Smart Digital Futures 2021

AMSTA | HCIS | IDT | InMed | SEEL | STS

Conference Programme

14-16 June 2021

KES Virtual Conference Centre

Contents

Chairs' Welcome

Welcome to the Smart Digital Futures 2021 (SDF-21) multi-theme conference, held in virtual form on the KES-online virtual conference platform, 14-16 June 2021.

This is the second time that Smart Digital Futures has been held virtually, and this has been made necessary because of the ongoing Covid-19 pandemic which has swept the world. Covid-19 has caused disruption, economic problems, and human tragedy in many countries. We offer condolences and sympathy to those who have sadly lost loved ones or colleagues in the pandemic.

SDF-21 is an amalgamation of six KES conferences: Agent and Multi-Agent Systems - Technology and Applications (KES-AMSTA-21), Intelligent Decision Technologies (KES-IDT-21), Human Centred Intelligent Systems (KES-HCIS-21), Innovation in Medicine and Healthcare (KES-InMed-21), Smart Education and e-Learning (KES-SEEL-21) and Smart Transportation Systems (KES-STS-21).

Although the conferences share a common forum, each one has its own Chair and International Programme Committee. The best papers submitted to the conference were presented and published in several volumes of proceedings in the Smart Innovation Systems and Technology series by Springer-Verlag. Delegates registered for SDF-21 may view sessions from any of the conferences and mix with the communities of the others through the online lounge.

Smart Digital Futures was organised as part of the KES International conference portfolio. For over a decade the mission of KES International has been to provide a professional community, networking and publication opportunities for all those who work in knowledge-intensive subjects. At KES we are passionate about the dissemination, transfer, sharing and brokerage of knowledge. The KES community consists of several thousand experts, scientists, academics, engineers, students and practitioners who participate in KES activities. KES runs conferences in different countries of the world on leading edge topics including Intelligent Systems, Sustainability in Energy and Buildings, Innovation, Knowledge Transfer and Enterprise, and Digital Media. KES provides routes to publication, such as journals, book series, and online publications, both through its own media and in conjunction with major publishers. KES also provides knowledge transfer services and consultancy.

The aim of Smart Digital Futures was to bring together researchers working at the leading edge of developments in smart systems and intelligent technology theory and applications. This programme contains 203 papers, each selected after full peer review by members of the International Programme Committees of the conferences.

We thank the keynote speakers for providing informative accounts of the latest research in their areas:
Prof Monica Bianchini, University of Siena, Italy (title of talk 'Modeling biological processes with Graph Neural Networks');
Prof Xiaopeng Li, University of South Florida, USA (title of talk 'Operations and Planning for Connected and Automated Transportation Systems');
Prof Sheela Ramanna, University of Winnipeg, Canada (title of talk 'Deep Neural Network Applications: Production of Real-time Road Conditions and Land-Use/Land-Cover Maps')
Prof Kenji Suzuki, Tokyo Institute of Technology, Japan (title of talk 'Artificial intelligence for medical image diagnosis');

We thank the General Chairs and Programme Chairs of the SDF-21 conferences for their hard work and dedication. We appreciate the efforts of those organising and chairing special sessions, members of the International Programme Committees and reviewers and we thank them. We are grateful to authors for the papers they have contributed to the conference, and to delegates for their attendance and we give them our thanks.

Finally, we thank the conference administration for their organisational efforts.

Although KES members cannot meet in person on this occasion because of Covid-19, we remain confident that the KES community will rise above these difficult times, and we look forward to seeing you at future KES events.

We hope you find the conference useful and informative and we wish you all well.

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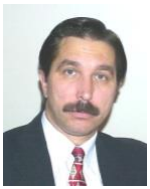

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Mr. Ying Yang	Australian Catholic University, Australia
Dr. Barbara Yen	National Chiao Tung University, Taiwan
Dr. Zuduo Zheng	Queensland University of Technology, Australia
Dr. Changfu Zou	Chalmers University of Technology, Sweden

Keynote Talks

Prof Monica Bianchini
University of Siena, Italy

Modeling biological processes with Graph Neural Networks

Abstract: Major advances in high-throughput technologies have recently produced an enormous amount of molecular data, making them available for in silico analysis. Indeed, DNA, RNA, proteins and metabolites play a crucial role in the molecular mechanisms at the basis of the cellular processes underlying life. Therefore, studying their structure and interactions is crucial in a variety of applications, ranging from the development of new drugs to the discovery of disease pathways. Since graphs provide a simple and intuitive representation of heterogeneous and complex biological processes, the modeling and understanding of complicated molecular mechanisms can be based on the use of graph theory and machine learning techniques for graphs. Graph-based neural networks are a powerful tool for managing graphs, and interest in their study and applications has been explosive in recent years. In my talk, I will review the history of GNNs from their rise to current models, while also exploring their applications for generating molecular graphs for drug discovery, predicting protein-protein interfaces, and integrating multi-omics data.

Biography: Monica Bianchini received the Laurea degree cum laude in Applied Mathematics in 1989 and the Ph.D. degree in Computer Science and Control Systems in 1995 from the University of Florence. She is currently an Associate Professor at the Department of Information Engineering and Mathematics of the University of Siena. Her main research interests are in the field of machine learning, with emphasis on neural networks for structured data and deep learning, approximation theory, bioinformatics, and image processing. M. Bianchini has authored more than one hundred papers and has been the editor of books and special issues on international journals in her research field. She has been involved in the organization of several scientific events, including the NATO Advanced Workshop on Limitations and Future Trends in Neural Computation (2001), the 8th AI*IA Conference (2002), GIRPR 2012, the 25th International Symposium on Logic-Based Program Synthesis and Transformation, and the ACM International Conference on Computing Frontiers 2017. Prof. Bianchini served/serves as an Associate Editor for IEEE Transactions on Neural Networks (2003-09), Neurocomputing (from 2003), and Int. J. of Computers in Healthcare (from 2010). She is a permanent member of the Editorial Board of IJCNN, ICANN, ICPR, ICPRAM, ESANN, ANNPR and KES.

Prof Xiaopeng Li
University of South Florida, USA

Operations and Planning for Connected and Automated Transportation Systems

Abstract: Advanced connected and automated vehicle (CAV) technologies can be utilized to achieve precise vehicle trajectory control and render unprecedented opportunities to improve transportation system performance in safety, mobility and sustainability. However, emergency of CAV technologies brought significant challenges to traffic operators and transportation planners in understanding, managing and planning for CAV traffic, particularly when mixed with regular human driven vehicles. This presentation will introduce theories, models and empirical findings of CAV traffic via modeling and experiments, ranging from microscopic trajectory control to macroscopic traffic capacity. Opportunities and challenges from individual CAV control to collective traffic management will be presented. How to accommodate CAV traffic in traffic operation practice and transportation planning activities will be discussed.

Biography: Dr. Xiaopeng (Shaw) Li is currently an associate professor in the Department of Civil and Environmental Engineering at the University of South Florida (USF). He is the director for one USDOT national university transportation center, National Institute for Congestion Reduction (NICR). He established the Connected and Automated Transportation Systems Lab that houses two L3 connected automated vehicles equipped with the USDOT CARMA platform. He is the first holder of Susan A. Bracken Faculty Fellowship at USF and is a recipient of a National Science Foundation (NSF) CAREER award. His major research interests include automated vehicle traffic control and connected & interdependent infrastructure systems. He has served as the PI or a co-PI for a number of federal (NSF, USDOT, USDOE), local (e.g., state DOTs, UTCs, I-4 Corridor Program) and industry grants, amounting to a total budget around $15 million. He has published over 70 peer-reviewed journal papers, many of which are in top journals such as Transportation Research Part B, Transportation Science and Operations Research. He has served as a member on the Transportation Network Modeling Committee (ADB30) and the Traffic Flow Theory and Characteristics (AHB45) of the Transportation Research Board (TRB) and an Associate Editor for IIE Transactions and have also served on the editorial boards for Transportation Research Part B, Part C, Part E, the ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, etc. Dr. Li received a B.S. degree (2006) in civil engineering with a computer engineering minor from Tsinghua University, China, a M.S. degree (2007) and a Ph.D. (2011) degree in civil engineering along with a M.S. degree (2010) in applied mathematics from the University

of Illinois at Urban-Champaign, USA. Please check http://ce.eng.usf.edu/facultyandstaff/xiaopengLi.htm for more information.

Prof Sheela Ramanna
University of Winnipeg, Canada

Deep Neural Network Applications: Production of Real-time Road Conditions and Land-Use/Land-Cover Maps

Abstract: In this talk, we present two applications of Deep Neural Networks: i) in Intelligent Transportation with Real-time Road Condition Map and, ii) in large-scale monitoring of land resource changes with Land-Use/Land-Cover Maps.
Road Weather Information Systems (RWIS) can provide real-time road weather information at point locations, which is often used to produce road weather forecasts. Since cameras are more prevalent than RWIS, the extraction of road conditions data, can provide a source of new observational data which can be assimilated into pavement forecast models, which normally use RWIS data as an input. Therefore, it is of value from both a monitoring and forecasting perspective to quickly extract road conditions data on a large scale. We present results obtained via leveraging state-of-the-art convolutional neural networks in labelling images taken by street and highway cameras located across North America. The classified images are then used to construct a map showing real-time road conditions at various camera locations across North America.
The second part of the talk focuses on an application of deep neural networks approach to Land use and Land cover (LULC) mapping from Landsat 5/7 multispectral satellite images taken of the Province of Manitoba in Canada. We show that by classifying each pixel in a satellite image into a number of LULC categories, we are able to successfully produce LULC maps. The presented solution is increasingly important since the abundance and affordability of satellite imagery has led to many government and private industries using LULC maps as a fundamental tool for large-scale monitoring of land resource changes.

