

# Table of Contents

Scroll to the title and select a [Blue](#) link to open a paper. After viewing the paper, use the bookmarks to the left to return to the beginning of the Table of Contents.

---

## ***Theme: Artificial Intelligence and Agents***

### **AIED - Artificial Intelligence for Education Track**

**Track Co-Chairs:** Danial Hooshyar, Tallinn University, Estonia  
Allison Littlejohn, University College London, UK  
Mart Laanpere, Tallinn University, Estonia  
Wayne Holmes, University College London, UK  
Kaška Porayska-Pomsta, University College London, UK

**Track Editorial** ..... 1

**EdGCon: Auto-Assigner of Iconicity Ratings Grounded by Lexical Properties to Aid in Generation of Technical Gestures** ..... 3

*Sameena Hossain, Arizona State University, USA*  
*Payal Kamboj, Arizona State University, USA*  
*Aranyak Maity, Arizona State University, USA*  
*Tamiko Azuma, Arizona State University, USA*  
*Ayan Banerjee, Arizona State University, USA*  
*Sandeep K.S. Gupta, Arizona State University, USA*

**Image4Assess: Automatic Learning Processes Recognition Using Image Processing** ..... 11

*Hsin-Yu Lee, National Cheng Kung University, Taiwan*  
*Maral Hooshyar, National Cheng Kung University, Taiwan*  
*Chia-Ju Lin, National Cheng Kung University, Taiwan*  
*Wei-Sheng Wang, National Cheng Kung University, Taiwan*  
*Yueh-Min Huang, National Cheng Kung University, Taiwan*

**Analysis of AI Models for Student Admissions: A Case Study** ..... 17

*Kelly Van Busum, Indiana University-Purdue University Indianapolis, USA*  
*Shiaofen Fang, Indiana University-Purdue University Indianapolis, USA*

## ***Theme: Distributed Systems***

### **CC - Cloud Computing Track**

**Track Co-Chairs:** Priya Chandran, NIT Calicut, India  
SD Madhu Kumar, NIT Calicut, India

**Track Editorial** ..... 23

**A Semantic Evidence-Based Approach to Continuous Cloud Service Certification** ..... 24

*Christian Banse, Fraunhofer AISEC, Germany*  
*Immanuel Kunz, Fraunhofer AISEC, Germany*  
*Nico Haas, Fraunhofer AISEC, Germany*  
*Angelika Schneider, Fraunhofer AISEC, Germany*

<b>Digital Forgetting Using Key Decay .....</b>	<b>34</b>
<i>Marwan Adnan Darwish, Delft University of Technology, The Netherlands</i>	
<i>Apostolis Zarras, University of Piraeus, Greece</i>	
<b>CEDCES: A Cost Effective Deadline Constrained Evolutionary Scheduler for Task Graphs in Multi-Cloud System .....</b>	<b>42</b>
<i>Atharva Tekawade, Institute of Technology Jammu, India</i>	
<i>Suman Banerjee, Institute of Technology Jammu, India</i>	
<b>AI Enabled Cloud Service to Detect Conversion Fraud in E-commerce .....</b>	<b>45</b>
<i>Abhay Narayan, National Institute of Technology Calicut, India</i>	
<i>Disha Galve, National Institute of Technology Calicut, India</i>	
<i>Anu Mary Chacko, National Institute of Technology Calicut, India</i>	
<b>On the Measurement of Performance Metrics for Virtualization-Enhanced Architectures .....</b>	<b>49</b>
<i>Swapneel C. Mhatre, National Institute of Technology Calicut, India</i>	
<i>Priya Chandran, National Institute of Technology Calicut, India</i>	
<b>COSTA: A Cost-Driven Solution for Migrating Applications in Multi-Cloud Environments .....</b>	<b>57</b>
<i>Leandro C. da Silva, Universidade Federal de Pernambuco, Brazil</i>	
<i>Robson W.A. de Medeiros, Universidade Federal Rural de Pernambuco, Brazil</i>	
<i>Nelson S. Rosa, Universidade Federal de Pernambuco, Brazil</i>	
 <b>Theme: System Software and Security</b>	
<b>CPS - Cyber-Physical Systems Track</b>	
<b>Track Co-Chairs:</b>	Qiao Li, Xiamen University, China
	Pi-Cheng Hsiu, Academia Sinica, Taiwan
	Jingtong Hu, University of Pittsburgh, USA
<b>RAB: Recomputation Aided Backup for Energy Efficient Non-volatile Processors .....</b>	<b>64</b>
<i>Shuo Xu, Shandong University, China</i>	
<i>Huichuan Zheng, Shandong University, China</i>	
<i>Hao Zhang, Shandong University, China</i>	
<i>Mengying Zhao, Shandong University, China</i>	
<b>Efficient Sanitization Design for LSM-Based Key-Value Store over 3D MLC NAND Flash .....</b>	<b>72</b>
<i>Liang-Chi Chen, National Cheng Kung University, Taiwan</i>	
<i>Shu-Qi Yu, National Taiwan University, Taiwan</i>	
<i>Chien-Chung Ho, National Cheng Kung University, Taiwan</i>	
<i>Wei-Chen Wang, Massachusetts Institute of Technology, USA</i>	
<i>Yung-Chun Li, Macronix International Co., Ltd., Taiwan</i>	
<b>Towards a High-Interaction Physics-Aware HoneyNet for Industrial Control Systems .....</b>	<b>76</b>
<i>Marco Lucchese, University of Verona, Italy</i>	
<i>Massimo Merro, University of Verona, Italy</i>	
<i>Federica Paci, University of Verona, Italy</i>	
<i>Nicola Zannone, Eindhoven University of Technology, The Netherlands</i>	
<b>CCFlash: A Correlation-Aware Compression Approach in Flash Memory .....</b>	<b>80</b>
<i>Jianqiang Chen, Xiamen University, China</i>	
<i>Qiongxia Huang, Fujian Agriculture and Forestry University, China</i>	
<i>Jiebin Zhai, Xiamen University, China</i>	
<i>Zhirong Shen, Xiamen University, China</i>	

**BcBench: Exploring Throughput Processor Designs Based on Blockchain Benchmarking ..... 88**

*Xiurui Pan, Peking University and Tsinghua University, China*  
*Yue Chen, Beijing University of Posts and Telecommunications, China*  
*Shushu Yi, Peking University, China*  
*Jie Zhang, Peking University, China*

**Enhancing Polar Codes Efficiency on 3D Flash Memory by Exploiting Multiple Error Variations ..... 98**

*Yajuan Du, Wuhan University of Technology, China*  
*Ziye Wang, Wuhan University of Technology, China*  
*Yao Zhou, Wuhan University of Technology, China*  
*Taiyu Zhou, Wuhan University of Technology, China*

**IoMiRCA: Root Cause Analysis in IoT-Extended 5G Microservice Environments ..... 106**

*Zeno Heeb, Zurich University of Applied Sciences, Switzerland*  
*Onur Kalinagac, Zurich University of Applied Sciences, Switzerland*  
*Wissem Soussi, Zurich University of Applied Sciences, Switzerland*  
*Gürkan Gür, Zurich University of Applied Sciences, Switzerland*

**Traffic Intersections as Agents: A Model Checking Approach for Analysing Communicating Agents ..... 109**

*Thamilselvam B, Indian Institute of Technology Hyderabad, India*  
*Yenda Ramesh, Indian Institute of Technology Hyderabad, India*  
*Subrahmanyam Kalyanasundaram, Indian Institute of Technology Hyderabad, India*  
*M.V. Panduranga Rao, Indian Institute of Technology Hyderabad, India*

**Theme: Distributed Systems**

**DADS - Dependable, Adaptive, and Secure Distributed Systems Track**

**Track Co-Chairs:** Karl Goeschka, UAS Technikum Vienna, Austria  
Matti Hiltunen, AT&T Shannon Laboratory, USA  
Rui Oliveira, Universidade do Minho, Portugal

**Track Editorial ..... 119**

**An Extensible Framework for Implementing Byzantine Fault-Tolerant Protocols ..... 121**

*Hanish Gogada, University of Stavanger, Norway*  
*Hein Meling, University of Stavanger, Norway*  
*Leander Jehl, University of Stavanger, Norway*  
*John Ingve Olsen, University of Stavanger, Norway*

**Detection of Adversarial Attacks by Observing Deep Features with Structured Data Algorithms ..... 125**

*Tommaso Puccetti, University of Florence, Italy*  
*Andrea Ceccarelli, University of Florence, Italy*  
*Tommaso Zoppi, University of Florence, Italy*  
*Andrea Bondavalli, University of Florence, Italy*

**SOTERIA: Preserving Privacy in Distributed Machine Learning ..... 135**

*Cláudia Brito, INESC TEC & University of Minho, Portugal*  
*Pedro Ferreira, INESC TEC & Faculty of Sciences, University of Porto, Portugal*  
*Bernardo Portela, INESC TEC & Faculty of Sciences, University of Porto, Portugal*  
*Rui Oliveira, INESC TEC & Univeristy of Minho, Portugal*  
*João Paulo, INESC TEC & Univeristy of Minho, Portugal*

<b>Deduplication vs Privacy Tradeoffs in Cloud Storage .....</b>	<b>143</b>
<i>Rodrigo Silva, INESC-ID, Instituto Superior Técnico, Universidade de Lisboa, Portugal</i>	
<i>Cláudio Correia, INESC-ID, Instituto Superior Técnico, Universidade de Lisboa, Portugal</i>	
<i>Miguel Correia, INESC-ID, Instituto Superior Técnico, Universidade de Lisboa, Portugal</i>	
<i>Luís Rodrigues, INESC-ID, Instituto Superior Técnico, Universidade de Lisboa, Portugal</i>	
<b>Proof of Swarm Based Ensemble Learning for Federated Learning Applications .....</b>	<b>152</b>
<i>Ali Raza, University of Lille, France and University of Kent, UK</i>	
<i>Kim Phuc Tran, University of Lille, France</i>	
<i>Ludovic Koehl, University of Lille, France</i>	
<i>Shujun Li, University of Kent, UK</i>	
<b>Acala: Aggregate Monitoring for Geo-Distributed Cluster Federations .....</b>	<b>156</b>
<i>Chih-Kai Huang, Univ Rennes, Inria, CNRS, IRISA, France</i>	
<i>Guillaume Pierre, Univ Rennes, Inria, CNRS, IRISA, France</i>	
<b>Cost-Effective Data Upkeep in Decentralized Storage Systems .....</b>	<b>165</b>
<i>Racin Nygaard, University of Stavanger, Norway</i>	
<i>Hein Meling, University of Stavanger, Norway</i>	
<i>John Inge Olsen, University of Stavanger, Norway</i>	
<b>Stateful Adaptive Streams with Approximate Computing and Elastic Scaling .....</b>	<b>174</b>
<i>João Francisco, Universidade de Lisboa, Portugal</i>	
<i>Miguel E. Coimbra, Universidade de Lisboa, Portugal</i>	
<i>Pedro F. Neto, Universidade de Lisboa, Portugal</i>	
<i>Felix Freitag, Universitat Politècnica de Catalunya, BarcelonaTech, Spain</i>	
<i>Luís Veiga, Universidade de Lisboa, Portugal</i>	
<b>Defektor: An Extensible Tool for Fault Injection Campaign Management in Microservice Systems .....</b>	<b>184</b>
<i>Gonçalo Baptista, University of Coimbra, Portugal</i>	
<i>Jaime Correia, University of Coimbra, Portugal</i>	
<i>Andre Bento, University of Coimbra, Portugal</i>	
<i>João Soares, Fiercely, Portugal</i>	
<i>Antonio Ferreira, Fiercely, Portugal</i>	
<i>Joao Duraes, Coimbra Polytechnic – ISEC, Portugal</i>	
<i>Raul Barbosa, University of Coimbra, Portugal</i>	
<i>Filipe Araujo, University of Coimbra, Portugal</i>	
<b>Maude Specification of Nets-within-Nets: A Formal Model of Adaptable Distributed Systems .....</b>	<b>188</b>
<i>Lorenzo Capra, Università degli Studi di Milano, Italy</i>	
<i>Michael Köhler-Bußmeier, University of Applied Science Hamburg, Germany</i>	
<b>Fluidity: Location-Awareness in Replicated State Machines .....</b>	<b>192</b>
<i>Johannes Köstler, University of Passau, Germany</i>	
<i>Hans P. Reiser, Reykjavik University, Iceland</i>	
<i>Franz J. Hauck, Ulm University, Germany</i>	
<i>Gerhard Habiger, Ulm University, Germany</i>	

## **Theme: Distributed Systems**

### **DAPP - Decentralized Applications with Blockchain, DLT and Crypto-Currencies Track**

**Track Co-Chairs:** Suzana Moreno, University of Geneva, Switzerland  
Jean-Marc Seigneur, University of Geneva, Switzerland

