# 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: Distributed Systems**

**CC - Cloud Computing and Interoperability Track**

**Track Co-Chairs:** Priya Chandran, National Institute of Technology Calicut, India  
SD Madhu Kumar, National Institute of Technology Calicut, India  
Young-Gab Kim, Sejong University, Korea

**Track Editorial**

---

**Transpose-Xen: Virtualized Mixed-Criticality through Dynamic Allocation**

John McFarland, North Carolina State University, USA  
Amro Awad, North Carolina State University, USA

**Domain Name Service Trust Delegation in Cloud Computing: Exploitation, Risks, and Defense**

Craig Laprade, George Washington University, USA  
H. Howie Huang, George Washington University, USA

**Security Interoperability in Heterogeneous IoT Platforms: Threat Model of the Interoperable OAuth 2.0 Framework**

Se-Ra Oh, Miro Corporation, Korea  
Jahoon Koo, Sejong University, Korea  
Young-Gab Kim, Sejong University, Korea

**Poster Papers**

**Deep Learning Based Self-Adaptive Framework for Environmental Interoperability in Internet of Things**

Euijong Lee, Chungbuk National University, Korea  
Sukhoon Lee, Kunsan National University, Korea  
Young-Duk Seo, Inha University, Korea

**RT-Kubernetes – Containerized Real-Time Cloud Computing**

Stefano Fiori, University of Pisa, Italy  
Luca Abeni, Scuola Superiore Sant’Anna, Italy  
Tommaso Cucinotta, Scuola Superiore Sant’Anna, Italy
Theme: Artificial Intelligence and Agents

CIVIA - Computational Intelligence and Video & Image Analysis Track

Track Co-Chairs:  Agostinho Rosa, University of Lisbon, Portugal
                  Andre L.C. Barczak, Massey University, New Zealand

Track Editorial .....................................................................................................................................................40

The Impact of Different Facial Expression Intensities on the Performance of Pre-trained Emotion Recognition Models..............................................................................................................................................41
Hermon Faria de Araujo, Universidade de São Paulo, Brazil
Fatima L.S. Nunes, Universidade de São Paulo, Brazil
Ariane Machado-Lima, Universidade de São Paulo, Brazil

A Better Loss for Visual-Textual Grounding.....................................................................................................49
Davide Rigoni, University of Padua and Fondazione Bruno Kessler, Italy
Luciano Serafini, Fondazione Bruno Kessler, Italy
Alessandro Sperduti, University of Padua, Italy

Adversarial Defense by Restricting In-Variance and Co-variance of Representations................................. 58
Jeevithan Alagurajah, University of Louisiana at Lafayette, USA
Chee-Hung Henry Chu, University of Louisiana at Lafayette, USA

Time2Vec Transformer: A Time Series Approach for Gas Detection in Seismic Data ..................................... 66
Petterson Diniz, Universidade Federal do Maranhão, Brazil
Domíngos A. Dias Junior, Universidade Federal do Maranhão, Brazil
João O.B. Diniz, Instituto Federal do Maranhão, Brazil
Anselmo Cardoso de Paiva, Universidade Federal do Maranhão, Brazil
Aristófanes Correa da Silva, Universidade Federal do Maranhão, Brazil
Marcelo Gattass, Pontifícia Universidade Católica do Rio de Janeiro, Brazil
Roberto Quevedo, Pontifícia Universidade Católica do Rio de Janeiro, Brazil
Diogo Michelon, Eneva, Brazil
Carlos Siedschlag, Eneva, Brazil
Roberto Ribeiro, Eneva, Brazil

Automated Video Editing Based on Learned Styles Using LSTM-GAN .......................................................... 73
Hsin-I Huang, National Taiwan University, Taiwan
Chi-Sheng Shih, National Taiwan University, Taiwan
Zi-Lin Yang, National Taiwan University, Taiwan

Poster Papers

Autorevise: Annotation Refinement Using Motion Signal Patterns .................................................................81
Jennifer Piane, DePaul University, USA
Yiyang Wang, DePaul University, USA
Xufan Ma, DePaul University, USA
Jacob Furst, DePaul University, USA
Daniela Stan Raicu, DePaul University, USA
Theme: System Software and Security

CPS - Cyber-Physical Systems Track

Track Co-Chairs: 
Wanli Chang, Hunan University, China
Pi-Cheng Hsiu, Academia Sinica, Taiwan
Jingtong Hu, University of Pittsburgh, USA

Track Editorial

Residual Size Is Not Enough for Anomaly Detection: Improving Detection Performance Using Residual Similarity in Multivariate Time Series

Jeong-Han Yun, The Affiliated Institute of ETRI, Korea
Jonguk Kim, The Affiliated Institute of ETRI, Korea
Won-Seok Hwang, The Affiliated Institute of ETRI, Korea
Young Geun Kim, Sungkyunkwan University, Korea
Simon S. Woo, Sungkyunkwan University, Korea
Byung-Gil Min, The Affiliated Institute of ETRI, Korea

CSP Specification and Verification of Relay-Based Railway Interlocking Systems

D.I. de Almeida Pereira, Clearsy, France
M.V.M. Oliveira, Universidade Federal do Rio Grande do Norte, Brazil
P.E.R. Bezerra, Universidade Federal do Rio Grande do Norte, Brazil
P. Bon, Université Gustave Eiffel, France
S. Collart-Dutilleul, Université Gustave Eiffel, France

On Enduring More Data through Enabling Page Rewrite Capability on Multi-Level-Cell Flash Memory

Yu-Ming Chang, Wolley, Taiwan
Chien-Chung Ho, National Cheng Kung University, Taiwan
Che-Wei Tsao, Academia Sinica, Taiwan
Shu-Hsien Liao, National Taiwan University, Taiwan
Wei-Chen Wang, Macronix International Co., Ltd. and National Taiwan University, Taiwan
Tei-Wei Kuo, City University of Hong Kong, China and National Taiwan University, Taiwan
Yuan-Hao Chang, Academia Sinica, Taiwan

RAM: Exploiting Restrained and Approximate Management for Enabling Neural Network Training on NVM-Based Systems

Chien-Chung Ho, National Cheng Kung University, Taiwan
Wei-Chen Wang, Macronix International Co., Ltd., Taiwan
Szu-Yu Chen, National Chung Cheng University, Taiwan
Yung-Chun Li, Macronix International Co., Ltd., Taiwan
Kun-Chi Chiang, Macronix International Co., Ltd., Taiwan

CIIA: Critical Infrastructure Impact Assessment

Olga Carvalho, INOV INESC Inovação, Portugal
Filipe Apolinário, INOV INESC Inovação, Portugal
Nelson Escravana, INOV INESC Inovação, Portugal
Carlos Ribeiro, Universidade de Lisboa, Portugal

Fast, Lightweight IoT Anomaly Detection Using Feature Pruning and PCA

John Carter, Drexel University, USA
Spiros Mancoridis, Drexel University, USA
Erick Galinkin, Drexel University, USA
Software-Defined Hardware-Assisted Isolation for Trusted Next-Generation IoT Systems ......................139
Filippos-George Kolimbianakis, Hellenic Mediterranean University, Greece
George Kornaros, Hellenic Mediterranean University, Greece

PICO: Privacy-Preserving Access Control in IoT Scenarios through Incomplete Information ...............147
Savio Sciancalepore, Eindhoven University of Technology, The Netherlands
Nicola Zannone, Eindhoven University of Technology, The Netherlands

Improving Response Time of Home IoT Services in Federated Learning ....................................................157
Dongjun Hwang, Chungnam National University, Korea
Hyunsu Mun, Chungnam National University, Korea
Youngseok Lee, Chungnam National University, Korea

SureSpace: Orchestrating Beacons and Witnesses to Certify Device Location ............................................164
João Tiago, INESC-ID, Instituto Superior Técnico, Universidade de Lisboa, Portugal
Samih Eisa, INESC-ID, Instituto Superior Técnico, Universidade de Lisboa, Portugal
Miguel L. Pardal, INESC-ID, Instituto Superior Técnico, Universidade de Lisboa, Portugal

Ontology-Based User Privacy Management in the Smart Grid .....................................................................174
Raisa Islam, New Mexico Tech, USA
Tomas Cerny, Baylor University, USA
Dongwan Shin, New Mexico Tech, USA

Poster Papers

FingerCI: Generating Specifications for Critical Infrastructures .................................................................183
Filipe Apolinário, INOV INESC Inovação, Portugal
Nelson Escravana, INOV INESC Inovação, Portugal
Éric Hervé, Alstef Group, France
Miguel L. Pardal, INESC-ID, Portugal
Miguel Correia, INESC-ID, Portugal

Efficient and Scalable Geographical Peer Matching for P2P Energy Sharing Communities .....................187
Romaric Duvignau, Chalmers University of Technology, Sweden
Vincenzo Gulisano, Chalmers University of Technology, Sweden
Marina Papatriantafilou, Chalmers University of Technology, Sweden

Planetary Digital Twin: A Case Study in Aquaculture ...................................................................................191
Rafael Teixeira, Federal University of Rio Grande, Brazil
Juliana Puccinelli, Federal University of Rio Grande, Brazil
Bruna de Vargas Guterres, Federal University of Rio Grande, Brazil
Marcelo Rita Pias, Federal University of Rio Grande, Brazil
Vinícius Menezes Oliveira, Federal University of Rio Grande, Brazil
Silvia Silva da Costa Botelho, Federal University of Rio Grande, Brazil
Luis Poersch, Federal University of Rio Grande, Brazil
Nelson Duarte Filho, Federal University of Rio Grande, Brazil
Ahmed Janati, Bioceanor, France
Maxime Paris, Bioceanor, France
A Framework for Representing Internet of Things Security and Privacy Policies and Detecting Potential Problems ................................................................. 198
Anthony Opara, University of Texas at Dallas, USA
Haan Johng, University of Texas at Dallas, USA
Tom Hill, Fellows Consulting Group, LLC, USA
Lawrence Chung, University of Texas at Dallas, USA

cpp-tiny-client: A Secure API Client Generator for IoT Devices ................................................................. 202
Anders Aaen Springborg, Aalborg University, Denmark
Martin Kaldahl Andersen, Aalborg University, Denmark
Kaare Holland Hattel, Aalborg University, Denmark
Michele Albano, Aalborg University, Denmark

Energy-Efficient Fog Computing-Enabled Data Transmission Protocol in Tactile Internet-Based Applications .............................................................................................. 206
Ali Kadhum Idrrees, University of Babylon, Iraq
Tara Ali-Yahiya, Universite Paris-Saclay, France
Sara Kadhum Idrrees, University of Babylon, Iraq
Raphael Couturier, Université Bourgogne Franche-Comté, France

Rethinking the Security of IoT from the Perspective of Developer Customized Device-Cloud Interaction ......................................................................................... 210
Yiwei Zhang, Shanghai Jiao Tong University, China
Juanru Li, Shanghai Jiao Tong University, China
Dawu Gu, Shanghai Jiao Tong University,

