, Assistant Professor Yassine El Hafid, Assistant Professor Abdessamad El Rharras, P.e.s Rachid Saadane, Professor Mohammed Wahbi
k21is-151	Call Admission Control Optimization in 5G in Downlink Single-Cell MISO System Phd. Student Slalmi Ahmed, Phd Chehri Abdellah, Dr. Mehdary Adil, Dr. Chaibi Hasna, Dr. Saadane Rachid
k21is-174	Minimizing the number of robots required for a Robotic Process Automation (RPA) problem Prof. Sara Seguin, Ph.d. Imène Benklai, Student Xavier Lebeuf, Student David-emmanuel Perron-chouinard, Prof. Hugo Tremblay

IS06-B: Global and Constrained Optimization: Algorithms and Applications
Chair: Prof. Abdellah Chehri

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 14

PROSE Paper No	Paper Title / Authors
k21is-209	Smart production: features of assessing the level of personnel digital readiness Ph.d. (economics) Yana Mitrofanova, Ph.d. (pedagogy) Valentina Burenina, Ph.d. Oksana Evstafeva, Prof, Dr. Of Science Lyudmila Glukhova, Senior Teacher Tatiana Popova
k21is-213	Block Matching Algorithms for the Estimation of Motion in Image Sequences: Analysis Dr Srinivasa Rao K, Dr Paramkusam A. V., Prof Chehri Abdellah, Dr Naresh Kumar Darimireddy
k21is-402	MAC Protocols for Industrial Delay-Sensitive Applications in Industry 4.0: Exploring Challenges, Protocols, and Requirements Pr Chehri Abdellah
k21is-411	Theory and Practice of Implementing a Successful Enterprise IoT Strategy in the Industry 4.0 Era Pr Abdellah Chehri, Pr Masuda Masuda, Pr Rainer Schmidt, Pr Alfred Zimmermann
k21is-470	Hybrid Deep Learning Vision-based Models for Human Object Action Interaction Detection by Knowledge Distillation Phd Saadane Rachid, Phd Chehri Abdellah, Phd Student Moutik Oumaima, Phd Tigani Smail

IS07: Interdisciplinary Approaches in Data Science and Digital Transformation Practice

Chair: Prof. Ralf-Christian Harting

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 5

PROSE Paper No	Paper Title / Authors
k21is-110	Relevance and Adoption of AI technologies in German SMEs - Results from Survey-Based Research Prof. Dr. Patrick Ulrich, M.sc. Vanessa Frank
k21is-117	Evaluation of Grasps in an automatic Intermodal Container Unloading System Mr. Aleksei Kharitonov, Mr. Wolfgang Echelmeyer, Mr. Maximilian Hentsch, Ms. Alice Kirchheim, Mr. Johannes Seibold
k21is-122	MobileNet family tailored for Raspberry Pi Pani Aleksandra Karpus, Pan Wojciech Glegola, Pan Adam Przybylek
k21is-163	Potentials and Challenges of Emotionally Sensitive Applications in Apprenticeship M.a. Felix Häfner, Prof. Dr. Jörg Bueechl, Prof. Dr. Ralf-christian Härting
k21is-183	Influence of Digitization on Employee Satisfaction in Small and Medium-sized Enterprises Prof. Dr. Joerg Bueechl, Prof. Dr. Ralf-christian Härting, M.a. Mara Schroeder

IS08: Intelligent Information Processing for Educational Innovations
Chair: Assoc. Prof. Dr. Daocheng Hong

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 13

PROSE Paper No	Paper Title / Authors
k21is-322	Service-Oriented Data Processing for Dynamic Schema Mr. Zixin Chen, Prof. Qiwen Dong, Mr. Zeqiu Fan, Prof. Daocheng Hong, Prof. Ye Wang, Doc. Huan Zhou
k21is-323	Application of access control model for confidential data Mr. Shan Lumin, Prof. Hong Daocheng, Doc. Zhou Huan, Prof. Dong Qiwen, Mr. Song Shubing, Prof. Wang Ye
k21is-324	Design and Implementation of Scientific Research Big Data Service Platform for Experimental Data Managing Mr. Zeqiu Fan, Mr. Zixin Chen, Prof. Qiwen Dong, Prof. Daocheng Hong, Prof. Ye Wang, Doc. Huan Zhou
k21is-325	Characterizing Academic Help-seeking Moods for Enrollment Performance of Institutional Online Student Prof Daocheng Hong, GM Yang Li, Mr Hongwei Shi

IS09-A: Recent Advances in Numerical Modelling and Recognition Techniques
Chair: Prof. Margarita N. Favorskaya

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 6

PROSE Paper No	Paper Title / Authors
k21is-020	Adaptive HVS objectivity-based watermarking scheme for copyright protection Prof. Margarita Favorskaya, Dr. Andrey Pakhirka
k21is-024	Digitalization of Propositional Algebra and NPC Prof, Dr. Of Science Natalia Serdyukova, Prof, Dr. Of Science Vladimir Serdyukov
k21is-027	Semantic segmentation of multispectral satellite images for land use analysis based on embedded information Prof. Margarita Favorskaya, Dr. Alexandr Zotin
k21is-048	CaregiverMatcher: graph neural networks for connecting caregivers of rare disease patients Filippo Guerranti, Mirco Mannino, Federica Baccini, Pietro Bongini, Niccol Pancino, Anna Visibelli, Sara Marziali
k21is-088	A Deep Learning-based Surrogate for the XRF Approximation of Elemental Composition within Archaeological Artefacts before Restoration Dr. Ruxandra Stoean, Dr. Miguel Atencia, Mrs. Marinela Boicea, Mr. Leonard Ionescu, Dr. Gonzalo Joya, Dr. Catalin Stoean
k21is-214	On an adaptive algorithm for detecting echo signals reflected from low-flying objects against the background of interference in the urban environment Dr. Vadim Nenashev, Dr. Sergey Ivanov, Dr. Anton Sentsov, Prof. Mikhail Sergeev

IS09-B: Recent Advances in Numerical Modelling and Recognition Techniques
Chair: Prof. Margarita N. Favorskaya

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 16

PROSE Paper No	Paper Title / Authors
k21is-243	Ensemble causal modelling for frost forecast in vineyard Professor Liya Ding, Professor Kosuke Noborio, Mr. Yosuke Tamura
k21is-313	Calculation of the destruction of ice structures by the grid-characteristic method on structured grids Drsci Alena Favorskaya, Prof Igor Petrov
k21is-315	Accounting for curved boundaries in rocks by using curvilinear and Chimera grids Drsci Alena Favorskaya, Dr Nikolay Khokhlov
k21is-342	Models and filtering of circular images with harmonic components of the covariance function Professor Victor Krasheninnikov, Ass Professor Yuiya Kuvayskova, Miss Olga Malenova, Mr Alexey Subbotin
k21is-343	Models of images of human biological fluids facies Professor Victor Krasheninnikov, Ass Professor Marina Albutova, Miss Olga Malenova, Mr Alexey Subbotin, Professor Larisa Trubnikova

IS10: Cybercrime Investigation and Digital Forensics
Chair: Assist. Prof. Fuching Tsai

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 15

PROSE Paper No	Paper Title / Authors
k21is-001	Drone Forensic Analysis Using Relational Flight Data: A Case Study of DJI Spark and Mavic Air Instructor Chi-cheng Yang, Student Hsuan Chuang, Associate Prof. Da-yu Kao
k21is-186	The Application of Blockchain of Custody in Criminal Investigation Process Mr. Tsai Fu-ching
k21is-231	Applying Spatio-temporal analysis in telecom fraud investigation Phd Shin Chih-hung, Mr. Chen Ren-Zhi

IS11: Bioengineering Applications
Chair: Dr. Milan Simic

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 16

PROSE Paper No	Paper Title / Authors
k21is-164	EEG changes and motor deficits in Parkinson's disease patients: Correlation of motor scales and EEG power bands Dr Aleksandar Miladinovic, Prof Agostino Accardo, Dr Milos Ajcevic, Prof Piero Paolo Battaglini, Dr Pierpaolo Busan, Dr Joanna Jarmolowska
k21is-201	Modeling of glycogen resynthesis according to insulin concentration: towards a system for prevention of late-onset exercise-induced hypoglycemia in Type 1 diabetes patients Dr. Milos Ajcevic, Prof. Agostino Accardo, Prof. Maria Pia Francescato
k21is-202	Ambulatory blood pressure monitoring versus office blood pressure measurement: Are there sex differences? Dr Miladinovic Aleksandar, Prof Agostino Accardo, Dr Milos Ajcevic, Dr Laura Liguori, Dr Lorenzo Pascazio, Dr Giulia Silveri
k21is-203	Ischemic lesion volume prediction in thrombolysis treated wake-up stroke patients Dr. Milos Ajcevic, Prof. Agostino Accardo, Dr. Giovanni Furlanis, Prof. Paolo Manganotti, Dr. Aleksandar Miladinovic, Dr. Marcello Naccarato
k21is-421	Human-Computer Interaction: Influences on Autistic Users Ms Mona Alzahrani, Dr Alexandra Uitdenbogerd, Dr Maria Spichkova
k21is-438	Analysis of pharmacy drug consumption following extreme weather conditions Dr Maria Spichkova, Dr Milan Simic
k21is-454	Project-based learning within eHealth, bioengineering and biomedical engineering application areas Mr Jeffery Young, Dr Milan Simic, Dr Maria Spichkova

IS12: ICT based innovation and entrepreneurship of companies
Chair: Prof. Jaroslaw Korpysa