#### **Track Editorial ..... 202**

#### **SBvote: Scalable Self-Tallying Blockchain-Based Voting ..... 203**

*Ivana Stančíková, Brno University of Technology, Czech Republic*  
*Ivan Homoliak, Brno University of Technology, Czech Republic*

#### **Ethereum Proof-of-Stake under Scrutiny ..... 212**

*Ulysse Pavloff, Université Paris-Saclay, CEA, List, France*  
*Yackolley Amoussou-Guenou, Université Paris-Saclay, CEA, List, France*  
*Sara Tucci-Piergiovanni, Université Paris-Saclay, CEA, List, France*

#### **DEDACS: Decentralized and Dynamic Access Control for Smart Contracts in a Policy-Based Manner ..... 222**

*Kristof Jannes, imec-DistriNet, KU Leuven, Belgium*  
*Vincent Reniers, imec-DistriNet, KU Leuven, Belgium*  
*Wouter Lenaerts, KU Leuven, Belgium*  
*Bert Lagaisse, imec-DistriNet, KU Leuven, Belgium*  
*Wouter Joosen, imec-DistriNet, KU Leuven, Belgium*

#### **Distributed Key Generation with Smart Contracts Using Zk-SNARKs ..... 231**

*Michael Sober, Technische Universität Hamburg, Germany*  
*Max Kobelt, Technische Universität Hamburg, Germany*  
*Giulia Scaffino, Technische Universität Wien, Austria*  
*Dominik Kaaser, Technische Universität Hamburg, Germany*  
*Stefan Schulte, Technische Universität Hamburg, Germany*

#### **NFT Trust Survey ..... 241**

*Jean-Marc Seigneur, University of Geneva, Switzerland and ArtistCert, France*  
*Suzana Moreno, University of Geneva, Switzerland*

#### **RESTChain: A Blockchain-Based Mediator for REST Interactions in Service Choreographies ..... 245**

*Francesco Donini, Institute of Informatics and Telematics CNR of Pisa, Italy*  
*Alessandro Marcelletti, University of Camerino, Italy*  
*Andrea Morichetta, University of Camerino, Italy*  
*Andrea Polini, University of Camerino, Italy*

#### **A Technology Readiness Level for Blockchain ..... 249**

*Garry Clawson, University of Lincoln, UK*

#### **Alleviating High Gas Costs by Secure and Trustless Off-Chain Execution of Smart Contracts ..... 258**

*Soroush Farokhnia, Hong Kong University of Science and Technology, China*  
*Amir Kafshdar Goharshady, Hong Kong University of Science and Technology, China*

#### **Towards Automated Verification of Bitcoin-Based Decentralised Applications ..... 262**

*Stefano Bistarelli, Università di Perugia, Italy*  
*Andrea Bracciali, University of Stirling, Scotland*  
*Rick Klomp, TZ Connect, Germany*  
*Ivan Mercanti, University of Perugia, Italy*

<b>PoRt: Non-interactive Continuous Availability Proof of Replicated Storage .....</b>	<b>270</b>
<i>Reyhaneh Rabaninejad, Tampere University, Finland</i>	
<i>Bin Liu, Tampere University, Finland</i>	
<i>Antonis Michalas, Tampere University, Finland and RISE Research Institutes of Sweden, Sweden</i>	
<b>Student Research Abstract: SplitChain – Blockchain with Fully Decentralised Dynamic Sharding Resilient to Fast Adaptive Adversaries .....</b>	<b>280</b>
<i>Arthur Rauch, Université de Rennes 1, France</i>	
<b>Theme: Information Systems</b>	
<b>DBDM - Databases and Big Data Management Track</b>	
<b>Track Co-Chairs:</b>	Ramzi Haraty, Lebanese American University, Lebanon
	Apostolos Papadopoulos, Aristotle University, Greece
	Junping Sun, Nova Southeastern University, USA
<b>Track Editorial .....</b>	<b>284</b>
<b>A Comparative Performance Evaluation of Multi-Model NoSQL Databases and Polyglot Persistence .....</b>	<b>286</b>
<i>Dimitri Van Landuyt, imec-DistriNet, KU Leuven, Belgium</i>	
<i>Vincent Reniers, imec-DistriNet, KU Leuven, Belgium</i>	
<i>Julien Benaouda, imec-DistriNet, KU Leuven, Belgium</i>	
<i>Ansar Rafique, imec-DistriNet, KU Leuven, Belgium</i>	
<i>Wouter Joosen, imec-DistriNet, KU Leuven, Belgium</i>	
<b>HSMR-RAID: Enabling a Low Overhead RAID-5 System over a Host-Managed Shingled Magnetic Recording Disk Array .....</b>	<b>294</b>
<i>Ting-Yu Lin, Yuan Ze University, Taiwan</i>	
<i>Tseng-Yi Chen, National Central University, Taiwan</i>	
<b>On Evaluating Text Similarity Measures for Customer Data Deduplication .....</b>	<b>297</b>
<i>Paweł Boiniski, Poznan University of Technology, Poland</i>	
<i>Mariusz Sienkiewicz, Poznan University of Technology, Poland</i>	
<i>Robert Wrembel, Poznan University of Technology, Poland</i>	
<i>Bartosz Bębel, Poznan University of Technology, Poland</i>	
<i>Witold Andrzejewski, Poznan University of Technology, Poland</i>	
<b>EHS: An Efficient Hashing Scheme for Persistent Memory .....</b>	<b>301</b>
<i>Dereje Regassa, Seoul National University, Korea</i>	
<i>Dongkyu Sung, Seoul National University, Korea</i>	
<i>Sunggon Kim, Seoul National University of Science and Technology, Korea</i>	
<i>Heon Young Yeom, Seoul National University, Korea</i>	
<i>Yongseok Son, Chung-Ang University, Korea</i>	
<b>NF-Log: Revisiting Log Writes in Relational Database for Efficient Persistent Memory Utilization .....</b>	<b>305</b>
<i>Zguem Sara, Seoul National University, Korea</i>	
<i>Qichen Chen, Seoul National University, Korea</i>	
<i>Heon Young Yeom, Seoul National University, Korea</i>	
<b>Exploring Alternatives of Complex Event Processing Execution Engines in Demanding Cases .....</b>	<b>313</b>
<i>Styliani Kyrama, Aristotle University of Thessaloniki, Greece</i>	
<i>Anastasios Gounaris, Aristotle University of Thessaloniki, Greece</i>	

**OCC2T: An Early-Read Dual-Track OCC Algorithm for Mixed Mode Systems** ..... 321  
*Abdullah Alhajri, University of Warwick, UK*  
*Arshad Jhumka, University of Warwick, UK*  
*Richard Kirk, University of Warwick, UK*

**MUTUAL: Multi-Domain Sentiment Classification via Uncertainty Sampling** ..... 331  
*Katerina Katsarou, Technische Universität Berlin, Germany*  
*Roxana Maria Jeney, Technische Universität Berlin, Germany*  
*Kostas Stefanidis, Tampere University, Finland*

**Theme: Information Systems**

**DM - Data Mining Track**

**Track Co-Chairs:** Hasan Jamil, University of Idaho, USA  
Rosa Meo, Università degli Studi di Torino, Italy

**Track Editorial** ..... 340

**Elastic Data Binning for Transient Pattern Analysis in Time-Domain Astrophysics** ..... 342  
*Thanapol Phungtua-eng, Shizuoka University, Japan*  
*Yoshitaka Yamamoto, Shizuoka University, Japan*  
*Shigeyuki Sako, University of Tokyo, Japan*

**Real-Life Performance of Fairness Interventions – Introducing a New Benchmarking Dataset for Fair ML** ..... 350  
*Daphne Lenders, University of Antwerp, Belgium*  
*Toon Calders, University of Antwerp, Belgium*

**A Fully Automated and Scalable Parallel Data Augmentation for Low Resource Languages Using Image and Text Analytics** ..... 358  
*Prawaal Sharma, Infosys, India*  
*Navneet Goyal, BITS Pilani, India*  
*Poonam Goyal, BITS Pilani, India*  
*Vishnupriyan K R, Infosys, India*

**Summarizing Fuzzy Tensors with Sub-tensors** ..... 362  
*Victor Henrique Silva Ribeiro, Federal University of Minas Gerais, Brazil*  
*Loïc Cerf, Federal University of Minas Gerais, Brazil*

**Discovering Process Models That Support Desired Behavior and Avoid Undesired Behavior** ..... 365  
*Ali Norouzfard, RWTH Aachen University, Germany*  
*Wil van der Aalst, RWTH Aachen University, Germany*

**Enforcement of Minimal Size and Area Constraints Before and While Mining Patterns in Fuzzy Tensors** ..... 369  
*Loïc Cerf, Federal University of Minas Gerais, Brazil*

**Multivariate Time Series Evapotranspiration Forecasting Using Machine Learning Techniques** ..... 377  
*Chalachew Muluken Liyew, Università di Torino, Italy*  
*Rosa Meo, Università di Torino, Italy*  
*Elvira Di Nardo, Università di Torino, Italy*  
*Stefano Ferraris, Politecnico di Torino and Università di Torino, Italy*

## ***Theme: Information Systems***

### **DS - Data Streams Track**

**Track Co-Chairs:** Albert Bifet, University of Waikato, New Zealand  
Joao Gama, University of Porto, Portugal  
Heitor Murilo Gomes, Victoria University of Wellington, New Zealand  
Bruno Veloso, University Portucalense, Portugal

**Track Editorial ..... 381**

**An Active Learning Budget-Based Oversampling Approach for Partially Labeled Multi-Class Imbalanced Data Streams ..... 382**

*Gabriel J. Aguiar, Virginia Commonwealth University, USA*

*Alberto Cano, Virginia Commonwealth University, USA*

**Aging and Rejuvenating Strategies for Fading Windows in Multi-Label Classification on Data Streams ..... 390**

*Martha Roseberry, Virginia Commonwealth University, USA*

*Sašo Džeroski, Jožef Stefan Institute, Slovenia*

*Albert Bifet, University of Waikato, New Zealand and Télécom ParisTech, France*

*Alberto Cano, Virginia Commonwealth University, USA*

**Accelerating the Quality Control of Genetic Sequences through Stream Processing ..... 398**

*Óscar Castellanos-Rodríguez, Universidade da Coruña, Spain*

*Roberto R. Expósito, Universidade da Coruña, Spain*

*Juan Touriño, Universidade da Coruña, Spain*

**A DTW Approach for Complex Data a Case Study with Network Data Streams ..... 402**

*Paula Raissa Silva, INESC TEC, University of Porto, Portugal*

*João Vinagre, Joint Research Centre - European Commission and University of Porto, Spain*

*João Gama, INESC TEC, University of Porto, Portugal*

**Transformer Based Early Classification for Real-Time Human Activity Recognition in Smart Homes ..... 410**

*Tae-Hoon Lee, Korea Advanced Institute of Science and Technology, Korea*

*Hyunju Kim, Korea Advanced Institute of Science and Technology, Korea*

*Dongman Lee, Korea Advanced Institute of Science and Technology, Korea*

**Online Adaptive Learning for Out-of-Round Railway Wheels Detection ..... 418**

*Afonso Lourenço, GECAD/ISEP, Portugal*

*Jorge Meira, GECAD - ISEP, Portugal*

*Goreti Marreiros, GECAD/ISEP, Portugal*

**Estimating Instantaneous Vehicle Emissions ..... 422**

*Thiago Andrade, University of Porto, INESC TEC, Portugal*

*João Gama, University of Porto, INESC TEC, Portugal*



**Theme: Artificial Intelligence and Agents**

**EC - Applications of Evolutionary Computing Track**

**Track Co-Chairs:** Federico Divina, Olavide University, Spain  
Miguel Garcia Torres, Universidad Pablo de Olavide, Spain  
Francisco Gómez, Universidad Pablo de Olavide, Spain

**Quality Diversity Evolutionary Learning of Decision Trees ..... 425**

*Andrea Ferigo, University of Trento, Italy*  
*Leonardo Lucio Custode, University of Trento, Italy*  
*Giovanni Iacca, University of Trento, Italy*

**Evolutionary Computation to Explain Deep Learning Models for Time Series Forecasting ..... 433**

*A.R. Troncoso Garcia, Pablo de Olavide University, Spain*  
*M. Martínez-Ballesteros, Universidad de Sevilla, Spain*  
*F. Martínez-Álvarez, Pablo de Olavide University, Spain*  
*A. Troncoso, Pablo de Olavide University, Spain*

**Optimal Location of Charging Stations for Electric Vehicles: A Theoretically-Sound Heuristic Approach ..... 437**

*Alfredo Cuzzocrea, University of Calabria, Italy*  
*Luigi Canadé, University of Calabria, Italy*  
*Riccardo Nicolichia, ISIRES, Italy*  
*Luca Roldo, ISIRES, Italy*

