Table of Contents

Scroll to the title and select a **Blue** link to open a paper. After viewing the paper, use the bookmarks to the left to return to the beginning of the Table of Contents.

Theme: AI and Ag	gents	
BIO - Bioinformat	ics Track	
Track Co-Chairs:	Paola Lecca, University of Trento, Italy Dan Tulpan, University of Guelph, Canada Juan Manuel Corchado, University of Salamanca, Spain	
Track Editorial		. 1
Souad Bouasker, Univ Sadok Ben Yahia, Tall	logical Data Mining based on Rarity and Correlation as Constraints	3
Sameh K. Mohamed, M Aayah Nounu, Univers	very using Knowledge Graph Embeddings National University of Ireland Galway, Ireland sity of Bristol, UK University of Ireland Galway, Ireland	11
AliAsghar ShahrjooiH Hichem Frigui, Univer Xiang Zhang, Univers Xiaoli Wei, University Biyun Shi, University	of Louisville, USA	19
Ameni Trabelsi, University Biyun Shi, University Xiaoli Wei, University Hichem Frigui, University Xiang Zhang, University Craig McClain, University Crais McClain, University Mechanics Control Mechanics (Mechanics) Ameni Mechanics (Mechanics) Ameni Trabelsi, University Mechanics (Mechanics) Ameni Trabelsi, University (Mechanics)	of Louisville, USA rsity of Louisville, USA	25
Theme: Software I	Design and Development	
BPMEA - Busines	ss Process Management & Enterprise Architecture Track	
Track Co-Chairs:	Marco Brambilla, Politecnico di Milano, Italy Davide Rossi, University of Bologna, Italy	
Marco Comuzzi, Ulsan Alfonso E. Marquez-C	ty Metric for SLA Predictive Monitoring In National Institute of Science and Technology, South Korea In Schamorro, Universidad de Sevilla, Spain In Spain In Spain	32

Controllability of Business Processes with Temporal Variables Johann Eder, Alpen-Adria-Universität Klagenfurt, Austria Marco Franceschetti, Alpen-Adria-Universität Klagenfurt, Austria Julius Köpke, Alpen-Adria-Universität Klagenfurt, Austria
Object-Centric Behavioral Constraint Models: A Hybrid Model for Behavioral and Data Perspectives 48 Guangming Li, Eindhoven University of Technology, The Netherlands Renata Medeiros de Carvalho, Eindhoven University of Technology, The Netherlands Wil M.P. van der Aalst, RWTH Aachen University, Germany
Optimizing Customer Journey using Process Mining and Sequence-Aware Recommendation
Static Analysis of BPMN-Based Process-Driven Applications
Towards a Metamodel for Supporting Decisions in Knowledge-Intensive Processes
VIEW: An Incremental Approach to Verify Evolving Workflows
Poster Papers
Configuring SQL-based Process Mining for Performance and Storage Optimisation
Formal Support of Process Chain Networks using Model-driven Engineering and Petri nets
On the Elicitation and Annotation of Business Activities based on Emails

CC - Cloud Comp	uting Track	
Track Co-Chairs:	Priya Chandran, NIT Calicut, India	
	SD Madhu Kumar, NIT Calicut, India	
Track Editorial		104
Alfonso Pérez, Univers Germán Moltó, Univer Miguel Caballer, Univ	odel and Middleware for High Throughput Serverless Computing Applications itat Politècnica de València, Spain ersitat Politècnica de València, Spain ersitat Politècnica de València, Spain niversitat Politècnica de València, Spain	106
	al Cost of Scientific Workflows under Deadline Constraints in	114
Tianyu Gao, Northwes Chase Q. Wu, New Jer Aiqin Hou, Northwest	sey Institute of Technology, USA University, China thwest University, China niversity, China	114
Ojus Thomas Lee, Cold Vijay Sharma, Nationa S. D Madhu Kumar, Na	vel Consistency in Erasure Code based Storage Systems	122
Sérgio Mendes, Univer José Simão, Instituto S	icro-Clouds with Energy-aware Containers Scheduling rsidade de Lisboa, Portugal superior de Engenharia de Lisboa, Portugal superior Técnico, Portugal	130
Gabriel P. Fernandez,	Orchestration in the Cloud: Policies and Implementation	138
Flexible Data Shari	ares: Combining Attribute-Based Encryption and Searchable Encryption for ng	146
Poster Papers		
	KU Leuven, Belgium ven, Belgium	156