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 7

PROSE Paper No	Paper Title / Authors
k21is-014	Factors stimulating and destimulating the level of tourism and recreational entrepreneurship among students Phd Marta Sidorkiewicz
k21is-057	Communication networks as the basis for functioning of the Internet Assoc. Prof. Maciej Czaplewski
k21is-114	Do the innovative MNEs generate an added value in emerging economy? Evidence from Scandinavian enterprises in Poland Phd. Piotr Szklarz, Phd. Rafal; Czyzycki, Prof. Rafal Klóska, Phd. Elzbieta Ociepa-kicinska
k21is-390	New financing Methods and ICT versus Logistics Startups dr hab. Prof. US. Jaroslaw Korpysa, Phd In Economics Marcin Halicki, Prof. Andreas Uphaus
k21is-439	Evaluation of the effectiveness of state aid offered to enterprises during the COVID-19 pandemic Msc Agnieszka Lopatka, Student Karol Fedorowicz
k21is-475	Entrepreneurial competencies of women ICT start-up Msc Agnieszka Lopatka

IS13: Innovative Supportive Systems for the Smart, Healthy, and Active Ageing at Home and in Local Community Environments
Chair: Dr. Eduardo Carrasco

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 6

PROSE Paper No	Paper Title / Authors
k21is-094	Behavioral anomaly detection system for the wellbeing assessment and lifestyle support of older people at home Msc. Garazi Artola, Dr. Idoia Berges, Dr. Eduardo Carrasco, Dr. Nekane Larburu, Ms. Kristin May Rebescher
k21is-101	Cybersecurity in Active and Healthy Ageing Era Dr Maria Santofimia, Ciso Antonio Fernandes, Msc Egor Litvinov, Dr Juan Lopez, Dr Ilia Viksnin, Dr Felix Villanueva
k21is-111	A low-cost and unobtrusive system for fall detection Master Jesús Fernández-bermejo Ruiz, Master Cristina Bolaños Peño, Dr. Xavier Del Toro García, Master Javier Dorado Chaparro, Master Henry Llumiguano Solano, Dr. Juan López López
k21is-113	An open and private-by-design Active and Healthy Ageing smart home platform Msc Henry Llumiguano, Dr. Xavier Del Toro, Bsc María Espinosa, Msc Jesús Fernández-bermejo, Bsc Sergio Jiménez, Dr. Juan Carlos López
k21is-131	Design Science Research and Designing Ethical Guidelines for the SHAPES AI Developers Master's Student Minna Nevanperä, Master's Student Jaakko Helin, D.sc. (tech), Ph.d. Jyri Rajamäki
k21is-244	Optimal deployment of face recognition solutions in a heterogeneous IoT platform for secure elderly care applications Mr Unai Elordi, Ms Nerea Aranjuelo, Mr Ignacio Arganda-carreras, Mr Alvaro Bertelsen, Mr Jon Goenetxea, Mr Luis Unzueta

IS14-A: Decision support systems, forecasting, classification
Chair: Prof. Wojciech Froelich

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 7

PROSE Paper No	Paper Title / Authors
k21is-004	Rule-based Medical Treatment Graph for the Modeling of Hypo- and Hyperglycemia at Onset Prof. Wojciech Froelich, Dr Rafal; Deja, Prof. Grazyna Deja
k21is-055	Chess as Sequential Data in a Chess Match Outcome Prediction Using Deep Learning with Various Chessboard Representations Prof. Rafal Drezewski, Mr. Grzegorz Wator
k21is-068	An Approach to Determine the Features of Dental X-ray Images Based on the Fractal Dimension Dr Ireneusz Gosciniak, Prof. Krzysztof Gdawiec, Dr Monika Machoy, Prof. Krzysztof Wozniak
k21is-076	The application of selected modern artificial intelligence techniques in an exemplary strategy game Prof. Rafal Drezewski, Mr. Jakub Solawa
k21is-100	Complexity of Rule Sets Mined from Incomplete Data Using Probabilistic Approximations Based on Characteristic Sets Professor Jerzy Grzymala-busse, Phd Patrick Clark, Professor Zdzislaw Hippe, Phd Teresa Mroczek
k21is-312	Convergence properties of radial basis functions networks in function learning Professor Adam Krzyzak, Professor Heinrich Niemann
k21is-327	Diagnosing Parkinson's disease by means of ensemble classification of patients' voice samples Phd Krzysztof Wrobel

IS14-B: Decision support systems, forecasting, classification

Chair: Prof. Wojciech Froelich

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 13

PROSE Paper No	Paper Title / Authors
k21is-103	Isolated Sign Language Recognition with Depth Cameras Dr Mariusz Oszust, Mr Jakub Krupski
k21is-166	Big Data Analysis Methods Based on Machine Learning to Ensure Information Security Ms Olga Veselska, Mr Yuriy Fenenko, Ms Joanna Nikodem, Ms Ruslana Ziubina
k21is-173	Statistical Tests Independence Verification Methods Prof. Roman Kochan, Prof. Oleksandr Korchenko, Dr.. Lyudmila Kovalchuk, Dr. Nataliia Kuchynska
k21is-176	Information Security Measures in Homogeneous Wireless Sensor Networks Prof. Mikolaj Karpinski, Dsc Marek Aleksander
k21is-180	Nonlinearity of Many-Valued Logic Component Functions of Modern Cryptographic Algorithms S-boxes Prof. Mikolaj Karpinski, Phd Tomasz Gancarczyk, Prof. Nadiia Kazakova, Phd Artem Sokolov
k21is-329	Condition attributes, properties of decision rules, and discretisation: Analysis of relations and dependencies Dr Hab. Beata Zielosko, Dr Urszula Stanczyk
k21is-371	Sustainable maritime crude oil transportation: a split pickup and split delivery multi-compartment problem with time windows Dr Hiba Yahyaoui, Dr Nadia Dahmani, Prof Saoussen Krichen

IS15-A: Internet-of-Things and Intelligent Decision Making
Chair: Prof. Xiangpei Hu

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 15

PROSE Paper No	Paper Title / Authors
k21is-037	Dynamic Decisions for Knowledge-Based Value Co-Creation Phd Candidate Xuejie Ren, Graduate Jianxiao Fu, Professor Lindu Zhao
k21is-039	Module-based service provision under different power structures Dr. Liping Liu, Professor Lindu Zhao
k21is-069	The Design of Energy-efficient Portable Node for Long-term ECG Monitoring Prof. Wei Zhuang, Dr. Dong Dai, Prof. Haiyan Wang, Dr. Yunhong Zhang
k21is-075	Prediction Algorithm of Characteristic K-Line charts based on Multi Factor Attention LSTM Dr Jianming Li, Dr Xiangpei Hu, Mr Rui Zhang
k21is-077	Optimal product co-creation strategies in a service-oriented smart manufacturing supply chain Candidate Of Ph.d Xiao Zhang, Candidate Of Ph.d Xiaoxiao Chang, Candidate Of Ph.d Huaqing Qiu, Professor Lindu Zhao

IS15-B: Internet-of-Things and Intelligent Decision Making
Chair: Prof. Xiangpei Hu

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 15

PROSE Paper No	Paper Title / Authors
k21is-082	An IoT-based Hierarchical Control Method for Greenhouse Seedling Production Phd Student Jingyuan Feng, Professor Xiangpei Hu
k21is-083	Two-stage Intelligent heuristic order batching algorithm in multiple-block ultra-narrow-aisle picking systems Ph.d Student Shan Zhu, Professor Xiangpei Hu, Master Student Long Shi, Ph.d Student Yanling Zhuang
k21is-086	Research on Location Routing Problem of Multi-type Precooling Facilities Based on Bi-level Programming Model Professor Xuping Wang, Ph.d Student Ya Li, Postgraduates Huimin Yang, Postgraduates Chiyi Zhang
k21is-137	Microservices in IoT Security: Current Solutions, Research Challenges, and Future Directions Dr. Maha Driss, Dr. Jawad Ahmad, Prof. Wadii Boulila, Ms. Daniah Hasan
k21is-319	Dynamic Behavioral Analytics in Weight-Loss Incentive Design Based on Personal Health Data Ms. Jianxia Gong, Prof. Lindu Zhao

IS16: Recent Advances in Biometric Technology
Chair: Assoc. Prof. Dr. Dzati Athiar Ramli

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 16

PROSE Paper No	Paper Title / Authors
k21is-155	UHF RFID spiral-loaded dipole tag antenna conception for Healthcare Applications Phd Student Ibtissame Bouhassoune, Pr Hasna Chaibi, Pr Abdellah Chehri, Pr Rachid Saadane
k21is-223	An Efficient Learning Weight of Elman Neural Network with Chicken Swarm Optimization Algorithm Mr Ali Barkat, Dr Abdullah Khan, Dr Saima Anwar Lashari, Dr Dzati Athiar Ramli, Dr Wareesa Sharif, Mr Kamran Ullah
k21is-303	Wearable Heat Stroke Detection System in IoT-based Environment Assoc. Prof. Dr. Dzati Athiar Ramli, Dr. Azniza Abd Aziz, Mr. Wil Son Teo
k21is-326	Weakly Semi-supervised Classification of Transcranial Doppler Ultrasound Signal for Ischemic Stroke Detection Assoc. Prof. Dr. Dzati Athiar Ramli, Dr. Najah Ghazali
k21is-385	A CNN based Handwritten Numeral Recognition Model for Four Arithmetic Operations Mr. Shanwei Chen, Dr. Theam Foo Ng, Assoc. Prof. Dzati Athiar Ramli, Dr. Shir Li Wang
k21is-394	Spiny Lobster Sound Identification Based on Blind Source Separation (BSS) for Passive Acoustic Monitoring (PAM) Assoc. Prof. Dr. Dzati Athiar Ramli, Ms Norsalina Hassan, Ms Fatin Izzati Ma Hadi
k21is-455	Detection of Violence in Cartoon Videos Using Visual Features Dr Abdullah Khan, Dr Saima Anwar Lashari, Dr Dzati Athiar Ramlie, Dr Javed Iqbal Bangash, Mrs Tahira Khalil, Dr Abdul Waheed Khan

