# 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.

## BIO - Computational BIOlogy and BIOinformatics Track

**Track Co-Chairs:**  
Paola Lecca, University of Trento, Italy  
Dan Tulpan, National Research Council, Canada  
Juan Manuel Corchado Rodriguez, University of Salamanca, Spain

### Track Editorial

| Track Editorial | .......................................................... | 1 |

### LIF: A Method to Infer Disease-Gene Relationships using Literature Data and Impact Factor

*Jeongwoo Kim, Yonsei University, Korea*  
*Jinyong Lee, Yonsei University, Korea*  
*Heechul Kang, Yonsei University, Korea*  
*Chunghun Kim, Yonsei University, Korea*  
*Sanghyun Park, Yonsei University, Korea*

| A Profile-Based Probabilistic Approach for the Detection of Anomalies in the Cytochrome C Oxidase I Amplicon Sequence | .......................................................... | 11 |

*Mahdi Belcaid, University of Hawaii at Manoa, USA*  
*Guylaine Poisson, University of Hawaii at Manoa, USA*

### Inference of Regulatory Networks with MCMC sampler guided by Mutual Information

*Nilzair M. Barreto, Universidade Federal do Rio Grande, Brazil*  
*Karina S. Machado, Universidade Federal do Rio Grande, Brazil*  
*Adriano V. Werhli, Universidade Federal do Rio Grande, Brazil*

### Poster Papers

#### Ranking Novel Regulatory Genes in Gene Expression Profiles using NetExpress

*Belma Yelbay, Sabanci University, Turkey*  
*Alexander Gow, Wayne State University, USA*  
*Hasan M. Jamil, University of Idaho, USA*

#### Biclustering of Time Series Data using Factor Graphs

*Matteo Denitto, University of Verona, Italy*  
*Alessandro Farinelli, University of Verona, Italy*  
*Manuele Bicego, University of Verona, Italy*

### Student Research Competition Paper

#### Student Research Abstract: Computational Study of Inward Rectifying Ion Channel in Urinary Bladder Over Activity

*Chitaranjan Mahapatra, Indian Institute of Technology Bombay, India*


*Vasu Jindal, University of Texas at Dallas, USA*
CASM - Collective Adaptive System and Middleware Track

Track Co-Chairs:
- Tomas Cerny, Czech Technical University, Czech Republic
- Mirko Viroli, University of Bologna, Italy
- Francesco Tiezzi, University of Camerino, Italy

Track Editorial

SmartOrch: An Adaptive Orchestration System for Human-Machine Collectives
- Michael Rovatsos, University of Edinburgh, United Kingdom
- Dimitrios I. Diochnos, University of Virginia, USA
- Zhenyu Wen, University of Edinburgh, United Kingdom
- Sofia Ceppi, University of Edinburgh, United Kingdom
- Pavlos Andreadis, University of Edinburgh, United Kingdom

Coordinated Execution of Adaptation Operations in Distributed Role-based Software Systems
- Martin Weißbach, Technische Universität Dresden, Germany
- Thomas Springer, Technische Universität Dresden, Germany

Efficient Compensation Handling via Subjective Updates
- Jovana Dedeić, University of Novi Sad, Serbia
- Jovanka Pantović, University of Novi Sad, Serbia
- Jorge A. Pérez, University of Groningen, Netherlands

Doctrine based Multi-Resolution HLA Distributed Simulation
- Ricardo L. Paul, Federal University of Santa Maria, Brazil
- Raul C. Nunes, Federal University of Santa Maria, Brazil
- Vanderlan D. Oliveira, Federal University of Santa Maria, Brazil
- Diogo Kunde, Federal University of Santa Maria, Brazil

Poster Papers

Runtime Verification Method for Self-Adaptive Software using Reachability of Transition System Model
- Euijong Lee, Korea University, Korea
- Young-Gab Kim, Sejong University, Korea
- Young-Duk Seo, Korea University, Korea
- Kwangsoo Seol, Korea University, Korea
- Doo-Kwon Baik, Korea University, Korea

Leveraging the Adoption of Electronic Identities and Electronic-Signature Solutions in Europe
- Alexander Marsalek, Graz University of Technology, Austria
- Thomas Zefferer, Graz University of Technology, Austria
- Florian Reimair, Graz University of Technology, Austria
- Çağatay Karabat, TÜBİTAK BİLGEM, Turkey
- Elif Ustundag Soykan, TÜBİTAK BİLGEM, Turkey

Enhanced Fraud Detection as a Service supporting Merchant-Specific Runtime Customization
- Davy Preuevenes, Katholieke Universiteit Leuven, Belgium
- Bavo Goosens, Katholieke Universiteit Leuven, Belgium
- Wouter Joosen, Katholieke Universiteit Leuven, Belgium
CIVIA - Computational Intelligence and Video & Image Analysis Track

Track Co-Chairs: Agostinho Rosa, University of Lisbon, Portugal
                Yin-Fu Huang, National Yunlin University of Science and Technology, Taiwan

Track Editorial ................................................................................................................................................... 76

Fraud Detection in Water Meters using Pattern Recognition Techniques ................................. 77
Juliana Patrícia Detroz, Santa Catarina State University, Brazil
André Tavares da Silva, Santa Catarina State University, Brazil

Lotfi Abdi, University of Tunis El Manar, Tunisia
Aref Meddeb, University of Sousse, Tunisia

Improving OR-PCA via Smoothed Spatially-Consistent Low-rank Modeling for Background Subtraction ................................................................................................................................. 89
Sajid Javed, Kyungpook National University, Korea
Thierry Bouwmans, Université de La Rochelle, France
Soon Ki Jung, Kyungpook National University, Korea

Video Popularity Prediction in Data Streams based on Context-Independent Features .................. 95
Vitor da Silva, Universidade Federal de Santa Maria, Brazil
Ana Trindade Winck, Universidade Federal de Santa Maria, Brazil

How to Extend the use of the Discrete Orthogonal Stockwell Transform to Image Watermarking ...... 101
Hana Ouazzane, Université de Tunis El Manar, Tunisia
Hela Mahersia, Université de Tunis El Manar, Tunisia
Kamel Hamrouni, Université de Tunis El Manar, Tunisia

Multi-shot Person Re-Identification using a novel Video Covariance Approach ......................... 108
Bassem Hadjkacem, Sfax University, Tunisia
Walid Ayedi, Sfax University, Tunisia
Mohamed Abid, Sfax University, Tunisia

Convolutions through Time for Multi-Label Movie Genre Classification ..................................... 114
Jônatas Wehrmann, Pontifical Catholic University of Rio Grande do Sul, Brazil
Rodrigo C. Barros, Pontifical Catholic University of Rio Grande do Sul, Brazil

Poster Papers

Nearest Neighbor Search on Total Bregman Balls Tree ..................................................................... 120
Daniela P.L. Ferreira, Instituto Federal do Triângulo Mineiro, Brazil
Bruno M. Rocha, Universidade Federal de Uberlândia, Brazil
Celia A.Z. Barcelos, Universidade Federal de Uberlândia, Brazil
CoCo - Cognitive Computing Track
Track Co-Chairs: Mauro Dragoni, Fondazione Bruno Kessler, Italy
Marco Rospocher, Fondazione Bruno Kessler, Italy

Track Editorial ................................................................................................................................................. 123

Learning and Reasoning in Logic Tensor Networks: Theory and Application to Semantic Image Interpretation ............................................................................................................................................. 125
Luciano Serafini, Fondazione Bruno Kessler, Italy
Ivan Donadello, Fondazione Bruno Kessler, Italy
Artur d’Avila Garcez, City University London, United Kingdom

Deep Learning Traffic Sign Detection, Recognition and Augmentation ........................................................... 131
Lotfi Abdi, University of Tunis El Manar, Tunisia
Aref Meddeb, University of Sousse, Tunisia

Gender-based Multimodal Deception Detection .............................................................................................. 137
Mohamed Abouelenien, University of Michigan, USA
Verónica Pérez-Rosas, University of Michigan, USA
Bohan Zhao, University of Michigan, USA
Rada Mihalcea, University of Michigan, USA
Mihai Burzo, University of Michigan, USA

Linking Knowledge Bases to Social Media Profiles .......................................................................................... 145
Yaroslav Nechaev, Fondazione Bruno Kessler, Italy
Francesco Corcoglioniti, Fondazione Bruno Kessler, Italy
Claudio Giuliano, Fondazione Bruno Kessler, Italy

Poster Papers

CogVis: Attention-driven Cognitive Architecture for Visual Change Detection ............................................ 151
Shailesh Deshpande, TCS Research, India
Arcot Sowmya, University of New South Wales, Australia
Piyush Yadav, TCS Research, India
Shamsuddin Ladha, TCS Research, India
Priyanka Verma, TCS Research, India
Karthikeyan Vaiapury, TCS Research, India
Jay Gubbi, TCS Research, India
Balamurali P., TCS Research, India

Towards Adaptation of Named Entity Classification .......................................................................................... 155
Pikakshi Manchanda, University of Milano-Bicocca, Italy
Elisabetta Fersini, University of Milano-Bicocca, Italy
Matteo Palmonari, University of Milano-Bicocca, Italy
Debora Nozza, University of Milano-Bicocca, Italy
Enza Messina, University of Milano-Bicocca, Italy
Variational Non Rigid Registration with Bregman Divergences ................................................. 158
Daniela P.L. Ferreira, Instituto Federal do Triângulo Mineiro, Brazil
Eraldo Ribeiro, Florida Institute of Technology, USA
Celia A.Z. Barcelos, Universidade Federal de Uberlândia, Brazil

Fully Anisotropic Morlet Transform for the Study of the Trabecular Bone Texture Variations .......... 164
Hind Oulhaj, Mohammed V University, Morocco
Mohammed El Hassouni, Mohammed V University, Morocco
Aouatif Amine, Ibn Tofail University in Kenitra, Morocco
Mohammed Rziza, Mohammed V University, Morocco
Rachid Jennane, University of Orléans, France

Poster Papers
An Automatic Method for Identification of Cystine Crystals in Urine Sediment ................................ 170
Vicenzo Abichequer, Pontifical Catholic University of Rio Grande do Sul, Brazil
Felipe Lammel, Pontifical Catholic University of Rio Grande do Sul, Brazil
Márcio Pinho, Pontifical Catholic University of Rio Grande do Sul, Brazil
Isabel Manssour, Pontifical Catholic University of Rio Grande do Sul, Brazil

HCI - Smart Human Computer Interfaces Track
Track Co-Chairs: Soon Ki Jung, Kyungpook National University, Korea
Anand Paul, Kyungpook National University, India
Ganesh Kumar P., Anna University, India

Towards a Hypothetical Framework of Humans Related Success Factors for Process Improvement in Global Software Development: Systematic Review ........................................... 180
Arif Ali Khan, City University of Hong Kong, Hong Kong
Jacky Keung, City University of Hong Kong, Hong Kong
Mahmood Niazi, King Fahd University of Petroleum and Minerals, Saudi Arabia
Shahid Hussain, City University of Hong Kong, Hong Kong

DyNetVis: A System for Visualization of Dynamic Networks ......................................................... 187
Cláudio D.G. Linhares, Federal University of Uberlândia, Brazil
Bruno A.N. Travençolo, Federal University of Uberlândia, Brazil
José Gustavo S. Paiva, Federal University of Uberlândia, Brazil
Luís E.C. Rocha, Karolinska Institute, Sweden

SBMI-LTD: Stationary Background Model Initialization based on Low-rank Tensor Decomposition .......................................................... 195
Sajid Javed, Kyungpook National University, Korea
Thierry Bouwmans, Université de La Rochelle, France
Soon Ki Jung, Kyungpook National University, Korea
Recommendations to Improve User Experience in Second Screen Applications: A Case Study

Daniel da S. Souza, Universidade Federal do Pará, Brazil
Marcos C. da R. Serufo, Universidade Federal do Pará, Brazil
Marianne K. Eliasquevici, Universidade Federal do Pará, Brazil