Theme: Distributed Systems

Merlin George, Nationa Anu Mary Chacko, Nati Sudeep Koshy Kurien, M	oud – Research Challenges al Institute of Technology, India ional Institute of Technology, India Malabar Institute of Medical Science, India stitute of Medical Science, India	160
Theme: Distributed	Systems	
	cation, Computing and Networking in Internet of Vehicles Track Imen Jemili, University of Carthage, Tunisia Mohamed Mosbah, Bordeaux INP, France	
Track Editorial		163
Philip Wendland, Techr Guenter Schaefer, Tech	ented Evaluation of LTE-V's Mode 4 for V2V Communication	165
Dimitris Bakoyiannis, T Othon Tomoutzoglou, T	Firmware Updating for Automotive Electronic Control Units Gechnological Educational Institute of Crete, Greece Gechnological Educational Institute of Crete, Greece Genological Educational Institute of Crete, Greece	174
Salman Memon, McGill	ning for Handover Optimization in Vehicular Fog Computing University, Canada aran, McGill University, Canada	182
Poster Papers		
Congestion in Urbar Lukáš Chrpa, Charles U Mauro Vallati, Universi	ed Planning for Efficient Centralized Vehicle Routing and Mitigating Road Networks University and Czech Technical University in Prague, Czech Republic ity of Huddersfield, UK ersity of Huddersfield, UK	191
Theme: AI and Age	ents	
CIVIA - Computation Track Co-Chairs:	Agostinho Rosa, University of Lisbon, Portugal Yin-Fu Huang, National Yunlin University of Science and Technology, Taiwan	
Track Editorial		195
Zackary P.T. Sin, The H. Peter H.F. Ng, The Hon Simon C.K. Shiu, The H. Fu-lai Chung, The Hong	Ating Networks: Bringing Static Characters to Move via Motion Transfer Hong Kong Polytechnic University, China Hong Kong Polytechnic University, China Hong Kong Polytechnic University, China Hong Rong Polytechnic University, China Hong Kong Polytechnic University, China Hong Kong Polytechnic University, China	196

An Effective Hybrid	I Imperialist Competitive Algorithm and Tabu Search for an Extended	
-	cheduling Problem	204
	di, University of Luxembourg, Luxembourg	
	ty of Luxembourg, Luxembourg	
Luiz Henrique Cherri,	University of São Paulo, Brazil	
Visual Content base	ed Video Retrieval on Natural Language Queries	212
Ravi Bansal, Google, I		212
<u> </u>	ndian Institute of Technology Kharagpur, India	
	s in COMputational Biomedical Imaging Track	
Track Co-Chairs:	Mohammed El Hassouni, Mohammed V University in Rabat, Morocco	
11.000 00 000000	Rachid Jennane, University of Orleans, France	
	Ayman El-Baz, University of Louisville, USA	
	ent Approach for the Segmentation of Vertebral Compression Fractures in	
0	Imaging	220
	niversity of São Paulo, Brazil	
	pe, Federal University of Rondônia, Brazil	
0	Barbosa, University of São Paulo, Brazil	
Agma J.M. Traina, Oni	iversity of São Paulo, Brazil	
Theme System Sot	ftware and Security	
•	·	
-	ical Systems Track	
Track Co-Chairs:	Jingtong Hu, University of Pittsburgh, USA	
	Jason Xue, City University of Hong Kong, Hong Kong	
	Qi Zhu, Northwestern University, USA	
Track Editorial		228
		== 9
AdaptC: Programm	ning Adaptation Policies for WSN Applications	229
•	chnic Institute of Porto, Portugal	
Luis Almeida, Universi		
Eduardo Tovar, Polyte	chnic Institute of Porto, Portugal	
Energy Ontimizatio	n of Branch-Aware Data Variable Allocation on Hybrid SRAM+NVM	
		236
	Electronic Science and Technology of China, China	
	of Electronic Science and Technology of China, China	
	of Electronic Science and Technology of China, China	
Jiayu Yu, University of	Electronic Science and Technology of China, China	
Ontimizing Fragme	ntation and Segment Cleaning for CPS based Storage Devices	242
Qi Li, Chongqing Univ		2 12
Aosong Deng, Chongqi	· ·	
Congming Gao, Chong		
0 0	ity of Hong Kong, China	
0	Normal University, China	
Edwin HM. Sha, East	China Normal University, China	