IS19: Complex and dispersed classifiers
Chair: Dr. hab. Malgorzata Przybyla-Kasperek

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 16

PROSE Paper No	Paper Title / Authors
k21is-035	Heterogeneous ensembles of classifiers in predicting Bundesliga football results Prof. Jan Kozak, Phd Student Szymon Glowania
k21is-200	Rapid detection of fake news based on machine learning methods Phd Barbara Probierz, Prof. Jan Kozak, Mr Piotr Stefanski
k21is-288	Stop Criterion in Building Decision Trees with Bagging Method for Dispersed Data Dr Hab. Malgorzata Przybyla-kasperek, M.sc. Aning Samuel
k21is-301	Selected approaches for decision rules construction-comparative study Dr Hab. Beata Zielosko, Mgr Krzysztof Zabinski
k21is-302	Averaging and Boosting Methods in Ensemble-Based Classifiers for Text Readability Mr. Ruslan Korniichuk, Prof. Mariusz Boryczka
k21is-357	Epigenetic Modification of Genetic Algorithm for Outlier Detection Phd Kornel Chrominski, Phd Magdalena Tkacz

IS20-A: Biosignal data acquisition and knowledge-based processing
Chair Prof. Dr. Ralf Seepold

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 8

PROSE Paper No	Paper Title / Authors
k21is-184	Extrapolation of weight from smart scale data Mr Pablo Caballero, Dr Luis González-abril, Dr Juan A. Ortega
k21is-221	Non-invasive devices for respiratory sound monitoring. Mrs Angela Del Robledo Troncoso García, Dr Natividad Martínez Madrid, Professor Juan A. Ortega, Dr Ralf Seepold
k21is-234	Classification of Alzheimer's Disease from EEG Signal using Robust-PCA Feature Extraction Dr. Paolo Crippa, Dr. Giorgio Biagetti, Dr. Laura Falaschetti, Prof. Simona Luzzi, Prof. Claudio Turchetti
k21is-245	Systematization of the principles and methods of applying for digital medicine in oncology Prof Georgy Lebedev, Mr Eduard Fartushniy, Mr Herman Klimenko, Prof Pavel Kozhin, Prof Elena Lutsai, Prof Anton Vladzimerskiy
k21is-246	Design of a sleep apnoea detection system for a home environment Mr. Maksym Gaiduk, Prof.dr. Natividad Martínez Madrid, Prof.dr. Simone Orcioni, Prof.dr. Ralf Seepold, Mr. Ángel Serrano Alarcón, Mr. Lucas Weber

IS20-B: Biosignal data acquisition and knowledge-based processing
Chair: Prof. Dr. Ralf Seepold

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 12

PROSE Paper No	Paper Title / Authors
k21is-251	Preliminary results of homomorphic deconvolution application to surface EMG signals during walking Prof. Simone Orcioni, Prof. Massimo Conti, Prof. Francesco Di Nardo, Prof. Sandro Fioretti, Dr. Maksym Gaiduk, Prof. Ralf Seepold
k21is-254	Artery wall stiffness evaluation by new pneumatic sensor using improved method for measuring the pulse wave velocity Phd Viacheslav Antsiperov, Phd Michael Danilychev, Engieer Gennadii Mansurov
k21is-257	Justification of the method of remote monitoring of the health of young athletes based on mobile technologies Prof Georgy Lebedev, Mr Eduard Fartushniy, Prof Herman Klimenko, Prof Pavel Kozhin, Prof Igor Shaderkin, Prof Anton Vladzimerskiy
k21is-283	Contactless temperature measuring with low-cost embedded device using deep learning Mag. Msc. Dr. Joachim Steinwendner, Bsc Janik Mabboux
k21is-318	Application of an Electronic Health Record System for Studying the Influence of the Daylight-Saving Time Change on Health Needs Phd Polina Mihova, Prof., MD, PhD Margarita Stankova

IS21: Data Cleansing, Selection and Pre-processing for Machine Learning
Chair: Prof. Antonio J. Tallon-Ballesteros

Wednesday 8 September 2021: 14:50 - 17:00 CET
Room 8

PROSE Paper No	Paper Title / Authors
k21is-124	Firefly algorithm for instance selection Prof. Ireneusz Czarnowski
k21is-152	DBSCAN algorithm for AIS data reconstruction Ms. Marta Mieczynska, Prof. Ireneusz Czarnowski
k21is-278	Framework for imbalanced data classification Bsc Mikolaj Blaszczyk, Professor Joanna Jedrzejowicz
k21is-297	A dataset for Sentiment analysis of Entities in News headlines (SEN) Msc Katarzyna Baraniak, Phd Marcin Sydow

IS23: Computational Intelligence System and its Application to Media Information Technology
Chair: Prof. Yuji Iwahori

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 6

PROSE Paper No	Paper Title / Authors
k21is-006	Construction of Attribute Dataset with SNS Mining for Generic Object Recognition Assoc. Prof. Ryosuke Yamanishi, Prof. Yuji Iwahori, Mr. Yuki Mizoguchi
k21is-025	Application Method of Deep Learning Model Trained with CG Images to Real Images Professor Tsukasa Kudo
k21is-032	Representation of Characters' Directed-relationships in Comics with Speech-roles Assoc. Prof. Ryosuke Yamanishi, Prof. Mitsunori Matsushita, Ms. Riona Mori
k21is-061	Interactive Design Support using Arbitrary Onomatopoeia Prof. Tsuyoshi Nakamura, Mr. Takaki Kaneiwa, Prof. Masayoshi Kanoh, Mr. Keima Osuka, Prof. Koji Yamada
k21is-108	Utterance Style Transfer Using Deep Models Prof. Urszula Markowska-kaczmar, Master Daniel Popek
k21is-134	Automatic Generation of Polyp Image using Depth Map for Endoscope Dataset Prof. Yuji Iwahori, Prof. M. Bhuyan, Dr. Shinji Fukui, Prof. Naotaka Ogasawara, Dr. Hiroyasu Usami, Mr. Haruki Yamane

IS24: AI, Robotics, and Human Machine Systems (IROHMS) for Medical and Healthcare Applications
Chair: Dr. Yulia Hicks

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 13

PROSE Paper No	Paper Title / Authors
k21is-195	The Use of Decision Trees for Analysis of the Epilepsy Asoc. Prof. Daniela Gifu
k21is-279	Explainability in Human-Robot Teaming Dr. Maryam Banitalebi Dehkordi, Eng. Reda Mansy, Prof. Rossitza Setchi, Eng. Arpit Singh, Dr. Abolfazl Zaraki
k21is-280	Optimal Feature Set for Smartphone-based Activity Recognition Dr. Maryam Banitalebi Dehkordi, Prof. Rossitza Setchi, Dr. Abolfazl Zaraki
k21is-311	MedPlus - a cross-platform application that allows remote patient monitoring Mr Adrian Iftene, Mrs Andra-Elena Gistescu, Mrs Camelia-Maria Milut, Mr Teodor Proca
k21is-451	Development of Recreation Game for Measurement of Eye Movement Using Tangram Ms Rise Morimoto, Dr Yulia Hicks, Dr Hiroharu Kawanaka, Prof Rossi Setchi

IS25-A: Cyber Security and Big Data
Chair: Dr. Francesco Mercaldo

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 8

PROSE Paper No	Paper Title / Authors
k21is-007	Cybersecurity and Sustainable Development Dr Inz. Adam Sulich, Mgr Jaroslaw Jezierski, Mgr Agnieszka Krawczyk-jezierska, Dr Hab. Inz. Malgorzata Rutkowska, Inz. Tomasz Zema
k21is-044	Detecting Call Indirection Obfuscation through Equivalence Checking in Android environment Dr Francesco Mercaldo, Mr Tiziano Marinaro, Dr Fabio Martinelli, Prof Antonella Santone
k21is-092	A Method for Automatic Penetration Testing and Mitigation: A Red Hat Approach Dr Francesco Mercaldo, Prof Eric Filiol, Prof Antonella Santone
k21is-132	Android Collusion Detection by means of Audio Signal Analysis with Machine Learning techniques Ms Rosangela Casolare, Mr Umberto Antonio Di Giacomo, Dr. Fabio Martinelli, Dr. Francesco Mercaldo, Dr. Antonella Santone
k21is-144	Exploiting Supervised Machine Learning for Driver Detection in a Real-World Environment Ms Rosangela Casolare, Mr Umberto Antonio Di Giacomo, Dr. Fabio Martinelli, Dr. Francesco Mercaldo, Dr. Torsten Priebe, Dr. Antonella Santone

IS25-B: Cyber Security and Big Data
Chair: Dr. Francesco Mercaldo

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 13

PROSE Paper No	Paper Title / Authors
k21is-165	Exploring the Impact of Data Poisoning Attacks on Machine Learning Model Reliability Dr. Laura Verde, Dr. Fiammetta Marulli
k21is-256	Vulnerability Evaluation of Android Malware Detectors against Adversarial Examples Dr Francesco Mercaldo, Prof D Harikrishnan, Prof Don Jose, Prof Godvin Poulose, Prof P Vinod, Prof Akka Zemmari
k21is-289	Exploring Data and Model Poisoning Attacks to Deep Learning-Based NLP Systems Dr. Fiammetta Marulli, Ph.D. Lelio Campanile, Dr. Laura Verde
k21is-320	Home office as new approach to smart city idea in pandemic time Phd Joanna Antczak, Phd Eng. Izabela Horzela

IS26-A: Intelligent Management Information Systems (IMIS)