Biography: Dr. Sheela Ramanna is a Full Professor and past Chair of the Applied Computer Science Department. She is the co-founder of the ACS graduate studies program University of Winnipeg. She received a Ph.D. in Computer Science from Kansas State University, U.S.A and a BS in Electrical Engineering and MS in Computer Science and Engineering from Osmania University, India. She serves on the Editorial Board of Springer Transactions on Rough Sets (TRS) Journal, Elsevier Engineering Applications of AI Journal, KES Journal and Advisory Board of the International Journal of Rough Sets and Data Analysis. She is the Managing Editor of the TRS and is a Senior Member of the IRSS (Intl. Rough Set Society). She has co-edited a book with L. C Jain and R. Howlett on Emerging Paradigms in Machine Learning

published in 2013 by Springer. She has served as Program Co-Chair for MIWAI 2013, RSKT 2011, RSCTC 2010 and JRS2007. She is currently the Program Co-Chair of IJCRS 2021 track of IFSA/EUSFLAT 2021. She is the recipient of a TUBITAK Fellowship (Turkey) for 2015. Her research is funded by Natural Sciences and Engineering Research Council of Canada Discovery and Engage Grants Program. She has received more than $1,130,000 in research funding since 1992. She has published over 50 peer-reviewed articles in the past 6 years in journals such as Pattern Recognition Letters, Knowledge-Based Systems, Neural Computing and Applications, Granular Computing, Knowledge and Information Systems, Intelligent Information Systems, Mathematics in Computer Science, Frontiers Advances in Computational Neurosciences, and Neuroscience Letters. The focus of her research is in fundamental and applied research in machine learning and granular computing. Her current interests include: i) Tolerance-based granular computing techniques (fuzzy sets, rough sets and near sets) with applications in social networks, natural language processing, computer vision and audio signal processing, ii) topological data analysis, iii) application of descriptive proximities, and iv) deep learning applications.

Prof Kenji Suzuki
Tokyo Institute of Technology, Japan

Artificial intelligence for medical image diagnosis

Abstract: Deep learning in artificial intelligence (AI) has become one of the most active areas of research in the biomedical imaging field including medical image analysis and computer-aided diagnosis (CAD), because "learning from examples or data" is crucial to handling a large amount of data ("Big data"") coming from medical imaging systems. Deep learning, including our original massive-training artificial neural networks (MTANNs), is an end-to-end machine learning model that enables a direct mapping from the input images to the desired outputs, eliminating the need for handcrafted features in feature-based machine learning. Deep learning is a versatile, powerful framework that can acquire medical image-processing and analysis functions through training with image examples. In this talk, deep learning in medical imaging and computer-aided diagnosis is overviewed, including 1) CAD for lung cancer detection in chest radiography and thoracic CT, 2) distinction between benign and malignant nodules in CT, 3) polyp detection and classification in CT colonography in colorectal cancer screening, 4) separation of bones from soft tissue in chest radiographs, and 5) radiation dose reduction in CT and mammography.

Biography: Kenji Suzuki, Ph.D, has been actively researching deep learning in medical imaging and AI-aided diagnosis for over 25 years. Prior faculty experiences include University of Chicago and Illinois Institute of Technology. He has published 14 books and over 340 papers and is an inventor on a dozen of licensed and commercialized patents, including one of the earliest deep learning patents. He has been awarded numerous grants, including grants from NIH, NEDO, and JST, chaired 98 international conferences, and served as editor of over 40 leading international journals. Dr. Suzuki has been Professor at Institute of Innovative Research at Tokyo Institute of Technology, where he explores the possibilities of explainable AI.

Schedule – Monday 14 June

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
	Opening Ceremony Prof Robert J Howlett & Prof Lakhmi Jain 9:00 - 9:15 AM BST					
	Keynote Speaker 1 Prof. Monica Bianchini, University of Siena, Italy Modeling biological processes with Graph Neural Networks 9:15 - 10:15 AM BST					
Session Details	**IDT-01 Main Track (1)** Chair: Prof. Ireneusz Czarnowski	**HCIS-01 Human-Centred Intelligent Systems** Chairs: Alfred Zimmermann, Rainer Schmidt		**InMed-01 Digital Architecture and Economics for Internet of Things, Big data, Cloud and Mobile IT in Healthcare** Chair: Yoshimasa Masuda	**AMSTA-01 Intelligent Software Agents and Optimisation** Chair: Asst. Prof. Pavle Skocir	**STS-01 Multimodal transport systems** Chair: Kun Gao
BST Time	10:30 AM - 12:30 PM BST	10:30 AM - 1:30 PM BST		10:30 AM - 12:30 PM BST	10:30 AM - 12:30 PM BST	10:30 AM - 12:30 PM BST

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
Session Details	**IDT-02 Main Track (2)** Chair: Prof. Ireneusz Czarnowski	**HCIS-02 Edge Computing Technologies for Mobile Computing and Internet of Things** Chairs: Abdellah Chehri, Gwanggil Jeon, Rachid Saadane	**SEEL-01 Smart Education** Chair: Dr. Vladimir Uskov	**InMed-02 Medical Watermarking** Chair: Liang Li	**AMSTA-02 Mobile Agent Systems and Networks** Chair: Prof. Mario Kusek	**STS-02 Road Transport** Chair: Jiaming Wu
BST Time	2:00 - 4:00 PM BST	2:00 - 4:00 PM BST	2:00 - 4:00 PM BST	2:00 - 4:00 PM BST	2:00 - 4:00 PM BST	2:00 - 4:00 PM BST
Session Details			**SEEL-02 Smart e-Learning** Chair: Dr. Elena Boldyreva			
BST Time			4:00 - 6:00 PM BST			

Schedule – Tuesday 15 June

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
	Keynote Speaker 2 Prof. Kenji Suzuki, Tokyo Institute of Technology, Japan Artificial intelligence for medical image diagnosis 9:00 - 10:00 AM BST					
Session Details	**IDT-03 Advances in Intelligent Data Processing and its Applications (IS01 - 1)** Chairs: Prof. Margarita N. Favorskaya, Prof. Lakhmi C. Jain, Prof. Mikhail Sergeev	**HCIS-03 Artificial Intelligence in the Corporate Application** Chairs: Tim Straub, Clemens van Dinther	**InMed-04 Method for Supporting Diagnostics** Chair: Satoshi Tanaka	**InMed-03 Medical and Biological Technologies and Systems** Chair: Yen-Wei Chen	**AMSTA-03 Multi-Agent and Smart Systems** Chair: Prof. Jessica Chen-Burger	**STS-03 Behavioral decision making** Chair: Ying Yang
BST Time	10:15 AM - 12:15 PM BST	10:15 AM - 12:15 PM BST	10:15 AM - 12:15 PM BST	10:15 AM - 12:15 PM BST	10:15 AM - 12:15 PM BST	10:15 AM - 12:15 PM BST

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
	Keynote Speaker 3 Prof. Sheela Ramanna, University of Winnipeg, Canada Deep Neural Network Applications: Production of Real-time Road Conditions and Land-Use/Land-Cover Maps 1:00 - 2:00 PM BST					
Session Details	**IDT-04 Advances in Intelligent Data Processing and its Applications (IS01 - 2)** Chairs: Prof. Margarita N. Favorskaya, Prof. Lakhmi C. Jain, Prof. Mikhail Sergeev	**HCIS-04 Intelligent Transportation Systems and Digital Enterprise Architecture** Chairs: Milan Simic, Yoshimasa Masuda, Alfred Zimmermann, Rainer Schmidt	**SEEL-03 Smart Education: Systems and Technology** Chair: Dr. Nunzio Casalino	**SEEL-04 Smart Education: Case Studies and Research** Chair: Dr. Seyeoung Chun	**AMSTA-04 Intelligent Agents in health, wellness and human development environments applied to health and medicine** Chair: Prof. Rosario Baltazar Flores	**IDT-05 Multi-Criteria Decision-Analysis Methods – Theory and Their Applications (IS02)** Chair: Prof. Wojciech Salabun
BST Time	2:00 - 4:00 PM BST	2:00 - 4:00 PM BST	2:00 - 4:00 PM BST	2:00 - 4:00 PM BST	2:00 - 4:00 PM BST	2:00 - 4:00 PM BST

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
Session Details			**SEEL-05 Digital Education and Economics in Smart University** Chair: Dr. Natalia A Serdyukova	**SEEL-06 Smart Universities and Their Impact on Students with Disabilities** Chair: Dr. Jeffrey P Bakken		
BST Time			4:00 - 6:00 PM BST	4:00 - 6:00 PM BST		