Human enabled Green IoT in 5G Networks

Sadia Din, Kyungpook National University, Korea
Awais Ahmad, Yeungnam University, Korea
Anand Paul, Kyungpook National University, Korea

Exploring Music Rankings with Interactive Visualization

Leandro Guedes, Federal University of Rio Grande do Sul, Brazil
Carla M.D.S. Freitas, Federal University of Rio Grande do Sul, Brazil

User Generated Soundscapes Activating Museum Visitors

Kari Salo, Helsinki Metropolia University of Applied Sciences, Finland
Merja Bauters, Helsinki Metropolia University of Applied Sciences, Finland
Tommi Mikkonen, Tampere University of Technology, Finland

Poster Papers

Driver Information System: A Combination of Augmented Reality and Deep Learning

Lotfi Abdi, University of Tunis El Manar, Tunisia
Aref Meddeb, University of Sousse, Tunisia

Student Research Competition Paper

Student Research Abstract: Distributed Smart Street LED Lights for Human Satisfaction in Smart City

M. Mazhar Rathore, Kyungpook National University, Korea

IRMAS - Intelligent Robotics and Multi-Agent Systems Track

Track Co-Chairs: Rui Rocha, University of Coimbra, Portugal
Daniel Kudenko, University of York, United Kingdom
Shaojie Shen, Hong Kong University of Science and Technology, China

Track Editorial

Exportation to the Cloud of Distributed Robotic Tasks Implemented in ROS

João Rosa, University of Coimbra, Portugal
Rui P. Rocha, University of Coimbra, Portugal

Multicriteria Optimization in Distributed Micro-Conveying Platform

Hakim Mabed, University of Burgundy - Franche-Comté, France
Eugen Dedu, University of Burgundy - Franche-Comté, France
Haithem Skima, University of Burgundy - Franche-Comté, France

Forecasting Battery State of Charge for Robot Missions

Ameer Hamza, University of Southern California, USA
Nora Ayanian, University of Southern California, USA

Efficient Scene Encoding for Programmable Matter Self-Reconfiguration Algorithms

Thadeu Tucci, University of Bourgogne Franche-Comté, France
Benoit Piranda, University of Bourgogne Franche-Comté, France
Julien Bourgeois, University of Bourgogne Franche-Comté, France
Path Efficient Level Set Estimation for Mobile Sensors ................................................................. 262
Lorenzo Bottarelli, University of Verona, Italy
Jason Blum, Carnegie Mellon University and Platypus LLC, USA
Manuele Bicego, University of Verona, Italy
Alessandro Farinelli, University of Verona, Italy

An Asynchronous Distributed Constraint Optimization Approach to Multi-Robot Path Planning with Complex Constraints ............................................................... 268
Alberto Viseras, German Aerospace Center, Germany
Valentina Karolj, German Aerospace Center, Germany
Luis Merino, Pablo de Olavide University, Spain

A Versatile High-Performance Visual Fiducial Marker Detection System with Scalable Identity Encoding ............................................................................................................. 276
Peter Lightbody, University of Lincoln, United Kingdom
Tomáš Krajník, University of Lincoln, United Kingdom
Marc Hanheide, University of Lincoln, United Kingdom

Cloud-Based Cooperative Navigation for Mobile Service Robots in Dynamic Industrial Environments ........................................................................................................................... 283
Jannik Abbenseth, Fraunhofer IPA, Germany
Felipe Garcia Lopez, Fraunhofer IPA, Germany
Christian Henkel, Fraunhofer IPA, Germany
Stefan Dörr, Fraunhofer IPA, Germany

Predicting Coordinated Group Movements of Sharks with Limited Observations using AUVs .......... 289
Cherie Ho, Harvey Mudd College, USA
Kimberly Joly, Harvey Mudd College, USA
Andrew P. Nosal, University of Saint Katherine, USA
Christopher G. Lowe, California State University, Long Beach, USA
Christopher M. Clark, Harvey Mudd College, USA

Poster Papers

On-the-Fly Transformation Synthesis for Information Sharing in Heterogeneous Multi-Agent Systems ........................................................................................................................................ 297
Stefan Niemczyk, University of Kassel, Germany
Nugroho Fredivianus, University of Kassel, Germany
Kurt Geihs, University of Kassel, Germany

Automated Seam Tracking System based on Passive Monocular Vision for Automated Linear Robotic Welding Process ................................................................................... 300
Átila Astor Weis, Federal University of Rio Grande, Brazil
Adriano Velasque Werhli, Universidade Federal do Rio Grande, Brazil
Nelson L. Duarte Filho, Federal University of Rio Grande, Brazil
Luciane Baldassari Soares, Federal University of Rio Grande, Brazil
Cristiano Rafael Steffens, Federal University of Rio Grande, Brazil
Matheus Franz de Faria, Federal University of Rio Grande, Brazil
Paulo Lilles Jorge Drews-Jr, Federal University of Rio Grande, Brazil
Silvia Silva da Costa Botelho, Federal University of Rio Grande, Brazil
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

A Semantic Federated Search Engine for Domain-Specific Document Retrieval .................................. 303
Mauro Dragoni, Fondazione Bruno Kessler, Italy
Andi Rexha, Know-Center GmbH, Austria
Hermann Ziak, Know-Center GmbH, Austria
Roman Kern, Know-Center GmbH, Austria

Utilizing Wikipedia Knowledge in Open Directory Project-based Text Classification ............................. 309
HaeYong Shin, Korea University, Korea
GeunJae Lee, Korea University, Korea
Woo-Jong Ryu, Korea University, Korea
SangKeun Lee, Korea University, Korea

A Semantic-enabled Platform for Supporting Healthy Lifestyle .............................................................. 315
Mauro Dragoni, Fondazione Bruno Kessler, Italy
Tania Bailoni, Fondazione Bruno Kessler, Italy
Claudio Eccher, Fondazione Bruno Kessler, Italy
Marco Guerini, Fondazione Bruno Kessler, Italy
Rosa Maimone, Fondazione Bruno Kessler, Italy

Influence of Semantic Similarity Measures in Ontology Cross-language Mappings ............................... 323
Juliana Medeiros Destro, University of Campinas, Brazil
Julio Cesar dos Reis, University of Campinas, Brazil
Ariadne Maria Brito Rizzoni Carvalho, University of Campinas, Brazil
Ivan Luiz Marques Ricarte, University of Campinas, Brazil

Schema-Summarization in Linked-Data-Based feature Selection for Recommender Systems .................. 330
Azzurra Ragone, University of Milan Bicocca, Italy
Paolo Tomeo, Polytechnic University of Bari, Italy
Corrado Magarelli, Polytechnic University of Bari, Italy
Tommaso Di Noia, Polytechnic University of Bari, Italy
Matteo Palmonari, University of Milan Bicocca, Italy
Andrea Maurino, University of Milan Bicocca, Italy
Eugenio Di Sciascio, Polytechnic University of Bari, Italy

Bridging Context and Data Warehouses through Ontologies ................................................................. 336
Okba Barkat, École Nationale Supérieure de Mécanique et d'Aérotechnique, France
Selma khouri, École Nationale Supérieure de Mécanique et d'Aérotechnique, France
Ladjel Bellatreche, École Nationale Supérieure de Mécanique et d'Aérotechnique, France
Narhimene Boustia, Blida University, Algeria

Reasoning and Discovering Novel Treatments in Linked Social Health Records .................................... 342
Paolo Cappellari, City University of New York, USA
Soon Ae Chun, City University of New York, USA
Dennis Shpitz, City University of New York, USA
Poster Papers

Syntactic and Semantic Validation of SPARQL Queries ................................................................. 349
Jesús M. Almendros-Jiménez, University of Almería, Spain
Antonio Becerra-Terón, University of Almería, Spain
Alfredo Cuzzocrea, University of Trieste, Italy

Towards Integration of Ontology and Text-extracted Data for Event Coreference Reasoning .......... 353
Stefano Borgo, Institute of Cognitive Sciences and Technologies, Italy
Loris Bozzato, Fondazione Bruno Kessler, Italy
Alessio Palmero Aprosio, Fondazione Bruno Kessler, Italy
Marco Rospocher, Fondazione Bruno Kessler, Italy
Luciano Serafini, Fondazione Bruno Kessler, Italy

Student Research Competition Paper

Student Research Abstract: Discovering and Linking with Life Sciences Linked Open Data Cloud ..... 356
Muntazir Mehdi, National University of Ireland, Galway, Ireland

CC - Cloud Computing Track

Track Co-Chairs: Priya Chandran, National Institute of Technology Calicut, India
S.D Madhu Kumar, National Institute of Technology Calicut, India

StopGap: Elastic VMs to Enhance Server Consolidation ................................................................. 358
Vlad Nitu, University of Toulouse, France
Boris Teabe, University of Toulouse, France
Leon Fopa, University of Toulouse, France
Alain Tchana, University of Toulouse, France
Daniel Hagimont, University of Toulouse, France

Secure Storage of User Credentials and Attributes in Federation of Clouds ................................ 364
Luciano Barreto, Federal University of Santa Catarina, Brazil
Leomar Scheunemann, Federal University of Santa Catarina, Brazil
Joni Fraga, Federal University of Santa Catarina, Brazil
Frank Siqueira, Federal University of Santa Catarina, Brazil

Verifiable Outsourced Database in the Cloud Using Game Theory .............................................. 370
Faryed Eltayesh, Concordia University, Canada
Jamal Bentahar, Concordia University, Canada

HyViDE: A Framework for Virtual Data Center Network Embedding ........................................ 378
M.P. Gilesh, National Institute of Technology Calicut, India
S.D Madhu Kumar, National Institute of Technology Calicut, India
Lillykutty Jacob, National Institute of Technology Calicut, India

A Predictive Approach for Enhancing Resource Utilization in PaaS Clouds ............................... 384
Henrique Truta, Federal University of Campina Grande, Brazil
José Luis Vivas, Federal University of Campina Grande, Brazil
Andrey Brito, Federal University of Campina Grande, Brazil
Telles Nobrega, Federal University of Campina Grande, Brazil
ElaScript: a DSL for Coding Elasticity in Cloud Computing .......................................................... 392
Simon Dupont, Sigma Informatique, France
Salma Bouri, Ecole des Mines de Nantes, France
Frederico Alvares, Ecole des Mines de Nantes, France
Thomas Ledoux, Ecole des Mines de Nantes, France

A Multi-Swarm based Approach with Cooperative Learning Strategy for Composite SaaS Placement .......................................................... 399
Haithem Mezni, University of Jendouba, Tunisia
Jaber Kouki, University of Tunis, Tunisia

Assessing End-to-End Performance and Security in Cloud Computing .............................................. 405
Kaiqi Xiong, University of South Florida, USA
Mufaddal Makati, Rochester Institute of Technology, USA

Poster Papers
Towards Scalable and Dynamic Data Encryption for Multi-Tenant SaaS ........................................... 411
Ansar Rafique, Katholieke Universiteit Leuven, Belgium
Dimitri Van Landuyt, Katholieke Universiteit Leuven, Belgium
Vincent Reniers, Katholieke Universiteit Leuven, Belgium
Wouter Joosen, Katholieke Universiteit Leuven, Belgium

DADS - Dependable, Adaptive, and trustworthy Distributed Systems Track
Track Co-Chairs: Karl M. Goeckhla, UAS Technikum Vienna, Austria
Rui Oliveira, Universidade do Minho, Portugal
Peter Pietzuch, Imperial College London, United Kingdom
Giovanni Russello, University of Auckland, New Zealand

Track Editorial ........................................................................................................................................ 415

ICE – Self-Configuration of Information Processing in Heterogeneous Agent Teams ................. 417
Stefan Niemczyk, University of Kassel, Germany
Stephan Opfer, University of Kassel, Germany
Nugroho Fredivianus, University of Kassel, Germany
Kurt Geihs, University of Kassel, Germany