Chair: Assoc. Prof. Marcin Hernes

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 2

PROSE Paper No	Paper Title / Authors
k21is-033	Shelf space allocation problem with horizontal shelf division M.sc. Kateryna Czerniachowska, Dr Adrianna Kozierkiewicz, M.sc. Agata Kozina, Dr Krzysztof Lutoslawski, M.sc. Aleksandra Markowska, M.sc. Karolina Matenczuk
k21is-172	Greencoin: the prototype of mobile application facilitating and evidencing pro-environmental behavior of citizens Dr Pawel Weichbroth, Msc Helena Anacka, Dr Hanna Obracht-prondzynska, Msc Kacper Radziszewski, Miss Dorota Tomczak, Msc Kacper Wereszko
k21is-219	Artificial Intelligence in Extended Agri-Food Supply Chain: A Short Review Based on Bibliometric Analysis Mr. José Monteiro, Dr. João Barata
k21is-236	Application of Machine Learning in medical data analysis illustrated with an example of association rules Phd Maciej Pondel, Phd Beata Butryna, Prof Iwona Chomiak-orsa, Phd Krzysztof Hauke, Phd Agnieszka Siennicka
k21is-292	Machine learning for liquidity prediction on Vietnamese stock markets MSc Pham Quoc Khang, Msc, Mba Radoslaw Depczynski, Msc Pawel Golec, Prof. Marcin Hernes, Msc Klaudia Kaczmarczyk, Phd Piotr Tutak

IS26-B: Intelligent Management Information Systems (IMIS)
Chair: Assoc. Prof. Marcin Hernes

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 2

PROSE Paper No	Paper Title / Authors
k21is-308	Backtesting comparison of machine learning methods on Warsaw Stock Exchange M.sc. Klaudia Kaczmarczyk
k21is-373	Dynamic programming approach for solving the retail shelf-space allocation problem Msc. Kateryna Czerniachowska, Phd. Eng. Krzysztof Lutoslawski
k21is-404	A note on the applications of artificial intelligence in the hospitality industry: preliminary results of a survey Dr Pawel Weichbroth, Miss Joanna Citak, Professor Mieczyslaw Owoc
k21is-462	Financial Time Series Forecasting: Comparison of Traditional and Spiking Neural Networks M. Sc. Aleksandra Markowska, Professor Mykola Dyvak, Professor Marcin Hernes, Phd Adrianna Kozierkiewicz, Phd Krzysztof Lutoslawski, Phd Artur Rot
k21is-467	The application of predictive analysis in decision-making processes on the example of mining company's investment projects M.Eng. Maciej Wach, Professor Iwona Chomiak-Orsa

IS27: Reasoning-based Intelligent Applied Systems
Chair: Dr. Jair Minoro Abe

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 16

PROSE Paper No	Paper Title / Authors
k21is-046	Open-Pit Mining Operational Planning using Multi Agent Systems Dr. Miri Weiss Cohen, Dr. Vitor Coelho
k21is-053	Application of architecture using AI in the training of a set of pixels of the image at aid decision-making diagnostic cancer Msc Luiz Lima, Msc Angel Martinez, Undergraduate Luigi Pavarini, Msc Liliam Sakamoto
k21is-054	PANN Component for Use in Pattern Recognition in medical diagnostics decision-making Mmsc Angel Antônio Martinez, Student Flávio Bernardini, Msc Luiz Lima, Msc Liliam Sakamoto, Msc Jonatas Souza, Student Nilson Souza
k21is-058	Expert Group Simulation Evaluating Behavioral Competence by Paraconsistent Annotated Evidencial Eτ B.Sc. in Engeneering Samira Sestari do Nascimento, Phd Jair Minoro Abe, B.B.A Luiz Roberto Forçan, Phd Irenilza de Alencar Nääs, Phd Cristina Corrêa de Oliveira
k21is-063	Application of Paraconsistent Annotated Evidential Logic Eτ for a Terrestrial Mobile Robot to Avoid Obstacles Professor Flávio Bernardini, Ph.d Jair Abe, Ph.d Marcia Da Silva
k21is-222	Software optimization for LGPD compliance using Paraconsistent Evidential Annotated Logic Eτ Mrs. Liliam Sakamoto, Mr. Jair Abe, Mr. Davis Alves, Mr. Nilson De Souza, Mr. Jonatas De Souza, Mr. Angel Martinez

IS28: *Chance Discovery and Market of Data*
Chair: Prof. Akinori Abe

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 3

PROSE Paper No	Paper Title / Authors
k21is-049	Skill Transfer of Traditional Pottery Techniques: Exploring the Effects of Metacognition Through Gaze Movement Professor Jun Nakamura, Doctor Nozomi Komiya, Professor Sanetake Nagayoshi
k21is-087	Verification Process of Data Combination for Problem-solving: A Case of a Residential Area Selection System Dr. Teruaki Hayashi, Professor Yukio Ohsawa
k21is-107	Preference for Abstract Diagrams and Sentiments Applied in a Product Selection B.e. Daisuke Hase, Dr. Teruaki Hayashi, Prof. Yukio Ohsawa
k21is-112	A Latent Topic Analysis Framework for Category-Level Target Promotion in the Supermarket M.b. Yi Sun, Dr. Teruaki Hayashi, Prof. Yukio Ohsawa
k21is-220	Visualizing Schemes and Logics among Sentences in Paragraph Prof. Noriyuki Kushiro, Dr. Yusuke Aoyama, Mr. Yusuke Ogata
k21is-476	Identification of toolchains used to build IoT malware with statically linked libraries Mr. Shu Akabane, Dr. Takeshi Okamoto

IS29-A: Smart Education: Learning environment using technology
Chair: Prof. Nobuyuki Ogawa

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 4

PROSE Paper No	Paper Title / Authors
k21is-003	Use of Virtual Reality in Non-Native Language Learning and Teaching Assoc. Prof. Blanka Klimova,
k21is-036	Technologies for Teaching during a Pandemic Professor Dana Barry, Professor Hideyuki Kanematsu, Professor Paul Mcgrath, Professor Nobuyuki Ogawa
k21is-045	Usefulness of flight simulator as a part of military pilots training - case study: Grob G 115E Researcher Kalle Saastamoinen, Lieutenant Kasper Maunula
k21is-059	An Insight into Online Foreign Language Learning and Teaching in the Era of COVID-19 Pandemic Assoc. Prof. Blanka Klimova,
k21is-060	Improvement of Active Textbook System (A-txt) on Unity Version and Examination of Usage in Consideration of Copyright Prof. Shin-nosuke Suzuki, Prof. Katsumi Hirata, Mr. Ryohei Kameyama, Prof. Takehito Kato, Dr. Akira Okada, Mr. Masaya Yamaguchi
k21is-067	Educational Mobile Applications for Learning English as a Second Language by Czech seniors Bc. Lukas Sanda, Assoc. Prof. Blanka Klimova

IS29-B: Smart Education: Learning environment using technology
Chair: Prof. Nobuyuki Ogawa

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 14

PROSE Paper No	Paper Title / Authors
k21is-129	The Use of ICT in Higher Education from the Perspective of the University Students Ms Diana Kozlova, Dr Marcel Pikhart
k21is-156	The observed effects of distance learning on curriculum implementation in management and business studies Mr. Kamil Lubinski, Mr. Dominik Tama
k21is-157	Learning through Esports in Innovation Practice on Electrical Technology Professor Minoru Komatsu, Professor Takashi Matsumoto, Assistant professor Christopher Prowant
k21is-162	Basic research on a handwritten note image recognition system that combines two OCRs Associate Professor Yasuhiro Kobayashi, Associate Professor Yousuke Iijima, Mr. Shunya Mimuro, Associate Professor Akira Okada, Associate Professor Shin-nosuke Suzuki
k21is-307	Research Activities in Materials Science and Engineering with Academic-Industrial Alliances during the COVID-19 Pandemic Professor Hideyuki Kanematsu, Professor Dana Barry, Associate Professor Nakahira Katsuko, Professor Nobuyuki Ogawa, Professor Shin-nosuke Suzuki, Professor Kuniaki Yajima

IS30-A: Machine Learning and Knowledge Representation in Epidemic Modeling
Chair: Prof. Andrzej Szalas

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 6

PROSE Paper No	Paper Title / Authors
k21is-096	Optimization Models for Medical Procedures Relocation Dr Hab. Linh Nguyen, Prof. Andrzej Szalas
k21is-104	Immunization using a heterogeneous geo-spatial population model: A qualitative perspective on COVID-19 vaccination strategies Assoc. Prof. Alexandru Topirceanu
k21is-253	Forecasts of Covid-19 evolution by nearest epidemic trajectories detection Dr Hab. Tomasz Rusin
k21is-260	Optimal Relocation of Medical Procedures Under the Covid-19 Regime: an Urology Case Study. Ph.D. Alina Powala, Ph.D. Adam Woznica
k21is-261	Cellular Automata in Covid-19 prediction Mr Piotr Podolski, Prof. Hung Son Nguyen

IS30-B: Machine Learning and Knowledge Representation in Epidemic Modeling
Chair: Prof. Andrzej Szalas

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 15

PROSE Paper No	Paper Title / Authors
k21is-290	Architectural Aspects of a Data-Intensive System: A Covid-19 Related Case Study Mr. Piotr Dunin-Keplicz, Mr. Michal Iwanski, Prof. Marek Niezgódka, Mr. Piotr Wisniewski
k21is-294	An Agent-Based Covid-19 Simulator: Extending Covasim to the Polish Context Phd Rafal Latkowski, Prof Barbara Dunin-keplicz
k21is-359	Advanced methods of visual analysis and visualization of various aspects of the COVID-19 outbreak in Poland. Phd Piotr Regulski, Phd Kerstin Kantiem, - Wiktor Murdzek, Phd Piotr Wendykier
k21is-365	An Overview of Biomedical Ontologies for Pandemics and Infectious Diseases Representation Phd. Ing Leila Bayoudhi, Pr Wassim Jaziri, Dr Najla Sassi