**A Bioinspired Ensemble Approach for Multi-Horizon Reference Evapotranspiration Forecasting in Portugal ..... 441**

*M.J. Jiménez-Navarro, Universidad de Sevilla, Spain*  
*M. Martínez-Ballesteros, Universidad de Sevilla, Spain*  
*I. Sofia Brito, Polytechnic Institute of Beja and Centre of Technology and Systems, Portugal*  
*F. Martínez-Álvarez, Pablo de Olavide University, Spain*  
*G. Asencio-Cortés, Pablo de Olavide University, Spain*

**Theme: System Software and Security**

**EMBS - Embedded Systems Track**

**Track Co-Chairs:** Marco D. Santambrogio, Politecnico di Milano, Italy  
Jalil Boukhobza, University of Brest, France  
Chien-Chung Ho, National Cheng Kung University, Taiwan

**Track Editorial ..... 449**

**A Software-Only Approach to Enable Diverse Redundancy on Intel GPUs for Safety-Related Kernels ..... 451**

*Nikolaos Andriotis, Barcelona Supercomputing Center and Universitat Politècnica de Catalunya, Spain*  
*Alejandro Serrano-Cases, Barcelona Supercomputing Center, Spain*  
*Sergi Alcaide, Barcelona Supercomputing Center and Universitat Politècnica de Catalunya, Spain*  
*Jaume Abella, Barcelona Supercomputing Center, Spain*  
*Francisco J. Cazorla, Barcelona Supercomputing Center, Spain*  
*Yang Peng, Intel, Germany*  
*Andrea Baldovin, Intel, Germany*  
*Michael Paulitsch, Intel, Germany*  
*Vladimir Tsymbal, Intel, Germany*

**Tracking Coherence-Related Contention Delays in Real-Time Multicore Systems ..... 461**

*Roger Pujol, Barcelona Supercomputing Center and Universitat Politècnica de Catalunya, Spain*

*Mohamed Hassan, McMaster University, Canada*

*Hamid Tabani, Barcelona Supercomputing Center, Spain*

*Jaume Abella, Barcelona Supercomputing Center, Spain*

*Francisco J. Cazorla, Barcelona Supercomputing Center, Spain*

**ASCOM: Affordable Sequence-Aware COntention Modeling in Crossbar-Based MPSoCs ..... 471**

*Jeremy Giesen, Barcelona Supercomputing Center and Universitat Politècnica de Catalunya, Spain*

*Enrico Mezzetti, Barcelona Supercomputing Center, Spain*

*Jaume Abella, Barcelona Supercomputing Center, Spain*

*Francisco J. Cazorla, Barcelona Supercomputing Center, Spain*

**A Makespan and Energy-Aware Scheduling Algorithm for Workflows under Reliability  
Constraint on a Multiprocessor Platform ..... 475**

*Atharva Tekawade, Institute of Technology Jammu, India*

*Suman Banerjee, Institute of Technology Jammu, India*

**CAT: Context Aware Tracing for Rust Asynchronous Programs ..... 483**

*Tsung-Yen Wang, National Cheng Kung University, Taiwan*

*Shao-Hua Wang, National Cheng Kung University, Taiwan*

*Chia-Heng Tu, National Cheng Kung University, Taiwan*

*Wen-Yew Liang, ADLINK Technology Inc., Taiwan*

***Theme: Information Systems***

**GIA - Geographical Information Analytics Track**

**Track Co-Chairs:** Christian Sallaberry, University of PAU & PAYS ADOUR, France

Eric Kergosien, University of LILLE, France

Gavin McArdle, University College Dublin, Ireland

Bianca Schoen-Phelan, Technological University Dublin, Ireland

**Track Editorial ..... 493**

**Detecting Road Intersections from Satellite Images Using Convolutional Neural Networks ..... 495**

*Fatma El-zahraa El-taher, Technological University Dublin, Ireland*

*Luis Miralles-Pechuán, Technological University Dublin, Ireland*

*Jane Courtney, Technological University Dublin, Ireland*

*Susan Mckeever, Technological University Dublin, Ireland*

**Graph-Based Semi-supervised Classification for Similar Wildfire Dynamics ..... 499**

*Lilian Berton, Federal University of São Paulo, Brazil*

*Pedro Leyria de Oliveira, Federal University of São Paulo, Brazil*

*Didier A. Vega-Oliveros, University of Campinas, Brazil*

**POI Types Characterization Based on Geographic Feature Embeddings ..... 507**

*Salatiel Dantas Silva, Universidade Federal de Campina Grande, Brazil*

*Claudio E.C. Campelo, Federal University of Campina Grande, Brazil*

*Maxwell Guimarães de Oliveira, Federal University of Campina Grande, Brazil*

**A General Methodology for Building Multiple Aspect Trajectories ..... 515**

*Francesco Lettich, ISTI CNR, Italy*

*Chiara Pugliese, ISTI CNR, Italy*

*Chiara Renso, ISTI CNR, Italy*

*Fabio Pinelli, IMT Lucca, Italy*

**Theme: MISSING**

**GMLR - Graph Models for Learning and Recognition Track**

**Track Co-Chairs:** Donatello Conte, University of Tours, France  
Alessandro D'Amelio, University of Milan, Italy  
Giuliano Grossi, University of Milan, Italy  
Raffaella Lanzarotti, University of Milan, Italy  
Jianyi Lin, University Cattolica del Sacro Cuore, Italy

**SymptomGraph: Identifying Symptom Clusters from Narrative Clinical Notes Using Graph Clustering ..... 518**

*Fattah Muhammad Tahabi, Indiana University-Purdue University Indianapolis, USA*  
*Susan Storey, Indiana University, USA*  
*Xiao Luo, Indiana University-Purdue University Indianapolis, USA*

**G-HIN2Vec: Distributed Heterogeneous Graph Representations for Cardholder Transactions ..... 528**

*Farouk Damoun, University of Luxembourg, Luxembourg*  
*Hamida Seba, University Lyon 1, France*  
*Jean Hilger, University of Luxembourg, Luxembourg*  
*Radu State, University of Luxembourg, Luxembourg*

**Topology Preserving Maps as Aggregations for Graph Convolutional Neural Networks ..... 536**

*Paolo Frazzetto, University of Padova, Italy*  
*Luca Pasa, University of Padova, Italy*  
*Nicolò Navarin, University of Padova, Italy*  
*Alessandro Sperduti, University of Padova, Italy*

**Quasi-CliquePool: Hierarchical Graph Pooling for Graph Classification ..... 544**

*Waqar Ali, Ca' Foscari University of Venice, Italy, Italy*  
*Sebastiano Vascon, Ca' Foscari University of Venice, Italy, Italy*  
*Thilo Stadelmann, ZHAW School of Engineering, Switzerland*  
*Marcello Pelillo, Ca' Foscari University of Venice, Italy, Italy*

**Theme: Information Systems**

**HIBIO - Health Informatics and Bioinformatics Track**

**Track Co-Chairs:** Anu Mary Chacko, National Institute of Technology Calicut, India  
Gopakumar G, National Institute of Technology Calicut, India

**Track Editorial ..... 553**

**Parallel Construction of RNA Databases for Extensive lncRNA–RNA Interaction Prediction ..... 555**

*Iñaki Amatria-Barral, CITIC, Universidade da Coruña, Spain*  
*Jorge González-Domínguez, CITIC, Universidade da Coruña, Spain*  
*Juan Touriño, CITIC, Universidade da Coruña, Spain*

**A Synthetic Dataset Generation for the Uveitis Pathology Based on MedWGAN Model ..... 559**

*Heithem Sliman, Institut National Universitaire Champollion, France*  
*Imen Megdiche, Institut National Universitaire Champollion and Université de Toulouse, France*  
*Sami Yangui, Université de Toulouse, France*  
*Aida Drira, Centre Hospitalier Universitaire de Nice, France*  
*Ines Drira, Centre Hospitalier Universitaire de Toulouse, France*  
*Elyes Lamine, Institut National Universitaire Champollion and Université de Toulouse, France*

<b>Mapping Strategies for Declarative Queries over Online Heterogeneous Biological Databases for Intelligent Responses .....</b>	<b>567</b>
<i>Hasan M. Jamil, University of Idaho, USA</i>	
<i>Kallol Naha, University of Idaho, USA</i>	
<b>MGCMA: Multi-Scale Generator with Channel-Wise Mask Attention to Generate Synthetic Contrast-Enhanced Chest Computed Tomography .....</b>	<b>575</b>
<i>Jeongho Kim, Sungkyunkwan University, Korea</i>	
<i>Yun-Gyoo Lee, Sungkyunkwan University School of Medicine, Korea</i>	
<i>Donggeun Ko, Sungkyunkwan University, Korea</i>	
<i>Taejune Kim, Sungkyunkwan University, Korea</i>	
<i>Soo-Youn Ham, Sungkyunkwan University School of Medicine, Korea</i>	
<i>Simon S. Woo, Sungkyunkwan University, Korea</i>	
<b>Automatic Detection of Signalling Behaviour from Assistance Dogs as They Forecast the Onset of Epileptic Seizures in Humans .....</b>	<b>585</b>
<i>Hitesh Raju, Dublin City University, Ireland</i>	
<i>Ankit Sharma, Dublin City University, Ireland</i>	
<i>Aoife Smeaton, Dogs for the Disabled, Ireland</i>	
<i>Alan F. Smeaton, Dublin City University, Ireland</i>	
<b>Personalized Graph Attention Network for Multivariate Time-Series Change Analysis: A Case Study on Long-Term Maternal Monitoring .....</b>	<b>593</b>
<i>Yuning Wang, University of Turku, Finland</i>	
<i>Iman Azimi, University of California, Irvine, USA</i>	
<i>Mohammad Feli, University of Turku, Finland</i>	
<i>Amir M. Rahmani, University of California, Irvine, USA</i>	
<i>Pasi Liljeberg, University of Turku, Finland</i>	
<b>Diversity-Promoting Ensemble for Medical Image Segmentation .....</b>	<b>599</b>
<i>Mariana-Iuliana Georgescu, University of Bucharest, Romania</i>	
<i>Radu Tudor Ionescu, University of Bucharest, Romain</i>	
<i>Andreea-Iuliana Miron, "Carol Davila" University of Medicine and Pharmacy, Coltea Hospital, Romania</i>	
<b>Unsupervised Forecasting and Anomaly Detection of ADLs in Single-Resident Elderly Smart Homes .....</b>	<b>607</b>
<i>Zahraa Khais Shahid, Luleå University of Technology, Sweden</i>	
<i>Saguna Saguna, Luleå University of Technology, Sweden</i>	
<i>Christer Åhlund, Luleå University of Technology, Sweden</i>	
<b>Mobile Freeze-Net with Attention-Based Loss Function for COVID-19 Detection from an Imbalanced CXR Dataset .....</b>	<b>611</b>
<i>Santanu Roy, Christ (Deemed to be University), India</i>	
<i>Rahul Khurana, Bharati Vidyapeeth's College of Engineering, India</i>	
<b>Patient-GAT: Sarcopenia Prediction Using Multi-Modal Data Fusion and Weighted Graph Attention Networks .....</b>	<b>614</b>
<i>Cary Xiao, Stanford University, USA</i>	
<i>Nam Pham, Washington University in St. Louis, USA</i>	
<i>Erik A. Imel, Indiana University, USA</i>	
<i>Xiao Luo, Indiana University-Purdue University Indianapolis, USA</i>	

**Automatic Pain Assessment with Ultra-Short Electrodermal Activity Signal ..... 618**

*Xinwei Ji, The University of Sydney, Australia*  
*Tianming Zhao, The University of Sydney, Australia*  
*Wei Li, The University of Sydney, Australia*  
*Albert Y. Zomaya, The University of Sydney, Australia*

**An ML Model for Mental Health Monitoring Using Facial Emotion Detection and Analyzing Social Media Posts ..... 626**

*Shafna V, National Institute of Technology Calicut, India*  
*SD Madhu Kumar, National Institute of Technology Calicut, India*

**The Case for tinyML in Healthcare CNNs for Real-Time On-Edge Blood Pressure Estimation ..... 629**

*Bailian Sun, McMaster University, Canada*  
*Safin Bayes, McMaster University, Canada*  
*Abdelrhman M. Abotaleb, McMaster University, Canada*  
*Mohamed Hassan, McMaster University, Canada*

**Theme: Information Systems**

**IAR - Information Access and Retrieval Track**

**Track Co-Chairs:** Gabriella Pasi, Università degli Studi di Milano Bicocca -DISCo, Italy  
Gloria Bordogna, Consiglio Nazionale delle Ricerche – CNR IREA, Italy

**Multiple Choice Online Algorithms for Technology-Assisted Reviews ..... 639**

*Otto B. Piramuthu, University of Illinois at Urbana-Champaign, USA*

**On the Effect of Low-Ranked Documents: A New Sampling Function for Selective Gradient Boosting ..... 646**

*Claudio Lucchese, Università Ca' Foscari Venezia, Italy*  
*Federico Marcuzzi, Università Ca' Foscari Venezia, Italy*  
*Salvatore Orlando, Università Ca' Foscari Venezia, Italy*