Schedule – Wednesday 16 June

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
Session Details	**IDT-06 Knowledge Engineering in Large-Scale Systems (IS03)** Chair: Prof. Dr. Sergey V. Zykov	**AMSTA-05 Business Informatics** Chair: Prof. Hiroshi Takahashi	**SEEL-07 Smart University Development: Organizational, Managerial, and Social Issues** Chairs: Dr. Svetlana Gudkova, Dr. Lyudmila Glukhova, Dr. Anna Sherstobitova, Dr. Abdellah Chehri	**IDT-07 Decision Making Theory for Economics (IS04)** Chairs: Prof. Dr. Takao Ohya and Dr. Takafumi Mizuno	**AMSTA-06 Agent-based Modelling** Chairs: Prof Hiroshi Takahashi and Dr. Mahdi Zargayouna	**IDT-09 Innovative Technologies and Applications in Computer Intelligence (IS06)** Chairs: Prof. Takumi Ichimura, Prof. Keiichi Tamura and Kamada Shin
BST Time	10:00 AM - 12:00 PM BST	10:00 AM - 12:00 PM BST	9:00 AM - 1:00 PM BST	10:00 AM - 12:00 PM BST	10:00 AM - 12:00 PM BST	10:00 AM - 12:00 PM BST

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
	Keynote Speaker 4 Prof. Xiaopeng Li, University of South Florida, USA Operations and Planning for Connected and Automated Transportation Systems 1:00 - 2:00 PM BST					
Session Details	**IDT-08 High-Dimensional Data Analysis, Knowledge Processing and Applications (IS05)** Chairs: Prof. Mika Sato-Ilic, Prof. Tamara Shikhnabieva and Prof. Lakhmi Jain			**AMSTA-07 Business Process Management, Agent-based Modeling and Simulation** Chair: Prof. Roman Sperka	**IDT-10 Intelligent Diagnosis and Monitoring of Systems: Methods, Tools, and Applications (IS07)** Chairs: Prof. Gianfranco Lamperti and Prof. Marina Zanella	**IDT-11 Spatial Data Analysis and Sparse Estimation (IS09)** Chair: Dr. Mariko Yamamura
BST Time	2:15 - 4:15 PM BST			2:15 - 4:15 PM BST	2:15 - 4:15 PM BST	2:15 - 4:15 PM BST

	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6
	Closing Ceremony 4:15 - 4:30 PM BST					

AMSTA Paper Presentations

AMSTA-01
Monday 14 June, 10:30 AM - 12:30 PM BST
Room 5

AMSTA-01: Intelligent Software Agents and Optimisation
Chair: Asst. Prof. Pavle Skocir

PROSE Paper No	Paper Title / Authors
ams21-002	An Agent-oriented, Blockchain-based Design of the Interbank Money Market Trading System Morteza Alaeddini, Julie Dugdale, Paul Reaidy, Philippe Madi□es, and Onder Gurcan
ams21-003	A Conceptual Model for Human-Agent Teams Salma Noorunnisa, Dennis Jarvis, Jacqueline Jarvis, and Ralph Ronnquist
ams21-009	Learned dynamics models and online planning for model-based animation agents Vihanga Gamage, Cathy Ennis, and Robert Ross
ams21-010	Swarm Intelligence Optimisation Algorithms and Their Applications in a Complex Layer-Egg Supply Chain Karan Singh, Yun-Heh Jessica Chen-Burger, Shau-Ping Lin, and Frederick Kin Hing Phoa
ams21-013	Collaborative Framework for Implementation of Accessible Digital Solutions Iva Topolovac, Zeljka Car, Ivo Majerski, and Ivana Rasan
ams21-018	Task Selection based on Worker Performance Prediction in Gamified Crowdsourcing Helun Bu and Kazuhiro Kuwabara

AMSTA-02
Monday 14 June, 2:00 - 4:00 PM BST
Room 5

AMSTA-02: Mobile Agent Systems and Networks
Chair: Prof. Mario Kusek

PROSE Paper No	Paper Title / Authors
ams21-019	Detection of Asynchronous Concatenation Emergent Behaviour in Multi-Agent Systems Anja Slama, Zahra Shakeri Hossein Abad, and Behrouz Far
ams21-032	A Mobile Agent Based-Framework to monitor and manage interoperability of C-ITS services in vehicles Aloui Ameni, Zagrouba Ezzeddine, and Hachicha Hela
ams21-039	Analysing Tweets Sentiments for Investment Decisions in The Stock Market Zhicheng Hao and Yun-Heh Jessica Chen-Burger
ams21-031	Impact of the COVID-19 Crisis on Digital Business Models – Contactless Payments Ralf-Christian H arting, Kevin Bilge, Lisa Fleischer, Nadja Landgraf, Feride Ozcakir, and Marcel Wicher
ams21-017	A simulator for the Internet of Moving Things Mohamed Mouatacim, Jean-philippe Kotowicz, and Cecilia
ams21-011	A Multi-Agent based System for Intrusion Detection Tesnim Younes and Farah Jemili

AMSTA-03: Room 5
Tuesday 15 June, 10:15 AM - 12:15 PM BST

AMSTA-03: Multi-Agent and Smart Systems
Chair: Prof. Jessica Chen-Burger

PROSE Paper No	Paper Title / Authors
ams21-038	Revising ethical principles and norms in hybrid societies: basic principles and issues Matteo Cristani, Francesco Olivieri, and Luca Pasetto
ams21-040	Asymmetry of ties in organizational performance Hitomi Inagaki and Setsuya Kurahashi
ams21-020	A Smart Lighting Context-aware Model based on Colored Petri Net Katarina Mandaric, Pavle Skocir, and Gordan Jezic
ams21-008	Multi-Agent Systems in Mechanical Engineering: A Review Stefan Plappert, Paul Christoph Gembarski, and Roland Lachmayer
ams21-001	Temporal Multi-Agent's Logic, Knowledge and Uncertainty, Plausibility Vladimir Rybakov
ams21-014	Improving water distribution in a multi-agent system using fixed multiunit first-price sealed-bid auction Kitti Chiewchan, Patricia Anthony, Birendra K. C., and Sandhya Samarasinghe

AMSTA-04
Tuesday 15 June 2:00 - 4:00 PM BST
Room 5

AMSTA-04: Intelligent Agents in health, wellness and human development environments applied to health and medicine
Chair: Prof. Rosario Baltazar Flores

PROSE Paper No	Paper Title / Authors
ams21-015	Intelligent System for the Evaluation of Implicit Memory with Semantic Emotional Stimuli (IS-EimSeS) Ibza Am erica Garc a-Le on, Noemi Pereda Beltr an, Arnulfo Alanis, and Javier Sotelo Moreno
ams21-016	Multi Agent System for Home Appliances on Internet of Things (MAS-HAIoT) Carlos Alberto Carrisosa Camacho, Arnulfo Alanis, Javier Sotelo, Karina Romero, and Samantha Jimenez
ams21-028	Multiagent Emergency Triage Classification System for Health Monitoring Fabiola Hernandez-Leal, Arnulfo Alanis, Samantha Jimenez, and Efra n Pati no
ams21-033	The Role Neuromarketing Emotion as Key to Defining Consumer Behavior Alma Casas-Frausto, Bogart Yail Marquez, Rosana Gutierrez, and Jose Sergio Magdaleno-Palencia
ams21-034	Intelligent Agent for Actuator Control in a Robot (IA-ACR) Ruben Sepulveda, Arnulfo Alanis, Marina Alvelais Alarcon, Rosario Baltazar, and Daniel Velazquez
ams21-035	Analysis and Prediction of EMG Signals for Interpretation of Human Communication for Individuals with Disabilities Sergio M endez-Mota, Bogart Yail M arquez, Samantha Jim enez, and Jos e Nava-Nava
ams21-036	Speech Recognition as Assistive Technology in a Smart Closet for Visual Disability Ingrid Carolina Sauceda-Pena, Rosario Baltazar-Flores, Daniel Alejandro Luna-G omez, and Anabel Pineda-Brise no

AMSTA-05:
Wednesday 16 June 10:00 AM - 12:00 PM BST
Room 2

AMSTA-05: Business Informatics
Chair: Prof. Hiroshi Takahashi

PROSE Paper No	Paper Title / Authors
ams21-052	Two-stage Lean Startup Model for Subscription Business Yoko Ishino and Yoshiyuki Udo
ams21-050	An Exploratory Study on Policy Evaluation of Tourism by using Agent-Based Model Atsumi Nakamura and Takahashi Hiroshi
ams21-048	Study of the Impact of Crypto Assets on Portfolio Risk-return Characteristics Before and After COVID-19 Outbreak (2014-2020) Mengyao Liu, Hiroaki Jotaki, and Hiroshi Takahashi
ams21-047	A Customer Experience Mapping Model for Business Case Description of Innovation and Value Co-creation Masaaki Kunigami, Takamasa Kikuchi, Hiroshi Takahashi, and Takao Terano
ams21-046	The Visualization of Innovation Pathway Based on Patent Data — Comparison Between Japan and America Zhiyan Chen, Yusuke Matsumoto, Aiko Suge, and Hiroshi Takahashi
ams21-044	Constructing a Decision-Making System using Patent Document Analysis Takashi Yonemura, Yusuke Matsumoto, Aiko Suge, and HiroshiTakahashi