IS31-A: New Generation Computing in Engineering, Life Science and Economy
Chair: Prof. Piotr Nikonczuk

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 14

PROSE Paper No	Paper Title / Authors
k21is-145	The Concept of Advanced Maritime Integrated Data Processing System with Use of Neural Network Methods Prof. Zut Andrzej Banaszek, Phd. Eng. Andrzej Lisaj
k21is-196	Analysis children with disabilities self-care problems based on selected data mining techniques Assoc. Prof. Agnieszka Dardzinska-Glebocka, Msc Malgorzata Zdrodowska
k21is-206	An improved tile-based Scalable distributed management model of massive high-resolution satellite images Ms Yosra Hajjaji, Dr Wadii Boulila, Prof Imed Riadh Farah
k21is-215	Design of ship course-keeping system via active disturbance rejection control using a full-scale realistic ship model Prof. Zenon Zwierzewicz, Phd Lech Dorobczyeski, Phd Slawomir Jaszczak
k21is-237	The composite scanning method (urbslingua) Dr Marika Pirveli,

IS31-B: New Generation Computing in Engineering, Life Science and Economy
Chair: Prof. Piotr Nikonczuk

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 15

PROSE Paper No	Paper Title / Authors
k21is-381	The latest developments in the computer sciences help astronomers explore the Universe Prof. Robert Suszynski, Dr. Pawel Poczekajlo
k21is-382	The Port Community System as an example of integration of port users Dsc. Phd. Eng. Magdalena Kaup, Dsc. Phd. Eng. Wojciech Slaczka, Phd., Eng. Agnieszka Deja, Msc. Eng. Marek Gróbarczyk
k21is-389	Conducting a secret ballot elections for virtual meetings Dr Grzegorz Szyjewski
k21is-401	Application of classification and regression tree (CRT) analysis to identify the agricultural households at risk of financial exclusion Dr. Agnieszka Strzelecka, Prof. Danuta Zawadzka
k21is-442	Utilizing the RIS system to improve the efficiency of inland waterway transport companies Professor Piotr Niedzielski, Msc Eng. Natalia Drop, Phd Eng. Piotr Durajczyk

IS31-C: New Generation Computing in Engineering, Life Science and Economy
Chair: Prof. Piotr Nikonczuk

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 3

PROSE Paper No	Paper Title / Authors
k21is-031	Identification of optimal efficiency exploitation conditions of axial-piston hydraulic motor A2FM type using Artificial Neural Network algorithms Professor Zut Andrzej Banaszek,
k21is-073	Methodology of flow rate calculation of submerged ballast pumps on modern product and chemical tankers with use of neural network methods Professor Zut Andrzej Banaszek
k21is-089	IPNES - Interpreted Petri Net for Embedded Systems Dr Hab. Inz. Prof. Tomasz Krolikowski, Dr Inz. Andrzej Andrzejewski, Prof. Dr Hab. Alexander Barkalov, Dr inz. Kazimierz Krzywicki, Prof. Dr Hab. Larysa Titarenko, dr inz. Wojciech Zajac
k21is-226	Investigation of Vibro Acoustical Properties Using Eigenvalue Problem Solution And Wavelets Dr Hab. Inz. P Tomasz Krolikowski, Dr Inz. Andrzej Blazejewski, Dr Inz. Sebastian Pecolt
k21is-242	Attitude of employees towards emerging technologies used in intralogistics Dr Natalia Wagner, Msc Patryk Wlochowicz
k21is-250	Investigation of Anti-Lock Braking System failures using wavelet analysis. Dr Hab. Inz. Prof. Tomasz Krolikowski, Dr Inz. Adrzej Blazejewski, Mgr Inz. Kacper Gierula, Dr Inz. Sebastian Pecolt

IS31-D: New Generation Computing in Engineering, Life Science and Economy
Chair: Prof. Piotr Nikonczuk

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 3

PROSE Paper No	Paper Title / Authors
k21is-197	Automatic system for IBD diagnosis Dr Anna Kasperczuk, Prof Agnieszka Dardzinska
k21is-277	Autonomous control of a mobile robot to explore areas with difficult terrain Dr Hab. Inz Prof Tomasz Krolikowski, Dr Inz. Andrzej Blazejewski, Dr Inz. Sebastian Pecolt, Mgr Inz Blazej Schulz, Mgr Inz. Piotr Zmuda Trzebiatowski
k21is-285	Modern computing methods for digital signal processing engineering systems Prof. Robert Suszynski, Dr. Pawel Poczekajlo
k21is-300	Implementation of an example of Hierarchical Petri Net (HPN) in LAD language in TIA Portal Dr Hab. Inz Prof Tomasz Krolikowski, Dr Inz Grzegorz Andrzejewski, Dr Hab. Inz Prof. Blazej Balasz, Dr Inz. Artur Karasinski
k21is-346	The concept of an e-platform cooperation model in the field of 3D printing during the COVID-19 pandemic dr inz. Roma Strulak-Wójcikiewicz, mgr inz. Adriana Bohdan

IS31-E: New Generation Computing in Engineering, Life Science and Economy
Chair: Prof. Piotr Nikonczuk

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 3

PROSE Paper No	Paper Title / Authors
k21is-352	Dynamics of changes in Poland in the light of the Industry 4.0 Dr Hab. Inz Prof Tomasz Krolikowski, Dr Hab. Inz Prof Blazej Balasz, Dr Hab. Inz Prof Agnieszka Ubowska
k21is-360	Orthogonal Array Approach Optimization of Epoxidation Process Dr. Anna Fajdek-bieda, Dr. Andrzej Perec, Dr. Aleksandra Radomska-zalas
k21is-361	Using Entropy-VIKOR method in chemical processes optimization Dr. Anna Fajdek-bieda
k21is-366	TISAX - optimization of IT risk management in the automotive industry Dr Hab. Inz Prof Tomasz Krolikowski, Dr Hab. Inz Prof Agnieszka Ubowska
k21is-471	The concept of a method of preliminary estimation of groups of sources polluting the air with carbon dioxide Prof Piotr Nikonczuk, Dr Karolina Kurtz-Orecka, Dr Wojciech Tuchowski

IS32-A: Neuroscience techniques and quantitative methods in supporting decision making
Chair: Prof. Kesra Nermend

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 14

PROSE Paper No	Paper Title / Authors
k21is-136	Determinants of the decision-making process in organizations Phd Karolina Beyer, Prof Katarzyna Koziol;-nadolna
k21is-139	Purchasing decisions of travellers in Poland in the context of their age Prof. Dr Hab. Grazyna Rosa,
k21is-158	The use of the multi-criteria AHP method to select a cloud computing provider. M.Sc.Eng. Piotr Niemcewicz,
k21is-205	Geographic information science in supporting business decisions Professor Marek Dutkowski,
k21is-235	Planning an experiment in a virtual environment reality as a place of research on human behaviour using methods of neuroscience measurement - bibliometric analysis and methodological approach Phd Kamila Slupinska, Doctoral Student Konrad Biercewicz, Phd Jaroslaw Duda
k21is-249	Applying Vector Measure Construction Method (VMCM) to analyze change dynamics of investment attractiveness of the region Dr Arkadiusz Marchewka,

IS32-B: Neuroscience techniques and quantitative methods in supporting decision making

Chair: Prof. Kesra Nermend

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 13

PROSE Paper No	Paper Title / Authors
k21is-341	Impact of the healthcare potential in the European countries on infections and mortality caused by Covid-19 Msc Konrad Biercewicz, Prof. Mariusz Borawski, Phd Jaroslaw Duda
k21is-391	Organizational potential of universities for commercialization - the analysis of university management models in the scope of commercialization Dr Hubert Pachciarek, Mgr Malwina Szarek
k21is-393	Problems related to the implementation of a complex training system and professional development of train drivers using traction vehicle simulators in the Polish railway transport Phd, Eng. Arkadiusz Drewnowski
k21is-395	Behavioral aspects of decision-making and its application in Poland illustrated by the example of the public institutions Phd Paulina Dabrosz-drewnowska
k21is-422	Applying the VMCM method to assess the level of residential attractiveness of municipalities in the West Pomeranian Voivodeship Ph.d. Marta Szaja,

IS32-C: Neuroscience techniques and quantitative methods in supporting decision making

Chair: Prof. Kesra Nermend

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 14

PROSE Paper No	Paper Title / Authors
k21is-358	Experiential learning in simulated conditions Phd Karol Kuczera
k21is-425	Assessment of investing in socially responsible companies during the COVID-19 pandemic Mgr Magda Ankiewicz
k21is-429	Application of VMCM, to assess of renewable energy impact in European Union Countries Phd Piotr Ogonowski
k21is-436	Churn factors identification from real-world data in the telecommunications industry: case study Dr Piotr Sulikowski, Dr Tomasz Zdziebko
k21is-457	The Impact Of Users Highly Sensory Processing Sensitivity On Websites Information Usefulness Perception Dr Michal Nowakowski

IS32-D: Neuroscience techniques and quantitative methods in supporting decision making
Chair: Prof. Kesra Nermend

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 2

PROSE Paper No	Paper Title / Authors
k21is-015	Cybersecurity and Sustainable Development Dr Inz. Adam Sulich, Mgr Jaroslaw Jezierski, Mgr Agnieszka Krawczyk-jezierska, Dr Hab. Inz. Malgorzata Rutkowska, Inz. Tomasz Zema
k21is-016	Support for the decision-making process in designing and implementing a new product on the market. Case study using focus group interview Ma Julia Anna Klimek, Ma Jordan Klimek
k21is-090	Indicators for the efficient portfolio construction. The case of Poland Prof. Dorota Witkowska, Ph.D. Krzysztof Kompa, Ph.D. Michal; Staszak
k21is-116	Using the PVM-VSI (Preference Vector Method - Vector Space of Increments) method in supporting the decision related to the purchase of an electric family car Mgr Inz;. Marek Kannchen
k21is-126	Decision Towards Green Careers and Sustainable Development Dr inz. Adam Sulich, dr hab. inz. Malgorzata Rutkowska, Dr Uma Singh
k21is-147	Agent-Based Modeling of Social Campaign Message Adoption: Problem of Parameter's Value Determination Dr. Anna Borawska, Prof. Malgorzata Latuszynska