**Student Research Abstract: Unsupervised Key Term Extraction of Tornado Narratives from NOAA Storm Events Database ..... 653**

*Emma L. McDaniel, Georgia State University, USA*

**Theme: MISSING**

**IE - IoT and Edge Computing Track**

**Track Co-Chairs:** Hong Min, Gachon University, South Korea  
Sabur Baidya, University of Louisville, USA

**Track Editorial ..... 657**

**MP-DDPG: Optimal Latency-Energy Dynamic Offloading Scheme in Collaborative Cloud Networks ..... 658**

*Jui Mhatre, Kennesaw State University, USA*  
*Ahyoung Lee, Kennesaw State University, USA*

<b>An Energy-Efficient FaaS Edge Computing Platform over IoT Nodes: Focus on Consensus Algorithm .....</b>	<b>661</b>
<i>David Fernández Blanco, INSA LYON and STELLANTIS, France</i>	
<i>Frédéric Le Mouël, INSA LYON, France</i>	
<i>Julien Ponge, Red Hat, France</i>	
<i>Trista Lin, STELLANTIS, France</i>	
<b>Software Aging in a Real-Time Object Detection System on an Edge Server .....</b>	<b>671</b>
<i>Kengo Watanabe, University of Tsukuba, Japan</i>	
<i>Fumio Machida, University of Tsukuba, Japan</i>	
<i>Ermeson Andrade, Federal Rural University of Pernambuco, Brazil</i>	
<i>Roberto Pietrantuono, University of Naples Federico II, Italy</i>	
<i>Domenico Cotroneo, University of Naples Federico II, Italy</i>	
<b>Efficient Resource Augmentation of Resource Constrained UAVs through EdgeCPS .....</b>	<b>679</b>
<i>Sangil Ha, Gyeongsang National University, Korea</i>	
<i>Euteum Choi, Gyeongsang National University, Korea</i>	
<i>Dongbeom Ko, Electronics and Telecommunications Research Institute, Korea</i>	
<i>Sungjoo Kang, Electronics and Telecommunications Research Institute, Korea</i>	
<i>Seongjin Lee, Gyeongsang National University, Korea</i>	
<b>Dynamic Load Balancing of RDF Reasoning in Fog-Computing Environments .....</b>	<b>683</b>
<i>Yuma Kokubo, University of Tsukuba, Japan</i>	
<i>Toshiyuki Amagasa, University of Tsukuba, Japan</i>	
<b>Reducing Power Consumption during Server Maintenance on Edge Computing Infrastructures .....</b>	<b>691</b>
<i>Felipe Pfeifer Rubin, Pontifical Catholic University of Rio Grande do Sul, Brazil</i>	
<i>Paulo Severo de Souza, Pontifical Catholic University of Rio Grande do Sul, Brazil</i>	
<i>Tiago Ferreto, Pontifícia Universidade Católica do Rio Grande do Sul, Brazil</i>	
<b>The Not-So-Easy Task of Taking Heavy-Lift ML Models to the Edge: A Performance-Watt Perspective .....</b>	<b>699</b>
<i>Lucas Pereira, Universidade Federal do Rio Grande, Brazil</i>	
<i>Bruna Guterres, Universidade Federal do Rio Grande, Brazil</i>	
<i>Kauê Sbrissa, Universidade Federal do Rio Grande, Brazil</i>	
<i>Amanda Mendes, Universidade Federal do Rio Grande, Brazil</i>	
<i>Francisca Vermeulen, The Scottish Association for Marine Science, Scotland</i>	
<i>Lisl Lain, South Africa's Council for Scientific and Industrial Research, South Africa</i>	
<i>Marié Smith, South Africa's Council for Scientific and Industrial Research, South Africa</i>	
<i>Javier Martinez, Acondicionamiento Tarrasense Association, Spain</i>	
<i>Paulo Drews, Universidade Federal do Rio Grande, Brazil</i>	
<i>Nelson Duarte Filho, Universidade Federal do Rio Grande, Brazil</i>	
<i>Vinicus Oliveira, Universidade Federal do Rio Grande, Brazil</i>	
<i>Silvia Botelho, Universidade Federal do Rio Grande, Brazil</i>	
<i>Marcelo Pias, Universidade Federal do Rio Grande, Brazil</i>	
<b>Swapping Training Optimizers and Tiny Partial Datasets to Improve Performance of Lighter Neural Networks for Edge Devices .....</b>	<b>707</b>
<i>Alexandre M. Nascimento, Universidade Federal de São Paulo, USA</i>	
<i>Vinicius V. de Melo, Verafin Inc., Canada</i>	
<i>Márcio P. Basgalupp, Universidade Federal de São Paulo, Brazil</i>	

<b>Design and Implementation of a Blockchain-Based E-voting System by Using the Algorand Platform .....</b>	<b>715</b>
<i>Christian Esposito, University of Salerno, Italy</i>	
<i>Chang Choi, Gachon University, Korea</i>	

<b>Towards Deployment of Mobile Robot Driven Preference Learning for User-State-Specific Thermal Control in a Real-World Smart Space .....</b>	<b>724</b>
<i>Geon Kim, Korea Advanced Institute of Science and Technology, Korea</i>	
<i>Hyunju Kim, Korea Advanced Institute of Science and Technology, Korea</i>	
<i>Youngjae Kim, LG Electronics, Korea</i>	
<i>Dongman Lee, Korea Advanced Institute of Science and Technology, Korea</i>	

<b>Student Research Abstract: A Hybrid Approach to Design Embedded Software Using JavaScript's Non-blocking Principle .....</b>	<b>732</b>
<i>Fernando Luis Oliveira, Instituto Federal Farroupilha, Brazil</i>	

**Theme: MISSING**

**INTOP - Interoperability Track**

**Track Co-Chairs:** Young-Gab Kim, Sejong University, South Korea

<b>Track Editorial .....</b>	<b>736</b>
------------------------------	------------

<b>Interoperable Access Control Framework for Services Demanding High Level Security among Heterogeneous IoT Platforms .....</b>	<b>737</b>
<i>Jahoon Koo, Sejong University, Korea</i>	
<i>Giluk Kang, Sejong University, Korea</i>	
<i>Young-Gab Kim, Sejong University, Korea</i>	

<b>Interoperability of Heterogeneous Systems of Systems: Review of Challenges, Emerging Requirements and Options .....</b>	<b>741</b>
<i>Mersedeh Sadeghi, University of Cologne, Germany</i>	
<i>Alessio Carenini, CEFRIEL, Italy</i>	
<i>Oscar Corcho, Polit�cnica de Madrid, Spain</i>	
<i>Matteo Rossi, Politecnico di Milano, Italy</i>	
<i>Riccardo Santoro, Ferrovie dello Stato, Italy</i>	
<i>Andreas Vogelsang, University of Cologne, Germany</i>	

<b>Relation Modeling on Knowledge Graph for Interoperability in Recommender Systems .....</b>	<b>751</b>
<i>SeungJoo Lee, Inha University, Korea</i>	
<i>Seokho Ahn, Inha University, Korea</i>	
<i>Young-Duk Seo, Inha University, Korea</i>	

<b>WiFi-Enabled Occupancy Monitoring in Smart Buildings with a Self-Adaptive Mechanism .....</b>	<b>759</b>
<i>Muhammad Salman, Inha University, Korea</i>	
<i>Young-Duk Soe, Inha University, Korea</i>	
<i>Youngtae Noh, KENTECH, Korea</i>	

**Model-Driven Integration and the OSLC Standard: A Mapping of Applied Studies ..... 763**

*Bruno Marcelo Ferreira, Federal University of Pampa, Brazil*

*Rafael Torres, Federal University of Pampa, Brazil*

*Fábio Paulo Basso, Federal University of Pampa, Brazil*

*Rafael Z. Frantz, Regional University of Northwestern Rio Grande do Sul, Brazil*

*Diego Kreutz, Federal University of Pampa, Brazil*

*Maicon Bernardino, Federal University of Pampa, Brazil*

*Elder Rodrigues, Federal University of Pampa, Brazil*

***Theme: Artificial Intelligence and Agents***

**IRMAS - Intelligent Robotics and Multi-Agent Systems Track**

**Track Co-Chairs:** Rui P. Rocha, University of Coimbra, Portugal

**Track Editorial ..... 771**

**A Hierarchical Game-Theoretic Decision-Making for Cooperative Multi-Agent Systems under the Presence of Adversarial Agents ..... 773**

*Qin Yang, University of Georgia, USA*

*Ramviyas Parasuraman, University of Georgia, USA*

**Optimising Redundancy in Distributed Sensor Networks ..... 783**

*Cyril Monette, University of Bristol, UK*

*James Wilson, University of Bristol, UK*

**An Empirical Method for Benchmarking Multi-Robot Patrol Strategies in Adversarial Environments ..... 787**

*James C. Ward, University of Bristol, UK*

*Edmund R. Hunt, University of Bristol, UK*

**Autonomous Topological Optimisation for Multi-Robot Systems in Logistics ..... 791**

*Zuyuan Zhu, Lincoln Centre for Autonomous Systems, University of Lincoln, UK*

*Gautham P. Das, Lincoln Centre for Autonomous Systems (LCAS), University of Lincoln, UK*

*Marc Hanheide, Lincoln Centre for Autonomous Systems (LCAS), University of Lincoln, UK*

**Low-Power Footprint Inference with a Deep Neural Network Offloaded to a Service Robot through Edge Computing ..... 800**

*Pedro Silva, University of Coimbra, Portugal*

*Rui P. Rocha, University of Coimbra, Portugal*

**Multi-Robot Expansive Planning and Trajectory Evaluation for Tracking and Localization of Marine Life ..... 808**

*Kehlani A. Fay, Pomona College, USA*

*Michael Giordano, Harvey Mudd College, USA*

*Alberto Soto, Harvey Mudd College, USA*

*Christopher M. Clark, Harvey Mudd College, USA*

*Emily Spurgeon, California State University Long Beach, USA*

*James Anderson, California State University Long Beach, USA*

*Christopher G. Lowe, California State University Long Beach, USA*



**A Formalization of Multi-Agent Planning with Explicit Agent Representation ..... 816**

*Alessandro Trapasso, Sapienza University of Rome, Italy*

*Sofia Santilli, Sapienza University of Rome, Italy*

*Luca Iocchi, Sapienza University of Rome, Italy*

*Fabio Patrizi, Sapienza University of Rome, Italy*

**Theme: MISSING**

**ISDE - Intelligent Systems for Digital Era Track**

**Track Co-Chairs:** Tarmo Robal, Tallinn University of Technology, Estonia

Innar Liiv, Tallinn University of Technology, Estonia

Diana Kalibatiene, Vilnius Gediminas Technical University, Lithuania

**Track Editorial ..... 824**

**Finding Indicator Diseases of Psychiatric Disorders in BigData Using Clustered Association Rule Mining ..... 826**

*Markus Bertl, Tallinn University of Technology, Estonia*

*Mahtab Shahin, Tallinn University of Technology, Estonia*

*Peeter Ross, Tallinn University of Technology, Estonia*

*Dirk Draheim, Tallinn University of Technology, Estonia*

**Improving the Quality of Public Transportation by Dynamically Adjusting the Bus Departure Time ..... 834**

*Shuheng Cao, National Tsing Hua University, Taiwan*

*Syauki Aulia Thamrin, Asia University, Taiwan*

*Arbee L.P. Chen, Asia University, Taiwan*

**Multimodal Semantographic Metalanguage (MSM): A Novel Methodology for Digital Enablement of Semi-literates ..... 844**

*Prawaal Sharma, Infosys, India*

*Navneet Goyal, BITS Pilani, India*

*Poonam Goyal, BITS Pilani, India*

**An Efficient Feature-Based Method for People Counting ..... 852**

*Daniel Helmer, Frankfurt University of Applied Sciences, Germany*

*Heiko Hinkelmann, Frankfurt University of Applied Sciences, Germany*

*Thomas Hollstein, Tallinn University of Technology, Estonia*

**Modeling a Conversational Agent Using BDI Framework ..... 856**

*Alexandre Yukio Ichida, Pontifícia Universidade Católica do Rio Grande do Sul, Brazil*