Theme: Distributed Systems

DADS - Dependable, Adaptive, and Trustworthy Distributed Systems Track
Track Co-Chairs: Karl M. Goeschka, UAS Technikum Vienna, Austria
Matti Hiltunen, AT&T Shannon Laboratory, USA
Rui Oliveira, Universidade do Minho, Portugal

Track Editorial ................................................................................................................................................... 214

A General and Configurable Framework for Blockchain-Based Marketplaces ................................................. 216
Andrea Merlina, University of Oslo, Norway
Roman Vitenberg, University of Oslo, Norway
Vinay Setty, University of Stavanger, Norway

Redundant Dataflow Applications on Clustered Manycore Architectures .................................................. 226
Christoph Külbacher, University of Augsburg, Germany
Theo Ungerer, University of Augsburg, Germany
Sebastian Altmeyer, University of Augsburg, Germany

RANC: Reward-All Nakamoto Consensus .................................................................................................. 236
Rami A. Khalil, Imperial College London, UK
Naranker Dulay, Imperial College London, UK
ElastiQuant: Elastic Quantization Strategy for Communication Efficient Distributed Machine Learning in IoT

Bharath Sudharsan, National University of Ireland, Galway, Ireland
John G. Breslin, National University of Ireland, Galway, Ireland
Muhammad Intizar Ali, Dublin City University, Ireland
Peter Corcoran, National University of Ireland, Galway, Ireland
Rajiv Ranjan, Newcastle University, UK

An Event-Driven Strategy for Reactive Replica Balancing on Apache Hadoop Distributed File System

Rhauani Weber Aita Fazul, Universidade Federal de Santa Maria, Brazil
Patrícia Pitthan Barcelos, Universidade Federal de Santa Maria, Brazil

Poster Papers

Adaptive Database Synchronization for an Online Analytical Cloud-to-Edge Continuum

Daniel Costa, INESC TEC and Universidade do Minho, Portugal
José Pereira, INESC TEC and Universidade do Minho, Portugal
Ricardo Vilaça, INESC TEC and Universidade do Minho, Portugal
Nuno Faria, INESC TEC and Universidade do Minho, Portugal

An Architecture Proposal for Checkpoint/Restore on Stateful Containers

Rodrigo H. Müller, Universidade Federal de Santa Catarina, Brazil
Cristina Meinhardt, Universidade Federal de Santa Catarina, Brazil
Odorico M. Mendizabal, Universidade Federal de Santa Catarina, Brazil

Theme: Distributed Systems

DAPP - Decentralized Applications with Blockchain, DLT and Crypto-Currencies Track
Track Co-Chairs: Suzana Maranhão Moreno, University of Geneva, Switzerland
Jean-Marc Seigneur, University of Geneva, Switzerland

Track Editorial

Trac2Chain: Trackability and Traceability of Graph Data in Blockchain with Linkage Privacy

Wenyi Tang, University of Notre Dame, USA
Changhao Chenli, University of Notre Dame, USA
Chanyang Ju, Hanyang University, Korea
Taeho Jung, University of Notre Dame, USA

Calibrating the Performance and Security of Blockchains via Information Propagation Delays

Julius Fechner, Vrije Universiteit Amsterdam, The Netherlands
Balakrishnan Chandrasekaran, Vrije Universiteit Amsterdam, The Netherlands
Marc X. Makkes, Vrije Universiteit Amsterdam, The Netherlands

Porting a Benchmark with a Classic Workload to Blockchain: TPC-C on Hyperledger Fabric

Attila Klenik, Budapest University of Technology and Economics, Hungary
Imre Kocsis, Budapest University of Technology and Economics, Hungary

FL-MAB: Client Selection and Monetization for Blockchain-Based Federated Learning

Zahra Batool, École de Technologie Supérieure, Canada
Kaiwen Zhang, École de Technologie Supérieure, Canada
Matthew Toews, École de Technologie Supérieure, Canada
Towards CBDC-Based Machine-to-Machine Payments in Consumer IoT

Nadia Pocher, Universitat Autònoma de Barcelona, Spain
Mirko Zichichi, Universidad Politécnica de Madrid, Spain

Model Checking of Vulnerabilities in Smart Contracts: A Solidity-to-CPN Approach

Ikram Garfatta, University of Tunis El Manar, Tunisia and University Sorbonne Paris North, France
Kaïs Klai, University Sorbonne Paris North, France
Mohamed Graïet, University of Monastir, Tunisia
Walid Gaaloul, Institut Mines-Télécom, Télécom SudParis, France

Poster Papers

Manipulation Detection in Cryptocurrency Markets: An Anomaly and Change Detection Based Approach

Olaf Kampers, Utrecht University, The Netherlands
Abdulhakim Qahtan, Utrecht University, The Netherlands
Swati Mathur, ChainSlayer, The Netherlands
Yannis Velegrakis, Utrecht University, The Netherlands and University of Trento, Italy

Towards a Decentralized Social Trust Solution to Proof-of-Address

Suzana Mesquita de Borba Maranhão Moreno, University of Geneva, Switzerland
Jean-Marc Seigneur, University of Geneva, Switzerland

An Extensive Agent-Based Simulation Study of Sycomore++, a DAG-Based Permissionless Ledger

Aimen Djari, Université Paris-Saclay, France
Emmanuelle Anceaume, CNRS, France
Sara Tucci-Piergiovanni, Université Paris-Saclay, France

Theme: Information Systems

DBDM - Databases and Big Data Management Track

Track Co-Chairs: Ramzi A. Haraty, Lebanese American University, Lebanon
Apostolos N. Papadopoulos, Aristotle University, Greece
Junping Sun, Nova Southeastern University, USA

Track Editorial

Toward Replicated and Asynchronous Data Streams for Edge-Cloud Applications

Owais Qayyum, University of Tromsø – The Arctic University of Norway, Norway
Weihai Yu, University of Tromsø – The Arctic University of Norway, Norway

Evaluating the Integration of Datasets

Matteo Paganelli, University of Modena and Reggio Emilia, Italy
Francesco Del Buono, University of Modena and Reggio Emilia, Italy
Francesco Guerra, University of Modena and Reggio Emilia, Italy
Nicola Ferro, University of Padua, Italy

A Graph-Based Blocking Approach for Entity Matching Using Pre-trained Contextual Embedding Models

John Bosco Mugeni, University of Tsukuba, Japan
Toshiyuki Amagasa, University of Tsukuba, Japan
Unifying Categorical Representation of Multi-Model Data ............................................................... 365
Pavel Koupil, Charles University, Czech Republic
Irena Holubová, Charles University, Czech Republic

Indexer++: Workload-Aware Online Index Tuning with Transformers and Reinforcement Learning ........................................................................................................................................ 372
Vishal Sharma, Utah State University, USA
Curtis Dyreson, Utah State University, USA

Poster Papers

Querying Multidimensional Big Data through a Chatbot System ................................................................. 381
Maria Helena Franciscatto, Federal University of Paraná, Brazil
Marcos Didonet Del Fabro, Federal University of Paraná, Brazil
Celio Trois, Federal University of Santa Maria, Brazil
Jordi Cabot, ICREA-UOC, Spain
Leon Augusto Okida Gonçalves, Federal University of Paraná, Brazil

A Comprehensive Approach to Conceptual Modelling and Visual Representation of Log Files .......... 385
Evelina Rakhmetova, Università degli Studi di Verona, Italy
Marco Garosi, Università degli Studi di Verona, Italy
Carlo Combi, Università degli Studi di Verona, Italy

Student Research Abstract: Spatial Data Processing Meets RDF Graph Exploration ......................... 389
Houssameddine Yousfi, LIAS Laboratory, France and LRIT Laboratory, Algeria

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 .................................................................................................................................................... 393

Variable Size Segmentation for Efficient Representation and Querying of Non-uniform Time Series Datasets ........................................................................................................................................ 395
Lamia Djebour, Inria, France
Reza Akbarinia, Inria, France
Florent Masseglia, Inria, France

“Do You Know Existing Accuracy Metrics Overrate Time-Series Anomaly Detection?” ...................... 403
Won-Seok Hwang, The Affiliated Institute of ETRI, Korea
Jeong-Han Yun, The Affiliated Institute of ETRI, Korea
Jonguk Kim, The Affiliated Institute of ETRI, Korea
Byung Gil Min, The Affiliated Institute of ETRI, Korea
K-Core Decomposition on Super Large Graphs with Limited Resources ................................................................. 413  
Shicheng Gao, Peking University, China  
Jie Xu, Tencent Inc., China  
Xiaosen Li, Tencent Inc., China  
Fangcheng Fu, Peking University, China  
Wentao Zhang, Peking University, China  
Wen Ouyang, Tencent Inc., China  
Yangyu Tao, Tencent Inc., China  
Bin Cui, Peking University, China

Sparse Tensor Storage by Tensor Unfolding ............................................................................................................ 423  
K. M. Azharul Hasan, Khulna University of Engineering & Technology, Bangladesh  
Md. Safayet Hossain, Khulna University of Engineering & Technology, Bangladesh

EiFFFeL: Enforcing Fairness in Forests by Flipping Leaves ................................................................................. 429  
Seyum Assefa Abebe, Ca'Foscari University of Venice, Italy  
Claudio Lucchese, Ca'Foscari University of Venice, Italy  
Salvatore Orlando, Ca'Foscari University of Venice, Italy

Poster Papers

Efficient Memory Utilization in Conformance Checking of Process Event Streams ........................................... 437  
Rashid Zaman, Eindhoven University of Technology, The Netherlands  
Marwan Hassani, Eindhoven University of Technology, The Netherlands  
Boudewijn F. van Dongen, Eindhoven University of Technology, The Netherlands

Nested Trees for Longitudinal Classification ....................................................................................................... 441  
Sergey Ovchinnik, University of Kent, UK  
Fernando Otero, University of Kent, UK  
Alex A. Freitas, University of Kent, UK

Student Research Abstract: Mining High Average Utility Pattern Using Bio-Inspired Algorithm........... 445  
Nam Ngoc Pham, Tomas Bata University, Czech Republic

Theme: Information Systems

DS - Data Streams Track

Track Co-Chairs:  Albert Bifet, AI Institute, University of Waikato, New Zealand  
Carlos Ferreira, INESC Porto, University of Porto, Portugal  
João Gama, INESC Porto, University of Porto, Portugal  
Heitor Murilo Gomes, AI Institute, University of Waikato, New Zealand

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

Optimizing ADWIN for Steady Streams ............................................................................................................... 450  
Hassan Moharram, Nile University, Egypt  
Ahmed Awad, University of Tartu, Estonia and Nile University, Egypt  
Passent M. El-Kafrawy, Nile University, Egypt

pi-Lisco: Parallel and Incremental Stream-Based Point-Cloud Clustering ....................................................... 460  
Hannaneh Najdataei, Chalmers University of Technology, Sweden  
Vincenzo Gulisano, Chalmers University of Technology, Sweden  
Philippas Tsigas, Chalmers University of Technology, Sweden  
Marina Papatriantafilou, Chalmers University of Technology, Sweden
Learning on Streaming Graphs with Experience Replay
Massimo Perini, University of Edinburgh, UK
Giorgia Ramponi, ETH Zürich, Switzerland
Paris Carbone, KTH Royal Institute of Technology, Sweden
Vasiliki Kalavri, Boston University, USA