IS32-E: Neuroscience techniques and quantitative methods in supporting decision making
Chair: Prof. Kesra Nermend

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 2

PROSE Paper No	Paper Title / Authors
k21is-295	Synthetic measures in benchmarking of the New Silk Road countries Prof. Dorota Witkowska, Ph.d. Krzysztof Kompa
k21is-309	Model of integration and cooperation of multi-criteria decision support methods Phd Aneta Becker, Prof. Ajp, Dr Hab. Jaroslaw Becker
k21is-314	The use of a computer game in a social campaign to improve road safety Dr. Anna Borawska, Prof. Mariusz Borawski
k21is-339	Best practices of neurophysiological data collection for media message evaluation in social campaigns Msc Konrad Biercewicz, Phd Anna Borawska, Phd Jaroslaw Duda
k21is-372	Methods of measuring diversity og structures Professor Boleslaw Borkowski, Dos Joanna Kisielinska, Dos Alexander Prokopenya, Dos Wieslaw Szczesny
k21is-465	Enterprise Business Architecture as a Tool for Sustainable Development in an Enterprise - case study Asoc Prof Malgorzata Rutkowska, Assoc Prof. Pawel Bartoszczuk, Dr Jerzy Tutaj

IS33-A: Eye Movement Data Processing and Analysis (EMDPA)
Chair: Assoc. Prof. Katarzyna Harezlak

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 7

PROSE Paper No	Paper Title / Authors
k21is-080	OkenReader: ML-based classification of the reading patterns using an Apple iPad Head Of Research Dep Victor Anisimov, Ceo Konstantin Chernozatonsky, Researcher Andrey Pikunov, Eyetracking Research Ksenia Shedenko, Eeg Researcher Daria Zhigulskaya, Data Scientist Sergey Zuev
k21is-159	Open-source Software for Determining the Dynamic Areas of Interest for Eye Tracking Data Analysis M.sc. Leszek Bonikowski, M.sc. Dawid Gruszczynski, Dr Hab. Jacek Matulewski
k21is-210	Slice: an algorithm to assign fixations in multi-line texts Bsc Dominik Glandorf, Prof. Dr. Sascha Schroeder
k21is-224	A Comparison of the Efficiency of Eye Movement Data Processing with the Usage of a Multi-Model Platform Associate Professor Katarzyna Harezlak, Associate Professor Pawel Kasprowski, M.sc. Malgorzata Mermon
k21is-229	Eye Movement-Based Methods for Human-System Interaction. A Comparison of Different Approaches Associate Professor Katarzyna Harezlak, M.sc Arkadiusz Duliban, Associate Professor Pawel Kasprowski

IS33-B: Eye Movement Data Processing and Analysis (EMDPA)
Chair: Assoc. Prof. Katarzyna Harezlak

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 16

PROSE Paper No	Paper Title / Authors
k21is-071	EOG metrics for cognitive workload detection Dr Chama Belkhiria, Dr Vsevolod Peysakhovich
k21is-133	Visual behavior on problem comprehension among novice programmers with prior knowledge Mr Zubair Ahsan, Dr Unaizah Obaidellah
k21is-171	Fusion Sustaining Oscillations: Dependence on Sustained Convergence Level Professor John Semmlow, Professor Tara Alvarez, Doctor Mitchell Scheiman, Doctor Chang Yaramothu
k21is-194	Quantitative analysis of temporal characteristics of opto-kinetic nystagmus for vection detection Ms Piruza Manukyan, Mr Alexei Drozhdev, Ms Mariya Klimova, Mr Artem Kovalev
k21is-199	Face emotional responses correlate with chaotic dynamics of eye movements. Phdc Albert Sledzianowski, Phd Wojciech Glac, Phd Andrzej Przybyszewski, Student Renata Slota, Phd Krzysztof Urbanowicz, Student Maria Wojtowicz
k21is-208	GazeEnViz4D: 4-D Gaze-in-Environment Visualization Pipeline Miss Anjali Jogeshwar, Dr. Jeff Pelz

IS34-A: Marketing in digital area – new methods, new challenges, new approaches, new research perspectives
Chair: Prof. Edyta Rudawska

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 17

PROSE Paper No	Paper Title / Authors
k21is-074	Barriers in the Use of Social Media in Managing the Image of Educational Institutions Dr hab. inz. Waldemar Jedrzejczyk
k21is-115	Typology of virtual brand communities' members Phd Dagna Siuda
k21is-141	The role of social media in communication of nostalgic brands Dr Hab. Magdalena Grebosz-krawczyk, Prof. Jacek Otto, Prof. Agnieszka Zakrzewska-bielawska
k21is-149	E-commerce as the predominant business model of fast fashion retailers in the era of global COVID 19 pandemics Ph.d Katarzyna Bilinska-reformat, Ph.d Anna Dewalska-opitek
k21is-262	Modeling e-loyalty of Polish young consumers: comparing the impact of selected online communication tools in 2016 and 2021 Phd Magdalena Kowalska

IS34-B: Marketing in digital area – new methods, new challenges, new approaches, new research perspectives
Chair: Prof. Edyta Rudawska

Wednesday 8 Sept 2021: 14:50 - 17:00 CET
Room 17

PROSE Paper No	Paper Title / Authors
k21is-270	The use of mobile technologies in online shopping during the Covid-19 pandemic - an empirical study Dr Malgorzata Wiscicka-Fernando
k21is-321	Identification and verification of the key methodology elements of measuring digital competences of ICT companies' customers. Dr Anna Szwajlik
k21is-355	The Competitive Function of Online Advertising. An Empirical Evaluation of Companies' Communication Strategies in a Digital World Prof. Dr Hab. Jan Wiktor, Dr Katarzyna Sanak-kosmowska
k21is-363	Effectiveness of city halls' social networking sites in Poland based on the DEA Methodology Doktor Magdalena Kotnis, Dr. Hab. Malgorzata Guzowska
k21is-369	Communicating socially responsible actions by means of social media in the process of building the image of an organization, as seen in the case of start-ups from the cosmetics industry Mrs Ewa Mazur-wierzbicka

IS34-C: Marketing in digital area – new methods, new challenges, new approaches, new research perspectives
Chair: Prof. Edyta Rudawska

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 17

PROSE Paper No	Paper Title / Authors
k21is-414	Applications of the Internet in customer value management processes in Poland in the light of the results of quantitative research Assoc. Prof. Magdalena Sobocinska, Prof. Krystyna Mazurek-Lopacinska
k21is-426	Social Media e-Leadership Practices During the COVID-19 Pandemic Ms. Nina Kotula, Ms. Dominika Kaczmarek-ciesielska, Prof. Grzegorz Mazurek
k21is-434	New Technologies in the Ecological Behavior of Generation Z Post Ph.d. Magdalena Jaciow, Post Ph.d. Robert Wolny
k21is-459	Using CRM Tools for Learning Development - The IPMA-Student Portal Example Phd Joanna Rzempala, Phd Rafal Szymanski
k21is-466	Big Data as a tool helpful in communication management Phd Agnieszka Smalec

IS35-A: LegalTech - Techology for Law and Law for Technology
Chair: Dr. hab. Kinga Flaga-Gieruszynska

Friday 10 2021: 10:30 - 12:30 CET
Room 4

PROSE Paper No	Paper Title / Authors
k21is-091	Liability for damages of a producer of devices that use ICT in the diagnostic and treatment process towards an injured patient - selected practical aspects Mr Michal Bialkowski
k21is-102	Automated decision-making in public administration Dr Hab. Prof. Us Aleksandra Monarcha-matlak
k21is-118	AI in judicial application of law and the right to a court Master Pawel Nowotko
k21is-167	Internet instruments for dissemination of information about law - Polish experience Dr Hab. Prof. Us Kinga Flaga-gieruszynska, Dr Aleksandra Klich
k21is-168	Contracts for the provision of technological supervision services in Polish civil law Magister Krzysztof Kubasik
k21is-169	Use of Information Technologies in Lithuanian Civil Procedure Dr Hab. Prof. Us Vytuatas Nekrosius

IS35-B: LegalTech - Techology for Law and Law for Technology
Chair: Dr. hab. Kinga Flaga-Gieruszynska

Friday 10 2021: 14:50 - 17:00 CET
Room 4

PROSE Paper No	Paper Title / Authors
k21is-178	Limits and Challenges of Embedding-based Question Answering in Export Control Expert System Dr. Rafal Rzepka, Prof. Akihiko Obayashi, Mr. Daiki Shirafuji
k21is-190	The issue of openness and impartiality of administrative proceedings resolved on the basis of an algorithm Dr Lukasz Dubinski
k21is-207	Electronic bailiff files as a tool for computerization the administration of justice in the Polish legal system. Dr Hab. Joanna Studzinska
k21is-247	The Internet of Things in carriage of goods by road - application, opportunities, problems Mgr Michal Wojdala
k21is-348	The challenges of consumer protection law connected with the development of artificial intelligence on the example of financial services (chosen legal aspects) Dr Hab. Prof. Us Krystyna Niziol
k21is-472	Digital transformation and data ecosystem: implications for policy actions and competency frameworks Dr Monika Rozkrut, Dr Dominik Rozkrut