*Felipe Meneguzzi, Pontifical Catholic University of Rio Grande do Sul, Brazil*

**On the Shift to Decentralised Identity Management in Distributed Data Exchange Systems ..... 864**

*Mariia Bakhtina, University of Tartu, Estonia*

*Raimundas Matulevičius, University of Tartu, Estonia*

*Ahmed Awad, University of Tartu, Estonia*

*Petteri Kivimäki, Nordic Institute for Interoperability Solutions, Finland*

**Deep-Learning Based Trust Management with Self-Adaptation in the Internet of Behavior ..... 874**

*Hind Bangui, Masaryk University, Czech Republic*

*Emilia Cioroai, Fraunhofer IESE, Germany*

*Mouzhi Ge, Deggendorf Institute of Technology, Germany*

*Barbora Buhnova, Masaryk University, Czech Republic*

<b>Migration from HL7 Clinical Document Architecture (CDA) to Fast Health Interoperability Resources (FHIR) in the Infectious Disease Information System of Estonia .....</b>	<b>882</b>
<i>Igor Bossenko, Tallinn University of Technology, Estonia</i>	
<i>Kerli Linna, Tallinn University of Technology, Estonia</i>	
<i>Gunnar Piho, Tallinn University of Technology, Estonia</i>	
<i>Peeter Ross, Tallinn University of Technology, Estonia</i>	
<b>AI4CITY – an Automated Machine Learning Platform for Smart Cities .....</b>	<b>886</b>
<i>Pedro José Pereira, University of Minho, Portugal</i>	
<i>Carlos Gonçalves, University of Minho, Portugal</i>	
<i>Lara Lopes Nunes, NOS SGPS, S.A, Portugal</i>	
<i>Paulo Cortez, University of Minho, Portugal</i>	
<i>Andé Pilastrri, University of Minho, Portugal</i>	
<b>Theme: Artificial Intelligence and Agents</b>	
<b>KNLP - Knowledge and Natural Language Processing Track</b>	
<b>Track Co-Chairs:</b>	Mauro Dragoni, Fondazione Bruno Kessler (FBK), Italy
	Marco Rospocher, Fondazione Bruno Kessler (FBK), Italy
<b>Dynamic Named Entity Recognition .....</b>	<b>890</b>
<i>Tristan Luiggi, Upskills R &amp;D, France</i>	
<i>Laure Soulier, Sorbonne Université, France</i>	
<i>Vincent Guigue, AgroParisTech, France</i>	
<i>Siwar Jendoubi, Upskills R &amp; D, France</i>	
<i>Aurélien Baelde, Upskills R &amp; D, France</i>	
<b>Call Reason Prediction Using Hierarchical Models .....</b>	<b>898</b>
<i>Vijay Varma Malladi, UnitedHealth Group, India</i>	
<i>Suman Roy, UnitedHealth Group, India</i>	
<b>FREDA: Flexible Relation Extraction Data Annotation .....</b>	<b>902</b>
<i>Michael Strobl, University of Alberta, Canada</i>	
<i>Amine Trabelsi, Université de Sherbrooke, Canada</i>	
<i>Osmar Zaiane, University of Alberta, Canada</i>	
<b>Zero-Shot Taxonomy Mapping for Document Classification .....</b>	<b>911</b>
<i>Lorenzo Bongiovanni, LINKS Foundation, Italy</i>	
<i>Luca Bruno, LINKS Foundation, Italy</i>	
<i>Fabrizio Dominici, LINKS Foundation, Italy</i>	
<i>Giuseppe Rizzo, LINKS Foundation, Italy</i>	
<b>REFORMIST: Hierarchical Attention Networks for Multi-Domain Sentiment Classification with Active Learning .....</b>	<b>919</b>
<i>Katerina Katsarou, Technische Universität Berlin, Germany</i>	
<i>Nabil Douss, Technische Universität Berlin, Germany</i>	
<i>Kostas Stefanidis, Tampere University, Finland</i>	

<b>BERTEPro: A New Sentence Embedding Framework for the Education and Professional Training Domain .....</b>	<b>929</b>
<i>Guillaume Lefebvre, Université Lyon 1, LIRIS Lab, France</i>	
<i>Haytham Elghazel, Université Lyon 1, LIRIS Lab, France</i>	
<i>Theodore Guillet, Inokufu, France</i>	
<i>Alexandre Aussem, Université Lyon 1, LIRIS Lab, France</i>	
<i>Matthieu Sonnati, Inokufu, France</i>	
<b>A General and NLP-Based Architecture to Perform Recommendation: A Use Case for Online Job Search and Skills Acquisition .....</b>	<b>936</b>
<i>Rubén Alonso, R2M Solution s.r.l., Italy</i>	
<i>Danilo Dessì, GESIS, Germany</i>	
<i>Antonello Meloni, University of Cagliari, Italy</i>	
<i>Diego Reforgiato Recupero, University of Cagliari, Italy</i>	
<b>Impact of Character N-grams Attention Scores for English and Russian News Articles Authorship Attribution .....</b>	<b>939</b>
<i>Liliya Makhmutova, Technological University Dublin, Ireland</i>	
<i>Robert Ross, Technological University Dublin, Ireland</i>	
<i>Giancarlo Salton, Unochapecó, Brazil</i>	
<b>Arabic Aspect Category Detection for Hotel Reviews Based on Data Augmentation and Classifier Chains .....</b>	<b>942</b>
<i>Asma Ameer, Polytechnic School of Tunisia, Tunisia</i>	
<i>Sana Hamdi, Faculty of Sciences of Tunis, Tunisia</i>	
<i>Sadok Ben Yahia, Tallinn University of Technology, Estonia</i>	
<b>A Biomedical Entity Extraction Pipeline for Oncology Health Records in Portuguese .....</b>	<b>950</b>
<i>Hugo Sousa, INESC TEC, FCUP, Portugal</i>	
<i>Arian Pasquali, INESC TEC, Portugal</i>	
<i>Alípio Mario Jorge, INESC TEC, FCUP, Portugal</i>	
<i>Catarina Sousa Santos, INESC TEC, Portugal</i>	
<i>Mário Amorim Lopes, INESC TEC, Portugal</i>	
<b>Theme: Artificial Intelligence and Agents</b>	
<b>KRR - Knowledge Representation and Reasoning Track</b>	
<b>Track Co-Chairs:</b>	Stefano Bistarelli, Università di Perugia, Italy
	Martine Ceberio, University of Texas El Paso, USA
	Eric Monfroy, Universidad Técnica Federico Santa María, Valparaíso, Chile and
	Université de Nantes, France
	Francesco Santini, Università di Perugia, Italy
	Carlo Taticchi, University of Perugia, Italy
<b>Reasoning about Non-deterministic Observability and Hypothetical Action Occurrences in Multi-Agent Domains .....</b>	<b>957</b>
<i>Loc Pham, New Mexico State University, USA</i>	
<i>Tran Cao Son, New Mexico State University, USA</i>	
<i>Enrico Pontelli, New Mexico State University, USA</i>	

<b>Dynamic Controllability of Parameterized CSTNUs .....</b>	<b>965</b>
<i>Marco Franceschetti, University of St. Gallen, Switzerland</i>	
<i>Roberto Posenato, University of Verona, Italy</i>	
<i>Carlo Combi, University of Verona, Italy</i>	
<i>Johann Eder, Alpen-Adria-Universität Klagenfurt, Austria</i>	

<b>Treating Role Assertions as First-Class Citizens in Repair and Error-Tolerant Reasoning .....</b>	<b>974</b>
<i>Franz Baader, Technische Universität Dresden, Germany</i>	
<i>Francesco Kriegel, Technische Universität Dresden, Germany</i>	
<i>Adrian Nuradiansyah, Technische Universität Dresden, Germany</i>	

<b>Optimal Repairs in Ontology Engineering as Pseudo-Contractions in Belief Change .....</b>	<b>983</b>
<i>Franz Baader, Technische Universität Dresden, Germany</i>	

<b>Breaking Symmetry for Knowledge Compilation .....</b>	<b>991</b>
<i>Andrea Balogh, University College Cork, Ireland</i>	
<i>Barry O'Sullivan, University College Cork, Ireland</i>	

<b>Representing and Manipulating Large Sequences of Argumentation Labellings .....</b>	<b>995</b>
<i>Odinaldo Rodrigues, King's College London, UK</i>	

<b>Translating FOL-Theories into SROIQ-Tboxes .....</b>	<b>1003</b>
<i>Fatima Danash, Université Grenoble Alpes, France</i>	
<i>Danielle Ziebelin, Université Grenoble Alpes, France</i>	

### ***Theme: Software Design and Development***

#### **LASD - Lean and Agile Software Development Track**

**Track Co-Chairs:** Adam Przybyłek, Gdańsk University of Technology, Poland  
Yen Ying Ng, Nicolaus Copernicus University, Poland

<b>Track Editorial .....</b>	<b>1007</b>
------------------------------	-------------

<b>An Exploratory Study about Non-functional Requirements Documentation Practices in Agile Teams .....</b>	<b>1009</b>
--	-------------

*Shahraz Nasir, Free University of Bozen-Bolzano, Italy*  
*Eduardo Guerra, Free University of Bozen-Bolzano, Italy*  
*Luciana Zaina, Federal University of São Carlos, Brazil*  
*Jorge Melegati, Free University of Bozen-Bolzano, Italy*

<b>Which Challenges Do Exist with Agile Culture in Practice? .....</b>	<b>1018</b>
--	-------------

*Thorben Kuchel, Bagilstein GmbH, Germany*  
*Michael Neumann, Hochschule Hannover, Germany*  
*Philipp Diebold, Bagilstein GmbH, Germany*  
*Eva-Maria Schön, University of Applied Science Emden/Leer, Germany*

<b>Agile GUI Testing by Computing Novel Mobile App Coverage Using Appium Tool .....</b>	<b>1026</b>
---	-------------

*Sangharatna Godbole, National Institute of Technology Warangal, India*  
*Debasish Dalei, National Institute of Technology Warangal, India*  
*Ravichandra Sadam, National Institute of Technology Warangal, India*  
*Durga Prasad Mohapatra, National Institute of Technology Rourkela, India*

**Challenges in Large-Scale Agile Software Development Projects ..... 1030**

*Hina Saeeda, Karlstad University, Sweden*  
*Muhammad Ovais Ahmad, Karlstad University, Sweden*  
*Tomas Gustavsson, Karlstad University, Sweden*

**Differences in Performance, Scalability, and Cost of Using Microservice and Monolithic Architecture ..... 1038**

*Szymon Okrój, Merapar, Poland*  
*Przemysław Jatkiewicz, University of Gdańsk, Poland*

**Tailoring Hybrid Software Processes in a Medium-Size Software Company ..... 1042**

*Jacqueline Marín, Universidad de Chile, Chile*  
*Julio Ariel Hurtado, Universidad del Cauca, Colombia*  
*María Cecilia Bastarrica, Universidad de Chile, Chile*  
*Luis Silvestre, Universidad de Talca, Chile*

**Towards a Recommender System-Based Process for Managing Risks in Scrum Projects ..... 1051**

*Ademar França de Sousa Neto, Universidade Federal de Campina Grande, Brazil*  
*Felipe Barbosa, Universidade Federal da Paraíba, Brazil*  
*Danyllo Albuquerque, Universidade Federal da Paraíba, Brazil*  
*Emanuel Dantas, Universidade Federal da Paraíba, Brazil*  
*Mirko Perkusich, Universidade Federal de Campina Grande, Brazil*  
*Hyggo Almeida, Universidade Federal de Campina Grande, Brazil*  
*Angelo Perkusich, Universidade Federal de Campina Grande, Brazil*

**Student Research Abstract: Why and Where Software Developers Are (Not) Using Project Data in Agile Retrospectives ..... 1060**

*Leon Bein, Hasso Plattner Institute, University of Potsdam, Germany*

***Theme: Distributed Systems***

**MCA - Mobile Computing and Applications Track**

**Track Co-Chairs:** Hong Va Leong, The Hong Kong Polytechnic University, China  
Sheikh Iqbal Ahamed, Marquette University, USA

**Track Editorial ..... 1064**

**Exploiting Machine-Learning Prediction for Enabling Real-Time Pixel-Scaling Techniques in Mobile Camera Applications ..... 1065**

*Shih-En Wei, National Taiwan Normal University, Taiwan*  
*Sheng-Da Tsai, National Taiwan Normal University, Taiwan*  
*Chun-Han Lin, National Taiwan Normal University, Taiwan*

**CrossChat: Instant Messaging across Different Apps on Mobile Devices ..... 1068**

*Menglong Cui, The Hong Kong Polytechnic University, China*  
*Mingsong Lv, The Hong Kong Polytechnic University, China*  
*Chuancai Gu, Huawei Technologies Co., Ltd., China*  
*Tao Yang, Huawei Technologies Co., Ltd., China*  
*Qiulin Chen, Huawei Technologies Co., Ltd., China*  
*Nan Guan, City University of Hong Kong, China*