Evidence-Based Security Configurations for Cloud Datastores ......................................................... 424
Frank Pallas, Technical University of Berlin, Germany
David Bermbach, Technical University of Berlin, Germany
Steffen Müller, Technical University of Berlin, Germany
Stefan Tai, Technical University of Berlin, Germany

Deconstructing Source Location Privacy-aware Routing Protocols .................................................. 431
Arshad Jhumka, University of Warwick, United Kingdom
Matthew Bradbury, University of Warwick, United Kingdom

Choreographing Cyber-Physical Distributed Control Systems for the Energy Sector ......................... 437
Hugo A. López, Technical University of Denmark, Denmark
Kai Heussen, Technical University of Denmark, Denmark

Handling Bitcoin Conflicts Through a Glimpse of Structure ............................................................ 444
Thibaut Lajoie-Mazenc, CNRS / IRISA, France
Romaric Ludinard, ENSAI, France
Emmanuelle Anceaume, CNRS / IRISA, France
Automatic Generation of Policies to Support Elastic Scaling in Cloud Environments .................................. 450
Richard Gil Martinez, Universidade de Lisboa, Portugal
Antónia Lopes, Universidade de Lisboa, Portugal
Luis Rodrigues, Universidade de Lisboa, Portugal

Performance Trade-Offs on a Secure Multi-Party Relational Database ................................................................. 456
Rogério Pontes, University of Minho, Portugal
Mário Pinto, University of Minho, Portugal
Manuel Barbosa, University of Minho, Portugal
Ricardo Vilaça, University of Minho, Portugal
Miguel Matos, University of Minho, Portugal
Rui Oliveira, University of Minho, Portugal

Poster Papers

Prepared Scan: Efficient Retrieval of Structured Data from HBase ............................................................................. 462
Francisco Neves, University of Minho, Portugal
Ricardo Vilaça, University of Minho, Portugal
José Pereira, University of Minho, Portugal
Rui Oliveira, University of Minho, Portugal

Fault-Tolerant Clock Synchronization in Ring-Networks ................................................................................................. 465
Klaus Echtle, University of Essen-Duisburg, Germany
Zoha Moztarzadeh, University of Essen-Duisburg, Germany

IoT - Internet of Things Track
Track Co-Chairs: Gail-Joon Ahn, Arizona State University, USA
Seong-Je Cho, Dankook University, Korea
Jun Zheng, New Mexico Tech, USA

An Evaluation of Service Discovery Protocols in the Internet of Things ................................................................. 469
Christian Cabrera, Trinity College Dublin, Ireland
Andrei Palade, Trinity College Dublin, Ireland
Siobhán Clarke, Trinity College Dublin, Ireland

Sensing by Proxy in Buildings with Agglomerative Clustering of Indoor Temperature Movements ..... 477
Daoyuan Li, University of Luxembourg, Luxembourg
Tegawendé F. Bissyandé, University of Luxembourg, Luxembourg
Jacques Klein, University of Luxembourg, Luxembourg
Yves Le Traon, University of Luxembourg, Luxembourg

From IoT Big Data to IoT Big Services ......................................................................................................................... 485
Amir Taherkordi, University of Oslo, Norway
Frank Eliassen, University of Oslo, Norway
Geir Horn, University of Oslo, Norway

Knowledge Discovery and Sharing in the IoT: The Physical Semantic Web Vision ................................. 492
Michele Ruta, Politecnico di Bari, Italy
Floriano Scioscia, Politecnico di Bari, Italy
Saverio Ieva, Politecnico di Bari, Italy
Giuseppe Loseto, Politecnico di Bari, Italy
Filippo Gramegna, Politecnico di Bari, Italy
Agnese Pinto, Politecnico di Bari, Italy
Eugenio Di Sciascio, Politecnico di Bari, Italy
Distributed Algorithm for Traffic Dissemination in Manhattan Networks with Optimal Routing-Time
Sayan Sen Sarma, Indian Statistical Institute, India
Koushik Sinha, Southern Illinois University, USA
Goutam Chakraborty, Iwate Prefectural University, Japan
Bhabani P. Sinha, Indian Statistical Institute, India

Poster Papers

ProfilIoT: A Machine Learning Approach for IoT Device Identification based on Network Traffic Analysis
Yair Meidan, Ben-Gurion University of the Negev, Israel
Michael Bohadana, Ben-Gurion University of the Negev, Israel
Asaf Shabtai, Ben-Gurion University of the Negev, Israel
Juan David Guarnizo, Singapore University of Technology and Design, Singapore
Martín Ochoa, Singapore University of Technology and Design, Singapore
Nils Ole Tippenhauer, Singapore University of Technology and Design, Singapore
Yuval Elovici, Ben-Gurion University of the Negev, Singapore University of Technology and Design, Israel, Singapore

Security Software Module Update for Heterogeneous VoT
Kiwook Kang, Soongsil University, Korea
Kyoungmin Kim, Soongsil University, Korea
Jinwoo Lee, Soongsil University, Korea
Joonhyouk Jang, Soongsil University, Korea
Jiman Hong, Soongsil University, Korea

Student Research Competition Paper

Student Research Abstract: A Novel IoT-based Wireless System to Monitor Heart Rate
Mohamed ElSaadany, Miami University, USA

MCA - Mobile Computing and Applications Track

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

Track Editorial

Secure Policy-based Device-to-Device Offloading for Mobile Applications
Andreas Reiter, Graz University of Technology, Austria

An Effective and Efficient Hybrid Scan Matching Algorithm for Mobile Object Applications
Kristijan Lenac, University of Rijeka, Croatia
Alfredo Cuzzocrea, University of Trieste and ICAR-CNR, Italy
Enzo Mumolo, University of Trieste, Italy

Observation-Based Detection of Femtocell Attacks in Wireless Mobile Networks
Mohamed Jacem Guezguez, University of Carthage, Tunisia
Slim Rekhis, University of Carthage, Tunisia
Noureddine Boudriga, University of Carthage, Tunisia
Cyber Security Patrol – Detecting Fake and Vulnerable WiFi-Enabled Printers .......................................... 535
Jinghui Toh, Singapore University of Technology and Design, Singapore
Muhammad Hatib, Singapore University of Technology and Design, Singapore
Omer Porzecanski, Singapore University of Technology and Design, Singapore
Yuval Elovici, Singapore University of Technology and Design, Singapore

MOMOS-MT: Mobile Monophonic System for Music Transcription ............................................................... 543
Munir Makhmutov, Innopolis University, Russia
Joseph Alexander Brown, Innopolis University, Russia
Manuel Mazzara, Innopolis University, Russia
Leonard Johard, Innopolis University, Russia

BaaS (Bluetooth-as-a-Sensor): Conception, Design and Implementation on Mobile Platforms .................. 550
Douglas Lautner, Illinois Institute of Technology, USA
Xiayu Hua, Illinois Institute of Technology, USA
Scott DeBates, Motorola Mobility LLC, USA
Miao Song, Motorola Mobility LLC, USA
Jagat Shah, Motorola Mobility LLC, USA
Shangping Ren, Illinois Institute of Technology, USA

Requirements for a Mobile Personal Health Record to Improve Cardiovascular Healthcare Services ........................................................................................................................................ 557
Sofia Ouhbi, University Mohamed V, Morocco
Ali Idri, University Mohamed V, Morocco
Rachid Hakmi, University Mohamed V, Morocco
Halima Benjelloun, University Mohamed V, Morocco
José Luis Fernández-Alemán, University of Murcia, Spain
Ambrosio Toval, University of Murcia, Spain

Flamingo: A Framework for Smartphone Security Context Management ..................................................... 563
Md Shahrear Iqbal, Queen's University, Canada
Mohammad Zulkernine, Queen's University, Canada

Poster Papers

Usability Evaluation and Development of Heuristics for Second-Screen Applications ............................ 569
Eduardo Mosqueira-Rey, University of A Coruña, Spain
David Alonso-Ríos, University of A Coruña, Spain
Diego Prado-Gesto, University of A Coruña, Spain
Vicente Moret-Bonillo, University of A Coruña, Spain

Utilizing Nearby Computing Resources for Resource-Limited Mobile Devices ........................................ 572
Minh Le, Utah State University, USA
Young-Woo Kwon, Utah State University, USA

Student Research Competition Paper

Student Research Abstract: Analyzing the Vulnerability Exploitation in Android with the device-mapper-verity (dm-verity) ................................................................................................................... 576
Abhishek P.C., SNS College of Technology, India
NET - Networking Track

Track Co-Chairs: Mario M. Freire, University of Beira Interior, Portugal
Marilia Curado, University of Coimbra, Portugal
Manuela Pereira, University of Beira Interior, Portugal
Teresa Vazão, University of Lisboa, Portugal

Prediction of the Domain Name System (DNS) Quality Attributes ............................................................ 578
Marwan Radwan, University of Leicester, United Kingdom
Reiko Heckel, University of Leicester, United Kingdom

Upper Bound Computation for Buffer Backlog on AFDX Networks with Multiple Priority Virtual Links .................................................................................................................................................... 586
Rodrigo Coelho, Technische Universität Kaiserslautern, Germany
Gerhard Fohler, Technische Universität Kaiserslautern, Germany
Jean-Luc Scharbang, Université de Toulouse, France

RALL - Routing-Aware Of Path Length, Link Quality and Traffic Load for Wireless Sensor Networks .................................................................................................................................................... 594
Vinicius N. Medeiros, Federal University of Goias, Brazil
Paulo César G. de Brito, Federal University of Goias, Brazil
Bruno Silvestre, Federal University of Goias, Brazil
Vinicius da C. M. Borges, Federal University of Goias, Brazil

Mathematical Model for a Collaborative Indoor Position System (IPS) and Movement Detection of Devices within IoT Environment .............................................................................................................................................. 602
D.R. Vasconcelos, Federal University of Ceará, Brazil
F.L.R. Pimentel, Federal University of Ceará, Brazil
R.M.C. Andrade, Federal University of Ceará, Brazil
J.N. Souza, Federal University of Ceará, Brazil

Phantom Walkabouts in Wireless Sensor Networks ..................................................................................................... 609
Chen Gu, University of Warwick, United Kingdom
Matthew Bradbury, University of Warwick, United Kingdom
Arshad Jhumka, University of Warwick, United Kingdom

Poster Papers

Research of The Interest Package Popple Broadcast Diffusion Attack in NDN VANET ........................................ 617
Bin Pang, Inner Mongolia University, China
Ru Li, Inner Mongolia University, China
Pengfei Yue, Inner Mongolia University, China

SAWCN - Selected Areas of Wireless Communications and Networking Track

Track Co-Chairs: Dongkyun Kim, Kyungpook National University, Korea
Wei Wang, San Diego State University, USA

Joint Workload Scheduling and BBU Allocation in Cloud-RAN for 5G Networks ........................................... 621
Lilatul Ferdouse, Ryerson University, Canada
Waleed Ejaz, Ryerson University, Canada
Alagan Anpalagan, Ryerson University, Canada
Asad Masood Khattak, Zayed University, UAE
Moving away from the Crowd: Channel Selection in Uncoordinated Unplanned Dense Wireless LANs
Parag Kulkarni, Toshiba Research Europe Ltd., United Kingdom
Zhenzhe Zhong, Toshiba Research Europe Ltd., United Kingdom
Fengming Cao, Toshiba Research Europe Ltd., United Kingdom

Design and Implementation of a Fast Handoff Scheme Supporting Vehicular Mobility over IEEE 802.11 WLAN
Made Harta Dwijaksara, Seoul National University, Korea
MinSik Hwang, Seoul National University, Korea
Wha Sook Jeon, Seoul National University, Korea
Dong Geun Jeong, Hankuk University of FS, Korea

NDN Goes Deep: Foreseeing the Underwater Named Data Networks
Safdar Hussain Bouk, Kyungpook National University, Korea
Syed Hassan Ahmed, Kyungpook National University, Korea
Dongkyun Kim, Kyungpook National University, Korea