IS36: Interactive Linguistics for Agent and Multi-agent Systems
Chair: Prof. Radoslaw Katarzyniak

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 4

PROSE Paper No	Paper Title / Authors
k21is-029	On the revealing the emotional valence in communication by text Assoc. Prof. Velina Slavova
k21is-282	Modeling natural language dialogue for argumentation. Pragmatic approach. Dr Olena Yaskorska-Shah
k21is-351	Concepts as decision functions. The issue of epistemic opacity of conceptual representations in artificial computing systems Dr Pawel Stacewicz, Dr hab. Hajo Greif
k21is-353	Response Stance in Query-Response Language Interaction between Cognitive Agents Dr Grzegorz Popek, Dr Wojciech Lorkiewicz

IS37: Knowledge and data engineering in medicine and health care

Chair: Assoc. Prof. Krzysztof Pancerz
Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 11

PROSE Paper No	Paper Title / Authors
k21is-085	Solving Complex Classification Problems using Multiobjective Evolutionary Optimization Phd Lukasz Chomatek, Prof Piotr Szczepaniak
k21is-182	Machine Learning Classifiers on Breast Cancer Recurrences Dr. Vincent Peter Magboo, Prof. Ma. Sheila Magboo
k21is-187	EEG channel selection strategy for deep learning in emotion recognition Phd, Eng, Dsc Agnieszka Wosiak, Mrs. Aleksandra Dura
k21is-306	Architecture and organization of a platform for diagnostics, therapy and post-covid complications using AI and mobile monitoring Ph.d., Eng. Miroslaw Hajder, Ph.d. Tomasz Gil, Msc., Eng. Piotr Hajder, Ph.d., Eng. Janusz Kolbusz, Bsc. Maciej Krzywda, Msc., Eng. Mateusz Liput
k21is-328	Identification of Relevant Medical Parameter Values in Information Systems using Fuzzy Approach Phd Wieslaw Paja
k21is-335	Analysis of Medical Multi-class Decision Problems with Classification and Prediction Software System (CLAPSS) Prof. Krzysztof Pancerz

IS38: Challenges and solutions for project knowledge management
Chair: Assoc. Prof. Tadeusz A. Grzeszczyk

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 7

PROSE Paper No	Paper Title / Authors
k21is-078	The importance of certification in project management in the labor market PhD Hanna Soroka-Potrzebna
k21is-138	The role and meaning of lessons learned in project knowledge management in organizations in Poland Phd Prof. Pawel Wyrozebski, Msc Robert Pawlak
k21is-367	Benefits of using IT systems in multi-sector projects: a case study of the Polish construction industry Assistant Proffesor Malgorzata Waszkiewicz, Msc Kamila Gumienny
k21is-383	Towards agile knowledge management in an online organization Mr. Thomas Naprawski
k21is-430	A bibliometric review of research on communication in virtual project teams Dr. Karolina Muszynska

IS39: Outlier detection in real data

Chair: Assoc. Prof. Agnieszka Nowak-Brzezinska

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 8

PROSE Paper No	Paper Title / Authors
k21is-084	Influence of outliers in MOBA games winner prediction Eng Justyna Tyran, Phd Lukasz Chomatek
k21is-119	Speed up Differential Evolution for ranking of items in recommendation systems Msc Michal Balchanowski, Professor Urszula Boryczka
k21is-123	Detecting anomalies and attacks in network traffic monitoring with classification methods and XAI-based explainability Mr Marcin Michalak, Mr Andrzej Bialas, Mr Adrian Kajzer, Mr Marek Sikora, Mr Mariusz Uchronski, Mr Lukasz Wawrowski
k21is-142	Using semantic enrichment methods in expert search system for recruitment process in IT corporation Phd, Eng, Dsc Agnieszka Wosiak
k21is-143	Automated extraction of information from Polish resume documents in the IT recruitment process Phd, Eng, Dsc Agnieszka Agnieszka,
k21is-185	Outlier Detection in Data Streams - A Comparative Study of Selected Methods Assoc. Prof. Agnieszka Duraj, Prof Piotr Szczepaniak
k21is-217	Outliers in Covid 19 data based on Rule representation - the analysis of LOF algorithm Assoc. Prof. Agnieszka Nowak-brzezinska, M.sc. Eng. Czeslaw Horyn

IS40: Skill Acquisition and Ubiquitous Human Computer Interaction
Chair: Assoc. Prof. Masato Soga

Wednesday 8 Sept 2021: 10:30 - 12:30 CET
Room 7

PROSE Paper No	Paper Title / Authors
k21is-105	Expressing Disaster Situations for Evacuation Training Using Markerless Augmented Reality Dr. Hiroyuki Mitsuhara, Dr. Junko Nemoto, Dr. Masami Shishibori, Dr. Chie Tanimura
k21is-304	Development of a learning environment for sketching human body with pose change using Motion Capture B.a. Akito Nishida, Dr. Masato Soga
k21is-305	Development and Evaluation of a System for showing Star Attribute Information with Sounds on a Virtual Planetarium B.a. Akira Nakashima, Dr. Masato Soga
k21is-340	Contrast effects of display colors on Hb concentration changes in the frontal lobe of elderly and young people Dr. Muhammad Nur Adilin Mohd Anuardi, Prof. Kayoko Murakami, Prof. Atsuko Yamazaki
k21is-410	Development and Evaluation of roasting degree prediction model of coffee beans by machine learning B.a. Masaki Okamura, B.a. Daishi Kaneda, M.a. Kazuki Kobata, Dr. Masato Soga, Director Yasuhiro Yamada
k21is-440	Analysis of cerebral blood flow during sound source direction recognition in virtual 3D sound technology Mr. Kazuki Nagaosa, Dr. Hirokazu Miura, Prof. Emer. Hirokazu Taki

IS42-A: Intelligent systems in evaluation and performance measurement
Chair: Prof. Iga Rudawska

Thursday 9 Sept 2021: 10:30 - 12:30 CET
Room 5

PROSE Paper No	Paper Title / Authors
k21is-275	Using e-government services and ensuring the protection of sensitive data in EU member countries M.A. Malgorzata Zakrzewska, Ph.d. Eng. Ireneusz Miciula
k21is-287	Covid-19 Economic Vulnerability Index: EU Evidence Dr Joanna Brzyska, Dr Izabela Szamrej-Baran
k21is-293	Expert systems in intermittent demand forecasting Dr Hab. Mariusz Doszyn
k21is-344	Measuring the Impact of Epidemic Outbreaks on Financial Results. Dr Hab. Malgorzata Porada - Rochon

IS42-B: Intelligent systems in evaluation and performance measurement
Chair: Prof. Iga Rudawska

Thursday 9 Sept 2021: 14:50 - 17:00 CET
Room 5

PROSE Paper No	Paper Title / Authors
k21is-109	Developing and Testing an Instrument to Evaluate Integration in Health Care Prof Iga Rudawska
k21is-240	Measuring the impact of ICT on society. Methodological aspects Prof. Dr Hab. Agnieszka Szewczyk,
k21is-241	Sentiment analysis as a factor included in the forecasts of price changes in the stock exchange Dr Grzegorz Wojarnik
k21is-255	Informal performance measurement in small enterprises Dr Piotr Wasniewski
k21is-273	Diagnosing and forecasting port services on the example of Świnoujście Ferry Terminal Doctor Wojciech Kuzminski

IS42-C: Intelligent systems in evaluation and performance measurement
Chair: Prof. Iga Rudawska

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 13

PROSE Paper No	Paper Title / Authors
k21is-258	Application of the rough set theory to the analysis of food safety in fish processing Dr. Barbara Wasikowska, Dr. Angelika Linowska
k21is-259	Sentiment analysis of CSR disclosures in annual reports of EU companies Dr. Przemyslaw Mucko
k21is-274	Lasso Penalty method for variable selection in the database construction process and developing house value models in RUA D.sc, Prof. Us Iwona Forys
k21is-286	Impact of categorical variables encoding on property mass valuation Ph.d. Sebastian Gnat
k21is-356	Usefulness of the Total Performance Scorecard for university - selected issues PhD Ilona Kedzierska-Bujak

IS43: Visual paradigm in engineering
Chair: Prof. Przemyslaw Rozewski

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 5

PROSE Paper No	Paper Title / Authors
k21is-148	Visual seabed classification using k-means clustering, CIELAB colors and Gabor-filters Researcher Kalle Saastamoinen, Environm. Specialist Sari Penttinen
k21is-317	Digitalising and visualising innovation process: comparative analysis of digital tools supporting innovation process in SMEs Dr Katarzyna Lobacz, Ds Maksym Zaverzhenets
k21is-387	System based on interactive storytelling for visual psychometrics. Mr Marcin Prys, Mr Igor Jakubowski
k21is-388	Framework of Visual Literacy Competences for Engineering Education Discussed in the Scope of DigComp framework with Examples from Educational R&D Projects Prof Przemyslaw Rózewski, Phd Magdalena Kieruzel, Phd Tomasz Lipczynski, Phd Student Marcin Prys
k21is-437	Multi-dimensional support for development of visual literacy in engineering education Prof Przemyslaw Rózewski, Phd Katarzyna Lobacz, Phd Magdalena Malinowska
k21is-441	How to visualize the competence: the Issue of Occupational Information Network Visualization Prof Przemyslaw Rózewski, Phd Student Marcin Prys

IS44: *Aspects of intelligent learning systems: e-Learning across various educational contexts*