AMSTA-06
Wednesday 16 June 10:00 AM - 12:00 PM BST
Room 5

AMSTA-06: Agent-based Modelling
Chairs: Prof Hiroshi Takahashi and Dr. Mahdi Zargayouna

PROSE Paper No	Paper Title / Authors
ams21-041	Policy Simulation for Retirement Planning based on Clusters Generated from Questionnaire Data Takamasa Kikuchi and Hiroshi Takahashi
ams21-037	Relationship between performance and work style extracted from location data Shohei Yada and Setsuya Kurahashi
ams21-045	Analysis of Factory Automated Guided Vehicles Systems using Contract Net Protocol Daimotsu Kato, Setsuya Kurahashi, and Shohei Yada
ams21-021	Collecting Diversified Opinions from Business Meetings: A study based on the faultline perspective Fumiko Kumada and Setsuya Kurahashi
ams21-029	Traveling Agents and Indirect Epidemic Transmission Rajesh Kumar Pandey and M. V. Panduranga Rao
ams21-012	Multi-agent Task Allocation Based on Reciprocal Trust in Distributed Environments Koki Sato and Toshiharu Sugawara

AMSTA-07
Tuesday 16 June 2:15 - 4:15 PM BST
Room 4

AMSTA-07: Business Process Management, Agent-based Modeling and Simulation
Chair: Prof. Roman Sperka

PROSE Paper No	Paper Title / Authors
ams21-026	Multi-Agent based framework for resource allocation in Cloud Computing Safia Rabaaoui, Hela Hachicha, and Ezzeddine Zagrouba
ams21-025	Characterizing the Data Basis of Parametric Computer Aided Design Systems for Agent-Based Modeling Paul Christoph Gembarski
ams21-023	Multi-agent Path Planning Approach Using Assignment Strategy Variations in Pursuit of Moving Targets Azizkhon Afzalov, Mehmet Emin Aydin, Jun He, and Ahmad Lot
ams21-049	TDABC and Estimation of Time Drivers Using Process Mining Michal Halaska and Roman Sperka
ams21-024	Multi-Agent Activity-Based Simulation of a Future Neighborhood Younes Delhoum, Rachid Belaroussi, Francis Dupin, and Mahdi Zargayouna
ams21-030	Potentials of Digital Business Models in Tourism – A Quantitative Study Ralf-Christian Harting, Marcel B auerle, Kevin Bilge, Lisa Fleischer, Nadja Landgraf, and Marcel Wicher
ams21-022	Using KNN to Predict Employee Attendance Dr. Long Ma, Mr. Ryan Zakaria

HCIS Paper Presentations

HCIS-01
Monday 14 June 10:30 AM - 1:30 PM BST
Room 2

HCIS-01: Human-Centred Intelligent Systems
Chairs: Alfred Zimmermann, Rainer Schmidt

PROSE Paper No	Paper Title / Authors
hcis21-024	Campus-Navigation-System Design for Universities - A Method Approach for Wismar Business School Mr. Thomas Paetow, Mr. Johannes Wichmann, Mr. Matthias Wißotzki
hcis21-021	Simple anti-fraud document authentication concept for public services M.a. Christian Mahrt, Prof. Dr. Andreas Speck
hcis21-018	Supply networks going digital - causalities of value production in digitalized systems Assoc. Prof. Jyri Vilko, Prof. Jukka Hallikas
hcis21-014	Crisis Year 2020: Analysis of Finnish Manufacturing Companies' Twitter Activity M.sc. (tech.) Oskari Lähdeaho, Professor Olli-pekka Hilmola
hcis21-013	Identifying Counterfeit Medicine in Bangladesh Using Deep Learning Dr. Bilkis Jamal Ferdosi, Mr. Joy Dhar, Mr. Md. Sirazul Islam, Mr. Mashroor Ahmed Sakib
hcis21-009	Human-Centered Referential Process Models for AI Application Dr.-ing. Matthes Elstermann, M. Sc. Jakob Bönsch, M. Sc. Andreas Kimmig, Prof. Dr. Dr.-ing. Jivka Ovtcharova
hcis21-008	Object Design System by Interactive Evolutionary Computation using GAN with Contour Images Prof. Kaoru Arakawa, Mr. Chen Xin
hcis21-006	Interaction and Dialogue Design of a Humanoid Social Robot in an Analogue Neurorehabilitation Application M.sc Alexandru Bundea, Dr. Sebastian Bader, Prof. Dr. Peter Forbrig
hcis21-004	Development of a unified artificial immune system for intelligent technology of complex industrial automation objects control in the oil and gas industry Dr. Galina Samigulina, Dr. Zarina Samigulina

HCIS-02
Monday 14 June 2:00 - 4:00 PM BST
Room 2

HCIS-02: Edge Computing Technologies for Mobile Computing and Internet of Things
Chairs: Abdellah Chehri, Gwanggil Jeon, Rachid Saadane

PROSE Paper No	Paper Title / Authors
hcis21-032	A Framework for 5G Ultra-Reliable Low Latency for Industrial and Mission-Critical Machine-Type Communication Pr Abdellah Chehri, Pr Paul Fortier, Pr Rachid Saadane
hcis21-029	IoT and Deep Learning Solutions for an Automated Crack Detection for the Inspection of Concrete Bridge Structures Pr Abdellah Chehri, Pr Ali Saeidi
hcis21-023	Data Loss Prevention in an IoT System Based on Multiprotocol Connectivity Mr. Hamza Takrouni, Mr. Youcef Fouzar, Prof. Larbi Talbi
hcis21-011	Performance of on-Skin RFID miniaturized loop tag for body-centric applications Phd Student Ibtissame Bouhassoune, Phd Hasna Chaibi, Pes Abdellah Chehri, Pes Rachid Saadane
hcis21-005	Hybrid OSA-CSA model for an efficient Dynamic Spectrum Access in Cognitive Radio Environments Phd Student Mohammed Saber, Professor Abdellah Chehri, Assistant Professor Yassine El Hafid, Professor Hatim Kharraz Aroussi, P.e.s Rachid Saadane, Professor Mohammed Wahbi

HCIS-03
Time: 15 June 10:15 AM - 12:15 PM BST
Room 2

HCIS-03: Artificial Intelligence in the Corporate Application
Chairs: Tim Straub, Clemens van Dinther

PROSE Paper No	Paper Title / Authors
hcis21-026	Univariate Time Series Forecasting by Investigating Intermittence and Demand Individually M.sc. Florian Grimm, M. Sc. Markus Bauer, M.sc. Daniel Kiefer
hcis21-025	Univariate Time Series Forecasting: Machine Learning Prediction of the Best Suitable Forecast Model based on Time Series Characteristics Mr Daniel Kiefer, Mr Markus Bauer, Mr Florian Grimm
hcis21-020	Sales Forecasting under Economic Crisis: A Case study of the Impact of the COVID19 Crisis to the predictability of Sales of a Medium-Sized Enterprise Mr Markus Bauer, Mr Florian Grimm, Mr Daniel Kiefer
hcis21-019	Digital Skills of Procurement Employees and their Attitudes toward Digital Technologies Dr. Gerald Blessing, Mr. Daniel Kiefer

HCIS-04
Tuesday 15 June 2:00 - 4:00 PM BST
Room 2

HCIS-04: Intelligent Transportation Systems and Digital Enterprise Architecture
Chairs: Milan Simic, Yoshimasa Masuda, Alfred Zimmermann, Rainer Schmidt

PROSE Paper No	Paper Title / Authors
hcis21-035	Autonomous Vehicles in Intelligent Transportation Systems Mr Abdulaziz Aldakkhelallah, Dr Milan Simic
hcis21-030	2D Autonomous Robot Localization using Fast SLAM 2.0 and YOLO in Long Corridors Pr Abdellah Chehri, Mr Ahmed Zarai, Pr Alfred Zimmermann
hcis21-033	Applying AIDAF for Enabling Industry 4.0 in Open Healthcare Platform 2030 Professor Yoshimasa Masuda, Professor Osamu Nakamura, Professor Kurt Sandkuhl, Professor Rainer Schmidt, Professor Toma Tetsuya, Professor Alfred Zimmermann
hcis21-031	Modeling of Machine Learning Projects using ArchiMate Prof. /dr. Hironori Takeuchi, Mr. Tetsu Isomura, Ms. Yu Ito, Ms. Risa Nishiyama
hcis21-012	Rotating Machinery Condition Monitoring using Time Series Analysis of Vibration Signal Pr Abdellah Chehri,pr Hassan Ezzaidi, Pr Alfred Zimmermann, Mr Wend-benedo Zoungranan