Theme: System Software and Security

EMBS - Embedded Systems Track
Track Co-Chairs: Jalil Boukhobza, ENSTA Bretange, France
Hung-Wei Tseng, University of California Riverside, USA
Chien-Chung Ho, National Chung-Kung University, Taiwan

Track Editorial

Improving CRPD Analysis for EDF Scheduling: Trading Speed for Precision
Fabien Bouquillon, Université de Lille and Université Polytechnique Hauts-de-France, France
Giuseppe Lipari, Université de Lille, France
Smail Niar, Université Polytechnique Hauts-de-France, France

Simulating Execution Time and Power Consumption of Real-Time Tasks on Embedded Platforms
Gabriele Ara, Scuola Superiore Sant'Anna, Italy
Tommaso Cucinotta, Scuola Superiore Sant'Anna, Italy
Agostino Mascitti, Scuola Superiore Sant'Anna, Italy

CETAS: A Cluster Based Energy and Temperature Efficient Real-Time Scheduler for Heterogeneous Platforms
Yanshul Sharma, Indian Institute of Information Technology Guwahati, India
Sanjay Moulik, Indian Institute of Information Technology Guwahati, India

Detecting Return-Oriented Programming on Firmware-Only Embedded Devices Using Hardware Performance Counters
Adebayo Omotosho, University of Passau, Germany
Gebrehiwet B. Welearegai, University of Passau, Germany
Christian Hammer, University of Passau, Germany

Towards Privacy Aware Deep Learning for Embedded Systems
Vasisht Duddu, University of Waterloo, Canada
Antoine Boutet, INSA Lyon, France
Virat Shejwalkar, University of Massachusetts Amherst, USA

Poster Papers

At-Scale Assessment of Weight Clustering for Energy-Efficient Object Detection Accelerators
Martí Caro, Barcelona Supercomputing Center and Universitat Politècnica de Catalunya, Spain
Hamid Tabani, Barcelona Supercomputing Center, Spain
Jaume Abella, Barcelona Supercomputing Center, Spain

A Priority-Aware Multiqueue NIC Design for Real-Time IoT Devices
Ilja Behnke, Technische Universität Berlin, Germany
Philipp Wiesner, Technische Universität Berlin, Germany
Robert Danicki, Technische Universität Berlin, Germany
Lauritz Thamsen, Technische Universität Berlin, Germany
Theme: Information Systems

GIA - Geographical Information Analytics Track

Track Co-Chairs: Gavin McArdle, University College Dublin, Ireland  
Eric Kergosien, University of LILLE, France  
Christian Sallaberry, University of Pau & Pays de l’Adour, France  
Bianca Schoen-Phelan, Technological University Dublin, Ireland

Track Editorial ................................................................................................................................................... 537

Place Embedding across Cities in Location-Based Social Networks ............................................................. 539
Christophe Haikal, Tianjin University, China and Pôle Universitaire Léonard de Vinci, France  
Pegah Alizadeh, Pôle Universitaire Léonard de Vinci, France  
Christophe Rodrigues, Pôle Universitaire Léonard de Vinci, France  
Bi Chongke, Tianjin University, China

An ETL-Like Platform for the Processing of Mobility Data .......................................................................... 547
Maxime Masson, University of Pau and Pays Adour, France  
Cécile Cayérè, La Rochelle University, France  
Marie-Noëlle Bessagnet, University of Pau and Pays Adour, France  
Christian Sallaberry, University of Pau and Pays Adour, France  
Philippe Roose, University of Pau and Pays Adour, France  
Cyril Faucher, La Rochelle University, France

Propagation Measure on Circulation Graphs for Tourism Behavior Analysis ............................................ 556
Hugo Prevoteau, Tianjin University, China and Pôle Universitaire Léonard de Vinci, France  
Sonia Djebali, Pôle Universitaire Léonard de Vinci, France  
Zhao Laiping, Tianjin University, China  
Nicolas Travers, Pôle Universitaire Léonard de Vinci, France

Poster Papers

Discovery of Tourists’ Movement Patterns in Venice from Public Transport Data .................................... 564
Héctor Cogollos Adrián, Universidad de Burgos, Spain  
Santiago Porras Alfonso, Universidad de Burgos, Spain  
Bruno Baruque Zanón, Universidad de Burgos, Spain  
Alessandra Raffaeletà, Ca’ Foscari University of Venice, Italy  
Filippo Zanatta, Ca’ Foscari University of Venice, Italy

Theme: Artificial Intelligence and Agents

GMLR - Graph Models for Learning and Recognition Track

Track Co-Chairs: Donatello Conte, Universite de Tours, France  
Jean-Yves Ramel, Universite de Tours, France  
Giuliano Grossi, University of Milan, Italy  
Raffaella Lanzarotti, University of Milan, Italy  
Jianyi Lin, Università Cattolica del Sacro Cuore, Italy

Track Editorial ................................................................................................................................................... 568
SAGA-Net: Efficient Pointcloud Completion with Shape-Assisted Graph Attention Neural Network ............................................................................................................................................................... 569
Liuyue Xie, Carnegie Mellon University, USA
Tinglin Duan, University of Toronto, Canada
Kenji Shimada, Carnegie Mellon University, USA

Learning Football Player Features Using Graph Embeddings for Player Recommendation System ....... 577
Öznur İlayda Yılmaz, Istanbul Technical University, Turkey
Şule Gündüz Öğüdücü, Istanbul Technical University, Turkey

Deep Graph Neural Network for Video-Based Facial Pain Expression Assessment ........................................... 585
Sabrina Patania, University of Milan, Italy
Giuseppe Boccignone, University of Milan, Italy
Sathya Buršić, University of Milan, Italy
Alessandro D'Amelio, University of Milan, Italy
Raffaella Lanzarotti, University of Milan, Italy

Compact Graph Neural Network Models for Node Classification ........................................................................ 592
Luca Pasa, Università Degli Studi di Padova, Italy
Nicolò Navarin, Università Degli Studi di Padova, Italy
Alessandro Sperduti, Università Degli Studi di Padova, Italy

SRC

Student Research Abstract: Continuous-Time Generative Graph Neural Network for Attributed Dynamic Graphs .................................................................................................................................................. 600
Alice Moallemy-Oureh, University of Kassel, Germany

Student Research Abstract: Using Local Activity Encoding for Dynamic Graph Pooling in Structural-Dynamic Graphs .................................................................................................................................................. 604
Silvia Beddar-Wiesing, University of Kassel, Germany

Theme: Information Systems

HIBIO - Health Informatics and Bioinformatics Track

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

Track Editorial ................................................................................................................................................... 608

A Fast Unsupervised Assignment of ICD Codes with Clinical Notes through Explanations............... 610
Amit Kumar, Optum Global Advantage, India
Suman Roy, Optum Global Advantage, India
Sourabh Bhattacharjee, New York University, USA

Improving Ligand Transport Trajectory within Flexible Receptor in CaverDock ........................................... 619
Petra Němcová, Masaryk University, Czech Republic
Jana Hozzová, Masaryk University, Czech Republic
 Jiří Filipovič, Masaryk University, Czech Republic
Configuring a Federated Network of Real-World Patient Health Data for Multimodal Deep Learning Prediction of Health Outcomes ........................................................................................................ 627
Christian Haudenschild, University of Minnesota School of Medicine, USA
Louis Vaickus, Dartmouth Hitchcock Medical Center, USA
Joshua Levy, Dartmouth Hitchcock Medical Center, USA

Development of Biologically Interpretable Multimodal Deep Learning Model for Cancer Prognosis Prediction ..................................................................................................................636
Zarif L. Azher, Thomas Jefferson High School for Science and Technology, USA
Louis J. Vaickus, Dartmouth Hitchcock Medical Center, USA
Lucas A. Salas, Dartmouth College Geisel School of Medicine, USA
Brock C. Christensen, Dartmouth College Geisel School of Medicine, USA
Joshua J. Levy, Dartmouth Hitchcock Medical Center, USA

Disentangling Temporal and Amplitude Variations in ECG Synthesis Using Anchored GANs .................645
Nour Neifar, ReDCAD Laboratory, ENIS and Centre de Recherche en Numérique de Sfax, Tunisia
Afef Mdhaffar, ReDCAD Laboratory, ENIS and Centre de Recherche en Numérique de Sfax, Tunisia
Achraf Ben-Hamadou, Centre de Recherche en Numérique de Sfax and Laboratory of Signals, Systems, Artificial Intelligence, and Networks, Tunisia
Mohamed Jmaiel, ReDCAD Laboratory, ENIS and Centre de Recherche en Numérique de Sfax, Tunisia
Bernd Freisleben, Philipps-Universität Marburg, Germany

A Hybrid Descriptor to Improve Kidney Pathologies Classification ............................................................ 653
Laiara Cristina da Silva, Universidade Federal do Piauí, Brazil
Vinicius Ponte Machado, Universidade Federal do Piauí, Brazil
Rodrigo de Melo Sousa Veras, Universidade Federal do Piauí, Brazil
Keylla Maria de Sá Urtiga Aita, Universidade Federal do Piauí, Brazil
Semiramis Jamil Hadad do Monte, Universidade Federal do Piauí, Brazil
Nayze Lucena Sangreman Aldeman, Federal University of Delta do Parnaíba, Brazil

DAM-AL: Dilated Attention Mechanism with Attention Loss for 3D Infant Brain Image Segmentation ..........................................................................................................................660
Dinh-Hieu Hoang, University of Science, John von Neumann Institute, and Vietnam National University, Vietnam
Gia-Han Diep, University of Science, John von Neumann Institute, and Vietnam National University, Vietnam
Minh-Triet Tran, University of Science, John von Neumann Institute, and Vietnam National University, Vietnam
Ngan T.H. Le, University of Arkansas, USA

CheReS: A Deep Learning-Based Multi-Faceted System for Similarity Search of Chest X-rays ............... 669
Ashery Mbilinyi, University of Basel, Switzerland
Heiko Schuldt, University of Basel, Switzerland

Poster Papers

Emotion Detection from Smartphone Keyboard Interactions: Role of Temporal vs Spectral Features .................................................................................................................................677
Salma Mandi, Indian Institute of Technology Kharagpur, India
Surjya Ghosh, BITS Pilani Goa, Indian
Pradipta De, Microsoft Corporation, USA
Bivas Mitra, Indian Institute of Technology Kharagpur, India
Data-Driven Depot Pre-positioning Model and Location-Routing Algorithm for Management of Disasters and Disease Outbreaks ................................................................. 681
Sampson E. Akwafuo, California State University, Fullerton, USA and Georgia State University, USA
Armin R. Mikler, Georgia State University, USA
Christopher Ibinegbu, University of Bonn, Germany