Poster Papers
Signal Strength as Support to Mobility Detection on Failure Detectors
Antônio Rodrigo D. De Vit, Pontifical Catholic University of Rio Grande do Sul, Brazil
César Marcon, Pontifical Catholic University of Rio Grande do Sul, Brazil
Raul Ceretta Nunes, Universidade Federal de Santa Maria, Brazil

UAV-Assisted Reactive Routing for Urban VANETs
Omar Sami Oubbati, University of Laghouat, Algeria
Abderrahmane Lakas, College of Information Technology, United Arab Emirates
Mesut Güneş, Ottovon-Guericke-University, Germany
Fen Zhou, University of Avignon, France
Mohamed Bachir Yagoubi, University of Laghouat, Algeria

WT - Web Technologies Track
Track Co-Chairs: Angelo Di Iorio, University of Bologna, Italy
Cristian Mateos, UNICEN University, Argentina
Tim A. Majchrzak, University of Agder, Norway

Track Editorial
A Linked Open Data Schema-Driven Approach for Top-N Recommendations
Thomas Wever, Erasmus University Rotterdam, Netherlands
Flavius Frasincar, Erasmus University Rotterdam, Netherlands

WebRTC: Your Privacy is at Risk
Andreas Reiter, Graz University of Technology, Austria
Alexander Marsalek, Graz University of Technology, Austria

Automatic Identification of Client-Side JavaScript Libraries in Web Applications
Hanyang Cao, University of Bordeaux, France
Yuxian Peng, Beihang University, China
Jing Jiang, Beihang University, China
Jean-Rémy Falleri, University of Bordeaux, France
Xavier Blanc, University of Bordeaux, France
A Quadtree Replication Method to Optimize Web and Mobile Applications Dealing with Large Sets of Objects on a Map

Patrick Munroe, Université du Québec à Montréal, Canada
Jonathan Milot, Université du Québec à Montréal, Canada
Éric Beaudry, Université du Québec à Montréal, Canada
Naouel Moha, Université du Québec à Montréal, Canada
François Grondin, Université de Sherbrooke, Canada

Poster Papers

A Smart MobiWeb Mashup Trip Planner Tool
Marwa Boulakbech, Université de François Rabelais, France
Nizar Messai, Université de François Rabelais, France
Yacine Sam, Université de François Rabelais, France
Thomas Devogele, Université de François Rabelais, France

Situation-Aware Multi-Criteria Recommender System: Using Criteria Preferences as Contexts
Yong Zheng, Illinois Institute of Technology, USA

Mitigating Distributed Denial of Service Attacks at the Application Layer
Robert Bronte, Kennesaw State University, USA
Hossain Shahriar, Kennesaw State University, USA
Hisham M. Haddad, Kennesaw State University, USA

Student Research Competition Paper

Student Research Abstract: Automatic Detection of Cross-Browser Incompatibilities using Machine Learning and Screenshot Similarity
Fagner Christian Paes, Technological Federal University of Paraná, Brazil

Student Research Abstract: A Key-Entity Graph for Clustering Multichannel News
Federica Rollo, University of Modena and Reggio Emilia, Italy

BPMEA - Business Process Management & Enterprise Architecture Track
Track Co-Chairs: Davide Rossi, University of Bologna, Italy
               Marco Brambilla, Politecnico di Milano, Italy

Track Editorial

Optimal Acquisition of Input Data for Decision Taking in Business Processes
Ekaterina Bazhenova, Hasso Plattner Institute, Germany
Mathias Weske, Hasso Plattner Institute, Germany

Lightweight Approach for Seamless Modeling of Process Flows in Case Management Models
Christoph Czepa, University of Vienna, Austria
Huy Tran, University of Vienna, Austria
Uwe Zdun, University of Vienna, Austria
Thanh Tran, ISIS Papyrus Europe AG, Austria
Erhard Weiss, ISIS Papyrus Europe AG, Austria
Christoph Ruhsam, ISIS Papyrus Europe AG, Austria
Reduction Techniques for Efficient Behavioral Model Checking in Adaptive Case Management .......... 719
Christoph Czepa, University of Vienna, Austria
Huy Tran, University of Vienna, Austria
Uwe Zdun, University of Vienna, Austria
Thanh Tran, ISIS Papyrus Europe AG, Austria
Erhard Weiss, ISIS Papyrus Europe AG, Austria
Christoph Ruhsam, ISIS Papyrus Europe AG, Austria

Modeling and Handling Duration Constraints in BPMN 2.0 ...................................................... 727
Carlo Combi, University of Verona, Italy
Barbara Oliboni, University of Verona, Italy
Francesca Zerbato, University of Verona, Italy

Recommendation Patterns for Business Process Imperative Modeling ........................................ 735
Mateus Barcellos Costa, Federal Institute of Espirito Santo, Brazil
Dalila Tamzalit, University of Nantes, France

Driving Time-dependent Paths in Clinical BPMN Processes ...................................................... 743
Carlo Combi, University of Verona, Italy
Pietro Sala, University of Verona, Italy
Francesca Zerbato, University of Verona, Italy

Service-Oriented Domain and Business Process Modelling ...................................................... 751
Gianna Reggio, Università di Genova, Italy
Maurizio Leotta, Università di Genova, Italy
Diego Clerissi, Università di Genova, Italy
Filippo Ricca, Università di Genova, Italy

Declarative Process Mining for DCR Graphs ............................................................................ 759
Søren Debois, IT University of Copenhagen, Denmark
Thomas T. Hildebrandt, IT University of Copenhagen, Denmark
Paw Høvsgaard Laursen, IT University of Copenhagen, Denmark
Kenneth Ry Ulrik, IT University of Copenhagen, Denmark

DM - Data Mining Track
Track Co-Chairs: Hasan Jamil, University of Idaho, USA
Stefan Kramer, Johannes Gutenberg University - Mainz, Germany
Raymond Wong, University of New South Wales, Australia

A Descriptive Clustering Approach to the Analysis of Quantitative Business-Process Deviances .......... 765
Francesco Folino, ICAR-CNR, Italy
Massimo Guarascio, ICAR-CNR, Italy
Luigi Pontieri, ICAR-CNR, Italy

Self-Tuning Techniques for Large Scale Cluster Analysis on Textual Data Collections ..................... 771
Evelina Di Corso, Politecnico di Torino, Italy
Tania Cerquitelli, Politecnico di Torino, Italy
Francesco Ventura, Politecnico di Torino, Italy
Towards Transforming FDA Adverse Event Narratives into Actionable Structured Data for Improved Pharmacovigilance
Susmitha Wunnava, Worcester Polytechnic Institute, USA
Xiao Qin, Worcester Polytechnic Institute, USA
Tabassum Kakar, Worcester Polytechnic Institute, USA
Vimig Socrates, Worcester Polytechnic Institute, USA
Amber Wallace, Worcester Polytechnic Institute, USA
Elke Rundensteiner, Worcester Polytechnic Institute, USA

Feature Extraction for the Author Name Disambiguation Problem in a Bibliographic Database
Jorge M.B. Silva, University of Porto, Portugal
Fernando Silva, University of Porto, Portugal

Hierarchical Multi-Label Classification with Chained Neural Networks
Jônatas Wehrmann, Pontifical Catholic University of Rio Grande do Sul, Brazil
Rodrigo C. Barros, Pontifical Catholic University of Rio Grande do Sul, Brazil
Silvia N. das Dôres, Pontifical Catholic University of Rio Grande do Sul, Brazil
Ricardo Cerri, Universidade Federal de São Carlos, Brazil

Discovering Spatial Contrast and Common Sets with Statistically Significant Co-location Patterns
Mohomed Shazan Mohomed Jabbar, University of Alberta, Canada
Osmar R. Zaïane, University of Alberta, Canada
Alvaro Osornio-Vargas, University of Alberta, Canada

Exploiting Implicit and Explicit Signed Trust Relationships for Effective Recommendations
Irfan Ali, Hanyang University Seoul, Korea
Jiwon Hong, Hanyang University Seoul, Korea
Sang-Wook Kim, Hanyang University Seoul, Korea

MILES: Multiclass Imbalanced Learning in Ensembles through Selective Sampling
Ali Azari, University of Maryland, USA
Vandana P. Janeja, University of Maryland, USA
Scott Levin, Johns Hopkins University, USA

A Novel Ensemble Approach on Regionalized Neural Networks for Brain Disorder Prediction
Lei Zheng, University of Illinois at Chicago, USA
Jingyuan Zhang, University of Illinois at Chicago, USA
Bokai Cao, University of Illinois at Chicago, USA
Philip S. Yu, University of Illinois at Chicago, USA
Ann Ragin, Northwestern University, USA

Poster Papers

Ontology-based Workflow Pattern Mining: Application to Bioinformatics Expertise Acquisition
Ahmed Halioui, Université du Québec à Montréal, Canada
Tomás Martín, Université du Québec à Montréal, Canada
Petko Valtchev, Université du Québec à Montréal, Canada
Abdoulaye Baniré Diallo, Université du Québec à Montréal, Canada

Student Research Competition Paper

Student Research Abstract: Improving Random Projection with Genetic Algorithms
Daniel López-Sánchez, University of Salamanca, Spain
DS - Data Streams Track

Track Co-Chairs: Albert Bifet, Université Paris-Saclay, France
Andre Carvalho, University of São Paulo, Brazil
Pedro P. Rodrigues, Universidade do Porto, Portugal
João Gama, University of Porto, Portugal

Fast Mutual Information Computation for Dependency-Monitoring on Data Streams ........................................ 830
Jonathan Boidol, Ludwig-Maximilians University, Germany
Andreas Hapfelmeier, Siemens AG, Germany

Feature Ranking in Hoeffding Algorithms for Regression ................................................................................... 836
João Duarte, University of Porto, Portugal
João Gama, University of Porto, Portugal

Enhanced Situation Space Mining for Data Streams .......................................................................................... 842
Yisroel Mirsky, Ben-Gurion University, Israel
Tal Halpern, Tel-Aviv University, Israel
Rishabh Upadhyay, Fr. Conceicao Rodrigues College of Engineering, India
Sivan Toledo, Tel-Aviv University, Israel
Yuval Elovici, Ben-Gurion University, Israel

Graph-Based Clustering with DRepStream .................................................................................................. 850
Ross Callister, Curtin University, Australia
Mihai Lazarescu, Curtin University, Australia
Duc-Son Pham, Curtin University, Australia

Modeling Discrete Dynamic Topics ................................................................................................................ 858
Seyed Ali Bahrainian, University of Lugano, Switzerland
Ida Mele, University of Lugano, Switzerland
Fabio Crestani, University of Lugano, Switzerland

Poster Papers

Understanding the Bigger Picture: Batch-Free Exploration of Streaming Sequential Patterns with Accurate Prediction ........................................... 866
Marwan Hassani, Eindhoven University of Technology, Netherlands
Daniel Töws, RWTH Aachen University, Germany
Thomas Seidl, Ludwig-Maximilians University, Germany

Personalised Fading for Stream Data ............................................................................................................. 870
Bruno Veloso, University of Porto, Portugal
Benedita Malheiro, University of Porto, Portugal
Juan Carlos Burguillo, University of Vigo, Spain
Jeremy Foss, Birmingham City University, United Kingdom
Track Co-Chairs: Ramzi A. Haraty, Lebanese American University, Lebanon
Apostolos N. Papadopoulos, Aristotle University, Greece
Junping Sun, Nova Southeastern University, USA

Track Editorial

Similarity Search through One-Dimensional Embeddings
Humberto Razente, Universidade Federal de Uberlândia, Brazil
Rafael L. Bernardes Lima, Universidade Federal de Uberlândia, Brazil
Maria Camila N. Barioni, Universidade Federal de Uberlândia, Brazil

A Log-structured Buffer for Database Systems using Non-volatile Memory
Yongseok Son, Seoul National University, Korea
Hara Kang, Seoul National University, Korea
Heon Young Yeom, Seoul National University, Korea
Hyuck Han, Dongduk Women's University, Korea