IDT Paper Presentations

IDT-01
Monday 14 June 10:30 AM - 12:30 PM BST
Room 1

IDT-01: Main Track (1)
Chair: Prof. Ireneusz Czarnowski

PROSE Paper No	Paper Title / Authors
idt21-010	ArgVote: Which Party Argues Like Me? Exploring an Argument-Based Voting Advice Application Markus Brenneis, Martin Mauve
idt21-064	Detecting Communities in Organizational Social Network Based on E-mail Communication Dariusz Barbucha, Pawel Szyman
idt21-012	Impact of the Time Window Length on the Ship Trajectory Reconstruction Based on AIS Data Clustering Marta Mieczyńska, Ireneusz Czarnowski
idt21-015	Improved Genetic Algorithm for Electric Vehicle Charging Station Placement Mohamed Wajdi Ouertani, Ghaith Manita, Ouajdi Korbaa
idt21-016	Solving a Many-objective Crop Rotation Problem with Evolutionary Algorithms Christian von Lücken, Angel Acosta, Norma Rojas

IDT-02
Monday 14 June 2:00 - 4:00 PM BST
Room 1

IDT-02: Main Track (2)
Chair: Prof. Ireneusz Czarnowski

PROSE Paper No	Paper Title / Authors
idt21-024	The Utility of Neural Model in Predicting Tax Avoidance Behavior Coita Ioana-Florina, Codruța Mare
idt21-031	Triple-Station System of Detecting Small Airborne Objects in Dense Urban Environment Mikhail Sergeev, Anton Sentsov, Vadim Nenashev, Evgeniy Grigoriev
idt21-022	Using Families of Extremal Quasi-Orthogonal Matrices in Communication Systems Anton Vostrikov, Alexander Sergeev, Yury Balonin
idt21-041	Variable Selection for Correlated High-dimensional Data with Infrequent Categorical Variables: Based on Sparse Sample Regression and Anomaly Detection Technology Yuhei Kotsuka, Sumika Arima
idt21-007	Verification of the Compromise Effect's Suitability Based on Product Features of Automobiles Takumi Kato

IDT-03
Tuesday 15 June 10:15 AM - 12:15 PM BST
Room 1

IDT-03: Advances in Intelligent Data Processing and its Applications (IS01-1)
Chairs: Prof. Margarita N. Favorskaya, Prof. Lakhmi C. Jain, Prof. Mikhail Sergeev

PROSE Paper No	Paper Title / Authors
idt21-051	Application of Implicit Grid-Characteristic Methods for Modeling Wave Processes in Linear Elastic Media Evgeniy Pesnya, Anton A. Kozhemyachenko, Alena V. Favorskaya
idt21-055	Combined Approach to Modeling of Acceleration Response Spectra in Areas of Active Shallow Seismicity Vasiliy Mironov, Konstantin Simonov, Aleksandr Zotin, Mikhail Kurako
idt21-049	Methods of Interpretation of CT Images with COVID-19 for the Formation of Feature Atlas and Assessment of Pathological Changes in the Lungs Aleksandr Zotin, Anzhelika Kents, Konstantin Simonov, Yousif Hamad
idt21-014	Multilevel Watermarking Scheme Based on PseudoBarcoding for Handheld Mobile Devices Margarita N. Favorskaya, Alexandr V. Proskurin
idt21-061	Multi-Quasiperiodic Cylindrical and Circular Images Victor R. Krasheninnikov, Yuliya E. Kuvayskova, Alexey U. Subbotin

IDT-04
Tuesday 15 June 2:00 - 4:00 PM BST
Room 1

IDT-04: Advances in Intelligent Data Processing and its Applications (IS01-2)
Chairs: Prof. Margarita N. Favorskaya, Prof. Lakhmi C. Jain, Prof. Mikhail Sergeev

PROSE Paper No	Paper Title / Authors
idt21-032	On the Importance of Capturing a Sufficient Diversity of Perspective for the Classification of micro-PCBs Adam Byerly, Tatiana Kalganova, Anthony J. Grichnik
idt21-020	Robust Visual Vocabulary Based On Grid Clustering Achref Ouni, Eric Royer, Marc Chevaldonné, Michel Dhome
idt21-050	Study of Anisotropy of Seismic Response from Fractured Media Alena Favorskaya, Vasily Golubev
idt21-004	Synchronization Correction Enforced by JPEG Compression in Image Watermarking Scheme for Handheld Mobile Devices Margarita N. Favorskaya, Vladimir V. Buryachenko
idt21-063	Tracking of Objects in Video Sequences Nikita Andriyanov, Vitaly Dementiev, Dmitry Kondratiev
idt21-066	Application of Granular Computing-based Pre-processing in the Labelling of Phonemes Negin Ashrafi, Sheela Ramanna

IDT-05
Tuesday 15 June 2:00 - 4:00 PM BST
Room 6

IDT-05: Multi-Criteria Decision-Analysis Methods – Theory and Their Applications (IS02)
Chair: Prof. Wojciech Salabun

PROSE Paper No	Paper Title / Authors
idt21-028	A New Approach to Identifying of the Optimal Preference Values in the MCDA Model: Cat Swarm Optimization Study Case Jakub Więckowski, Andrii Shekhovtsov, Jarosław Wątróbski
idt21-057	A Study of Different Distance Metrics in the TOPSIS Method Bartłomiej Kizielewicz, Jakub Więckowski, Jarosław Wątróbski
idt21-054	Assessment and Improve Intelligent Technology in Architectural Design Satisfactory Development Advantages Management Vivien Yi-Chun Chen, Jerry Chao-Lee Lin, Zheng Wu, Gwo-Hshiung Tzeng
idt21-008	IT Support for the Optimization of the Epoxidation of Unsaturated Compounds on the Example of the TOPSIS Method Aleksandra Radomska-Zalas, Anna Fajdek-Bieda
idt21-070	Land Suitability Evaluation by Integrating Multi-Criteria Decision Making (MCDM), Geographic Information System (GIS) Method, and Augmented Reality-GIS Hanhan Maulana, Hideaki Kanai
idt21-029	Towards Reliability in the MCDA Rankings: Comparison of Distance-Based Methods Andrii Shekhovtsov, Jakub Więckowski, Jarosław Wątróbski

IDT-06
Wednesday 16 June 10:00 AM - 12:00 PM BST
Room 1

IDT-06: Knowledge Engineering in Large-Scale Systems (IS03)
Chair: Prof. Dr. Sergey V. Zykov

PROSE Paper No	Paper Title / Authors
idt21-069	Affection of Java Design Patterns to Cohesion Metrics Sergey Zykov, Dmitry Alexandrov, Maqsudjon Ismoilov, Anton Savachenko, Artem Kozlov
idt21-067	Applicative-Frame Model of Medical Knowledge Representation Georgy Lebedev, Alexey Losev, Eduard Fartushniy, Sergey Zykov, Irina Fomina, Herman Klimenko
idt21-065	EOLANG: Towards a New Java-Based Object-Oriented Programming Language Hadi Saleh, Sergey Zykov, Alexander Legalov
idt21-062	Mission-critical Goals Impact onto Process Efficiency: Case of Aeroflot Group Alexander Gromoff, Sergey Zykov, Yaroslav Gorchakov

IDT-07
Wednesday 16 June 10:00 AM - 12:00 PM BST
Room 4

IDT-07: Decision Making Theory for Economics (IS04)
Chairs: Prof. Dr. Takao Ohya and Dr. Takafumi Mizuno

PROSE Paper No	Paper Title / Authors
idt21-033	Calculations of SPCM by Several Methods for MDAHP Including Hierarchical Criteria Takao Ohya
idt21-040	Equilibria between Two Sets of Pairwise Comparisons as Solutions of Decision-Making with Orthogonal Criteria Takafumi Mizuno
idt21-044	Fluctuations in Evaluations with Multi-branch Tree Method for Efficient Resource Allocation Natsumi Oyamaguchi
idt21-046	Foundations for Model-Building of Intelligent Pricing Methodology Marina Kholod, Yury Lyandau, Valery Maslennikov, Irina Kalinina, Ekaterina Borovik
idt21-021	Informatization of life insurance companies and organizational decision-making (Case of Nippon life Insurance company) Shunei Norikumo
idt21-047	Value Measurement and Taxation Metrics in the Model Building Foundations for Intelligent Pricing Methodology Marina Kholod, Yury Lyandau, Elena Popova, Aleksei Semenov, Ksenia Sadykova

IDT-08
Wednesday 16 June 2:15 - 4:15 PM BST
Room 1

IDT-08: High-Dimensional Data Analysis, Knowledge Processing and Applications (IS05)
Chairs: Prof. Mika Sato-Ilic, Prof. Tamara Shikhnabieva and Prof. Lakhmi Jain

PROSE Paper No	Paper Title / Authors
idt21-001	A Classification Method Based On Ensemble Learning Of Deep Learning And Multidimensional Scaling Kazuya Miyazawa, Mika Sato-Ilic
idt21-002	Individual Differences Assessment Method Based On Cluster Scale Using A Data Reduction Method Kazuki Nitta, Mika Sato-Ilic
idt21-068	A Hybrid Method of Multi-Class SVM and Classification Method Based on Reliability Score for Autocoding of the Family Income and Expenditure Survey Yukako Toko, Mika Sato-Ilic
idt21-003	A Consistent Likelihood-Based Variable Selection Method in Normal Multivariate Linear Regression Ryoya Oda, Hirokazu Yanagihara