Theme: Information Systems

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

Track Editorial.......................................................................................................................... 685

Collaborative Is Better than Adversarial: Generative Cooperative Networks for Topic Clustering .......... 688
Andrea Lenzi, Sapienza University of Rome, Italy
Paola Velardi, Sapienza University of Rome, Italy

Aspect Based Sentiment Analysis in Music: A Case Study with Spotify ................................................ 696
Giovanni Maria Biancofiore, Polytechnic University of Bari, Italy
Tommaso Di Noia, Polytechnic University of Bari, Italy
Eugenio Di Sciascio, Polytechnic University of Bari, Italy
Fedelucio Narducci, Polytechnic University of Bari, Italy
Paolo Pastore, Polytechnic University of Bari, Italy

Query-Relevant Sentiment Summarization Based on Facet Identification and Sentence Clustering .......... 704
Matthew Moulton, Brigham Young University, USA
Sophie Gao, Brigham Young University, USA
Yiu-Kai Ng, Brigham Young University, USA

Poster Papers

Towards Open Data Discovery: A Comparative Study ........................................................................ 713
Maria Helena Franciscatto, Federal University of Paraná, Brazil
Marcos Didonet Del Fabro, Universidade Federal do Paraná, Brazil
Celio Trois, Federal University of Santa Maria, Brazil
Hegler Tissot, Drexel University, USA

Assessing Health Misinformation in Online Content ......................................................................... 717
Stefano Di Sotto, University of Milano-Bicocca, Italy
Marco Viviani, University of Milano-Bicocca, Italy

Theme: Artificial Intelligence and Agents

IRMAS - Intelligent Robotics and Multi-Agent Systems Track
Track Co-Chairs: Rui P. Rocha, ISR – University of Coimbra, Portugal

Track Editorial.......................................................................................................................... 721

Towards Fast Fiducial Marker with Full 6 DOF Pose Estimation ............................................................ 723
Jiří Ulrich, Czech Technical University in Prague, Czech Republic
Ahmad Alsayed, The University of Manchester, UK
Farshad Arvin, The University of Manchester, UK
Tomáš Krajnik, Czech Technical University in Prague, Czech Republic
Semi-supervised Learning for Image Alignment in Teach and Repeat Navigation ..................................... 731
Zdeněk Rozsypálek, Czech Technical University in Prague, Czech Republic
George Broughton, Czech Technical University in Prague, Czech Republic
Pavel Linder, Czech Technical University in Prague, Czech Republic
Tomáš Rouček, Czech Technical University in Prague, Czech Republic
Keerthy Kusumam, University of Nottingham, UK
Tomáš Krajník, Czech Technical University in Prague, Czech Republic

Learning State-Variable Relationships for Improving POMCP Performance............................................. 739
Maddalena Zuccotto, Università degli Studi di Verona, Italy
Alberto Castellini, Università degli Studi di Verona, Italy
Alessandro Farinelli, Università degli Studi di Verona, Italy

Learning Adaptive Control in Dynamic Environments Using Reproducing Kernel Priors with Bayesian Policy Gradients ................................................................................................................................. 748
Apan Dastider, University of Central Florida, USA
Sayyed Jaffar Ali Raza, University of Central Florida, USA
Mingjie Lin, University of Central Florida, USA

Bootstrapped Learning for Car Detection in Planar Lidars .......................................................................... 758
George Broughton, Czech Technical University in Prague, Czech Republic
Jiří Janota, Czech Technical University in Prague, Czech Republic
Jan Blaha, Czech Technical University in Prague, Czech Republic
Tomáš Krajník, Czech Technical University in Prague, Czech Republic

Poster Papers

Curriculum Learning for Safe Mapless Navigation ........................................................................................766
Luca Marzari, Università degli Studi di Verona, Italy
Davide Corsi, Università degli Studi di Verona, Italy
Enrico Marchesini, Università degli Studi di Verona, Italy
Alessandro Farinelli, Università degli Studi di Verona, Italy

Bounding Optimal Headings in the Dubins Touring Problem .......................................................................770
Petr Váňa, Czech Technical University in Prague, Czech Republic
Jan Faigl, Czech Technical University in Prague, Czech Republic

Realization of Adaptive System Transitions in Self-Adaptive Autonomous Robots ................................... 774
Ana Petrovska, Technical University of Munich, Germany
Julian Weick, CERN, Switzerland

Theme: Artificial Intelligence and Agents
KG - Knowledge Graphs Track

Track Co-Chairs:   Feng Xia, Federation University, Australia
                   Francesco Osborne, The Open University, UK
                   Shuo Yu, Dalian University of Technology, China

GraphSPARQL: A GraphQL Interface for Linked Data .................................................................................. 778
Kevin Angele, University of Innsbruck and Onlim GmbH, Austria
Manuel Meitinger, University of Innsbruck, Austria
Marc Bußjäger, University of Innsbruck, Austria
Stephan Föhl, University of Innsbruck, Austria
Anna Fensel, University of Innsbruck, Austria and Wageningen University & Research, The Netherlands
Query-Oriented Entity Spatial-Temporal Summarization in Fuzzy Knowledge Graph

Erhe Yang, Shaanxi Normal University, China
Fei Hao, Shaanxi Normal University, China
Aziz Nasridinov, Chungbuk National University, Korea
Geyong Min, University of Exeter, UK
Doo-Soon Park, Soonchunhyang University, Korea

Effective Use of BERT in Graph Embeddings for Sparse Knowledge Graph Completion

Xinglan Liu, Know-Center GmbH, Austria
Hussain Hussain, Graz University of Technology, Austria
Houssam Razouk, Graz University of Technology, Austria
Roman Kern, Graz University of Technology, Austria

Attractiveness Based Conference Ranking

Chen Zhang, Dalian University of Technology, China
Falih Febrinanto, Federation University Australia, Australia
Mujie Liu, Ningbo Tech University, China
Xiangjie Kong, Zhejiang University of Technology, China
Dongyu Zhang, Dalian University of Technology, China
Sardar M.N. Islam, Victoria University, Australia

Towards Diversity-Tolerant RDF-Stores

Masoud Salehpour, The University of Sydney, Australia
Joseph G. Davis, The University of Sydney, Australia

Theme: Artificial Intelligence and Agents

KNLP - Knowledge and Natural Language Processing Track

Track Co-Chairs: Mauro Dragoni, Fondazione Bruno Kessler, Italy
                    Marco Rospocher, Università degli Studi di Verona, Italy

Attention-Based Clinical Note Summarization

Neel Kanwal, University of Stavanger, Norway
Giuseppe Rizzo, Links Foundation, Italy

Linguistic Characterization of Answer Passages for Fact-Seeking Question Answering

Bahadorreza Ofoghi, Deakin University, Australia

Iterative Adversarial Removal of Gender Bias in Pretrained Word Embeddings

Yacine Gaci, University of Lyon, France
Boualem Benatallah, University of New South Wales, Australia
Fabio Casati, University of Trento, Italy and ServiceNow, USA
Khalid Benabdeslem, University of Lyon, France

Named-Entity Recognition for a Low-Resource Language Using Pre-trained Language Model

Hailemariam Mehari Yohannes, University of Tsukuba, Japan
Toshiyuki Amagasa, University of Tsukuba, Japan
Using Distributional Thesaurus to Enhance Transformer-Based Contextualized Representations for Low Resource Languages

Gopalakrishnan Venkatesh, International Institute of Information Technology Bangalore, India
Abhik Jana, Universität Hamburg, Germany
Steffen Remus, Universität Hamburg, Germany
Özge Sevgili, Universität Hamburg, Germany
Gopalakrishnan Srinivasaraghavan, International Institute of Information Technology Bangalore, India
Chris Biemann, Universität Hamburg, Germany

Practical and Efficient Out-of-Domain Detection with Adversarial Learning

Bo Wang, Kyushu University, Japan
Tsunenori Mine, Kyushu University, Japan

Leveraging Multimodal Content for Podcast Summarization

Lorenzo Vaiani, Politecnico di Torino, Italy
Moreno La Quatra, Politecnico di Torino, Italy
Luca Caglieri, Politecnico di Torino, Italy
Paolo Garza, Politecnico di Torino, Italy

Poster Papers

Question Answering over Logic Puzzles Using Theorem Proving

Adrian Groza, Technical University of Cluj-Napoca, Romania
Cristian Nitu, Technical University of Cluj-Napoca, Romania

Effective Utilization of Labeled Data from Related Tasks Using Graph Contrastive Pretraining – Application to Disaster Related Text Classification

Samujjwal Ghosh, Indian Institute of Technology Hyderabad, India
Subhadeep Maji, Amazon, India
Maunendra Sankar Desarkar, Indian Institute of Technology Hyderabad, India

Context Matters! Identifying Argumentative Relations in Essays

Gil Rocha, University of Porto, Portugal
Henrique Lopes Cardoso, University of Porto, Portugal

SRC

Student Research Abstract: Dual Architecture for Name Entity Extraction and Relation Extraction with Applications in Medical Corpora

Ernesto Quevedo Caballero, Baylor University, USA
Theme: Artificial Intelligence and Agents

KRR - Knowledge Representation and Reasoning Track

Track Co-Chairs: Stefano Bistarelli, Università degli Studi di Perugia, Italy
Martine Ceberio, University of Texas El Paso, USA
Eric Monfroy, Université d'Angers, LERIA, France
Francesco Santini, Università degli Studi di Perugia, Italy
Carlo Taticchi, Università degli Studi di Perugia, Italy

Track Editorial....................................................................................................................................................878

Belief Selection through Argumentation ..........................................................................................................880
Souhila Kaci, LIRMM, France
Yakoub Salhi, CRIL, France

Topological Semantics for Default Conditional Logic – Preliminary Report.........................................................888
Costas D. Koutras, American University of the Middle East, Kuwait
Christos Nomikos, University of Ioannina, Greece

Computing Generalizations of Temporal $\mathcal{EEE}$ Concepts with Next and Global..............................................894
Satyadharma Tirtarasa, Technische Universität Dresden, Germany
Anni-Yasmin Turhan, Technische Universität Dresden, Germany

Poster Papers

Update Models for Lying and Misleading Announcements......................................................................................902
Loc Pham, New Mexico State University, USA
Tran Cao Son, New Mexico State University, USA
Enrico Pontelli, New Mexico State University, USA

Theme: Distributed Systems

MCANET - Mobile Computing and Applications and Networking Track

Track Co-Chairs: Hong Va Leong, The Hong Kong Polytechnic University, China
Sheikh Iqbal Ahamed, Marquette University, USA
Mario M. Freire, University of Beira Interior, Portugal
Maria Curado, University of Coimbra, Portugal
Ivan Ganchev, University of Limerick, Ireland

Track Editorial....................................................................................................................................................905

CEMDA: Detecting Android Complex File Events to Infer the User’s Mental Model ...........................................908
Michael J. May, Asparna Research Center, Israel and Kinneret College on the Sea of Galilee, Israel
Yaakov Cohen, Kinneret College on the Sea of Galilee, Israel
Hovav Menachem, Kinneret College on the Sea of Galilee, Israel
Yogeve Swissa, Kinneret College on the Sea of Galilee, Israel