Numerical Similarity-aware Data Partitioning for Recommendations as a Service
Ting-Ting Yang, National Chung-Hsing University, Taiwan
Hsueh-Wen Tseng, National Chung-Hsing University, Taiwan

Processing Skyline Queries in Temporal Databases
Christos Kalyvas, University of the Aegean, Greece
Theodoros Tzouramanis, University of the Aegean, Greece
Yannis Manolopoulos, Aristotle University of Thessaloniki, Greece

One Index to Dominate them All: Domain Indexes for improving Queries across Multiple Tables
Paulo H. Oliveira, University of São Paulo, Brazil
Lucas C. Scabora, University of São Paulo, Brazil
Caetano Traina Jr., University of São Paulo, Brazil
Daniel S. Kaster, University of Londrina, Brazil

Exploiting Photo Location and Direction for Clustering-based Points-of-Interest Discovery
Yuri A. Lacerda, Federal Institute of Ceará, Brazil
Leandro B. Marinho, Federal University of Campina Grande, Brazil
Cláudio de S. Baptista, Federal University of Campina Grande, Brazil
Chiara Renso, CNR-ISTI, Italy
Raffaele Perego, CNR-ISTI, Italy

Poster Papers

The Similarity-aware Relational Division Database Operator
André S. Gonzaga, University of São Paulo, Brazil
Robson L.F. Cordeiro, University of São Paulo, Brazil

Next Generation JDBC Database Drivers for Performance, Transparent Caching, Load Balancing, and Scale-out
Ramon Lawrence, University of British Columbia, Canada
Erik Brandsberg, Heimdall Data Inc., USA
Roland Lee, Heimdall Data Inc., USA
**IAR - Information Access and Retrieval Track**

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

---

**Fixed Budget Pooling Strategies based on Fusion Methods**  
Aldo Lipani, Vienna University of Technology, Austria  
Mihai Lupu, Vienna University of Technology, Austria  
João Palotti, Vienna University of Technology, Austria  
Guido Zuccon, Queensland University of Technology, Australia  
Allan Hanbury, Vienna University of Technology, Austria

---

**Emphasizing Temporal-based User Profile Modeling in the Context of Session Search**  
Ameni Kacem, University of Paul Sabatier, France  
Mohand Boughanem, University of Paul Sabatier, France  
Rim Faiz, University of Carthage, Tunisia

---

**Part-of-speech Tagging for Web Search Queries using a Large-scale Web Corpus**  
Atsushi Keyaki, Tokyo Institute of Technology, Japan  
Jun Miyazaki, Tokyo Institute of Technology, Japan

---

**ToPI - An approach to Identify Places of Interest using Geo-Tagged Images**  
Jean R. Ponciano, Federal University of Uberlândia, Brazil  
José Gustavo S. Paiva, Federal University of Uberlândia, Brazil  
Denise Gulito, Federal University of Uberlândia, Brazil

---

**ES-Rank: Evolution Strategy Learning to Rank Approach**  
Osman Ali Sadek Ibrahim, University of Nottingham, United Kingdom  
Dario Landa-Silva, University of Nottingham, United Kingdom

---

**Decaying Inverted Quadtree: Index Structure for Supporting Spatio-Temporal-Keyword Query Processing of Microblog Data**  
Sehwa Park, Sogang University, Korea  
Seog Park, Sogang University, Korea

---

**Poster Papers**

**Finding Duplicate Images in Biology Papers**  
Markus Zlabinger, Vienna University of Technology, Austria  
Allan Hanbury, Vienna University of Technology, Austria

---

**Personalized Ranking for Context-Aware Venue Suggestion**  
Mohammad Aliannejadi, Università della Svizzeria italiana, Switzerland  
Ida Mele, Università della Svizzeria italiana, Switzerland  
Fabio Crestani, Università della Svizzeria italiana, Switzerland

---

**Student Research Competition Paper**

**Student Research Abstract: Using Chord Distance Descriptors to Enhance Music Information Retrieval**  
Ladislav Maršík, Charles University, Czech Republic
KRR - Knowledge Representation and Reasoning Track

Track Co-Chairs:
- Stefano Bistarelli, Università di Perugia, Italy
- Martine Ceberio, University of Texas at El Paso, USA
- Eric Monfroy, University of Nantes, France
- Francesco Santini, Università di Perugia, Italy

Probabilistic Quantitative Temporal Reasoning ................................................................. 965
Paolo Terenziani, University of Eastern Piedmont, Italy
Antonella Andolina, ITCS Sommeiller, Italy

Temporal Reasoning Techniques for the Analysis of Interactions in the Treatment of Comorbid Patients ................................................................. 971
Luca Anselma, Università di Torino, Italy
Luca Piovesan, Università del Piemonte Orientale, Italy
Paolo Terenziani, Università del Piemonte Orientale, Italy

A Reconstruction of Default Conditionals within Epistemic Logic ........................................ 977
Costas D. Koutras, University of Peloponnese, Greece
Christos Moyzes, University of Liverpool, United Kingdom
Christos Rantsoudis, Institut de Recherche en Informatique de Toulouse, France

Decidability and Complexity of Threshold Description Logics Induced by Concept Similarity Measures ............................................................................. 983
Franz Baader, Technische Universität Dresden, Germany
Oliver Fernández Gil, Technische Universität Dresden, Germany

Reasoning by Cases in Structured Argumentation ........................................................ 989
Mathieu Beirlaen, Ruhr University Bochum, Germany
Jesse Heyninck, Ruhr University Bochum, Germany
Christian Straßer, Ruhr University Bochum, Germany

Propagating Degrees of Truth on an Argumentation Framework: an Abstract Account of Fuzzy Argumentation ................................................................. 995
Pierpaolo Dondio, Dublin Institute of Technology, Ireland

Analysing the Effect of Candidate Selection and Instance Ordering in a Realtime Algorithm Configuration System ............................................................. 1003
Tadhg Fitzgerald, University College Cork, Ireland
Barry O'Sullivan, University College Cork, Ireland

SONAMA - Social Network and Media Analysis Track

Track Co-Chairs: Sang-Wook Kim, Hanyang University, Korea

Track Editorial ......................................................................................................................... 1009

A Gold-Standard Social Media Corpus for Urban Issues .................................................. 1011
Maxwell Guimarães de Oliveira, Federal University of Campina Grande, Brazil
Cláudio de Souza Baptista, Federal University of Campina Grande, Brazil
Cláudio E.C. Campelo, Federal University of Campina Grande, Brazil
Michela Bertolotto, University College Dublin, Ireland
Identifying Authoritative Researchers in Digital Libraries using External a Priori Knowledge .......... 1017
B. de La Robertie, Institut de Recherche en Informatique de Toulouse, France
Y. Pitarch, Institut de Recherche en Informatique de Toulouse, France
A. Takasu, National Institute of Informatics, Japan
O. Teste, Institut de Recherche en Informatique de Toulouse, France

Understanding How User Activities are Related to Profile Images on Twitter through Regression Analysis ........................................................................................................... 1023
Tomu Tominaga, Osaka University, Japan
Yoshinori Hijikata, Osaka University, Japan

TSViz: A Data Stream Architecture to Online Collect, Analyze, and Visualize Tweets ......................... 1031
Ricardo A. Rios, Universidade Federal da Bahia, Brazil
Paulo A. Pagliosa, Federal University of Mato Grosso do Sul, Brazil
Renato P. Ishii, Federal University of Mato Grosso do Sul, Brazil
Rodrigo F. de Mello, University of São Paulo, Brazil

Using Stratified Privacy for Personal Reputation Defense in Online Social Networks ....................... 1037
Hasan M. Jamil, University of Idaho, USA

Marketing Campaign Targeting using Bridge Extraction ........................................................................ 1045
Prokopios Gryllas, University of Patras, Greece
Christos Makris, University of Patras, Greece
Pantelis Vikatos, University of Patras, Greece

Evolutionary Role Mining in Complex Networks by Ensemble Clustering ............................................. 1053
Sarvenaz Choobdar, University of Porto, Portugal
Pedro Ribeiro, University of Porto, Portugal
Fernando Silva, University of Porto, Portugal

Incremental Maximum Flow Computation on Evolving Networks .......................................................... 1061
Sergio Greco, University of Calabria, Italy
Cristian Molinaro, University of Calabria, Italy
Chiara Pulice, University of Maryland, USA
Ximena Quintana, University of Calabria, Italy

Survival Analysis for Modeling Critical Events that Communities May Undergo in Dynamic Social Networks .............................................................................................................................................. 1068
Etienne Gae Tajeuna, University of Sherbrooke, Canada
Mohamed Bouguessa, University of Quebec at Montreal, Canada
Shengrui Wang, University of Sherbrooke, Canada

Irony Detection on Microposts with Limited Set of Features .................................................................... 1076
Hande Taslioglu, Middle East Technical University, Turkey
Pinar Karagoz, Middle East Technical University, Turkey

Poster Papers

Exploring the Viability of Tie Strength and Tags in Access Controls for Photo Sharing ....................... 1082
Ricard L. Fogues, Universitat Politecnica de Valencia, Spain
Jose M. Such, King’s College, United Kingdom
Agustín Espinosa, Universitat Politecnica de Valencia, Spain
Ana Garcia Fornes, Universitat Politecnica de Valencia, Spain
Identical User Tracking with Behavior Pattern Analysis in Online Community ............................................. 1086
Sang-Hyun Park, Sogang University, Korea
Min-Suk Kang, Sogang University, Korea
So-Hye Yoon, Sogang University, Korea
Seog Park, Sogang University, Korea

Student Research Competition Paper

Student Research Abstract: User Preferences Dynamics on Evolving Social Networks – Learning,
Modeling and Prediction ............................................................................................................................... 1090
Fabiola S.F. Pereira, Federal University of Uberlândia, Brazil

RE - Requirement Engineering Track

Track Co-Chairs: Jaelson Castro, Universidade Federal de Pernambuco, Brazil
Fabiano Dalpiaz, Utrecht University, Netherlands

Track Editorial ............................................................................................................................................... 1092

Trust in Requirements Elicitation: How Does it Build, and Why Does it Matter to
Requirements Engineers? ............................................................................................................................. 1094
Corentin Burnay, University of Namur, Belgium
Monique Snoeck, Katholieke Universiteit Leuven, Belgium

Study in HealthCare ...................................................................................................................................... 1102
Nour Ali, University of Brighton, United Kingdom
Alfonso Martinez-Martinez, Universidad Autónoma Metropolitana, Mexico
Lorena Ayuso-Pérez, Universidad Autónoma Metropolitana, Mexico
Angelina Espinoza, Universidad Autónoma Metropolitana, Mexico

A Gamification Requirements Catalog for Educational Software: Results from a Systematic
Literature Review and a Survey with Experts ............................................................................................... 1108
Mariana Peixoto, Universidade Federal de Pernambuco, Brazil
Carla Silva, Universidade Federal de Pernambuco, Brazil

An Approach based on Design Practices to Specify Requirements in Agile Projects ......................... 1114
Juliana Medeiros, Instituto Federal de Educação, Ciência e Tecnologia da Paraíba, Brazil
Alexandre Vasconcelos, Universidade Federal de Pernambuco, Brazil
Miguel Goulão, Universidade Nova de Lisboa, Portugal
Carla Silva, Universidade Federal de Pernambuco, Brazil
João Araújo, Universidade Nova de Lisboa, Portugal

i* in Practice: Identifying Frequent Problems in its Application .............................................................. 1122
Karina Abad, Universidad de Cuenca, Ecuador
Wilson Pérez, Universidad de Cuenca, Ecuador
Juan Pablo Carvallo, Universidad de Cuenca, Ecuador
Xavier Franch, Universitat Politécnica de Catalunya, Spain

A Semantic Model for Action-based Adaptive Security .............................................................................. 1130
Sara Sartoli, Texas Tech University, USA
Akbar Siami Namin, Texas Tech University, USA
Student Research Competition Paper