IDT-09
Wednesday 16 June 10:00 AM - 12:00 PM BST
Room 6

IDT-09: Innovative Technologies and Applications in Computer Intelligence (IS06)
Chairs: Prof. Takumi Ichimura, Prof. Keiichi Tamura and Kamada Shin

PROSE Paper No	Paper Title / Authors
idt21-053	Adaptive Structural Deep Learning to Recognize Kinship using Families in Wild Multimedia Takumi Ichimura, Shin Kamada
idt21-056	Detecting Adversarial Examples for Time Series Classification and its Performance Evaluation Jun Teraoka, Keiichi Tamura
idt21-059	Efficient Data Presentation Method for Building User Preference Model Using Interactive Evolutionary Computation Akira Hara, Jun-ichi Kushida, Ryohei Yasuda, Tetsuyuki Takahama
idt21-052	Image based Early Detection of Alzheimer's Disease by using Adaptive Structural Deep Learning Shin Kamada, Takumi Ichimura, Toshihide Harada

IDT-10
Wednesday 16 June 2:15 - 4:15 PM BST
Room 2

IDT-10: Intelligent Diagnosis and Monitoring of Systems: Methods, Tools, and Applications (IS07)
Chairs: Prof. Gianfranco Lamperti and Prof. Marina Zanella

PROSE Paper No	Paper Title / Authors
idt21-027	Diagnosis of Active Systems with Abstract Observability Gianfranco Lamperti, Marina Zanella, Xiangfu Zhao
idt21-035	Java2CSP - A Model-based Diagnosis Tool Not Only for Software Debugging Franz Wotawa, Vlad Andrei Dumitru
idt21-058	Meta-diagnosis via Preference Relaxation for State Trackability Xavier Pucel, Stéphanie Roussel, Louise Travé-Massuyès, Valentin Bouziat
idt21-036	Model-based Diagnosis of Time Shift Failures in Discrete Event Systems: A (max,+) Observer-based Approach Claire Paya, Euriell Le Corronc, Yannick Pencolé, Philippe Vialletelle

IDT-11
Wednesday 16 June 2:15 - 4:15 PM BST
Room 2

IDT-11: Spatial Data Analysis and Sparse Estimation (IS09)
Chair: Dr. Mariko Yamamura

PROSE Paper No	Paper Title / Authors
idt21-023	Coordinate Descent Algorithm for Normal-Likelihood-Based Group Lasso in Multivariate Linear Regression Hirokazu Yanagihara, Ryoya Oda
idt21-037	Discriminant Analysis via Smoothly Varying Regularization Hisao Yoshida, Shuichi Kawano, Yoshiyuki Ninomiya
idt21-013	Optimizations for Categorizations of Explanatory Variables in Linear Regression via Generalized Fused Lasso Mineaki Ohishi, Kensuke Okamura, Yoshimichi Itoh, Hirokazu Yanagihara
idt21-030	Robust Bayesian Changepoint Analysis in the Presence of Outliers Shonosuke Sugasawa, Shintaro Hashimoto
idt21-026	Spatio-temporal Adaptive Fused Lasso for Proportion Data Mariko Yamamura, Mineaki Ohishi, Hirokazu Yanagihara
idt21-009	Variable fusion for Bayesian linear regression via spike-and-slab priors Shengyi Wu, Kaito Shimamura, Kohei Yoshikawa, Kazuaki Murayama, Shuichi Kawano

InMed Paper Presentations

InMed-01
Monday 14 June 10:30 AM - 12:30 PM BST
Room 4

InMed-01: Digital Architecture and Economics for Internet of Things, Big data, Cloud and Mobile IT in Healthcare
Chair: Yoshimasa Masuda

PROSE Paper No	Paper Title / Authors
imed21-003	Influence of Telehealth Intervention on Knowledge of Danger Signs in Pregnancy, Childbirth and Postpartum during the Health Emergency by COVID-19 in Peru Augusto Felix Olaza-Maguiña, Yuliana Mercedes De La Cruz-Ramirez
imed21-016	Support for COVID-19 Vaccination in Tamba City's Regional Comprehensive Care System Yoshiaki Fukami, Yoshimasa Masuda
imed21-019	A Proposal of Architectural Framework and Performance Indicator Derivation Model for Digitalization of Quality Management System Kasei Miura, Nobuyuki Kobayashi, Tetsuro Miyake, Seiko Shirasaka, Yoshimasa Masuda
imed21-015	Regulated Digital Pharmacy based on Electronic Health Record to Improve Prescription Services Junhao Zhong, Zhengjia Mao, Hangpeng Li, Yoshimasa Masuda, Tetsuya Toma
imed21-009	Performance Verification of a Text Analyzer using Machine Learning for Radiology Reports toward Phenotyping Takanori Yamashita, Rieko Izukura, Naoki Nakashima
imed21-007	An Optimization Model for the Tradeoff Between Efficiency and Equity for Mobile Stroke Unit Placement Saeid Amouzad Mahdiraji, Johan Holmgren, Radu-Casian Mihailescu, Jesper Petersson

InMed-02
Monday 14 June 2:00 - 4:00 PM BST
Room 4

InMed-02: Medical Watermarking
Chair: Liang Li

PROSE Paper No	Paper Title / Authors
imed21-011	A Novel Robust Watermarking Algorithm for Encrypted Medical Image based on Bandelet-DCT Yangxiu Fang, Jing Liu, Jingbing Li, Dan Yi, Wenfeng Cui, Xiliang Xiao, Baoru Han, Uzair Aslam Bhatti
imed21-012	Robust Zero Watermarking Algorithm for Encrypted Medical Image based on DWT-Gabor Xiliang Xiao, Jingbing Li, Dan Yi, Yangxiu Fang, Wenfeng Cui, Uzair Aslam Bhatti, Baoru Han
imed21-013	A Zero Watermarking Scheme for Encrypted Medical Images based on Tetrolet-DCT Wenfeng Cui, Jing Liu, Jingbing Li, Yangxiu Fang, Dan Yi, Xiliang Xiao, Uzair Aslam Bhatti, Baoru Han
imed21-014	A Robust Zero-Watermarkinging Algorithm based on PHTs-DCT for Medical Images in the Encrypted Domain Dan Yi, Jingbing Li, Yangxiu Fang, Wenfeng Cui, Xiliang Xiao, Uzair Aslam Bhatti, Baoru Han

InMed-03
Tuesday 15 June 10:15 AM - 12:15 PM BST
Room 4

InMed-03: Medical and Biological Technologies and Systems
Chair: Yen-Wei Chen

PROSE Paper No	Paper Title / Authors
imed21-005	Recent Advancements on Smartwatches and Smartbands in Healthcare Marco Cipriano, Gennaro Costagliola, Mattia De Rosa, Vittorio Fuccella, Sergiy Shevchenko
imed21-004	Prediction of Length of Stay Using Vital Signs at the Admission Time in Emergency Departments Amin Naemi, Thomas Schmidt, Marjan Mansourvar, Ali Ebrahimi, Uffe Kock Wiil
imed21-008	Knowledge Distillation with Teacher Multi-task Model for Biomedical Named Entity Recognition Tahir Mehmood, Alberto Lavelli, Ivan Serina, Alfonso Gerevini
imed21-025	Genomics-based Models for Recurrence Prediction of Non-Small Cells Lung Cancers Panyanat Aonpong, Yutaro Iwamoto, Weibin Wang, Lanfen Lin, Yen-Wei Chen
imed21-022	IDH Mutation Status Prediction by Modality-Self Attention Network Xinran Zhang, Yutaro Iwamoto, Jingliang Cheng, Jie Bai, Guohua Zhao, Xian- hua Han, Yen-Wei Chen

InMed-04
Time: 15 June 10:15 AM - 12:15 PM BST
Room 3

InMed-04: Method for Supporting Diagnostics
Chair: Satoshi Tanaka

PROSE Paper No	Paper Title / Authors
imed21-020	Automatic Joint Position Estimation Method for Diagnosis Support System in Rheumatoid Arthritis Tomio Goto, Ryota Fujimura, Koji Funahash
imed21-021	Computer-aided Diagnosis of Peritonitis on Cine-MRI Using Deep Optical Flow Network Toshiki Kawahara, Akitoshi Inoue, Yutaro Iwamoto, Akira Furukawa, Yen-Wei Chen
imed21-024	Automated Retrieval of Focal Liver Lesions in Multi-Phase CT Images Using Tensor Sparse Representation Jian Wang, Junlin Zhao, Xian-Hua Han, Lanfen Lin, Hongjie Hu, Yingying Xu, Qingqing Chen, Yutaro Iwamoto, Yen-Wei Chen
imed21-023	Colorization for Medical Images based on Patient-specific Prior Information and GAN Features Yonglong Zhang, Yizhou Chen, Wenbo Pang, Huiyan Jiang
imed21-017	Case Discrimination: Self-supervised Feature Learning for the Classification of Focal Liver Lesions Haohua Dong, Yutaro Iwamoto, Xianhua Han, Lanfen Lin, Hongjie Hu, Xiujun Cai, Yen-Wei Chen
imed21-018	Content-based Retrieval of Focal Liver Lesions Using Geometrical and Textural Features of Multi-phase CT-Scan Images Saeed Moslehi, Amir Hossein Foruzan, Yen-Wei Chen, Hongjie Hu