An Automatic Approach to Detect Problems in Android Builds through Screenshot Analysis..........................917
Lorena P. de Figueiredo, Sidia R&D Institute, Brazil
Jonathan P. Gomes, Sidia R&D Institute, Brazil
Flavia de S. Santos, Sidia R&D Institute, Brazil
Guilherme M. Queiroz, Sidia R&D Institute, Brazil
Felipe T. Giuntini, Sidia R&D Institute, Brazil
Juliano E. Sales, Sidia R&D Institute, Brazil
Estimating the Lifetime of Transient Context for Adaptive Caching in IoT Applications
Shakthi Weerasinghe, Deakin University, Australia
Arkady Zaslavsky, Deakin University, Australia
Seng W. Loke, Deakin University, Australia
Alexey Medvedev, Deakin University, Australia
Amin Abken, Deakin University, Australia

Pktpit: Separating Routing and Packet Transfer for Fast and Scalable Software Routers
Yukito Ueno, The University of Tokyo and NTT Communications, Japan
Ryo Nakamura, The University of Tokyo, Japan
Yohei Kuga, The University of Tokyo, Japan
Hiroshi Esaki, The University of Tokyo, Japan

OpenFlow Rule Placement in Carrier Networks for Augmented Reality Applications
Rafael George Amado, École de Technologie Supérieure, Canada
Kim-Khoa Nguyen, École de Technologie Supérieure, Canada
Mohamed Cheriet, École de Technologie Supérieure, Canada

Poster Papers

Statistical Verification Using Learned Usages for Evaluating Energy-Efficient Mobile Device Design
Jiyoung Song, KAIST, Korea
Youlim Jung, DelightRoom, Korea
Chiwoo Cho, Bluepoint Partners, Korea
Eunkyoung Jee, KAIST, Korea
Doo-Hwan Bae, KAIST, Korea

Generating Synthetic Mobility Data for Realistic Populations with RNNs to Improve Utility and Privacy
Alex Berke, MIT Media Lab, USA
Ronan Doorley, MIT Media Lab, USA
Kent Larson, MIT Media Lab, USA
Esteban Moro, MIT Media Lab, USA

Pairing-Free Secure-Channel Establishment in Mobile Networks with Fine-Grained Lawful Interception
Xavier Bultel, INSA Centre Val-de-Loire, France
Cristina Onete, Université de Limoges, France

Theme: Artificial Intelligence and Agents
MLA - Machine Learning and its Applications Track
Track Co-Chairs:  
Jee-Hyong Lee, Sungkyunkwan University, Korea
Keon Myung Lee, Chungbuk National University, Korea
Federico Divina, Pablo de Olavide University, Spain

Enhanced Strawberry Image Classification Using Multi-Task Deep Neural Learning
Sandya De Alwis, School of Information Technology, Deakin University, Australia
Bahadorreza Ofoghi, School of Information Technology, Deakin University, Australia
Myung Hwan Na, Department of Mathematics and Statistics, Chonnam National University, Korea

Dual Hybridization Method for the Classification of Ultrasound Breast Tumors
Mingue Song, Towson University, USA
Yanggon Kim, Towson University, USA
Representation Learning via Consistent Assignment of Views to Clusters ..........................................................978
Thalles Santos Silva, University of Campinas, Brazil
Adín Ramirez Rivera, Reykjavik University, Iceland

Leveraging N-gram Neural Embeddings to Improve Deep Learning DGA Detection ..............................................986
Christian Morbidoni, Università degli Studi G. d'Annunzio, Italy
Luca Spalazzi, Università Politecnica delle Marche, Italy
Antonio Teti, Università degli Studi G. d'Annunzio, Italy
Alessandro Cucchiarelli, Università Politecnica delle Marche, Italy

Automatic Disease Vector Mosquitoes Identification via Hierarchical Data Stream Classification .................996
Eduardo Tieppo, Pontificia Universidade Católica do Paraná, Brazil
Jean Paul Barddal, Pontificia Universidade Católica do Paraná, Brazil
Júlio Cesar Nievola, Pontificia Universidade Católica do Paraná, Brazil

A Comparison of Spatio-Temporal Prediction Methods: A Parking Availability Case Study .........................1004
Claudio Lucchese, Ca' Foscari University of Venice, Italy
Gianmarco Callegher, University Ca' Foscari of Venice, Italy
Mirko Modenese, Humco S.r.L., Italy
Silvia Dassiè, Humco S.r.L., Italy

PTD: Privacy-Preserving Human Face Processing Framework Using Tensor Decomposition ..................1012
Jeongho Kim, Sungkyunkwan University, Korea
Shahroz Tariq, Sungkyunkwan University, Korea
Simon S. Woo, Sungkyunkwan University, Korea

Repairing Misclassifications in Neural Networks Using Limited Data ............................................................1022
Patrick Henriksen, Imperial College London, UK
Francesco Leofante, Imperial College London, UK
Alessio Lomuscio, Imperial College London, UK

Visual Context Embeddings for Zero-Shot Recognition ..............................................................................1030
Gunhee Cho, Hanyang University, Korea
Yong Suk Choi, Hanyang University, Korea

Correlation-Based Regularization for Fast and Energy-Efficient Spiking Neural Networks ...................1039
Chan Sik Han, Chungbuk National University, Korea
Keon Myung Lee, Chungbuk National University, Korea

A New Reference-Based Algorithm Based on Non-Euclidean Geometry for Multi-Stakeholder Media Planning .................................................................1047
Fodil Benali, Advanted Group, France
Damien Bodénès, Advanted Group, France
Cyril de Runz, University of Tours, France
Nicolas Labroche, University of Tours, France

A Motion-Based Approach for Real-Time Detection of Pornographic Content in Videos .......................1057
Jhonatan Geremias, Pontificia Universidade Católica do Paraná, Brazil
Eduardo K. Viegas, Pontificia Universidade Católica do Paraná, Brazil
Alceu S. Britto Jr., Pontificia Universidade Católica do Paraná, Brazil
Altair O. Santin, Pontificia Universidade Católica do Paraná, Brazil
A Similarity-Based Deep Feature Extraction Method Using Divide and Conquer for Image Classification ................................................................. 1123
Seunghui Jang, Towson University, USA
Yanggon Kim, Towson University, USA

Semi-supervised Clustering via Information-Theoretic Markov Chain Aggregation ........................................... 1127
Sophie Steger, Graz University of Technology, Austria
Bernhard C. Geiger, Know-Center GmbH, Austria
Marek Śmieja, Jagiellonian University, Poland

Improving Wheat Head Detection: A Data-Centric Approach by Domain Variance Reduction ..........1131
Abhi Lad, Pandit Deendayal Energy University, India
Mehul S. Raval, Ahmedabad University, India

A Transfer Learning Approach to Predict Shipment Description Quality......................................................... 1135
Xi Chen, Open University of the Netherlands, The Netherlands
Stefano Bromuri, Open University of the Netherlands, The Netherlands
Marko Van Eekelen, Open University of the Netherlands, The Netherlands

A Novel Approach to Discover Numerical Association Based on the Coronavirus Optimization Algorithm...........................................................................1139
C. Segarra-Martín, International University of Mendéndez Pelayo, Spain
M. Martínez-Ballesteros, University of Seville, Spain
A. Troncoso, Pablo de Olavide University, Spain
F. Martínez-Álvarez, Pablo de Olavide University, Spain

Similarity-Based Uncertainty Scores for Interpretable Deep Learning in Scientific Applications........ 1143
Lillian Roelofs, University of Houston, USA
Claire Weissman, Whitman College, USA
Daniela Raicu, DePaul University, USA
Jacob Furst, DePaul University, USA
Roselyne Tchoua, DePaul University, USA

Theme: System Software and Security

OSSP - Operating Systems and Software Platforms Track
Track Co-Chairs: Joonhyouk Jang, Hannam University, Korea
Jimman Jung, Hannam University, Korea
Bongjae Kim, Chungbuk National University, Korea
Hong Min, Gachon University, Korea
Kwanghee Won, South Dakota State University, USA

A Framework for OS Portability: From Formal Models to Low-Level Code .....................................................1147
Renata Martins Gomes, Graz University of Technology, Austria
Marcel Baunach, Graz University of Technology, Austria

Enhanced Configurable Snapshot: Snapshot-Based Fast Booting on NAND Flash with Lifetime Control ........................................................................................................1157
Kyungsik Lee, LG Electronics, Korea
Gunho Lee, LG Electronics, Korea
Taehoon Song, LG Electronics, Korea
DMAFV: Testing Device Drivers against DMA Faults
Masanori Misono, The University of Tokyo, Japan
Toshiki Hatanaka, The University of Tokyo, Japan
Takahiro Shinagawa, The University of Tokyo, Japan

CuPSO: GPU Parallelization for Particle Swarm Optimization Algorithms
Chuan-Chi Wang, National Taiwan University, Taiwan
Chun-Yen Ho, National Taiwan University, Taiwan
Chia-Heng Tu, National Cheng Kung University, Taiwan
Shih-Hao Hung, National Taiwan University, Taiwan

R&R Tool for Android Applications Hiding Malicious Features
Jusuk Lee, Soongsil University, Korea
Ajung Kim, Soongsil University, Korea
Sumin Lee, Soongsil University, Korea
Jiman Hong, Soongsil University, Korea

An Efficient Log-Structured Scheme for Disk Arrays
Guangyu Zhu, Chung-Ang University, Korea
Sang Jin Lee, Chung-Ang University, Korea
Yongseok Son, Chung-Ang University, Korea

Poster Papers

Copying Values v.s. References for Memory Page Compaction in Virtualized Systems
Naoki Aoyama, Tokyo University of Agriculture and Technology, Japan
Hiroshi Yamada, Tokyo University of Agriculture and Technology, Japan

An Efficient and Parallel File Defragmentation Scheme for Flash-Based SSDs
Guangyu Zhu, Chung-Ang University, Korea
Jeongeun Lee, Chung-Ang University, Korea
Yongseok Son, Chung-Ang University, Korea

Band Selection Techniques Using Discrete Ranges and MaxPooling Operations for Hyperspectral Image Pixel Classification
Duhyeuk Chang, Hansung University, Korea
Jungsoo Lee, Hansung University, Korea
Byunghyun Jeong, Hansung University, Korea
Junyoung Heo, Hansung University, Korea

Theme: System Software and Security

PDP - Privacy by Design in Practice Track
Track Co-Chairs: Ronald Petrlic, Technische Hochschule Nürnberg Georg Simon Ohm, Germany
Christoph Sorge, Saarland University, Germany