Student Research Abstract: A New Comprehensive Approach to Security Requirements Engineering ........................................................................................................................................................................ 1136
Ilham Maskani, Hassan II University, Morocco

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

Track Co-Chairs: Rafael Capilla, University Rey Juan Carlos, Spain
Diego Perez-Palacin, Politecnico di Milano, Italy
Patrizia Scandurra, University of Bergamo, Italy

Track Editorial ............................................................................................................................................... 1138

Exploring Anomaly Detection in Systems of Systems ................................................................................ 1139
Tommaso Zoppi, University of Florence, Italy
Andrea Ceccarelli, University of Florence, Italy
Andrea Bondavalli, University of Florence, Italy

Knowledge based Decision Framework for Architecting Complex Systems ........................................... 1147
Ramakrishnan Raman, Honeywell Technology Solutions Lab, India
Meenakshi D'Souza, International Institute of Information Technology, India

Reconfigurable Service-Based Architecture based on Variability Description ......................................... 1154
Seza Adjoyan, University of Montpellier, France
Abdelhak-Djamel Seriai, University of Montpellier, France

Collaborative Development of Feature Models and Evaluation of Performance Bounds ...................... 1162
Paolo Arcaini, Charles University, Czech Republic
Catia Trubiani, Gran Sasso Science Institute, Italy

Formal Verification of Storm Topologies through D-VerT ....................................................................... 1168
Francesco Marconi, Politecnico di Milano, Italy
Marcello M. Bersani, Politecnico di Milano, Italy
Matteo Rossi, Politecnico di Milano, Italy

Poster Papers

Encoding Asynchrony in Choreographies ................................................................................................... 1175
Luis Cruz-Filipe, University of Southern Denmark, Denmark
Fabrizio Montesi, University of Southern Denmark, Denmark

Defining an Architecture for Evolving Environments ............................................................................. 1178
Jarkko Hyysalo, University of Oulu, Finland
Gavin Harper, University of Oulu, Finland
Jaakko Sauvola, University of Oulu, Finland
Anja Keskinarkaus, University of Oulu, Finland
Ilkka Juuso, University of Oulu, Finland
Mikka Salminen, University of Oulu, Finland
Juha Partala, University of Oulu, Finland
SE - Software Engineering Track

Track Co-Chairs: Byungjeong Lee, University of Seoul, Korea
Eunjee Song, Baylor University, USA
Tao Zhang, Harbin Engineering University, China

Track Editorial

Prioritizing Random Combinatorial Test Suites
Rubing Huang, Jiangsu University, China
Yunan Zhou, Jiangsu University, China
Tsong Yueh Chen, Swinburne University of Technology, Australia
Dave Towey, The University of Nottingham, China
Jinfu Chen, Jiangsu University, China
Weiwen Zong, Jiangsu University, China

Feedback on How MDE Tools are used Prior to Academic Collaboration
Vasco Sousa, University of Montreal, Canada
Eugene Syriani, University of Montreal, Canada
Martin Paquin, Fresche Legacy, Canada

Learning Environment Model at Runtime for Self-Adaptive Systems
Moeka Tanabe, Waseda University, Japan
Kenji Tei, National Institute of Informatics, Japan
Yoshiaki Fukazawa, Waseda University, Japan
Shinichi Honiden, National Institute of Informatics, Japan

On Continuous Deployment Maturity in Customer Projects
Antti Virtanen, Solita Ltd., Finland
Kati Kuusinen, University of Central Lancashire, United Kingdom
Marko Leppänen, Tampere University of Technology, Finland
Antti Luoto, Tampere University of Technology, Finland
Terhi Kilamo, Tampere University of Technology, Finland
Tommi Mikkonen, Tampere University of Technology, Finland

Model-Based Testing of End-User Collaboration Intensive Systems
Alessio Gambi, Saarland University, Germany
Christoph Mayr-Dorn, Johannes Kepler University, Austria
Andreas Zeller, Saarland University, Germany

Nonconformance between Programs and Contracts: A Study on C#/Code Contracts Open Source Systems
Alysson Milanez, Federal University of Campina Grande, Brazil
Bianca Lima, Federal University of Campina Grande, Brazil
José Ferreira, Federal University of Campina Grande, Brazil
Tiago Massoni, Federal University of Campina Grande, Brazil

APR: Architectural Pattern Recommender
Shipra Sharma, Indian Institute of Technology Ropar, India
Balwinder Sodhi, Indian Institute of Technology Ropar, India
A Theoretical Model for Capturing the Impact of Design Patterns on Quality: The Decorator
Case Study ...................................................................................................................................................... 1231
Sofia Charalampidou, University of Groningen, Netherlands
Apostolos Ampatzoglou, University of Groningen, Netherlands
Paris Avgierou, University of Groningen, Netherlands
Seren Sençer, Sabanci University, Turkey
Elvira-Maria Arvanitou, University of Groningen, Netherlands
Ioannis Stamelos, Aristotle University of Thessaloniki, Greece

On the Significance of Relationship Directions in Clustering Algorithms for Reverse Engineering ..... 1239
David Jensen, Chalmers and University of Gothenburg, Sweden
Andreas Lundkvist, Chalmers and University of Gothenburg, Sweden
Imed Hammouda, Chalmers and University of Gothenburg, Sweden

Sync/CC: Continuations and Aspects to Tame Callback Dependencies on JavaScript Handlers ....... 1245
Paul Leger, Universidad Católica del Norte, Chile
Hiroaki Fukuda, Shibaura Institute of Technology, Japan

Software Effort Estimation using Classical Analogy Ensembles based on Random Subspace .............. 1251
Mohamed Hosni, University Mohamed V, Morocco
Ali Idri, University Mohamed V, Morocco

Run-Time Component Allocation in CPU-GPU Embedded Systems .......................................................... 1259
Gabriel Campeanu, Mälardalen University, Sweden
Mehrdad Saadatmand, Mälardalen University, Sweden

On the Randomness and Seasonality of Affective Metrics for Software Development ......................... 1266
Giuseppe Destefanis, Brunel University London, United Kingdom
Marco Ortu, University of Cagliari, Italy
Steve Counsell, Brunel University London, United Kingdom
Stephen Swift, Brunel University London, United Kingdom

SMT-based Consistency Analysis of Industrial Systems Requirements ..................................................... 1272
Predrag Filipovikj, Malardalen University, Sweden
Guillermo Rodriguez-Navas, Malardalen University, Sweden
Mattias Nyberg, Scania, Sweden
Cristina Seceleanu, Malardalen University, Sweden

Analyzing Emotion Words to Predict Severity of Software Bugs: A Case Study of Open Source Projects ......................................................................................................................... 1280
Geunseok Yang, University of Seoul, Korea
Seungsuk Baek, University of Seoul, Korea
Jung-Won Lee, Ajou University, Korea
Byungjeong Lee, University of Seoul, Korea

Deriving Use Cases from Business Processes: A Goal-Oriented Transformational Approach .............. 1288
Grace Park, University of Texas at Dallas, USA
Fadoua Fellir, Ibn Tofail University, Morocco
Jang-Eui Hong, Chungbuk National University, Korea
José Luis Garrido, University of Granada, Spain
Manuel Noguera, University of Granada, Spain
Lawrence Chung, University of Texas at Dallas, USA
Generating Test Cases and Procedures from use Cases in Dynamic Software Product Lines .......... 1296
Italo L. Araújo, Federal University of Ceará, Brazil
Ismayle S. Santos, Federal University of Ceará, Brazil
João B. Ferreira Filho, Federal University of Ceará, Brazil
Rossana M.C. Andrade, Federal University of Ceará, Brazil
Pedro Santos Neto, Federal University of Piauí, Brazil

Poster Papers

Ibtissam Abnane, University Mohamed V, Morocco
Ali Idri, University Mohamed V, Morocco
Alain Abran, École de Technologie Supérieure, Canada

Student Research Competition Paper

Student Research Abstract: Predicting the Quality of Contests on Crowdsourcing-Based Software Development Platforms ................................................................. 1305
Muhammad Imran Faisal, Gomal University, Pakistan

Student Research Abstract: A Methodology to Predict the Instable Classes ......................................................... 1307
Shahid Hussain, City University of Hong Kong, Hong Kong

SOAP - Service-Oriented Architecture and Programming Track

Track Co-Chairs: Massimo Bartoletti, Università di Cagliari, Italy
Hernán Melgratti, University of Buenos Aires, Argentina
Maurice ter Beek, ISTI-CNR, Italy
Luis Cruz-Filipe, University of Southern Denmark, Denmark

Track Editorial ........................................................................................................................................ 1309

Interleaving Sessions with Predicates ........................................................................................................ 1312
Peter Thiemann, Albert-Ludwigs-Universität Freiburg, Germany

Semantic Similarity based Web Service Composition Framework ..................................................... 1319
Ahmed Abid, Université de Tours, France
Nizar Messai, Université de Tours, France
Mohsen Rouached, Sultan Quaboos University, Oman
Mohamed Abid, University of Sfax, Tunisia
Thomas Devogele, Université de Tours, France

Petri Nets and Dynamic Causality for Service-Oriented Computations ............................................. 1326
Giovanni Casu, Università di Cagliari, Italy
G. Michele Pinna, Università di Cagliari, Italy

Compatibility Flooding: Measuring Interaction of Services Interfaces ............................................. 1334
Meriem Ouederni, Institut de Recherche en Informatique de Toulouse, France
Uli Fahrenberg, École Polytechnique, France
Axel Legay, Inria Rennes, France
Gwen Salaün, Inria Grenoble, France
Generating Runtime Verification Specifications based on Static Code Analysis Alerts ............................... 1342
Yunus Kılıç, Özyeğin University, Turkey
Hasan Sözer, Özyeğin University, Turkey

Moving from Event-B to Probabilistic Event-B .......................................................................................... 1348
Mohamed Amine Aouadhi, University of Nantes, France
Benoît Delahaye, University of Nantes, France
Arnaud Lanoix, University of Nantes, France

Statistical Model Checking of an Energy-Saving Cyber-Physical System in the Railway Domain ...... 1356
Davide Basile, ISTI CNR Pisa, Italy
Felicta Di Giandomenico, ISTI CNR Pisa, Italy
Stefania Gnesi, ISTI CNR Pisa, Italy

Mutation Tools for Java ........................................................................................................................ 1364
András Márdi, University of Skövde, Sweden
Birgitta Lindström, University of Skövde, Sweden

Specification, Design and Verification of an Accountability-Aware Surveillance Protocol ....................... 1372
Thibaud Antignac, Chalmers University of Technology, Sweden
Mukelabai Mukelabai, Chalmers University of Technology, Sweden
Gerardo Schneider, University of Gothenburg, Sweden

Runtime Verification of LTL on Lossy Traces .......................................................................................... 1379
Yogi Joshi, University of Waterloo, Canada
Guy Martin Tchamgoue, University of Waterloo, Canada
Sebastian Fischmeister, University of Waterloo, Canada

GiGAn: Evolutionary Mutation Testing for C++ Object-Oriented Systems .............................................. 1387
Pedro Delgado-Pérez, University of Cádiz, Spain
Inmaculada Medina-Bulo, University of Cádiz, Spain
Sergio Segura, University of Cádiz, Spain
Antonio García-Domínguez, Aston University, United Kingdom
Juan José Dominguez-Jiménez, University of Cádiz, Spain

CARET Model Checking for Pushdown Systems ...................................................................................... 1393
Huu-Vu Nguyen, University Paris Diderot and LIPN, France
Tayssir Touili, LIPN, CNRS and University Paris 13, France

An Empirical Study on the Application of Mutation Testing for a Safety-Critical Industrial Software System ................................................................. 1401
Rudolf Ramler, Software Competence Center Hagenberg GmbH, Austria
Thomas Wetzlmaier, Software Competence Center Hagenberg GmbH, Austria
Claus Klammer, Software Competence Center Hagenberg GmbH, Austria