SEEL Paper Presentations

SEEL-01
Monday 14 June 2:00 - 4:00 PM BST
Room 3

SEEL-01: Smart Education
Chair: Dr. Vladimir Uskov

PROSE Paper No	Paper Title / Authors
	SEEL-2020: Welcome Address Vladimir L. Uskov
seel21-042	Smart Education: Predictive Analytics of Student Academic Performance using Machine Learning Models in Weka and Dataiku Systems Vladimir L. Uskov, Jeffrey P. Bakken, Prasanthi Putta, Keerthi Sree Ganapathi, Deepali Krishnakumar
seel21-026	Educational Trajectories Modeling for Practice-Oriented Higher Education Elena A. Boldyreva, Lubov S. Lisitsyna
seel21-032	A Hybrid Online Laboratory for Basic STEM Education Karsten Henke, Johannes Nau, Robert Niklas Bock, Heinz-Dietrich Wuttke
seel21-036	Approach to Relevant Data Providing for the Pedagogical Design in Knowledge-Intensive Areas Vadim D. Kholoshnia, Elena A. Boldyreva
seel21-014	Personalizing Older People Training in Modern Technologies for Successful Life in Smart Society Daria A. Barkhatova, Marina A. Bitner, Ekaterina V. Grohotova, Pavel S. Lomasko, Anna L. Simonova

SEEL-02
Monday 14 June 4:00 - 6:00 PM BST
Room 3

SEEL-02: Smart e-Learning
Chair: Dr. Elena Boldyreva

PROSE Paper No	Paper Title / Authors
seel21-025	A Smart e-Learning System for Data-Driven Grammar Learning Hengbin Yan, Yinghui Li
seel21-028	Experience in Smart e-Learning System Application when Switching to Distance Education to the Fullest Extent: the Case of the Moodle LMS Leonid L. Khoroshko, Maxim A. Vikulin, Alexey L. Khoroshko
seel21-017	Gamification Model for Developing e-Learning in Libyan Higher Education Entisar Alhadi Al Ghawail, Sadok Ben Yahia, Joma Rajab Alrzini
seel21-021	Digital Divide and Social Media Related to Smart e-Learning in Obstetrics during the Health Emergency by COVID-19 in Peru Yuliana Mercedes De La Cruz-Ramirez, Augusto Felix Olaza-Maguiña
seel21-027	Method of Planned Learning Outcomes Identification in Higher Education Based on Intellectual Analysis of Labor Market Needs Elena A. Boldyreva, Lubov S. Lisitsyna, Vadim D. Kholoshnia

SEEL-03
Tuesday 15 June 2:00 - 4:00 PM BST
Room 3

SEEL-03: Smart Education: Systems and Technology
Chair: Dr. Nunzio Casalino

PROSE Paper No	Paper Title / Authors
seel21-044	Learning Smart Behaviors through Digital Simulations: Combining Individual-, Firm- and System-Level Complexity Andrea Montefusco, Federica Angeli, Nunzio Casalino
seel21-035	Implementing Virtual Reality in K-12 Classrooms Lessons Learned from Early Adopters Espen Stranger-Johannessen, Siw Olsen Fjørtoft
seel21-034	Software Testing Education Experiences Using Collaborative Platforms Camelia Chisalita-Cretu, Florentin Bota, Andreea-Diana Pop
seel21-031	Interactive Theorem Prover Based on Calculational Logic to Assist Finite Difference and Summation Learning Federico Flaviani
seel21-023	Information Technology in Teaching Future Pop Vocalists to Promote Their Creativity at the University Svetlana A. Konovalova, Nataliya G. Tagiltseva, Oksana O. Aksarina, Svetlana V. Ward
seel21-043	Inspiring the Organizational Change and Accelerating the Digital Transition in Public Sector by Systems Thinking and System Dynamics Approaches Nunzio Casalino, Stefano Armenia, Primiano Di Nauta

SEEL-04
Tuesday 15 June 2:00 - 4:00 PM BST
Room 4

SEEL-04: Smart Education: Case Studies and Research
Chair: Dr. Seyeoung Chun

PROSE Paper No	Paper Title / Authors
seel21-045	The Effect of Emergency Remote Teaching From a Student's Perspective During COVID-19 Pandemic: Findings From a Psychological Intervention on Doping Use Tommaso Palombi, Federica Galli, Luca Mallia, Fabio Alivernini, Andrea Chirico, Thomas Zandonai, Arnaldo Zelli, Fabio Lucidi, Francesco Giancamilli
seel21-033	The Potential of Smart Pedagogies for Sustainable Education in Foreign Language Teaching Štěpánka Rubešová
seel21-030	A Case Study on Teaching a Brain–Computer Interface Interdisciplinary Course to Undergraduates Abdelkader Nasreddine Belkacem, Abderrahmane Lakas
seel21-005	Classroom of the Future Realization in the Industrialization Era: Towards 4.0 - the Future of Learning Elias Tabane, Nxumalo Lindelani, Promise Mvelase
seel21-024	Relationship Between Teacher's Teaching Expertise and Digital Literacy Seyeoung Chun, Jieun Kim, Deukjoon Kim
seel21-049	Development of a Two-Stage Teaching Strategy for Senior Psychological students in a Virtual Environment Ying Yang, Luisa Batalha

SEEL-05
Tuesday 15 June 4:00 - 6:00 PM BST
Room 3

SEEL-05: Digital Education and Economics in Smart University
Chair: Dr. Natalia A. Serdyukova

PROSE Paper No	Paper Title / Authors
seel21-008	Validating Development Indicators for Smart University: Quality Function Deployment Svetlana A. Gudkova, Lyudmila V. Glukhova, Svetlana D. Syrotyuk, Raisa K. Krayneva, Olga A. Filippova
seel21-007	Comprehensive Unified Indicator of the Smart System's Quality: Application to e-Learning Natalia A. Serdyukova, Vladimir I. Serdyukov
seel21-010	The Concept of Transition from Smart University to Smart Business in Digital Economic Environment Anna A. Sherstobitova, Lyudmila V. Glukhova, Svetlana A. Gudkova, Elena N. Korneeva, Olga A. Filippova, Tatiana G. Lyubivaya
seel21-009	University Innovative Networking in Digital Age: Theory and Simulation Anna A. Sherstobitova, Svetlana A. Gudkova, Bella V. Kazieva, Kantemir V. Kaziev, Valery M.Kaziev, Tatiana S. Yakusheva
seel21-006	Innovative “Algebraic Methods in Digitalization of Smart Systems” Course Natalia A. Serdyukova, Vladimir I. Serdyukov, Svetlana I. Shishkina
seel21-038	Using of the Taxonomic Structures in the Process of Studying the Foreign Languages Tamara Sh. Shikhnabieva, Evelina R. Yaralieva, Elena V. Lopanova, Naila A. Teplaya, and Inga Y. Stepanova

SEEL-06
Tuesday 15 June 4:00 - 6:00 PM BST
Room 4

SEEL-06: Smart Universities and Their Impact on Students with Disabilities
Chair: Dr. Jeffrey P. Bakken

PROSE Paper No	Paper Title / Authors
seel21-047	Smart Universities: Assistive Technologies for Students with Visual Impairment Jeffrey P. Bakken, Prasanthi Putta, Vladimir L. Uskov
seel21-041	A technology for Assisting Literacy Development in Adults with Dyslexia and Illiterate Second Language Learners Matteo Cristani, Serena Dal Maso, Sabrina Piccinin, Claudio Tomazzoli, Marco Vedovato, Maria Vender
seel21-048	Smart Universities: Assistive Technologies for Students with Hearing Impairment Jeffrey P. Bakken, Prasanthi Putta, Vladimir L. Uskov

SEEL-07
Wednesday 16 June 9:00 AM - 1:00 PM BST
Room 3

SEEL-07: Smart University Development: Organizational, Managerial and Social Issues
Chairs: Dr. Svetlana Gudkova, Prof. Lyudmila Glukhova, Dr. Anna A. Sherstobitova, Dr. Abdellah Chehri