Track Editorial

Can Blockchains and Data Privacy Laws Be Reconciled? A Fundamental Study of How Privacy-Aware Blockchains Are Feasible
Christoph Stach, University of Stuttgart, IPVS, Germany
Clémentine Gritti, University of Canterbury, New Zealand
Dennis Przytarski, University of Stuttgart, IPVS, Germany
Bernhard Mitschang, University of Stuttgart, IPVS, Germany
Ensuring Privacy in the Application of the Brazilian General Data Protection Law (LGPD) ..........1219
Evandro Thalles Vale de Castro, University of Brasilia, Brazil
Geovana R.S. Silva, University of Brasilia, Brazil
Edna Dias Canedo, University of Brasilia, Brazil

Mitigation Lost in Translation: Leveraging Threat Information to Improve Privacy Solution Selection ..........................................................................................................................1227
Ala'a Al-Momani, Ulm University, Germany
Christoph Bösch, Ulm University, Germany
Kim Wuyts, KU Leuven, Belgium
Laurens Sion, KU Leuven, Belgium
Wouter Joosen, KU Leuven, Belgium
Frank Kargl, Ulm University, Germany

Theme: Software Design and Development

PL - Programming Languages Track
Track Co-Chairs: Barrett R. Bryant, University of North Texas, USA
Rajeev R. Raje, Indiana University-Purdue University-Indianapolis, USA

Track Editorial.................................................................................................................................................1237

Synchronous Semantics of Multi-Mode Multi-Periodic Systems .................................................................1239
Frédéric Fort, Université de Lille, France
Julien Forget, Université de Lille, France

Constraint-Logic Object-Oriented Programming on the Java Virtual Machine .............................................1249
Hendrik Winkelmann, University of Münster, Germany
Herbert Kuchen, University of Münster, Germany

Condition-Based Synchronization in Data-Centric Concurrency Control ...................................................... 1259
David Neves, Universidade NOVA de Lisboa, Portugal
Hervé Paulino, Universidade NOVA de Lisboa, Portugal

Poster Papers

Model-Driven Customizing of ERP Systems: A Case Study .............................................................................. 1267
Jonathan Neugebauer, University of Münster, Germany
Herbert Kuchen, University of Münster, Germany

Differential Testing of Simulation-Based VM Generators: Automatic Detection of VM Generator Semantic Gaps between Simulation and Generated VMs ..................................................................................1271
Pierre Misse-Chanabier, Inria, France
Guillermo Polito, Université de Lille, France
Stéphane Ducasse, Inria, France
Noury Bouraqadi, IMT Nord Europe, France
Luc Fabresse, IMT Nord Europe, France
Pablo Tesone, Inria, France

Synchronization Operator for Communication Privacy ........................................................................................1275
Bogdan Aman, Alexandru Ioan Cuza University, Romania
Gabriel Ciobanu, Alexandru Ioan Cuza University and Romanian Academy, Institute of Computer Science, Romania
Theme: Software Design and Development

RE - Requirements Engineering Track

Track Co-Chairs:  Julio Cesar Sampaio Prado Leite, Pontifical Catholic University of Rio de Janeiro, Brazil
                  Maria Lencastre, Universidade de Pernambuco, Brazil
                  Miguel Goulão, Universidade Nova de Lisboa, Portugal

Track Editorial

A Survey on Requirements Notations in Software Engineering Research ................................. 1282
Larissa Mangolim Amaral, Universidade de São Paulo, Brazil
Fábio Levy Siqueira, Universidade de São Paulo, Brazil
Anarosa Alves Franco Brandão, Universidade de São Paulo, Brazil

Requirements Engineering for Autonomous Vehicles: A Systematic Literature Review .............. 1290
Quelita A.D.S. Ribeiro, Universidade Federal de Pernambuco, Brazil
Moniky Ribeiro, Universidade Federal de Pernambuco, Brazil
Jaelson Castro, Universidade Federal de Pernambuco, Brazil

Studying Industry Practices of Accessibility Requirements in Agile Development .................... 1300
Darliane Miranda, Universidade NOVA de Lisboa, Portugal
João Araujo, Universidade NOVA de Lisboa, Portugal

Elicitation of Adaptive Requirements Using Creativity Triggers: A Controlled Experiment ......... 1309
Fabian Kneer, Dortmund University of Applied Sciences and Arts, Germany
Erik Kamsties, Dortmund University of Applied Sciences and Arts, Germany
Klaus Schmid, University of Hildesheim, Germany

A Bayesian Network-Based Model to Understand the Role of Soft Requirements in Technology Acceptance: The Case of the NHS COVID-19 Test and Trace App in England and Wales ..........1318
Luis H. Garcia Paucar, Aston University, UK
Nelly Bencomo, Durham University, UK
Alistair Sutcliffe, Durham University, UK
Peter Sawyer, Aston University, UK

Poster Papers

Impact of Korean Culture on the Selection of RE Elicitation Methods .................................... 1328
Alexander Uder, University of Applied Sciences Wuerzburg-Schweinfurt, Germany and Ajou University, Korea
Isabel John, University of Applied Sciences Wuerzburg-Schweinfurt, Germany
Seok-Won Lee, Ajou University, Korea

A User-Centric Threat Model and Repository for Cyber Attacks ............................................. 1332
Prerit Datta, Texas Tech University, USA
Sara Sartoli, Texas Tech University, USA
Luis Felipe Gutiérrez, Texas Tech University, USA
Faranak Abri, Texas Tech University, USA
Akbar Siambi Namin, Texas Tech University, USA
Keith S. Jones, Texas Tech University, USA
Theme: System Software and Security

RS - Recommender Systems Track

Track Co-Chairs: Yong Zheng, Illinois Institute of Technology, USA
Markus Zanker, Free University of Bozen-Bolzano, Italy
Li Chen, Hong Kong Baptist University, China
Panagiotis Symeonidis, Free University of Bozen-Bolzano, Italy

Track Editorial

Predicting Links in a Social Network Based on Recognised Personalities
Andrew Aquilina, University of Malta, Malta
Charlie Abela, University of Malta, Malta

Rating Consistency Is Consistently Underrated: An Exploratory Analysis of Movie-Tag Rating Inconsistency
Denis Kotkov, University of Helsinki, Finland
Alan Medlar, University of Helsinki, Finland
Umesh Raj Satyal, Åbo Akademi University, Finland
Alexandr Maslov, Åbo Akademi University, Finland
Mats Neovius, Åbo Akademi University, Finland
Dorota Glowacka, University of Helsinki, Finland

Shap-Enhanced Counterfactual Explanations for Recommendations
Jinfeng Zhong, Université Paris-Dauphine, France
Elsa Negre, Université Paris-Dauphine, France

GAN-Based Matrix Factorization for Recommender Systems
Ervin Dervishaj, ContentWise and Politecnico di Milano, Italy
Paolo Cremonesi, Politecnico di Milano, Italy

IPreMom: A Continual Learning-Based Image Rating Framework for Infant Precious Moments Capturing
Yu Huang, National Yang Ming Chiao Tung University, Taiwan
Ju-Hui Tseng, National Yang Ming Chiao Tung University, Taiwan
Ching-Jui Hsiao, Compal Electronics, Taiwan
Hui-Mei Hung, Compal Electronics, Taiwan
Vincent S. Tseng, National Yang Ming Chiao Tung University, Taiwan

F2VAE: A Framework for Mitigating User Unfairness in Recommendation Systems
Rodrigo Borges, Tampere University, Finland
Kostas Stefanidis, Tampere University, Finland

Poster Papers

On the Impact of Data Sampling on Hyper-Parameter Optimisation of Recommendation Algorithms
Matteo Montanari, Politecnico di Milano, Italy
Cesare Bernardis, Politecnico di Milano, Italy
Paolo Cremonesi, Politecnico di Milano, Italy

Bias Disparity in Graph-Based Collaborative Filtering Recommenders
Georgios Botsis, University of Ioannina, Greece
Evaggelia Pitoura, University of Ioannina, Greece
Theme: Software Design and Development

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

Track Co-Chairs: Matteo Camilli, Free University of Bozen-Bolzano, Italy
Sungwon Kang, Korea Advanced Institute of Science and Technology, Korea
Patrizia Scandurra, DIGIP, University of Bergamo, Italy

Track Editorial .................................................................................................................................................. 1398

Software Layer Recovery through Ego Network Analysis ................................................................. 1401
Sanjay B. Thakre, Dr. Babasaheb Ambedkar Technological University, India
Arvind W. Kiwelekar, Dr. Babasaheb Ambedkar Technological University, India

HYGAR: A Hybrid Genetic Algorithm for Software Architecture Recovery ........................................ 1408
Milad Elyasi, Ozyegin University, Turkey
Muhammed Esad Simitcioglu, Ozyegin University, Turkey
Abdullah Saydemir, Ozyegin University, Turkey
Ali Ekici, Ozyegin University, Turkey
Hasan Sozer, Ozyegin University, Turkey

Continuous Evaluation of Software Architectures: An Overview of the State of the Art ................. 1416
Rodrigo C. Soares, University of São Paulo, Brazil
Vinicius dos Santos, University of São Paulo, Brazil
Elisa Yumi Nakagawa, University of São Paulo, Brazil

A Federated Machine Learning Approach to Detect International Revenue Share Fraud on the 5G Edge ................................................................................................................................................ 1423
Luís Ferreira, University of Minho, Portugal
Leopoldo Silva, University of Minho, Portugal
Diana Pinho, University of Minho, Portugal
Francisco Morais, CCG, Portugal
Carlos Manuel Martins, WeDo Technologies, Portugal
Pedro Miguel Pires, WeDo Technologies, Portugal
Pedro Fidalgo, WeDo Technologies, Portugal
Helena Rodrigues, University of Minho, Portugal
Paulo Cortez, University of Minho, Portugal
André Pilastri, CCG, Portugal

Federico Di Menna, University of L'Aquila, Italy
Henry Muccini, University of L'Aquila, Italy
Karthik Vaidhyanathan, University of L'Aquila, Italy

Poster Papers

X-IoT: A Model-Driven Approach for Cross-Platform IoT Applications Development ..................... 1439
Flavio Corradini, University of Camerino, Italy
Arianna Fedeli, University of Camerino, Italy
Fabrizio Fornari, University of Camerino, Italy
Andrea Polini, University of Camerino, Italy
Barbara Re, University of Camerino, Italy
DevOps and Microservices in Scientific System Development: Experience on a Multi-Year Industry Research Project
Maximilien de Bayser, IBM Research, Brazil
Vinícius Segura, IBM Research, Brazil
Leonardo G. Azevedo, IBM Research, Brazil
Leonardo P. Tizzei, IBM Research, Brazil
Raphael Thiago, IBM Research, Brazil
Elton Soares, IBM Research, Brazil
Renato Cerqueira, IBM Research, Brazil

Estimating the Energy Consumption of Software Components from Size, Complexity and Code Smells Metrics
Daniel Guamán, Universidad Politécnica de Madrid, Spain and Universidad Técnica Particular de Loja, Ecuador
Jenifer Pérez, Universidad Politécnica de Madrid, Spain
Priscila Valdiviezo-Diaz, Universidad Técnica Particular de Loja, Ecuador
Norberto Cañas, Universidad Politécnica de Madrid, Spain

SRC

Student Research Abstract: Microservices-Based Systems Visualization
Amr S. Abdelfattah, Baylor University, USA

Theme: Software Design and Development
SE - Software Engineering Track
Track Co-Chairs: Byungjeong Lee, University of Seoul, Korea
Eunjee Song, Baylor University, USA
Tao Zhang, Macau University of Science and Technology, China

Track Editorial

A Longitudinal Study of Hacker Behaviour
Thomas Walshe, University of Oxford, UK
Andrew Simpson, University of Oxford, UK

Evolution of a Haskell Repository and Its Use of Monads: An Exploratory Study of Stackage
Paul Leger, Universidad Católica del Norte, Chile
Felipe Ruiz, Universidad Católica del Norte, Chile
Nicolás Sepúlveda, Universidad Católica del Norte, Chile
Ismael Figueroa, Pragmatics Lab, Chile

Are Tags ‘It?’: Analysis of the Impact of Tags on StackOverflow Questions
Von Ithipathachai, East Carolina University, USA
Maral Azizi, East Carolina University, USA

Automating the Measurement of Heterogeneous Chatbot Designs
Pablo C. Cañizares, Universidad Autónoma de Madrid, Spain
Sara Pérez-Soler, Universidad Autónoma de Madrid, Spain
Esther Guerra, Universidad Autónoma de Madrid, Spain
Juan de Lara, Universidad Autónoma de Madrid, Spain
Constraint-Logic Object-Oriented Programming for Test Case Generation

Hendrik Winkelmann, University of Münster, Germany
Laura Troost, University of Münster, Germany
Herbert Kuchen, University of Münster, Germany

How Does the First Buggy File Work Well for Iterative IR-Based Bug Localization?