Yajuan Du, Wuhan Un Wei Liu, Wuhan Unive Yu Zhu, Huazhong Uni	Cleaning via Constrained Victim Block Selection
Poster Papers	
James Coleman, Intel (Sara Almalih, Intel Co Alexander Slota, Intel	rporation, USA
Theme: Distributed	d Systems
DADS - Dependab	le, Adaptive, and Secure Distributed Systems Track
Track Co-Chairs:	Karl M. Goeschka, UAS Technikum Vienna, Austria Rui Oliveira, Universidade do Minho, Portugal Peter Pietzuch, Imperial College London, UK Giovanni Russello, University of Auckland, New Zealand
Track Editorial	
Paola Martins Pereira Fernando Luis Dotti, F Cristina Meinhardt, U Odorico Machado Men	ces Transparent Replication
João Marçal, Instituto Luís Rodrigues, Institu	Superior Técnico, Universidade de Lisboa, Portugal to Superior Técnico, Universidade de Lisboa, Portugal o Superior Técnico, Universidade de Lisboa, Portugal
Don't Hesitate to St Subir Halder, Universi Mauro Conti, Universi	
Mohammad Rafiuzzam Julien Gascon-Samson Karthik Pattabiraman,	n the Internet of Things due to Memory Exhaustion
Alejandro Ranchal Ped	Factories for Bitcoin
Richard Gil Martinez, Antónia Lopes, Univer	Executions when using Spot Instances in the Cloud

Quantitative Comparison of Unsupervised Anomaly Detection Algorithms for Intrusion Detection Filipe Falcão, Universidade Federal de Alagoas, Brazil Tommaso Zoppi, University of Florence, Italy Caio Barbosa Viera Silva, Universidade Federal de Alagoas, Brazil Anderson Santos, Universidade Federal de Alagoas, Brazil Baldoino Fonseca, Universidade Federal de Alagoas, Brazil Andrea Ceccarelli, University of Florence, Italy Andrea Bondavalli, University of Florence, Italy	. 318
Securely deploying Distributed Computation Systems on Peer-to-Peer Networks Kobe Vrancken, KU Leuven, Belgium Frank Piessens, KU Leuven, Belgium Raoul Strackx, KU Leuven, Belgium	. 328
Poster Papers	
Distributed Storage System based on Permissioned Blockchain Racin Nygaard, University of Stavanger, Norway Hein Meling, University of Stavanger, Norway Leander Jehl, University of Stavanger, Norway	. 338
Is it Safe to Dockerize my Database Benchmark? Martin Grambow, Technische Universität Berlin, Germany Jonathan Hasenburg, Technische Universität Berlin, Germany Tobias Pfandzelter, Technische Universität Berlin, Germany David Bermbach, Technische Universität Berlin, Germany	. 341
Theme: Distributed Systems DAPP - Decentralized Applications with Blockchain, DLT and Crypto-Currencies Track	
Track Co-Chairs: Jean-Marc Seigneur, University of Geneva, Switzerland and Reputaction, France	
Track Editorial	. 345
Analysis of Architectural Variants for Auditable Blockchain-based Private Data Sharing Vincent Reniers, KU Leuven, Belgium Dimitri Van Landuyt, KU Leuven, Belgium Paolo Viviani, Noesis Solutions NV, University of Torino, Italy Bert Lagaisse, KU Leuven, Belgium Riccardo Lombardi, Noesis Solutions NV, Belgium Wouter Joosen, KU Leuven, Belgium	. 346
Building Private Blockchains over Public Blockchains (PoP): An Attribute-Based Access	255
Control Approach Dijiang Huang, Arizona State University, USA Chun-Jen Chung, Arizona State University, USA Qiuxiang Dong, Arizona State University, USA Jim Luo, U.S. Naval Research Lab, USA Myong Kang, U.S. Naval Research Lab, USA	. 335