PROSE Paper No	Paper Title / Authors
seel21-002	Modern Approach for Strategic Development of Smart Universities: Svetlana A. Gudkova, Lyudmila V. Glukhova, Tatiana S. Yakusheva, Elena N. Korneeva, Diana Yu. Burenkova, Inga V.Treshina
seel21-022	Project Management of Smart University Development: Models and Tools Yana S. Mitrofanova, Abdellah Chehri, Anna V. Tukshumskaya
seel21-020	Strategic Analysis of Smart University Resource Potential for Management Objectives Leyla F. Berdnikova, Veronika A. Frolova, Svetlana V. Pavlova, Dmitrii V. Zmievskii, Natalya A. Igoshina
seel21-011	Challenges of Digitalization: Smart Pedagogy for Smart University Anna A. Sherstobitova, Valery M. Kaziev, Bella V. Kazieva, Lyudmila V. Glukhova, Svetlana A. Gudkova, Tatiana S.Yakusheva
seel21-037	Smart University: Development of Analytical Management System Based on Big Data Yana S. Mitrofanova, Andrei Yu. Aleksandrov, Olga A. Ivanova, Aleksandr D. Nemtcev, Tatiana N. Popova
seel21-016	Smart University Innovation Efficiency Improvement Model Leyla F. Berdnikova, Natalia O. Mikhalenok, Olga E. Medvedeva, Dmitry S. Khmara, Oksana M. Syardova
seel21-001	Managerial Approach for Foreign Language Learning and Fostering in a Smart University Environment Svetlana A. Gudkova, Marina V. Dayneko, Natalia V. Yashchenko, Diana Yu. Burenkova, Inga V. Treshina
seel21-029	Integration of Smart Universities in the Region as a Basis for Development of Educational Information Infrastructure Yana S. Mitrofanova, Anna V. Tukshumskaya, Valentina I. Burenina, Elena V. Ivanova, Tatiana N. Popova

PROSE Paper No	Paper Title / Authors
seel21-018	Controlling as a Tool to Reduce the Risks of Smart University in the Digital Economy Leyla F. Berdnikova, Anastasia Yu. Smagina, Alina S. Neustupova, Iuliia A. Anisimova, Leonid L. Chumakov
seel21-012	BlockChain Methodology for Smart Academic Environment 37 in Russia Anna A. Sherstobitova, Valery M. Kaziev, Raisa K. Krayneva , Svetlana A. Gudkova, Olga A. Filippova1, Anton A. Gudkov
seel21-013	Use of Innovation and Emerging Technologies to Address 38 Covid-19-like Pandemics Challenges in Education Systems Abdellah Chehri, Tatiana N. Popova, Natalia V. Vinogradova, Valentina I. Burenina

STS Paper Presentations

STS-01
Monday 14 June 10:30 AM - 12:30 PM BST
Room 6

STS-01: Multimodal transport systems
Chair: Kun Gao, Chalmers

PROSE Paper No	Paper Title / Authors
sts21-001	Scheduling shore power usage at port Yu Guo, Hong Kong PolyU
sts21-003	Drone-Based Image Processing for Construction Site Safety, Transportation, and Progress Management Wen Yi, Massey University
sts21-007	Optimal Vehicle Performance Parameters selection for Electric Bus Routes Yiming Bie
sts21-009	Optimization of pure electric bus scheduling based on immune optimization algorithm Weiwei Qi, South China University of Technology
sts21-013	Modeling seafarer change at seaports in COVID-19 Yu Guo, Hong Kong PolyU

STS-02
Monday 14 June 2:00 - 4:00 PM BST
Room 6

STS-02: Road Transport
Chair: Jiaming Wu, Chalmers

PROSE Paper No	Paper Title / Authors
sts21-002	Security Analysis using Deep Learning in IoT and Intelligent Transport System Gwanggil Jeon
sts21-010	Optimal design of mixed charging station for electric transit with joint consideration of normal charging and fast charging Le Zhang, Nanjing University of Science and Technology
sts21-011	Impact of ambient temperature on electric bus energy consumption in cold regions: case study of Meihekou city, China Mrs. Mingjie Hao
sts21-012	Impacts Analysis of Rainfall on Road Traffic Operation Yadan Yan
sts21-015	An Online Processing Method for the Cooperative Control of Connected and Automated Vehicle Platoons Jiaming Wu, Chalmers
sts21-017	Measuring Transportation Accessibility Based on Different Data Sources: A state-of-the-Art Review Yadan Yan

STS-03
Tuesday 15 June 10:15 AM - 12:15 PM BST
Room 6

STS-03: Behavioral decision making
Chair: Ying Yang, ACU

PROSE Paper No	Paper Title / Authors
sts21-005	Public Transport Passenger Count Forecasting in Pandemic Scenarios Using Regression Tsetlin Machine Case Study of Agder, Norway Darshana Abeyrathna
sts21-008	Evaluation and optimization of driver's training methods in view of public awareness Weiwei Qi, South China University of Technology
sts21-006	Travel time reliability analysis of arterial road based on Burr distribution Yixiao Lu
sts21-014	Driving Style Recognition Incorporating Risk Surrogate by Support Vector Machine Qingwen Xue, Chalmers
sts21-016	Modeling Measurements towards Effect of Past Behavior on Travel Behavior Kun Gao
sts21-012	Modeling Commercial Vehicle Drivers' Acceptance of Forward Collision Warning System Yueru Xu, Southeast University

Knowledge Brokerage | Professional networks | Conferences | Publications | Membership Services

KES INTERNATIONAL

For over a decade the mission of KES International has been to provide a professional community, networking and publication opportunities for all those who work in knowledge-intensive subjects. At KES we are passionate about the dissemination, transfer, sharing & brokerage of knowledge. The KES community consists of several thousand experts, scientists, academics, engineers, students and practitioners who participate in KES activities.

KES brings people together to make ... Knowledge Connections.

KES CONFERENCES

For over 20 years KES has run conferences in different countries of the world on leading edge topics -

Intelligent Systems -- *Intelligent Decision Technologies -- Intelligent Interactive Multimedia Systems and Services -- Agent and Multi Agent Systems -- Smart Technology based Education and Training*
Sustainable Technology -- *Sustainability in Energy and Buildings, Smart Energy -- Sustainable Design and Manufacturing*.
Innovation, Knowledge Transfer, Enterprise and Entrepreneurship -- *Innovation and Knowledge Transfer -- Innovation in Medicine and Healthcare*
Digital Media -- *Archiving Tomorrow -- Innovation in Music*

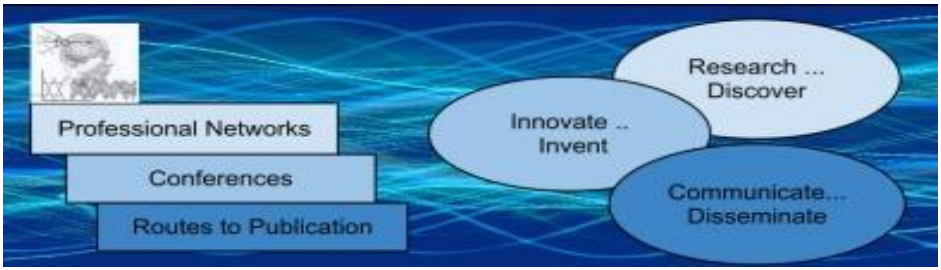
Some of the countries - Australia, Chile, Croatia, England, Germany, Japan, Ireland, Italy, Poland, Portugal, New Zealand, United States, Vietnam, Wales

KES JOURNALS

KES edits a range of journals and serials on knowledge intensive subjects -
-- International Journal of Knowledge Based and Intelligent Engineering Systems -- Intelligent Decision Technologies: an International Journal -- InImpact: the Journal of Innovation Impact -- Sustainability in Energy and Buildings: Research Advances -- Advances in Smart Systems Research

KES TRANSACTIONS -- THE KES OPEN ACCESS LIBRARY

KES Transactions is a book series containing the results of applied and theoretical research on a range of leading-edge topics. The series accepts conference proceedings, edited books and research monographs. Papers contained in KES Transactions may also appear in the KES Open Access Library (KOALA), our own online gold standard open access publishing platform.



TRAINING AND SHORT COURSES

KES can provide live and online training courses on all the topics in its portfolio. KES has good relationships with leading universities and academics around the world, and can harness these to provide excellent personal development and training courses.

DISSEMINATION OF RESEARCH RESULTS

It is essential for research groups to communicate the outcomes of their research to those that can make use of them. But academics do not want to run their own conferences. KES has specialist knowledge of how to run a conference to disseminate research results. Or a research project workshop can be run alongside a conference to increase dissemination to an even wider audience.

THE KES-IKT KNOWLEDGE ALLIANCE

KES works in partnership with the Institute of Knowledge Transfer (IKT), the sole accredited body dedicated to supporting and promoting the *knowledge professional*: those individuals involved in innovation, enterprise, and the transfer, sharing and exchange of knowledge. The IKT accredits the quality of innovation and knowledge transfer processes, practices activities, and training providers, and the professional status of its members.

ABOUT KES

Formed in 2001, KES is an independent worldwide association involving about 5000 professionals, engineers, academics, students and managers, operated on a not-for-profit basis, from a base in the UK. A number of universities around the world contribute to its organisation, operation and academic activities. KES International Operations Ltd is a company limited by guarantee that services the KES International organization.

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International Conference on Agents and Multi-Agent Systems: Technology and Applications (AMSTA-21)

International Conference on Human Centred Intelligent Systems (HCIS-21)

International Conference on Intelligent Decision Technologies (IDT-21)

International Conference on Innovation in Medicine and Healthcare (InMed-21)

International Conference on Smart Education and E-Learning (SEEL-21)

International Symposium on Smart Transportation Systems (STS-21)

Science and Education Research Council

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