**Adaptive Context Caching for Efficient Distributed Context Management Systems ..... 1078**

*S. Weerasinghe, Deakin University, Australia*

*A. Zaslavsky, Deakin University, Australia*

*S.W. Loke, Deakin University, Australia*

*A. Abken, Deakin University, Australia*

*A. Hassani, Deakin University, Australia*

*A. Medvedev, Deakin University, Australia*

**Theme: Artificial Intelligence and Agents**

**MLA - Machine Learning and its Applications Track**

**Track Co-Chairs:** Jee-Hyong Lee, Sungkyunkwan University, South Korea

Keon Myung Lee, Chungbuk National University, South Korea

**Prediction of Readmissions in Hospitalized Children and Adolescents by Machine Learning ..... 1088**

*Nayara Christina da Silva, Federal University of Uberlândia, Brazil*

*Marcelo Keese Albertini, Federal University of Uberlândia, Brazil*

*André Ricardo Backes, Federal University of São Carlos, Brazil*

*Geórgia das Graças Pena, Federal University of Uberlândia, Brazil*

**Robust DeepFake Detection Method Based on Ensemble of ViT and CNN ..... 1092**

*Hyunsoo Ha, Soongsil University, Korea*

*Minsang Kim, Soongsil University, Korea*

*Songhun Han, Soongsil University, Korea*

*Sangjun Lee, Soongsil University, Korea*

**ComplAI: Framework for Multi-Factor Assessment of Black-Box Supervised Machine Learning Models ..... 1096**

*Arkadipta De, Indian Institute of Technology Hyderabad, India*

*Satya Swaroop Gudipudi, CVR College of Engineering, Hyderabad, India, India*

*Sourab Panchanan, Pandit Deendayal Energy University, Gujarat, India, India*

*Maunendra Sankar Desarkar, Indian Institute of Technology Hyderabad, India*

**Exploring Candlesticks and Multi-Time Windows for Forecasting Stock-Index Movements ..... 1100**

*Kanghyeon Seo, Sogang University, Korea*

*Jihoon Yang, Sogang University, Korea*

**Estimating Phenotypic Characteristics of Tuberculosis Bacteria ..... 1110**

*Marios Zachariou, University of St Andrews, Scotland*

*Ognjen Arandelović, University of St Andrews, Scotland*

*Evelin Dombay, University of St Andrews, Scotland*

*Wilber Sabiiti, University of St Andrews, Scotland*

*Bariki Mtafya, Mbeya Medical Research Center, Tanzania*

*Derek J. Sloan, University of St Andrews, Scotland*

**FedFAME: A Data Augmentation Free Framework Based on Model Contrastive Learning for Federated Semi-supervised Learning ..... 1114**

*Shubham Malaviya, TCS Research, India*

*Manish Shukla, TCS Research, India*

*Pratik Korat, TCS Research, India*

*Sachin Lodha, TCS Research, India*

<b>Analysis of Active Semi-supervised Learning .....</b>	<b>1122</b>
<i>Lilian Berton, Federal University of São Paulo, Brazil</i>	
<i>Felipe Baz Mitsuishi, Federal University of São Paulo, Brazil</i>	
<i>Didier A. Vega-Oliveros, University of Campinas, Brazil</i>	
<b>S-ViT: Sparse Vision Transformer for Accurate Face Recognition .....</b>	<b>1130</b>
<i>Geunsu Kim, Hyundai Kefico Corp, Hyundai Motor Group, and Sungkyunkwan University, Korea</i>	
<i>Gyudo Park, Hyundai Kefico Corp, Hyundai Motor Group, and Sungkyunkwan University, Korea</i>	
<i>Sooheok Kang, Hyundai Kefico Corp, Hyundai Motor Group, Korea</i>	
<i>Simon S. Woo, Sungkyunkwan University, Korea</i>	
<b>Show, Prefer and Tell: Incorporating User Preferences into Image Captioning .....</b>	<b>1139</b>
<i>Annika Lindh, Technological University Dublin, Ireland</i>	
<i>Robert Ross, Technological University Dublin, Ireland</i>	
<i>John D. Kelleher, Technological University Dublin, Ireland</i>	
<b>Finite Multivariate McDonald's Beta Mixture Model Learning Approach in Medical Applications ...</b>	<b>1143</b>
<i>Darya Forouzanfar, Concordia University, Canada</i>	
<i>Narges Manouchehri, Concordia University, Canada</i>	
<i>Nizar Bouguila, Concordia University, Canada</i>	
<b>IMG-NILM: A Deep Learning NILM Approach Using Energy Heatmaps .....</b>	<b>1151</b>
<i>Jonah Edmonds, University of Bristol, UK</i>	
<i>Zahraa S. Abdallah, University of Bristol, UK</i>	
<b>Sec2vec: Anomaly Detection in HTTP Traffic and Malicious URLs .....</b>	<b>1154</b>
<i>Mateusz Gniewkowski, Wroclaw University of Science and Technology, Poland</i>	
<i>Henryk Maciejewski, Wroclaw University of Science and Technology, Poland</i>	
<i>Tomasz Surmacz, Wroclaw University of Science and Technology, Poland</i>	
<i>Wiktor Walentyłowicz, Wroclaw University of Science and Technology, Poland</i>	
<b>Semi-supervised Hybrid Predictive Bi-clustering Trees for Drug-Target Interaction Prediction .....</b>	<b>1163</b>
<i>André Hallwas Ribeiro Alves, Universidade Federal de São Carlos, Brazil</i>	
<i>Pedro de Carvalho Ildio Silva, Universidade de São Paulo, Brazil</i>	
<i>Ricardo Cerri, Federal University of São Carlos, Brazil</i>	
<b>Are Alternatives to Backpropagation Useful for Training Binary Neural Networks? An Experimental Study in Image Classification .....</b>	<b>1171</b>
<i>Ben Crulis, University of Tours, France</i>	
<i>Barthelemy Serres, University of Tours, France</i>	
<i>Cyril de Runz, University of Tours, France</i>	
<i>Gilles Venturini, University of Tours, France</i>	
<b>SLResNet: Neural-Network-Based End-to-End Structure Light 3D Reconstruction for Endoscope ...</b>	<b>1179</b>
<i>Yu-Shian Lin, National Taiwan University, Taiwan</i>	
<i>Chi-Sheng Shih, National Taiwan University, Taiwan</i>	
<i>Kai Ju Cheng, QuanTa Computer Inc., Taiwan</i>	
<i>Chin Kang Chang, QuanTa Computer Inc., Taiwan</i>	
<b>Machine Learning Applied on Hydraulic Actuator Control .....</b>	<b>1189</b>
<i>Thomaz Pereira da Silva Junior, Universidade Federal do Rio Grande, Brazil</i>	
<i>Everson da Silva Flores, Universidade Federal do Rio Grande, Brazil</i>	
<i>Vagner Santos da Rosa, Universidade Federal do Rio Grande, Brazil</i>	
<i>Fábio Augusto Pires Borges, Universidade Federal do Rio Grande, Brazil</i>	

<b>MultiPathGAN: Structure Preserving Stain Normalization Using Unsupervised Multi-Domain Adversarial Network with Perception Loss .....</b>	<b>1197</b>
<i>Haseeb Nazki, University of St Andrews, UK</i>	
<i>Ognjen Arandjelović, University of St Andrews, UK</i>	
<i>In Hwa Um, University of St Andrews, UK</i>	
<i>David Harrison, University of St Andrews, UK</i>	
<b>Convolutional Method for Modeling Video Temporal Context Effectively in Transformer .....</b>	<b>1205</b>
<i>Hae Sung Park, Hanyang University, Korea</i>	
<i>Yong Suk Choi, Hanyang University, Korea</i>	
<b>Federated Hyperparameter Optimisation with Flower and Optuna .....</b>	<b>1209</b>
<i>Juan Marcelo Parra-Ullauri, Bristol University, UK</i>	
<i>Xunzheng Zhang, University of Bristol, UK</i>	
<i>Anderson Bravalheri, University of Bristol, UK</i>	
<i>Reza Nejabati, University of Bristol, UK</i>	
<i>Dimitra Simeonidou, University Bristol, UK</i>	
<b>Classification by Frequent Association Rules .....</b>	<b>1217</b>
<i>Md Rayhan Kabir, University of Alberta, Canada</i>	
<i>Osmar R. Zaiane, University of Alberta, Canada</i>	
<b>MAFD: A Federated Distillation Approach with Multi-Head Attention for Recommendation Tasks .....</b>	<b>1221</b>
<i>Aming Wu, Kyungpook National University, Korea</i>	
<i>Young-Woo Kwon, Kyungpook National University, Korea</i>	
<b>Discrete Wavelet Coefficient-Based Embeddable Branch for Ultrasound Breast Masses Classification .....</b>	<b>1225</b>
<i>Mingue Song, Towson University, USA</i>	
<i>Yanggon Kim, Towson University, USA</i>	
<b>ACL TA-DA: A Dataset for Text Summarization and Generation .....</b>	<b>1233</b>
<i>Min Su Park, Sungkyunkwan University, Korea</i>	
<i>Eunil Park, Sungkyunkwan University, Korea</i>	
<b>Gradient-Based Counterfactual Generation for Sparse and Diverse Counterfactual Explanations .....</b>	<b>1240</b>
<i>Chan Sik Han, Chungbuk National University, Korea</i>	
<i>Keon Myung Lee, Chungbuk National University, Korea</i>	
<b>Rotated-DETR: An End-to-End Transformer-Based Oriented Object Detector for Aerial Images .....</b>	<b>1248</b>
<i>Jinbeom Kim, Sungkyunkwan University, Korea</i>	
<i>GilJun Lee, Sungkyunkwan University, Korea</i>	
<i>Taejune Kim, Sungkyunkwan University, Korea</i>	
<i>Simon Woo, Sungkyunkwan University, Korea</i>	
<b>Adaptive Feature Selection Using an Autoencoder and Classifier: Applied to a Radiomics Case .....</b>	<b>1256</b>
<i>Reza Hassanpour, Rotterdam University of Applied Sciences, The Netherlands</i>	
<i>Niels Netten, Rotterdam University of Applied Sciences, The Netherlands</i>	
<i>Tony Busker, Rotterdam University of Applied Sciences, The Netherlands</i>	
<i>Mortaza S. Bargh, Rotterdam University of Applied Sciences, The Netherlands</i>	
<i>Sunil Choenni, Rotterdam University of Applied Sciences, The Netherlands</i>	