Failure History Data-based Test Case Prioritization for Effective Regression Test .............................. 1409
Jeongho Kim, Sungkyunkwan University, Korea
Hohyeon Jeong, Sungkyunkwan University, Korea
Eunseok Lee, Sungkyunkwan University, Korea
CPS - Cyber-Physical Systems Track
Track Co-Chairs: Tei-Wei Kuo, Academia Sinica, Taiwan
Ai-Chun Pang, National Taiwan University, Taiwan
Chun Jason Xue, City University of Hong Kong, China

SmartSen: Smart Sensing for Enhancing Real-time Activity Recognition in Phone-based Interactive CPS ................................................................. 1416
Huan Li, Beihang University, China
Qinghua Yu, Beihang University, China
Krithi Ramamritham, IIT Bombay, India
Xiaotao Liu, Supernode Research, China

Multi-CNN and Decision Tree based Driving Behavior Evaluation ........................................ 1424
Shouyi Yin, Tsinghua University, China
Jinjin Duan, Tsinghua University, China
Peng Ouyang, Tsinghua University, China
Leibo Liu, Tsinghua University, China
Shaojun Wei, Tsinghua University, China

Resource Constrained Real-time Lane-Vehicle Detection for Advanced Driver Assistance on Mobile Devices ........................................................................ 1430
Tianchen Wang, University of Notre Dame, USA
Kangli Hao, University of Notre Dame, USA
Chun-chen Liu, Kneron, Inc., USA
Yiyu Shi, University of Notre Dame, USA

Self-Adaptive Control in Cyber-Physical Systems: The Autonomous Train Experiment .............. 1436
Alexander Svae, Norwegian University of Science and Technology, Norway
Amir Taherkordi, Norwegian University of Science and Technology and University of Oslo, Norway
Peter Herrmann, Norwegian University of Science and Technology, Norway
Jan Olaf Blech, RMIT University, Australia

Towards Trusted Execution of Multi-Modal Continuous Authentication Schemes .................... 1444
Carlton Shepherd, Royal Holloway, University of London, United Kingdom
Raja Naeem Akram, Royal Holloway, University of London, United Kingdom
Konstantinos Markantonakis, Royal Holloway, University of London, United Kingdom

Poster Papers

Identity Management for Cyber-Physical Production Workflows and Individualized Manufacturing in Industry 4.0 ................................................................. 1452
Davy Preuveneers, Katholieke Universiteit Leuven, Belgium
Wouter Joosen, Katholieke Universiteit Leuven, Belgium
Elisabeth Ilie-Zudor, Hungarian Academy of Sciences, Hungary

Exploring the Trade-Off between Processing Resources and Settling Time in Image-Based Control through LQR Tuning ................................................................. 1456
Robinson Medina, Eindhoven University of Technology, Netherlands
Sander Stuijk, Eindhoven University of Technology, Netherlands
Dip Goswami, Eindhoven University of Technology, Netherlands
Twan Basten, Eindhoven University of Technology, TNO ESI, Netherlands
EMBS - Embedded Systems Track
Track Co-Chairs: Marco Di Natale, Scuola Superiore S. Anna, Italy
Li-Pin Chang, National Chiao-Tung University, Taiwan

A Pattern-aware Write Strategy to Enhance the Reliability of Flash-Memory Storage Systems .......... 1460
Tseng-Yi Chen, Institute of Information Science, Academia Sinica, Taiwan
Yuan-Hao Chang, Institute of Information Science, Academia Sinica, Taiwan
Yuan-Hung Kuan, Institute of Information Science, Academia Sinica, Taiwan
Ming-Chang Yang, Institute of Information Science, Academia Sinica, Taiwan
Yu-Ming Chang, Institute of Information Science, Academia Sinica, Taiwan
Pi-Cheng Hsiu, Institute of Information Science, Academia Sinica, Taiwan

Synthesis of Ada Code from Graph-Based Task Models ................................................................. 1467
Jakaria Abdullah, Uppsala University, Sweden
Morteza Mohaqeqi, Uppsala University, Sweden
Wang Yi, Uppsala University, Sweden

Modeling and Generation of Secure Component Communications in AUTOSAR ......................... 1473
Cinzia Bernardeschi, University of Pisa, Italy
Marco Di Natale, Scuola Superiore Sant'Anna, Italy
Gianluca Dini, University of Pisa, Italy
Dario Varano, University of Pisa, Italy

Hardware Resource Estimation for Heterogeneous FPGA-based SoCs ........................................... 1481
Mariem Makni, University of Valenciennes, Tunisia
Mouna Baklouti, National Engineering School of Sfax, Tunisia
Smail Niar, University of Valenciennes, France
Mohamed Abid, National Engineering School of Sfax, Tunisia

Student Research Competition Paper

Student Research Abstract: A Time-Triggered Message-Based Multi-Core Architecture for AUTOSAR ................................................................. 1488
Moisés Urbina, University of Siegen, Germany

OOPS - Object Oriented Programming Languages and Systems Track
Track Co-Chairs: Davide Ancona, Università di Genova, Italy

Track Editorial ................................................................................................................................. 1490

From Object-Oriented Code with Assertions to Behavioural Types ................................................. 1492
Cláudio Vasconcelos, Universidade Nova de Lisboa, Portugal
António Ravara, Universidade Nova de Lisboa, Portugal

Crossing Abstraction Barriers when Debugging In Dynamic Languages ......................................... 1498
Bastian Kruck, Hasso Plattner Institute, Germany
Tobias Pape, Hasso Plattner Institute, Germany
Tim Felgentreff, Hasso Plattner Institute, Germany
Robert Hirschfeld, Hasso Plattner Institute, Germany

Detecting Spring Configurations Errors .......................................................................................... 1505
Vincent von Hof, University of Münster, Germany
Konrad Fögen, RWTH Aachen, Germany
Herbert Kuchen, University of Münster, Germany
A Type and Effect System for Sharing
Paola Giannini, Università del Piemonte Orientale, Italy
Marco Servetto, Victoria University of Wellington, New Zealand
Elena Zucca, Università di Genova, Italy

OS - Operating Systems Track
Track Co-Chairs: George Hamer, South Dakota State University, USA
Joonhyouk Jang, Soongsil University, Korea
Bongjae Kim, Moon University, Korea
Jaeheung Lee, Daejeon University, Korea

The Influence of Resource Allocation on Cloud Computing Performance
Dionisio Machado Leite, Federal University of Mato Grosso do Sul, Brazil
Maycon L.M. Peixoto, Universidade Federal da Bahia, Brazil
Bruno G. Batista, Federal University of Itajubá, Brazil
Bruno T. Kuehne, Federal University of Itajubá, Brazil
Carlos H.G. Ferreira, Federal University of Minas, Brazil

A Page Replacement Algorithm based on Frequency Derived from Reference History
Hong-Bin Tsai, National Taiwan University, Taiwan
Chin-Laung Lei, National Taiwan University, Taiwan

Quantitative Analysis of Measurement Overhead for Integrity Verification
Juhyung Son, Dankook University, Korea
Sungmin Koo, Dankook University, Korea
Seong-je Choi, Dankook University, Korea
Seungjae Baek, Korea Institute of Ocean Science & Technology, Korea
Gwangil Jeon, Korea Polytechnic University, Korea
Jun-Hyeok Park, National Security Research Institute, Korea
Hyounghun Kim, National Security Research Institute, Korea

Coarse-grained mtime Update for Better fsync() Performance
Hankeun Son, Hanyang University, Korea
Seongjin Lee, Gyeongsang National University, Korea
Gyeongyeol Choi, Hanyang University, Korea
Youjip Won, Hanyang University, Korea

An Empirical Study on Patterns of Failure Causes in a Mass-Market Operating System
Caio Augusto R. dos Santos, Federal University of Uberlândia, Brazil
Rivalino Matias Jr., Federal University of Uberlândia, Brazil

Improving Service Time with a Multicore Aware Middleware
Marisol Garcia-Valls, Universidad Carlos III de Madrid, Spain
Christian Calva-Urrego, Universidad Carlos III de Madrid, Spain
Towards Energy-Efficient Storage Servers ................................................................. 1554
Vinicius Machado, Federal University of Rio Grande do Sul, Brazil
Amanda Braga, Federal University of Rio Grande do Sul, Brazil
Natália Rampon, Federal University of Rio Grande do Sul, Brazil
Jean Bez, Federal University of Rio Grande do Sul, Brazil
Francieli Zanon Boito, Federal University of Santa Catarina, Brazil
Rodrigo Kassick, Federal University of Rio Grande do Sul, Brazil
Edson Padoin, UNIJUI, Brazil
Julien Diaz, INRIA, France
Jean-François Méhaut, University of Grenoble Alpes, France
Philippe Navaux, Federal University of Rio Grande do Sul, Brazil

Poster Papers

A Dynamic Duty Cycle Control Mechanism based on Mobility for Animal Tracking .................. 1560
Seonil Kim, Hannam University, Korea
Jisup Yoon, Hannam University, Korea
Seoyeon Kim, Hannam University, Korea
Sunsup So, Kongju National University, Korea
Noh Sup Kwak, Hannam University, Korea
Young Sun Yun, Hannam University, Korea
Jinman Jung, Hannam University, Korea
Seongbae Eun, Hannam University, Korea

DACS: Dynamic Allocation Credit Scheduler for Virtual Machine ........................................... 1563
Myungjoon Shon, Soongsil University, Korea
Kisu Kim, Soongsil University, Korea
Hansol Lee, Soongsil University, Korea
Sung Y. Shin, South Dakota State University, USA
Jiman Hong, Soongsil University, Korea

PAPP - Practical Aspects of High-Level Parallel Programming Track
Track Co-Chairs: Frédéric Loulergue, Northern Arizona University, USA

Multiple Back-End Support for the Armadillo Linear Algebra Interface ................................. 1566
Paolo Viviani, University of Torino, Italy
Marco Aldinucci, University of Torino, Italy
Massimo Torquati, University of Pisa, Italy
Roberto d'Ippolito, Noesis Solutions, Belgium

Scalable Subgraph Counting using MapReduce ......................................................................... 1574
Ahmad Naser eddin, University of Porto, Portugal
Pedro Ribeiro, University of Porto, Portugal

P3ARSEC: Towards Parallel Patterns Benchmarking .............................................................. 1582
Marco Danelutto, University of Pisa, Italy
Tiziano De Matteis, University of Pisa, Italy
Daniele De Sensi, University of Pisa, Italy
Gabriele Mencagl, University of Pisa, Italy
Massimo Torquati, University of Pisa, Italy
Poster Papers

CATS: A Big Network Clustering Algorithm based on Triangle Structures
Mincheol Shin, Yonsei University, Korea
Jeongwoo Kim, Yonsei University, Korea
Jungrim Kim, Yonsei University, Korea
Dongmin Seo, Korea Institute of Science and Technology Information, Korea
Chihyun Park, Korea Institute of Science and Technology Information, Korea
Seok Jong Yu, Korea Institute of Science and Technology Information, Korea
Sanghyun Park, Yonsei University, Korea

Enabling Efficient use of Algorithmic Skeletons in Cloud Environments: Container-based Virtualization for Hybrid CPU-GPU Execution of Data-parallel Skeletons
Fabian Wrede, University of Münster, Germany
Vincent von Hof, University of Münster, Germany

PL - Programming Languages Track
Track Co-Chairs: Marjan Mernik, University of Maribor, Slovenia
Barrett Bryant, University of North Texas, USA

Track Editorial

Business Apps with MAML: A Model-Driven Approach to Process-Oriented Mobile App Development
Christoph Rieger, University of Münster, Germany

Tarski: A Platform for Automated Analysis of Dynamically Configurable Traceability Semantics
Ferhat Erata, Wageningen University, Netherlands
Moharram Challenger, Wageningen University, Netherlands
Bedir Tekinerdogan, Wageningen University, Netherlands
Anne Monceaux, Airbus Group Innovations, France
Eray Tüzün, HAVELSAN A.S., Turkey
Geylani Kardaş, Ege University, Turkey