Chair: Prof. Dr. Hiroshi Ueda

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 5

PROSE Paper No	Paper Title / Authors
k21is-040	The Impact of the Use of Social Media on Second Language Acquisition Dr Marcel Pikhart, Dr Onorina Botezat
k21is-239	Implemention of Secured Log Analysis Environment for Moodle using Virtual Cloud Provider Service Dr. Nobukuni Hamamoto, Dr. Kento Aida, Dr. Atsuko Takefusa, Dr. Shigetoshi Yokoyama
k21is-271	Students' emotion extraction and visualization for engagement detection in online learning Dr. Mohammad Nehal Hasnine, Dr. Gökhan Akçapinar, Ms. Huyen T. T. Bui, Mr. Ho Tan Nguyen, Ms. Thuy Thi Thu Tran, Dr. Hiroshi Ueda
k21is-272	Wordhyve: A context-aware language learning app for vocabulary enhancement through images and learning contexts Dr. Mohammad Nehal Hasnine, Mr. Junji Wu
k21is-461	Developing Policies for the Use of Education and Learning Data in Japan Prof. Hiroshi Ueda, Prof. Hiroaki Ogata, Prof. Tsuneo Yamada

IS45-A: Information, Innovation and Technology as a basis for sustainable business and society

Chair: Prof. Katarzyna Szopik-Depczynska

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 6

PROSE Paper No	Paper Title / Authors
k21is-188	Innovating digitally for services: A review of innovation process literature focused on digital innovation and service innovation M.sc. Judith Helmer, Ass. Prof. Dr. Katarzyna Lobacz, B.a. Thien-minh-thuong Huynh, Ass. Prof. Dr. Burcu Kör, Prof. Dr. Ingrid Wakkee
k21is-248	Frugal Innovations In Rail Transport Phd Joanna Markiewicz
k21is-299	The problem of trust in innovative ICT technologies used in e-health systems. The case study of private health care units located in Szczecin Profesor Joanna Wisniewska, Doctor Monika Rózycka
k21is-330	Visualization on charts - manipulations and distortions Phd, Dsc Ewa Krok
k21is-362	Cultural and Creative Industries as boost for innovation and Sustainable development of companies in cross innovation process. Dr Monika Klein, Dr Laima Gerlitz, Dr Monika Spychalska Wojtkiewicz
k21is-378	Impact of the availability of gamified e-guides on museum visit intention Dr Hab. Jakub Swacha, Dr Hab. Beata Bieszk-stolorz, Dr Krzysztof Dmytrów, Ms. Jurgita Eglinskiene, Ms. Susanne Marx, Ms. Agnieszka Miluniec
k21is-464	The new form of innovations related to the environment - a systematic review Ms Mariia Vikhasta, Prof. Katarzyna Cheba, MSc, MBA Radoslaw Depczynski, Prof. Katarzyna Szopik-depczynska

IS45-B: Information, Innovation and Technology as a basis for sustainable business and society

Chair: Prof. Katarzyna Szopik-Depczynska

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 6

PROSE Paper No	Paper Title / Authors
k21is-364	Sustainable financial systems toward sustainability in finance. Institutional and managerial approach Assoc. Prof. Phd Hab Magdalena Ziolo, Assoc. Prof. Phd Hab Iwona Bak, Assoc. Prof. Phd Hab Katarzyna Cheba, Professor Piotr Niedzielski, Assistant Prof. Phd Anna Spoz
k21is-377	Crowdfunding - innovative financing of cultural ventures by society Assoc. Prof. Angelika Kedzierska-szczepaniak,
k21is-379	Transforming IT small business - the perspective of business advice process Dr Hab Pawel Glodek, Dr Katarzyna Lobacz
k21is-380	Barriers to innovative activity in the sustainable development of public sector organizations Dr Karolina Beyer, Prof. Katarzyna Koziol-nadolna
k21is-386	The business services sector - development potential in the West Pomeranian region Mrs Magdalena Lawicka
k21is-396	Application of the Mental Toughness Questionnaire in business practice: case study based on post-pandemic experiences Ma Malgorzata Smolska
k21is-412	E-communication and CSR - a new look at organizations' relations with stakeholders in the time of digitalization Mrs Ewa Mazur-wierzbicka

IS46: The use of ICT in the power systems in the era of energy transition
Chair: Prof. Wojciech Drozdz

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 7

PROSE Paper No	Paper Title / Authors
k21is-444	A multi-criteria model for assessing the use of energy storage in the activities of a distribution system operator Dr Bartosz Pilecki, Mgr Jakub Dowejko
k21is-445	Virtual Reality Training System as a comprehensive and effective method for delivering technical hands-on training in the field Dr Hab., Prof. Us Wojciech Drozdz
k21is-448	The use of IT systems in the power industry based on implemented projects Dr Hab., Prof. Us Wojciech Drozdz, Mgr Inz. Marcin Kopiczko
k21is-452	Micro-scale installations and the energy network of Distribution System Operator - on the example of Enea Operator Master Jakub Dowejko, Phd Bartosz Pilecki
k21is-453	Harnessing solar energy and green hydrogen - the energy transition Phd Karolina Drela,
k21is-474	Mathematical model of distributed energy production Dr Marcin Rabe, Mgr Pawel Miazek

IS47-A: Computational learning theory and advances from Heuristics to Hyperheuristics: new trends and applications in hard optimization, in constraint reasoning and in and in real life problems

Chair: Prof. Sadok Bouamama

Friday 10 Sept 2021: 10:30 - 12:30 CET
Room 8

PROSE Paper No	Paper Title / Authors
k21is-198	Honey Bee Cooperative HyperHeuristic Phd Student Imen Oueslati, Doctor Moez Hammami
k21is-252	Modeling Employee Flexible Work Scheduling As A Classification Problem Dr. Fred Kiwanuka, Dr Ja'far Alqatawna, Dr Anang Amin, Dr. Louay Karadsheh
k21is-266	Toward a new intelligent Sentiment analysis pipeline using CNN-LSTM and Cultural Algorithms Dr. Imtiez Fliss
k21is-269	Hybrid APM-CPGSO Approach for Constraint SatisfactionProblem Solving: Application in Remote Sensing Mlle Zouhayra Ayadi, D. Wadii Boulila, P. Imed Riadh Farah
k21is-281	Optimal Solutions for Real-Time Scheduling of Reconfigurable Embedded Systems Based on Neural Networks with Minimization of Power Consumption. Phd Ghofrane Rehaiem, Pr. Samir Ben Ahmed, Dr. Hamza Gharsellaoui
k21is-298	Towards Unified Modeling for NoSQL Solution Based on Mapping Approach Phd Afef Gueidi, Pr. Samir Ben Ahmed, Dr. Hamza Gharsellaoui

IS47-B: Computational learning theory and advances from Heuristics to Hyperheuristics: new trends and applications in hard optimization, in constraint reasoning and in and in real life problems
Chair: Prof. Sadok Bouamama

Friday 10 Sept 2021: 14:50 - 17:00 CET
Room 8

PROSE Paper No	Paper Title / Authors
k21is-316	An Agent-based Model for Resource Provisioning and Task Scheduling in Cloud Computing Using DRL Phd Toutou Oudaa, Pr. Samir Ben Ahmed, Dr. Hamza Gharsellaoui
k21is-337	A new template concept to guide the local search: case of maximal constraint satisfaction problems Dr. Hajer Ben Othman, Prof Sadok Bouamama
k21is-338	Image segmentation by Honey bee optimization Dr. Hajer Ben Othman, Prof Sadok Bouamama
k21is-347	Face Recognition Smart Attendance System using Deep Transfer Learning Ms. Khawla Alhanaee, Ms. Mitha Alhammadi, Ms. Nahla Almenhali, Dr. Maad Shatnawi
k21is-374	Sets of Semantic Superposed graphs: the new theory that enriches the graph theory Prof Sadok Bouamama
k21is-375	Application of improved genetic algorithm to the Hamiltonian circuit problem Prof Sadok Bouamama, Phd-student Khaoula Bouazzi, Dr. Moez Hammami

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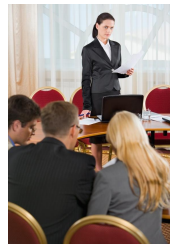
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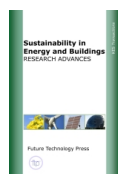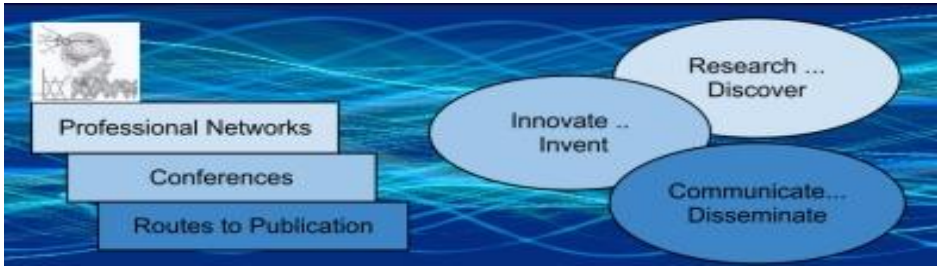
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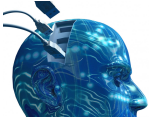
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2022 Calendar

SDF-2022: 20th - 22nd June

Rhodes, Greece

Smart Digital Futures 2022 brings you six of our most popular conferences: (Innovation in Medicine & Healthcare, Intelligent Decision Technologies, Human Centred Intelligent Systems, Agent & Multi-agent Systems, Smart Education & E-Learning and Smart Transportation Systems).

KES-2022: 7th - 9th September

Verona, Italy

The 26th annual **KES conference** encompasses a broad spectrum of intelligent systems related subjects, including but not limited to: automation, neural networks, fuzzy techniques and systems, machine learning, computational neuroscience, and many more!

SST-2022: 14th - 16th September

Split, Croatia

Smart Sustainable Technologies 2022 is KES's duel themed conference incorporating: Sustainability in Energy and Buildings (SEB-22) & Sustainable Design and Manufacturing (SDM-22).

All conferences in 2022 will offer a hybrid attendance option (subject to travel restrictions).

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