**Interpretable ML Enhanced CNN Performance Analysis of cuBLAS, cuDNN and TensorRT ..... 1260**

*Zhumakhan Nazir, Nazarbayev University, Kazakhstan*

*Vladislav Yarovenko, Nazarbayev University, Kazakhstan*

*Jurn-Gyu Park, Nazarbayev University, Kazakhstan*

**Theme: Distributed Systems**

**NET - Networking Track**

**Track Co-Chairs:** Mário M. Freire, University of Beira Interior, Portugal

Marília Curado, University of Coimbra, Portugal

Ivan Ganchev, University of Limerick, Ireland

**Track Editorial ..... 1266**

**PKache: A Generic Framework for Data Plane Caching ..... 1268**

*Roy Friedman, Technion, Israel*

*Or Goaz, Technion, Israel*

*Dor Hovav, Technion, Israel*

**Topology Analysis of the XRP Ledger ..... 1277**

*Vytautas Tumas, University of Luxembourg, Luxembourg*

*Sean Rivera, University of Luxembourg, Luxembourg*

*Damien Magoni, Université de Bordeaux, France*

*Radu State, University of Luxembourg, Luxembourg*

**Time-Limited Bloom Filter ..... 1285**

*Ana Rodrigues, INESC TEC, Portugal*

*Ariel Shtul, Redis, Israel*

*Carlos Baquero, Universidade do Porto, Portugal*

*Paulo Sérgio Almeida, Universidade do Minho, Portugal*

**A Lightweight Authentication and Privacy Preservation Scheme for MQTT ..... 1289**

*Sijia Tian, University of York, UK*

*Vassilios G. Vassilakis, University of York, UK*

**Theme: System Software and Security**

**OS - Operating Systems Track**

**Track Co-Chairs:** Bongjae Kim, Chungbuk National University, South Korea

Kwanghee Won, South Dakota State University, USA

**Nioh-PT: Virtual I/O Filtering for Agile Protection against Vulnerability Windows ..... 1293**

*Mana Senuki, Keio University, Japan*

*Kenta Ishiguro, Hosei University, Japan*

*Kenji Kono, Keio University, Japan*

**Hot-Patching Platform for Executable and Linkable Format Binary Application for System Resilience ..... 1301**

*Haegon Jeong, Hanyang University, Korea*

*Jinsung An, Hanyang University, Korea*

*Kyungtae Kang, Hanyang University, Korea*

**Comparative Study on Fuchsia and Linux Device Driver Architecture ..... 1305**

*Taejoon Song, LG Electronics, Korea*

*YoungJin Kim, LG Electronics, Korea*

**MFence: Defending against Memory Access Interference in a Disaggregated Cloud Memory Platform ..... 1309**

*Jinhoon Lee, Sogang University, Korea*

*Yeonwoo Jung, Sogang University, Korea*

*Suyeon Lee, Georgia Institute of Technology, USA*

*Safdar Jamil, Sogang University, Korea*

*Sungyong Park, Sogang University, Korea*

*Kwangwon Koh, Electronics and Telecommunications Research Institute, Korea*

*Hongyeon Kim, Electronics and Telecommunications Research Institute, Korea*

*Kangho Kim, Electronics and Telecommunications Research Institute, Korea*

*Youngjae Kim, Sogang University, Korea*

**An Efficient Profiling Tool for Baseboard Management Controllers ..... 1318**

*Jaeseop Kim, Soongsil University, Korea*

*Juw Won Park, University of Louisville, USA*

*Sung Y. Shin, South Dakota State University, USA*

*Austin Hanson, Oracle, USA*

*Jaehoon An, Korea Electronics Technology Institute, Korea*

*Younghwan Kim, Korea Electronics Technology Institute, Korea*

*Jiman Hong, Soongsil University, Korea*

**Hibernation Execution Interval Based Hybrid Boot for Baseboard Management Controllers ..... 1325**

*Ajung Kim, Soongsil University, Korea*

*Gwangyong Kim, Chungbuk National University, Korea*

*Bongjae Kim, Chungbuk National University, Korea*

*Jiman Hong, Soongsil University, Korea*

**Spidermine: Low Overhead User-Level Prefetching ..... 1332**

*Jiwoong Won, Hanyang University, Korea*

*Jemin Ahn jemin, Hanyang University, Korea*

*Sangwoon Yun, Hanyang University, Korea*

*Jongchan Kim, Kookmin University, Korea*

*Kyungtae Kang, Hanyang University, Korea*

**zCeph: Achieving High Performance on Storage System Using Small Zoned ZNS SSD ..... 1342**

*Jin Yong Ha, Seoul National University, Korea*

*Heon Young Yeom, Seoul National University, Korea*

**Theme: MISSING**

**PDP - Privacy by Design in Practice Track**

**Track Co-Chairs:** Ronald Petric, Federal Commissioner for Data Protection and Freedom of Information, Germany

Christoph Sorge, Saarland University, Germany

**Privacy Compliance in Software Development: A Guide to Implementing the LGPD Principles ..... 1352**

*Lucas Dalle Rocha, University of Brasilia, Brazil*

*Geovana Ramos Sousa Silva, University of Brasilia, Brazil*

*Edna Dias Canedo, University of Brasilia, Brazil*

**Privacy by Design in Software Engineering: An Update of a Systematic Mapping Study ..... 1362**

*Shirlei Aparecida de Chaves, Federal University of Santa Catarina, Brazil*

*Fabiane Barreto Vavassori Benitti, Federal University of Santa Catarina, Brazil*

**Theme: Software Design and Development**

**PL - Programming Languages Track**

**Track Co-Chairs:** Barrett Bryant, University of North Texas, USA

Rajeev Raje, Indiana University-Purdue University-Indianapolis, USA

**Track Editorial ..... 1370**

**Type-Based Termination Analysis for Parsing Expression Grammars ..... 1372**

*Elton M. Cardoso, Universidade Federal de Ouro Preto, Brazil*

*Daniel F. Pereira, Universidade Federal de Juiz de Fora, Brazil*

*Regina S.M.A. de Paula, Universidade Federal de Juiz de Fora, Brazil*

*Leonardo V.S. Reis, Universidade Federal of Juiz de Fora, Brazil*

*Rodrigo G. Ribeiro, Universidade Federal de Ouro Preto, Brazil*

**Synchronous Cooperative Threading Model in MSSL ..... 1380**

*Darine Rammal, Université d'Orléans, France*

*Wadoud Bousdira, Université d'Orléans, France*

*Frédéric Dabrowski, Université d'Orléans, France*

**Optimizing the Order of Bytecode Handlers in Interpreters Using a Genetic Algorithm ..... 1384**

*Wanhong Huang, The University of Tokyo, Japan*

*Stefan Marr, University of Kent, UK*

*Tomoharu Ugawa, The University of Tokyo, Japan*

**Anticipation of Method Execution in Mixed Consistency Systems ..... 1394**

*Marco Giunti, NOVA University of Lisbon, Portugal*

*Hervé Paulino, NOVA University of Lisbon, Portugal*

*António Ravara, NOVA University of Lisbon, Portugal*

**Theme: Software Design and Development**

**RE - Requirements Engineering Track**

**Track Co-Chairs:** Maria Lencastre, Universidade de Pernambuco, Brazil

Beatriz Mariela Marín Campusano, Universitat Politècnica de València, Spain

Julio Cesar Leite, PUC-Rio, Brazil

**Track Editorial ..... 1402**

**A Multi-Layered Collaborative Framework for Evidence-Driven Data Requirements Engineering for Machine Learning-Based Safety-Critical Systems ..... 1404**

*Sangeeta Dey, Ajou University, Korea*

*Seok-Won Lee, Ajou University, Korea*

**Towards a FAIR Dataset for Non-functional Requirements ..... 1414**

*María Isabel Limaylla Lunarejo, Universidade da Coruña, Spain*

*Nelly Condori-Fernandez, Universidad de Santiago de Compostela, Spain*

*Miguel R. Luaces, Universidade da Coruña, Spain*

**Building User Stories and Behavior Driven Development Scenarios with a Strict Set of Concepts:  
Ontology, Benefits and Primary Validation ..... 1422**

*Samedi Heng, Université catholique de Louvain, Belgium*

*Konstantinos Tsilionis, KU Leuven, Belgium*

*Yves Wautelet, KU Leuven, Belgium*

**Theme: MISSING**

**SATTA - Software Architecture: Theory, Technology, and Applications Track**

**Track Co-Chairs:** Matteo Camilli, Politecnico di Milano, Italy  
Diego Perez Palacin, Linnaeus University, Sweden  
Patrizia Scandurra, University of Bergamo, Italy

**Track Editorial ..... 1430**

**Using Automatically Recommended Seed Mappings for Machine Learning-Based Code-to-  
Architecture Mappers ..... 1432**

*Sebastian Herold, Karlstad University, Sweden*

*Zipani Tom Sinkala, Karlstad University, Sweden*

**A Theoretical Framework for Self-Adaptive Systems: Specifications, Formalisation, and  
Architectural Implications ..... 1440**

*Ana Petrovska, Technical University of Munich, Germany*

*Thomas Hutzelmann, Technical University of Munich, Germany*

*Stefan Kugele, Technische Hochschule Ingolstadt, Germany*

**Expressive and Systematic Risk Assessments with Instance-Centric Threat Models ..... 1450**

*Stef Verreydt, imec-DistriNet, KU Leuven, Belgium*

*Dimitri Van Landuyt, imec-DistriNet, KU Leuven, Belgium*

*Wouter Joosen, imec-DistriNet, KU Leuven, Belgium*

**Theme: Software Design and Development**

**SE - Software Engineering Track**

**Track Co-Chairs:** Eunjee Song, Baylor University, USA  
Byungjeong Lee, University of Seoul, South Korea  
Jung-Won Lee, Ajou University, South Korea

**Track Editorial ..... 1458**

**Specialization of Run-Time Configuration Space at Compile-Time: An Exploratory Study ..... 1459**

*Xhevahire Tërnavá, Univ Rennes, CNRS, Inria, IRISA, France*

*Mathieu Acher, Univ Rennes, IUF, CNRS, Inria, IRISA, France*

*Benoit Combemale, Univ Rennes, CNRS, Inria, IRISA, France*

**Source Code Metrics for Software Defects Prediction ..... 1469**

*Dominik Arne Rebro, Masaryk University, Czech Republic*

*Bruno Rossi, Masaryk University, Czech Republic*

*Stanislav Chren, Masaryk University, Czech Republic*

**Deriving Metrics for Software Architectures from the “Protected Entry Points” Security Patterns ... 1473**

*Monica Buitrago, IRISA, Université de Bretagne Sud, France*

*Isabelle Borne, IRISA, Université de Bretagne Sud, France*

*Jérémy Buisson, IRISA, Académie Militaire de Saint-Cyr Coëtquidan, France*

<b>PyLC: A Framework for Transforming and Validating PLC Software Using Python and Pynguin Test Generator .....</b>	<b>1476</b>
<i>Mikael Ebrahimi Salari, Mälardalen University, Sweden</i>	
<i>Eduard Paul Enoiu, Mälardalen University, Sweden</i>	
<i>Wasif Afzal, Mälardalen University, Sweden</i>	
<i>Cristina Seceleanu, Mälardalen University, Sweden</i>	
<b>Optimization of the Product Configuration System of Renault .....</b>	<b>1486</b>
<i>Hao Xu, LIP6, France</i>	
<i>Souheib Baarir, LIP6 (now at EPITA), France</i>	
<i>Tewfik Ziadi, LIP6, Sorbonne Université, France</i>	
<i>Lom Messan Hillah, LIP6 (now at Meritis), France</i>	
<i>Siham Essodaigui, Renault, France</i>	
<i>Yves Bossu, Renault, France</i>	
<b>Survey on Trust in Software Engineering for Autonomous Dynamic Ecosystems .....</b>	<b>1490</b>
<i>Barbora Buhnova, Masaryk University, Czech Republic</i>	
<i>David Halasz, Masaryk University, Czech Republic</i>	
<i>Danish Iqbal, Masaryk University, Czech Republic</i>	
<i>Hind Bangui, Masaryk University, Czech Republic</i>	
<b>Applying Gamification to Prioritize Requirements in Agile Projects .....</b>	<b>1498</b>
<i>Daniel Silva, Universidade de Pernambuco, Brazil</i>	
<i>Maria Lencastre, Universidade de Pernambuco, Brazil</i>	
<i>João Pimentel, Universidade Federal Rural de Pernambuco, Brazil</i>	
<i>Jaelson Castro, Universidade Federal de Pernambuco, Brazil</i>	
<i>Luiza Lira, Universidade de Pernambuco, Brazil</i>	
<b>McRepair: Multi-Chunk Program Repair via Patch Optimization with Buggy Block .....</b>	<b>1508</b>
<i>Jisung Kim, University of Seoul, Korea</i>	
<i>Byungjeong Lee, University of Seoul, Korea</i>	
<b>A Performant and Secure Single Sign-On System Using Microservices .....</b>	<b>1516</b>
<i>Mahyar T. Moghaddam, University of Southern Denmark, Denmark</i>	
<i>Andreas Edal Pedersen, University of Southern Denmark, Denmark</i>	
<i>William Walter Lillebroe Bolding, VIA University College, Denmark</i>	
<i>Torben Worm, University of Southern Denmark, Denmark</i>	
<b>Theme: System Software and Security</b>	
<b>SEC - Computer Security Track</b>	
<b>Track Co-Chairs:</b>	Giampaolo Bella, Università di Catania, Italy
	Saša Radomirovic, University of Surrey, UK
<b>Track Editorial .....</b>	<b>1520</b>
<b>Free Willy: Prune System Calls to Enhance Software Security .....</b>	<b>1522</b>
<i>Charlie Groh, Technical University of Munich, Germany</i>	
<i>Sergej Proskurin, Technical University of Munich, Germany</i>	
<i>Apostolis Zarras, University of Piraeus, Greece</i>	

**CryptSan: Leveraging ARM Pointer Authentication for Memory Safety in C/C++ ..... 1530**

*Konrad Hohentanner, Fraunhofer AISEC, Germany  
Philipp Zieris, Fraunhofer AISEC, Germany  
Julian Horsch, Fraunhofer AISEC, Germany*

**ARGANIDS: A Novel Network Intrusion Detection System Based on Adversarially Regularized Graph Autoencoder ..... 1540**

*Andrea Venturi, University of Modena and Reggio Emilia, Italy  
Matteo Ferrari, University of Modena and Reggio Emilia, Italy  
Mirco Marchetti, University of Modena and Reggio Emilia, Italy  
Michele Colajanni, University of Bologna, Italy*

**Realism versus Performance for Adversarial Examples against DL-Based NIDS ..... 1549**

*Huda Ali Alatwi, Newcastle University, UK  
Charles Morisset, Newcastle University, UK*

**RMC-PVC: A Multi-Client Reusable Verifiable Computation Protocol ..... 1558**

*Pascal Lafourcade, LIMOS, Université Clermont-Auvergne, France  
Gael Marcadet, LIMOS, Université Clermont-Auvergne, France  
Léo Robert, XLIM, Université de Limoges, France*

**The EVIL Machine: Encode, Visualize and Interpret the Leakage ..... 1566**

*Valence Cristiani, NinjaLab, France  
Maxime Lecomte, CEA-Leti, Univ. Grenoble Alpes, France  
Philippe Maurine, LIRMM, France*

**Scalable Coercion-Resistant E-voting under Weaker Trust Assumptions ..... 1576**

*Thomas Haines, Australian National University, Australia  
Johannes Müller, University of Luxembourg, Luxembourg  
Iñigo Querejeta-Azurmendi, Independent Researcher, Spain*

**Generic Privacy Preserving Private Permissioned Blockchains ..... 1585**

*Frédéric A. Hayek, Clermont-Auvergne University, CNRS, LIMOS, France  
Mirko Koscina, be ys Pay, France  
Pascal Lafourcade, Clermont-Auvergne University, CNRS, LIMOS, France  
Charles Olivier-Anclin, be ys Pay and Clermont-Auvergne University, CNRS, LIMOS, France*