Misoo Kim, Sungkyunkwan University, Korea
Youngkyoung Kim, Sungkyunkwan University, Korea
Eunseok Lee, Sungkyunkwan University, Korea

Fighting Evil Is Not Enough When Refactoring Metamodels: Promoting the Good Also Matters

Oussama Ben Sghaier, University of Montreal, Canada
Houari Sahraoui, University of Montreal, Canada
Eugene Syriani, University of Montreal, Canada

Investigating Technological Risks and Mitigation Strategies in Software Projects

Emanuel Dantas, Universidade Federal do Paraíba, Brazil
Ademar Sousa Neto, Universidade Federal de Campina Grande, Brazil
Dalton Valadares, Federal Institute of Pernambuco, Brazil
Mirko Perkusich, Universidade Federal de Campina Grande, Brazil
Felipe Ramos, Universidade Federal do Paraíba, Brazil
Hyggo Almeida, Universidade Federal de Campina Grande, Brazil
Angelo Perkusich, Universidade Federal de Campina Grande, Brazil

Feature Assortment for Deep Learning-Based Bug Localization with a Program Graph

Youngkyoung Kim, Sungkyunkwan University, Korea
Misoo Kim, Sungkyunkwan University, Korea
Eunseok Lee, Sungkyunkwan University, Korea

Design Patterns Mining Using Neural Sub-graph Matching

Pasquale Ardimento, University of Bari Aldo Moro, Italy
Lerina Aversano, University of Sannio, Italy
Mario Luca Bernardi, University of Sannio, Italy
Marta Cimitile, University of Rome Unitelma Sapienza, Italy

RepCoder: An Automated Program Repair Framework for Probability-Based Program Synthesis

Suhwan Ji, Kangwon National University, Korea
Sang-Min Choi, Yonsei University, Korea
Sang-Ki Ko, Kangwon National University, Korea
Dohyung Kim, Kangwon National University, Korea
Hyeonseung Im, Kangwon National University, Korea

Metrics to Quantify Software Developer Experience: A Systematic Mapping

Renata Brasil-Silva, Escola Politécnica da Universidade de São Paulo, Brazil
Fábio Levy Siqueira, Escola Politécnica da Universidade de São Paulo, Brazil
Optimized Flight Safety Event Detection in the National General Aviation Flight Information Database

Aidan P. LaBella, Rochester Institute of Technology, USA
Joshua A. Karns, Rochester Institute of Technology, USA
Farhad Akhbardeh, Rochester Institute of Technology, USA
Travis Desell, Rochester Institute of Technology, USA
Andrew J. Walton, Liberty University, USA
Zechariah Morgan, University of North Dakota, USA
Brandon Wild, University of North Dakota, USA
Mark Dusenbury, University of North Dakota, USA

How Do Developers Deal with Security Issue Reports on GitHub?

Noah Bühlmann, University of Bern, Switzerland
Mohammad Ghafari, University of Auckland, New Zealand

Learning to Characterize Performance Regression Introducing Code Changes

Deema AlShoaibi, Rochester Institute of Technology, USA
Hiten Gupta, Rochester Institute of Technology, USA
Max Mendelson, Rochester Institute of Technology, USA
Ilyes Jenhani, Prince Mohammad Bin Fahd University, KSA
Ali Ben Mrad, University of Sfax, Tunisia
Mohamed Wiem Mkaouer, Rochester Institute of Technology, USA

Towards Automated Library Migrations with Error Prone and Refaster

Rick Ossendrijver, University of Amsterdam, The Netherlands
Stephan Schroeters, Picnic Technologies, The Netherlands
Clemens Grelck, University of Amsterdam, The Netherlands

Poster Papers

A New Scrum and CMMI Level 2 Compatible Model for Small Software Firms in Order to Enhance Their Software Quality

Sabir Saheel, Independent University, Bangladesh
Labib Bin Rahman, Independent University, Bangladesh
Fariz Humaira, Independent University, Bangladesh
Farzana Sadia, Daffodil International University, Bangladesh
Mahady Hasan, Independent University, Bangladesh

A Comparative Study of Name Entity Recognition Techniques in Software Engineering Texts

Michelle Y. Chew, University of Wisconsin - Eau Claire, USA
Yi J. Cheng, University of Wisconsin - Eau Claire, USA
Oliver Mahan, University of Wisconsin - Eau Claire, USA
Md Rakibul Islam, University of Wisconsin - Eau Claire, USA

SRC

Student Research Abstract: Bridging the Gap between Source Code and High-Level Concepts in Static Code Analysis

Micah Schiewe, Baylor University, USA

Student Research Abstract: On Language-Agnostic Abstract Syntax Trees

Jacob Curtis, Baylor University, USA
Theme: System Software and Security
SEC - Computer Security Track
Track Co-Chairs: Giampaolo Bella, Università di Catania, Italy
               Saša Radomirović, Heriot-Watt University, UK

Track Editorial.................................................................................................................................................. 1614

CHORS: Hardening High-Assurance Security Systems with Trusted Computing...........................................1617
Wojciech Ozga, IBM Research Europe - Zurich, Switzerland and TU Dresden, Germany
Rasha Faqeh, TU Dresden, Germany
Do Le Quoc, Huawei Research, Germany
Franz Gregor, Scontain, Germany
Silvio Dragone, IBM Research Europe - Zurich, Switzerland
Christof Fetzer, TU Dresden, Germany

Generative Adversarial Networks for Subdomain Enumeration........................................................................ 1627
Luca Degani, University of Trento and IIT CNR, Italy
Francesco Bergadano, Università degli Studi di Torino, Italy
Seyed Ali Mirheidari, University of Trento, Italy
Fabio Martinelli, IIT CNR, Italy
Bruno Crispo, University of Trento, Italy

The Dawn of a Text-Dependent Society: Deepfakes as a Threat to Speech Verification Systems .......... 1637
Anton Firc, Brno University of Technology, Czech Republic
Kamil Malinka, Brno University of Technology, Czech Republic

Strategic Selection of Data Sources for Cyber Attack Detection in Enterprise Networks: A Survey and Approach ...................................................................................................................................................1647
Manuel Kern, Austrian Institute of Technology, Austria
Florian Skopik, Austrian Institute of Technology, Austria
Max Landauer, Austrian Institute of Technology, Austria
Edgar Weippl, University of Vienna, Austria

MARSHAL: Messaging with Asynchronous Ratchets and Signatures for Faster HeALing...................... 1657
Olivier Blazy, Institut Polytechnique de Paris, France
Pierre-Alain Fouque, IRISA, France
Thibaut Jacques, Orange Labs, France
Pascal Lafourcade, Université Clermont-Auvergne, France
Cristina Onete, XLIM, France
Léo Robert, Université Clermont-Auvergne, France

Towards Effective Preservation of Robust Safety Properties .................................................................1665
Matteo Busi, University of Pisa, Italy
Pierpaolo Degano, IMT School for Advanced Studies and University of Pisa, Italy
Letterio Galletta, IMT School for Advanced Studies, Italy

ANUBIS: A Provenance Graph-Based Framework for Advanced Persistent Threat Detection ..........1675
Md. Monowar Anjum, National Research Council, Canada
Shahrear Iqbal, National Research Council, Canada
Benoit Hamelin, Tutte Institute for Mathematics and Computing, Canada
Hardening the Security Analysis of Browser Extensions ................................................................. 1685
Benjamin Eriksson, Chalmers University of Technology, Sweden
Pablo Picazo-Sanchez, Chalmers University of Technology, Sweden
Andrei Sabelfeld, Chalmers University of Technology, Sweden

Effective TLB Thrashing – Unveiling the True Short Reach of Modern TLB Designs ..................... 1695
Andrés R. Hernández C., University of Texas at San Antonio, USA
Wei-Ming Lin, University of Texas at San Antonio, USA

Security Risks of Porting C Programs to WebAssembly .................................................................. 1704
Quentin Stiévenart, Vrije Universiteit Brussel, Belgium
Coen De Roover, Vrije Universiteit Brussel, Belgium
Mohammad Ghafari, University of Auckland, New Zealand

Poster Papers

Mauro Conti, University of Padua, Italy
Eleonora Losiouk, University of Padua, Italy
Alessandro Visintin, University of Padua, Italy

Deriving Optimal Deep Learning Models for Image-Based Malware Classification ....................... 1718
Rikima Mitsuhashi, The University of Tokyo, Japan
Takahiro Shinagawa, The University of Tokyo, Japan

Theme: Information Systems

SONAMA - Social Network and Media Analysis Track
Track Co-Chairs: Sang-Wook Kim, Hanyang University, Korea
Yunyong Ko, Hanyang University, Korea

Track Editorial ........................................................................................................................................ 1721

An Architecture for Data Integrity in Untrustworthy Social Networks ............................................. 1723
Carlos Eduardo da Silva, Sheffield Hallam University, UK
Angus Young, Sheffield Hallam University, UK

User Awareness and Defenses Against Sockpuppet Friend Invitations in Facebook ....................... 1731
Sajedul Talukder, Southern Illinois University, USA
Nestor Hernandez, The MathWorks, Inc., USA
Mozhgan Azimpourkivi, Bloomberg LP, USA
Bogdan Carbunar, Florida International University, USA