Code Spartanization: One Rational Approach for Resolving Religious Style Wars
Yossi Gil, Technion I.I.T, Israel
Matteo Orrù, Technion I.I.T, Israel

LARA as a Language-Independent Aspect-Oriented Programming Approach
Pedro Pinto, University of Porto, Portugal
Tiago Carvalho, University of Porto, Portugal
João Bispó, University of Porto, Portugal
João M.P. Cardoso, University of Porto, Portugal

Poster Papers

Computing Super Reduced Program Slices by Composing Slicing Techniques
David Insa, Universitat Politècnica de València, Spain
Sergio Pérez, Universitat Politècnica de València, Spain
Josep Silva, Universitat Politècnica de València, Spain
Track Co-Chairs: Yong Zheng, Illinois Institute of Technology, USA  
Li Chen, Hong Kong Baptist University, China  
Markus Zanker, Free University of Bolzano, Italy

Track Editorial ................................................................................................................................. 1634

Leveraging Multi-Dimensional User Models for Personalized Next-Track Music Recommendation  .... 1635
Dietmar Jannach, Technical University of Dortmund, Germany  
Iman Kamehkhosh, Technical University of Dortmund, Germany  
Lukas Lerche, Technical University of Dortmund, Germany

Determining Characteristics of Successful Recommendations from Log Data – A Case Study ........... 1643
Dietmar Jannach, Technical University of Dortmund, Germany  
Malte Ludewig, Technical University of Dortmund, Germany

Offline Performance vs. Subjective Quality Experience: A Case Study in Video Game Recommendation ............................................................................................................................. 1649
Dietmar Jannach, Technical University of Dortmund, Germany  
Lukas Lerche, Technical University of Dortmund, Germany

Action Prediction Models for Recommender Systems based on Collaborative Filtering and Sequence Mining Hybridization ................................................................................................................... 1655
Tural Gurbanov, Free University of Bozen-Bolzano, Italy  
Francesco Ricci, Free University of Bozen-Bolzano, Italy

A Framework for Unexpectedness Evaluation in Recommendation .................................................. 1662
Thiago Silveira, Tsinghua University, China  
Leonardo Rocha, Universidade Federal de São João del Rei, Brazil  
Fernando Mourão, Universidade Federal de São João del Rei, Brazil  
Marcos Gonçalves, Universidade Federal de Minas Gerais, Brazil

Improving Recommender Systems with an Intention-based Algorithm Switching Strategy ................ 1668
Fanjuan Shi, Université Jean Moulin Lyon 3, France  
Chirine Ghedira, Université de Lyon 3, France

Text-Based Question Routing for Question Answering Communities via Deep Learning .................. 1674
Amr Azzam, Cairo University, Egypt  
Neamat Tazi, Cairo University, Egypt  
Ahmad Hossny, University of Adelaide, Australia

Learning Hierarchical Category Influence on both Users and Items for Effective Recommendation ............................................. 1679
Zhu Sun, Nanyang Technological University, Singapore  
Guibing Guo, Northeastern University, China  
Jie Zhang, Nanyang Technological University, Singapore

Dynamic Elicitation of User Preferences in a Chat-Based Group Recommender System .................. 1685
Thuy Ngoc Nguyen, Free University of Bozen-Bolzano, Italy  
Francesco Ricci, Free University of Bozen-Bolzano, Italy
Poster Papers

How Item Discovery Enabled by Diversity Leads to Increased Recommendation List Attractiveness ................................................................. 1693
Bruce Ferwerda, Johannes Kepler University, Austria
Mark P. Graus, Eindhoven University of Technology, Netherlands
Andreu Vall, Johannes Kepler University, Austria
Marko Tkalcic, Free University of Bozen-Bolzano, Italy
Markus Schedl, Johannes Kepler University, Austria

A Language Modeling Approach for the Recommendation of Tourism-Related Services ............. 1697
Sondess Missaoui, University of Tunis, Tunisia
Marco Vivani, University of Milano-Bicocca, Italy
Rim Faiz, University of Carthage, Tunisia
Gabriella Pasi, University of Milano-Bicocca, Italy

SEC - Computer Security Track
Track Co-Chairs: Giampaolo Bella, Università di Catania, Italy
Lieven Desmet, Katholieke Universiteit Leuven, Belgium

Track Editorial ......................................................................................................................... 1701

Hiding Debuggers from Malware with Apaten........................................................................... 1703
Hao Shi, University of Southern California, USA
Jelena Mirkovic, University of Southern California, USA

Decentralized Privacy-Aware Collaborative Filtering of Smart Spammers in a Telecommunication Network ........................................................................... 1711
Muhammad Ajmal Azad, Newcastle University, United Kingdom
Samiran Bag, Newcastle University, United Kingdom

R-PackDroid: API Package-Based Characterization and Detection of Mobile Ransomware ........... 1718
Davide Maiorca, University of Cagliari, Italy
Francesco Mercaldo, National Research Council, Italy
Giorgio Giacinto, University of Cagliari, Italy
Corrado Aaron Visaggio, University of Sannio, Italy
Fabio Martinelli, National Research Council, Italy

Preventing Relay Attacks in Mobile Transactions using Infrared Light ....................................... 1724
Iakovos Gurulian, Royal Holloway, University of London, United Kingdom
Raja Naeem Akram, Royal Holloway, University of London, United Kingdom
Konstantinos Markantonakis, Royal Holloway, University of London, United Kingdom
Keith Mayes, Royal Holloway, University of London, United Kingdom

Security and Privacy Preserving Data Aggregation in Cloud Computing ........................................ 1732
Leandro Ventura Silva, Federal University of Campina Grande, Brazil
Rodolfo Marinho, Federal University of Campina Grande, Brazil
José Luís Vivas, Federal University of Campina Grande, Brazil
Andrey Brito, Federal University of Campina Grande, Brazil

Attacks Landscape in the Dark Side of the Web ........................................................................... 1739
Onur Catakoğlu, Eurecom, France
Marco Balduzzi, Trend Micro Research, Italy
Davide Balzarotti, Eurecom, France
TeICC: Targeted Execution of Inter-Component Communications in Android
Maqsood Ahmad, University of Trento, Italy
Valerio Costamagna, University of Torino, Italy
Bruno Crispo, University of Trento and Katholieke Universiteit Leuven, Italy and Belgium
Francesco Bergadano, University of Torino, Italy

Measuring Login Webpage Security
Steven Van Acker, Chalmers University of Technology, Sweden
Daniel Hausknecht, Chalmers University of Technology, Sweden
Andrei Sabelfeld, Chalmers University of Technology, Sweden

Student Research Competition Paper
Student Research Abstract: On Computing Similarity of Android Executables using Text Mining
Gyoosik Kim, Dankook University, Korea

SiSoS - Software-intensive Systems-of-Systems Track
Track Co-Chairs: Flavio Oquendo, IRISA – Univ. Bretagne Sud, France
Khaliil Drira, LAAS-CNRS, France
Axel Legay, Inria, France
Thais Vasconcelos Batista, UFRN, Brazil

Track Editorial

A Process to Establish, Model and Validate Missions of Systems-of-Systems in Reference Architectures
Lina Garcés, University of São Paulo and Université de Bretagne-Sud, Brazil and France
Elisa Yumi Nakagawa, University of São Paulo, Brazil

IoTA-MD: A Model-Driven Approach for Applying QoS Attributes in the Development of the IoT Systems
Marcelo Pitanga Alves, Federal University of Rio de Janeiro, Brazil
Flávia C. Delicato, Federal University of Rio de Janeiro, Brazil
Paulo F. Pires, Federal University of Rio de Janeiro, Brazil

Iterative Multi-Scale Modeling of Software-Intensive Systems of Systems Architectures
Ilhem Khlif, University of Sfax, Tunisia
Mohamed Hadj Kacem, University of Sfax, Tunisia
Ahmed Hadj Kacem, University of Sfax, Tunisia

A Tool for Modeling SoS Architectures using Bigraphs
Amal Gassara, University of Sfax, Tunisia
Ismael Bouassida Rodriguez, University of Sfax, Tunisia
Mohamed Jmaiel, University of Sfax, Tunisia

System of Systems Software Architecture Description using the ISO/IEC/IEEE 42010 Standard
Mariam Chaabane, University of Sfax, Tunisia
Ismael Bouassida Rodriguez, University of Sfax, Tunisia
Mohamed Jmaiel, University of Sfax, Tunisia

Poster Papers
Modeling Traceability in System of Systems
Bedir Tekinerdogan, Wageningen University, Netherlands
Ferhat Erata, Wageningen University, Netherlands
Towards Safe and Secure Systems of Systems: Challenges and Opportunities ........................................... 1803
Avenir Kobetski, SICS Swedish ICT AB, Sweden
Jakob Axelsson, SICS Swedish ICT AB, Sweden

SP - Software Platforms Track
Track Co-Chairs: Jinman Jung, Hannam University, Korea
Jun Huang, Chongqing University of Post & Telecommunications, China
Hong Min, Hoseo University, Korea

Track Editorial ............................................................................................................................................... 1807

TransReport: Collaborative Supervision of the Public Transportation ....................................................... 1808
Raul S. Ferreira, Universidade Federal do Rio de Janeiro, Brazil
Renan Prata, Universidade Federal do Rio de Janeiro, Brazil
Carlos Eduardo Barbosa, Universidade Federal do Rio de Janeiro, Brazil
Jano Moreira de Souza, Universidade Federal do Rio de Janeiro, Brazil
Vinicio Mororo, Universidade Anhanguera, Brazil
Kleyton Pontes Cotta, Universidade Federal do Rio de Janeiro, Brazil

Design and Implementation of a Message-Service Oriented Middleware for Fog of Things Platforms ................................................................. 1814
Cássio Prazeres, Universidade Federal da Bahia, Brazil
Jurandir Barbosa, Universidade Federal da Bahia, Brazil
Leandro Andrade, Universidade Federal da Bahia, Brazil
Martin Serrano, Insight Centre for Data Analytics NUIG, Ireland

MetricStore Repository: On the Leveraging of Performance Metrics in Databases ........................................... 1820
Abdelkader Ouared, National High School for Computer Science, Algeria
Yassine Ouhammou, ENSMA, France
Ladjel Bellatreche, ENSMA, France

Poster Papers

Genetic Algorithm based Patching Scheme for Worm Containment on Social Network ...................... 1826
Donghwa Kang, Korea Internet & Security Agency, Korea
Seoyeon Kim, Hannam University, Korea
Jinman Jung, Hannam University, Korea
Bongjae Kim, Sun Moon University, Korea
Hong Min, Hoseo University, Korea
Junyoung Heo, Hansung University, Korea

TRECK - Trust, Reputation, Evidence and other Collaboration Know-how Track
Track Co-Chairs: Ilyoung Chong, Hankuk University of Foreign Studies, Korea
Jean-Marc Seigneur, University of Geneva, Switzerland
Ronald Petrlic, Saarland University, Germany

Track Editorial ............................................................................................................................................... 1829

A Computational Model to Evaluate Honesty in Social Internet of Things ........................................... 1830
Upul Jayasinghe, Liverpool John Moores University, United Kingdom
Hyun-Woo Lee, ETRI, Korea
Gyu Myoung Lee, Liverpool John Moores University, United Kingdom
An End-to-end Voting-system based on Bitcoin
Stefano Bistarelli, University of Perugia, Italy
Marco Mantilacci, University of Perugia, Italy
Paolo Santancini, University of Perugia, Italy
Francesco Santini, University of Perugia, Italy

Learning Nuanced Cross-Disciplinary Citation Metric Normalization using the Hierarchical
Dirichlet Process on Big Scholarly Data
Hafsah Umar, University of St. Andrews, United Kingdom
Ognjen Arandjelović, University of St. Andrews, United Kingdom

Student Research Competition Paper

Student Research Abstract: On Enhancing Trust in Cryptographic Solutions
Nikolaos Alexopoulos, Technische Universität Darmstadt, Germany

.................................................. 1836
.................................................. 1842
.................................................. 1848