***Theme: Information Systems***

**SONAMA - Social Network and Media Analysis Track**

**Track Co-Chairs:** Sang-Wook Kim, Hanyang University, South Korea  
Yunyoung Ko, University of Illinois at Urbana-Champaign, USA

**Track Editorial ..... 1593**

**A Cross-Domain Aspect-Based Sentiment Classification by Masking the Domain-Specific Words ..... 1595**

*Junhee Lee, Erasmus University Rotterdam, The Netherlands  
Flavius Frasinca, Erasmus University Rotterdam, The Netherlands  
Maria Mihaela Truşcă, Bucharest University of Economic Studies, Romania*

**Cyber Security and Online Safety Education for Schools in the UK: Looking through the Lens of Twitter Data ..... 1603**

*Jamie Knott, University of Kent, UK*

*Haiyue Yuan, University of Kent, UK*

*Matthew Boakes, University of Kent, UK*

*Shujun Li, University of Kent, UK*

**SocioPedia: Visualizing Social Knowledge over Time ..... 1607**

*Tra My Nguyen, Chung-Ang University, Korea*

*Jason J. Jung, Chung-Ang University, Korea*

**Personalized Prediction of Offensive News Comments by considering the Characteristics of Commenters ..... 1615**

*Teruki Nakahara, Kyushu University, Japan*

*Taketoshi Ushiyama, Kyushu University, Japan*

**Topic Aware Influential Member Detection in Meetup ..... 1623**

*Arpan Dam, Indian Institute of Technology Kharagpur, India*

*Suryansh Kumar, Indian Institute of Technology Kharagpur, India*

*Debarati Bhattacharjee, Indian Institute of Technology Kharagpur, India*

*Sayan Pathak, Microsoft AI and Research, USA*

*Bivas Mitra, Indian Institute of Technology Kharagpur, India*

**Graph Convolutional Neural Network for Multimodal Movie Recommendation ..... 1633**

*Prabir Mondal, Indian Institute of Technology Patna, India*

*Daipayan Chakder, Indian Institute of Technology Patna, India*

*Subham Raj, Indian Institute of Technology Patna, India*

*Sriparna Saha, Indian Institute of Technology Patna, India*

*Naoyuki Onoe, Sony Research India, India*

**Detecting and Measuring the Polarization Effects of Adversarial Botnets on Twitter ..... 1641**

*Yeonjung Lee, Arizona State University, USA*

*Mert Ozer, Arizona State University, USA*

*Steven R. Corman, Arizona State University, USA*

*Hasan Davulcu, Arizona State University, USA*

***Theme: System Software and Security***

**SP - Software Platforms Track**

**Track Co-Chairs:** Jinman Jung, Inha University, South Korea

Jun Huang, Baylor University, USA

Joonhyouk Jang, Hannam University, South Korea

**Comparing Modern Build Automation Tools for an Insurance Company ..... 1650**

*A. Koschel, Hochschule Hannover, Germany*

*K.C. Tran, Hochschule Hannover, Germany*

*A. Grunewald, Hochschule Hannover, Germany*

*M. Lange, Hochschule Hannover, Germany*

*A. Pakosch, Hochschule Hannover, Germany*

*I. Astrova, Tallinn University of Technology, Estonia*

**Hierarchical Platform Design for the Comprehensive Test and Validation of Future Power Device Using DT, RTDS, and PHILS ..... 1656**

*Jeongtaek Lim, Korea Electronics Technology Institute, Korea  
Minho Kim, Korea Electronics Technology Institute, Korea  
Kyung Sun Ham, Korea Electronics Technology Institute, Korea  
Taehyoung Kim, Korea Electronics Technology Institute, Korea*

**Optimal Charging Method for Effective Li-Ion Battery Life Extension Based on Reinforcement Learning ..... 1659**

*Minho Kim, Korea Electronics Technology Institute, Korea  
Jeongtaek Lim, Korea Electronics Technology Institute, Korea  
Kyung Sun Ham, Korea Electronics Technology Institute, Korea  
Taehyoung Kim, Korea Electronics Technology Institute, Korea*

**Detecting Suspicious Conditional Statement Using App Execution Log ..... 1662**

*Sumin Lee, Soongsil University, Korea  
Minho Park, Soongsil University, Korea  
Jiman Hong, Soongsil University, Korea*

**Security Verification Software Platform of Data-Efficient Image Transformer Based on Fast Gradient Sign Method ..... 1669**

*In-pyo Hong, Gachon University, Korea  
Gyu-ho Choi, Gachon University, Korea  
Pan-koo Kim, Chosun University, Korea  
Chang Choi, Gachon University, Korea*

***Theme: Software Design and Development***

**SVT - Software Verification and Testing Track**

**Track Co-Chairs:** Georgiana Caltais, University of Twente, The Netherlands  
Pascale Le Gall, Université Paris-Saclay, France

**Formalizing an Efficient Runtime Assertion Checker for an Arithmetic Language with Functions and Predicates ..... 1673**

*Thibaut Benjamin, Université Paris-Saclay, CEA, List, France  
Julien Signoles, Université Paris-Saclay, CEA, List, France*

**A Formal Analysis of Dutch Generic Integral Tunnel Design Models ..... 1681**

*Kevin H.J. Jilissen, Rijkswaterstaat, The Netherlands  
Peter Dieleman, Rijkswaterstaat, The Netherlands  
Jan Friso Groote, Eindhoven University of Technology, The Netherlands*

**Ownership-Based Owicki-Gries Reasoning ..... 1685**

*Mikhail Semenyuk, University of Surrey, UK  
Brijesh Dongol, University of Surrey, UK*

**BlueCov: Integrating Test Coverage and Model Checking with JBMC ..... 1695**

*Matthias Güdemann, Munich University of Applied Sciences, Germany  
Peter Schrammel, University of Sussex and Diffblue Ltd., UK*

**Multi-Thread Combinatorial Test Generation with SMT Solvers ..... 1698**

*Andrea Bombarda, University of Bergamo, Italy  
Angelo Gargantini, University of Bergamo, Italy  
Andrea Calvagna, University of Catania, Italy*



**An Efficient Black-Box Support of Advanced Coverage Criteria for Klee ..... 1706**

*Nicolas Berthier, OCamlPro, France*

*Steven De Oliveira, OCamlPro, France*

*Nikolai Kosmatov, Thales Research & Technology, France*

*Delphine Longuet, Thales Research & Technology, France*

*Romain Soulat, Thales Research & Technology, France*

**Exhaustive Branch Coverage with TreeFrog ..... 1716**

*Nicky Williams, Université Paris-Saclay, CEA, LIST, France*

**Theme: Information Systems**

**SWA - Semantic Web and Applications Track**

**Track Co-Chairs:** Soon Ae Chun, City University of New York, USA

Hyoil Han, Illinois State University, USA

Sangsoo Sung, Google Inc., USA

**Ontology-Mediated Data Migration: Deriving Migration Rules by Reasoning on Schema Descriptions ..... 1724**

*Loris Bozzato, Fondazione Bruno Kessler, Italy*

*Luciano Serafini, Fondazione Bruno Kessler, Italy*

**Inferring Threatening IoT Dependencies Using Semantic Digital Twins toward Collaborative IoT Device Management ..... 1732**

*Amal Guittoum, Orange Innovation, France*

*François Aïssaoui, Orange Innovation, France*

*Sébastien Bolle, Orange Innovation, France*

*Fabienne Boyer, University of Grenoble Alpes – LIG, France*

*Noel De Palma, University of Grenoble Alpes – LIG, France*

**An Ontology-Driven Approach for Process-Aware Risk Propagation ..... 1742**

*Gal Engelberg, Accenture Labs and University of Haifa, Isreal*

*Mattia Fumagalli, Free University of Bozen-Bolzano, Italy*

*Adrian Kuboszek, Avanade, Poland*

*Dan Klein, Accenture Labs, Israel*

*Pnina Soffer, University of Haifa, Israel*

*Giancarlo Guizzardi, University of Twente, The Netherlands*

**DISO: A Domain Ontology for Modeling Dislocations in Crystalline Materials ..... 1746**

*Ahmad Zainul Ihsan, Forschungszentrum Jülich, Institute of Advanced Simulation – Materials Data Science and Informatics (IAS-9), Germany*

*Said Fathalla, Forschungszentrum Jülich, Institute of Advanced Simulation – Materials Data Science and Informatics (IAS-9), Germany and Faculty of Science, University of Alexandria, Egypt*

*Stefan Sandfeld, Forschungszentrum Jülich, Institute of Advanced Simulation – Materials Data Science and Informatics (IAS-9) and RWTH Aachen University, Faculty 5, Germany*

**Automatic Extraction of Effective Relations in a Knowledge Graph for a Recommendation Explanation System ..... 1754**

*Shi-Jun Luo, Tokyo Institute of Technology, Japan*

*Hyoil Han, Illinois State University, USA*

*Qiong Chang, Tokyo Institute of Technology, Japan*

*Jun Miyazaki, Tokyo Institute of Technology, Japan*

**CEM: An Ontology for Crime Events in Newspaper Articles ..... 1762**

*Federica Rollo, University of Modena and Reggio Emilia, Italy*

*Laura Po, University of Modena and Reggio Emilia, Italy*

*Alessandro Castellucci, University of Modena and Reggio Emilia, Italy*

**Theme: Distributed Systems**

**WCN - Wireless Communications and Networking Track**

**Track Co-Chairs:** Dongkyun Kim, Kyungpook National University, South Korea

**Scalable Simultaneous Connectivity with Multiple APs and Virtual UEs in CF-Networks ..... 1766**

*Ayesha Siddiq, Kyungpook National University, Korea*

*Junho Seo, Kyungpook National University, Korea*

*Malik Muhammad Saad, Kyungpook National University, Korea*

*Bomi Jeong, Kyungpook National University, Korea*

*Dongkyun Kim, Kyungpook National University, Korea*

**Fairness Analysis of Deep Reinforcement Learning Based Multi-Path QUIC Scheduling ..... 1772**

*Ernesto Quevedo, Baylor University, USA*

*Jeff Donahoo, Baylor University, USA*

*Tomas Cerny, Baylor University, USA*

**An Efficient Dual Encryption of IoMT Data Using Lightweight Security Scheme for Cloud Based IoT Environment ..... 1782**

*Sanjay Kumar, Indian Institute of Technology Patna, India*

*Kumar Abhishek, Indian Institute of Technology Patna, India*

*Rutvij H. Jhaveri, Pandit Deendayal Energy University, India*

*Abdulatif Alabdulatif, Qassim University, Saudi Arabia*

*Rajkumar Gaur, Madan Mohan Malaviya University of Technology, India*

**Machine Learning for VRUs Accidents Prediction Using V2X Data ..... 1789**

*Bruno Ribeiro, University of Minho, Portugal*

*Maria João Nicolau, University of Minho, Portugal*

*Alexandre Santos, University of Minho, Portugal*

**Towards the Support of Industrial IoT Applications with TSCH ..... 1792**

*Ivanilson França Vieira Junior, University of Coimbra, Brazil*

*Jorge Granjal, University of Coimbra, Portugal*

*Marilia Curado, University of Coimbra, Portugal*

**Theme: MISSING**

**WE - Web Engineering Track**

**Track Co-Chairs:** Cristian Mateos, Unicen University, Argentina

Tim A. Majchrzak, University of Agder, Norway

**Weighted Neural Collaborative Filtering: Deep Implicit Recommendation with Weighted Positive and Negative Feedback ..... 1799**

*Stan Hennekes, Erasmus University Rotterdam, The Netherlands*

*Flavius Frasinca, Erasmus University Rotterdam, The Netherlands*

**Usability Heuristics and Guidelines for RESTful APIs and Application to a Case Study ..... 1809**

*Eduardo Mosqueira-Rey, Universidade da Coruña, Spain*

*David Alonso-Rios, Universidade da Coruña, Spain*

*Nerea Vázquez-Callejón, Universidade da Coruña, Spain*

**Million.js: A Fast Compiler-Augmented Virtual DOM for the Web ..... 1813**

*Aiden Bai, Camas High School, USA*

**Semantic-Based Adaptation of Quality of Experience in Web Multimedia Streams ..... 1821**

*Giuseppe Loseto, LUM University "Giuseppe Degennaro", Italy*

*Floriano Scioscia, Polytechnic University of Bari, Italy*

*Michele Ruta, Polytechnic University of Bari, Italy*

*Filippo Gramegna, Polytechnic University of Bari, Italy*

*Ivano Bilenchi, Polytechnic University of Bari, Italy*

**Proxy-Based Web Prefetching Exploiting Long Short-Term Memory ..... 1831**

*Jiwoong Won, Hanyang University, Korea*

*Wenbo Zou, Bytedance, Korea*

*Jemin Ahn, Hanyang University, Korea*

*Jiseoup Lim, Hanyang University, Korea*

*Gun-Woo Kim, Gyeongsang National University, Korea*

*Kyungtae Kang, Hanyang University, Korea*