Combining Clutter Reduction Methods for Temporal Network Visualization ............................... 1739
Jean R. Ponciano, Federal University of Uberlândia, Brazil and Getulio Vargas Foundation, Brazil
Claudio D.G. Linhares, University of São Paulo, Brazil
Luis E.C. Rocha, Ghent University, Belgium
Elaine R. Faria, Federal University of Uberlândia, Brazil
Bruno A.N. Travençolo, Federal University of Uberlândia, Brazil
POSLAN: Disentangling Chat with Positional and Language Encoded Post Embeddings ..........1747
Bhashithe Abeysinghe, Georgia State University, USA
Dhara Shah, Georgia State University, USA
Chris Freas, Georgia State University, USA
Robert Harrison, Georgia State University, USA
Rajshekhar Sunderraman, Georgia State University, USA

Incremental Communication Patterns in Blockchain Online Social Media .........................1755
Barbara Guidi, Università di Pisa, Italy
Andrea Michienzi, Università di Pisa, Italy
Laura Ricci, Università di Pisa, Italy

D-FEND: A Diffusion-Based Fake News Detection Framework for News Articles Related to COVID-19 .................................................................1762
Soeun Han, Hanyang University, Korea
Yunyong Ko, Hanyang University, Korea
Yushim Kim, Arizona State University, USA
Seong Soo Oh, Hanyang University, Korea
Heejin Park, Hanyang University, Korea
Sang-Wook Kim, Hanyang University, Korea

Group Oriented Trust-Aware Location Recommendation for Location-Based Social Networks ........ 1770
Huseyin Alper Teoman, Middle East Technical University, Turkey
Pinar Karagoz, Middle East Technical University, Turkey

Poster Papers

Characterizing the Impact of Fact-Checking on the COVID-19 Misinformation Combat .......... 1780
Cefas Garcia Pereira, Pontifical Catholic University of Minas Gerais, Brazil
Humberto Torres Marques-Neto, Pontifical Catholic University of Minas Gerais, Brazil

A Comparison of Online Hate on Reddit and 4chan: A Case Study of the 2020 US Election .......... 1788
Fatima Zahrah, University of Oxford, UK
Jason R.C. Nurse, University of Kent, UK
Michael Goldsmith, University of Oxford, UK

Cluster Boosting and Data Discovery in Social Networks .................................................................1792
Maria Tomasso, Texas State University, USA
Lucas J. Rusnak, Texas State University, USA
Jelena Tešić, Texas State University, USA

A Diversity Personalization Approach towards Recommending POIs for Jeju Island ................. 1795
Jongsoo Lee, Hanyang University, Korea
Jung Ah Shin, Columbia University, USA
Dong-Kyu Chae, Hanyang University, Korea
Theme: Software Design and Development

SVT - Software Verification and Testing Track

Track Co-Chairs:  
Erika Abraham, RWTH Aachen University, Germany  
Pascale Le Gall, Université Paris-Saclay, France

Summarization of Branching Loops

Martin Blicha, Charles University, Czech Republic and Università della Svizzera italiana, Switzerland  
Jan Kofroň, Charles University, Czech Republic  
William Tatarko, Charles University, Czech Republic

Verifying Opacity by Abstract Interpretation

Isabella Mastroeni, Università degli Studi di Verona, Italy  
Michele Pasqua, Università degli Studi di Verona, Italy

Leveraging Hardware-Dependent Knowledge Extraction with Multiple Program Analysis Techniques

Thuy Nguyen, Japan Advanced Institute of Science and Technology, Japan  
Takashi Tomita, Japan Advanced Institute of Science and Technology, Japan  
Junpei Endo, AISIN SOFTWARE Co., Ltd., Japan  
Geon-ung Kang, AISIN SOFTWARE Co., Ltd., Japan  
Toshiaki Aoki, Japan Advanced Institute of Science and Technology, Japan

A Lightweight Approach for Sound Call Graph Approximation

Aharon Abadi, WhiteSource, Israel  
Bar Makovitzki, The Open University of Israel, Israel  
Ron Shemer, WhiteSource, Israel  
Shmuel Tyszberowicz, Afeka Academic College of Engineering, Israel

Poster Papers

Model Sketching by Abstraction Refinement for Lifted Model Checking

Aleksandar S. Dimovski, Mother Teresa University, Macedonia

Verifying Redundant-Check Based Countermeasures: A Case Study

Thibault Martin, Université Paris-Saclay, France  
Nikolai Kosmatov, Thales Research and Technology, France  
Virgile Prevost, Université Paris-Saclay, France

A Simple Proof of Data-Race Freedom and Data Coherence for Simpson’s 4-Slot Algorithm

Xu Wang, East China Normal University, China  
Qiwen Xu, University of Macau, China

Capturing Program Models with BISM

Chukri Soueidi, Université Grenoble Alpes and Inria, France  
Yliès Falcone, Université Grenoble Alpes and Inria, France
Theme: Information Systems

SWA - Semantic Web and Applications Track

Track Co-Chairs: Hyoil Han, Illinois State University, USA
Soon Ae Chun, City University of New York, USA
Sangsoo Sung, Google Inc., USA
Cristian Mateos, UNICEN University - Tandil, Argentina
Tim A. Majchrzak, University of Agder - Kristiansand, Norway
Flavius Frasincar, Erasmus University Rotterdam, The Netherlands

Track Editorial

Predicting the Category of Customers’ Next Product to Buy in Web Shops
Laura Rekasiute, Erasmus University Rotterdam, The Netherlands
Alvaro Jose Jimenez Palenzuela, Erasmus University Rotterdam, The Netherlands
Nijole Salnaite, Erasmus University Rotterdam, The Netherlands
Ramon Carrera Cuenca, Erasmus University Rotterdam, The Netherlands
Flavius Frasincar, Erasmus University Rotterdam, The Netherlands

Could Jamstack Be the Future of Web Applications Architecture? An Empirical Study
Dragana Markovic, Mälardalen University, Sweden
Milic Scekic, Mälardalen University, Sweden
Alessio Bucaioni, Mälardalen University, Sweden
Antonio Cicchetti, Mälardalen University, Sweden

Knowledge Graph Enhanced Multi-Task Learning between Reviews and Ratings for Movie Recommendation
Yun Liu, Tokyo Institute of Technology, Japan
Jun Miyazaki, Tokyo Institute of Technology, Japan
Qiong Chang, Tokyo Institute of Technology, Japan

Generalized Graph Pattern Discovery in Linked Data with Data Properties and a Domain Ontology
Tomas Martin, Université du Québec à Montréal, Canada
Victor Fuentes, Université du Québec à Montréal, Canada
Petko Valtchev, Université du Québec à Montréal, Canada
Abdoulaye Baniré Diallo, Université du Québec à Montréal, Canada
René Lacroix, LactaNet, Canada

A Blockchain-Based Framework for Drug Traceability: ChainDrugTrac
Eddy Kiomba Kambilo, CY Cergy Paris Université, France
Hajer Baazaoui Zghal, CY Cergy Paris Université, France
Chirine Ghedira Guegan, Université Jean Moulin Lyon III, France
Vlado Stankovski, University of Ljubljana, Slovenia
Petar Kochovski, University of Ljubljana, Slovenia
Dan Vodislav, CY Cergy Paris Université,

EABlock: A Declarative Entity Alignment Block for Knowledge Graph Creation Pipelines
Samaneh Jozashoori, Leibniz University of Hannover, Germany
Ahmad Sakor, Leibniz University of Hannover, Germany
Enrique Iglesias, Leibniz University of Hannover, Germany
Maria-Esther Vidal, Leibniz University of Hannover, Germany
Poster Papers

v-TCM: Vertical-Aware Transformer Click Model for Web Search .......................................................... 1908
Kritarth Bisht, Delhi Technological University, India
Seba Susan, Delhi Technological University, India

5D-IoT, a Semantic Web Based Framework for Assessing IoT Data Quality ......................................................... 1912
Shubham Mante, International Institute of Information Technology Hyderabad, India
Nathalie Hernandez, University of Toulouse, France
Aftab M. Hussain, International Institute of Information Technology Hyderabad, India
Sachin Chaudhari, International Institute of Information Technology Hyderabad, India
Deepak Gangadharan, International Institute of Information Technology Hyderabad, India
Thierry Monteil, University of Toulouse, France

Theme: Distributed Systems

WCN - Wireless Communications and Networking Track
Track Chair: Dongkyun Kim, Kyungpook National University, Korea

UAV-VANET Authentication for Real-Time Highway Surveillance ........................................................... 1916
Otto B. Piramuthu, University of Illinois Urbana-Champaign, USA
Matthew Caesar, University of Illinois Urbana-Champaign, USA

Cluster-Based AUV Communication for Delay-Sensitive Vulnerability Detection Using NDN ............... 1923
Junho Seo, Kyungpook National University, Korea
Ayesha Siddiqa, Kyungpook National University, Korea
Muhammad Ashar Tariq, Kyungpook National University, Korea
Malik Muhammad Saad, Kyungpook National University, Korea
Dongkyun Kim, Kyungpook National University, Korea

A Reinforcement Learning-Based Path Planning for Collaborative UAVs .................................................. 1929
Shahnila Rahim, Kyungpook National University, Korea
Mian Muaz Razaq, Kyungpook National University, Korea
Shih Yu Chang, San Jose University, USA
Limei Peng, Kyungpook National University, Korea

On Hybrid Front-Haul for 5G NR mmWave Indoor Coverage ................................................................. 1935
Syed Hassan Raza Naqvi, University of Waterloo, Canada
Pin-Han Ho, University of Waterloo, Canada

A Meta-Policy Approach for Learning Suitable Caching Replacement Policies in Information-Centric Networks ................................................................. 1941
Stéfani Pires, Federal University of Bahia, Brazil
Adriana Ribeiro, Federal University of Bahia, Brazil
Leobino Sampaio, Federal University of Bahia, Brazil

Multi-Antenna Covert Communications in Random Wireless Networks with Full-Duplex Relay .......... 1951
Yan Liu, Future University Hakodate, Japan
Huihui Wu, Tsinghua University, China
Yulong Shen, Xidian University, China
Xiaohong Jiang, Future University Hakodate, Japan
Optimization of IoT Slices in WiFi Enterprise Networks
Foroutan Fami, École de Technologie Supérieure, Canada
Nessrine Hammami, École de Technologie Supérieure, Canada
Chuan Pham, École de Technologie Supérieure, Canada
Kim-Khoa Nguyen, École de Technologie Supérieure, Canada

Poster Papers

Lightweight VANET Authentication Protocols
Otto B. Piramuthu, University of Illinois Urbana-Champaign, USA
Matthew Caesar, University of Illinois Urbana-Champaign, USA

GPGPU Wide-Area Calculations for Estimation of Electromagnetic Field Human Exposure Levels
Dariusz P. Więcek, National Institute of Telecommunications, Poland
Jacek W. Wroński, National Institute of Telecommunications, Poland

An Intelligent Blockchain Application for Emergency Medical Services
Thomas Lavigne, INSA Centre Val de Loire, France
Bacem Mbarek, Masaryk University, Czech Republic
Tomáš Pitner, Masaryk University, Czech Republic