DECOUPLES: A Decentralized, Unlinkable and Privacy-preserving Traceability System for the	
Supply Chain	364
Mourad El Maouchi, Delft University of Technology, The Netherlands	
Oğuzhan Ersoy, Delft University of Technology, The Netherlands	
Zekeriya Erkin, Delft University of Technology, The Netherlands	
Hybrid Mining: Exploiting Blockchain's Computational Power for Distributed Problem Solving	374
Krishnendu Chatterjee, Institute of Science and Technology Austria, Austria	
Amir Kafshdar Goharshady, Institute of Science and Technology Austria, Austria	
Arash Pourdamghani, Sharif University of Technology, Iran	
MUSCLE: Authenticated External Data Retrieval from Multiple Sources for Smart Contracts	382
Bjorn van der Laan, Delft University of Technology, The Netherlands	
Oğuzhan Ersoy, Delft University of Technology, The Netherlands	
Zekeriya Erkin, Delft University of Technology, The Netherlands	
Smart Contracts in View of the Civil Code	392
Monika di Angelo, Technische Universität Wien, Austria	
Alfred Soare, Technische Universität Wien, Austria	
Gernot Salzer, Technische Universität Wien, Austria	
The Treewidth of Smart Contracts	400
Krishnendu Chatterjee, Institute of Science and Technology Austria, Austria	
Amir Kafshdar Goharshady, Institute of Science and Technology Austria, Austria	
Ehsan Kafshdar Goharshady, Ferdowsi University of Mashhad, Iran	
TickEth, a Ticketing System built on Ethereum	409
Pietro Corsi, Università di Genova, Italy	
Giovanni Lagorio, Università di Genova, Italy	
Marina Ribaudo, Università di Genova, Italy	
Poster Papers	
Process Traceability in Distributed Manufacturing using Blockchains Sebastian Geiger, Siemens Corporate Technology, USA Daniel Schall, Siemens Corporate Technology, USA Sebastian Meixner, Siemens Corporate Technology, USA Andreas Egger, Siemens Corporate Technology, USA	417
GG ,	

Track Co-Chairs:	Ramzi A. Haraty, Lebanese American University, Lebanon Apostolos N. Papadopoulos, Aristotle University, Greece Junping Sun, Nova Southeastern University, USA	
Track Editorial		421
Tiago Brasileiro Araújo Carlos Eduardo Santos Demetrio Gomes Mestr Thiago Pereira da Nóbi Dimas Cassimiro do Na	d Schema-agnostic Blocking Technique for Entity Resolution	422
Ekaterina B. Dimitrova,	e Optimization for Multi-Provider Queries University of Pittsburgh, USA University of Pittsburgh, USA of Pittsburgh, USA	431
Akrivi Vlachou, Univers Christos Doulkeridis, U Apostolos Glenis, Unive Georgios M. Santipanta	poral RDF Query Processing in Large Dynamic Knowledge Bases	439
Panagiotis Moutafis, Un Francisco García-Garc George Mavrommatis,		448
Evandro Miguel Kuszer Leticia M. Peres, Feder	QL: Transforming Data with Metamorfose Framework a, Technological Federal University of Paraná, Brazil al University of Paraná, Brazil bro, Federal University of Paraná, Brazil	456
Poster Papers		
Doyoung Kim, Yonsei U Won Gi Choi, Yonsei U Hanseung Sung, Yonsei		464

Theme: Information Systems

DBDM - Databases and Big Data Management Track

Caetano Traina Jr., Ur Andre Moriyama, Univ Guilherme Rocha, Univ Robson Cordeiro, Univ	mework: Similarity Queries in Plain SQL viversity of São Paulo, Brazil versity of São Paulo, Brazil Jniversity of São Paulo, Brazil ty of São Paulo, Brazil	468
Theme: Information	on Systems	
DLHWB - Digital L	ife for Human Well-being Track	
Track Co-Chairs:	Sara Comai, Politecnico di Milano, Italy Luc De Witte, The University of Sheffield, UK Fabio Salice, Politecnico di Milano, Italy	
Track Editorial		472
Márcia Valéria Rodrig Laura Sánchez García, André Luiz Pires Gued Djanira Aparecida da L Celia Regina Alves de L Carlos Eduardo de Arc Web-based Authori Elderly Digital Liter Bruna C.R. Cunha, Fec Kamila R.H. Rodrigues Isabela Zaine, Universi Leonardo F. Scalco, U. Caio C. Viel, Universit	niversity of São Paulo, Brazil	
Theme: Informatio	on Systems	
DM - Data Mining	Track	
Track Co-Chairs:	Hasan Jamil, University of Idaho, USA Rosa Meo, Università degli Studi di Torino, Italy	
Track Editorial		492
Bayesian Networks Stephen Pauwels, Univ	ion Technique for Business Processes based on Extended Dynamic ersity of Antwerp, Belgium ity of Antwerp, Belgium	494
Khadidja Meguelati, IN	tpellier SupAgro, France France	502

Explaining Black Box Models by means of Local Rules Eliana Pastor, Politecnico di Torino, Italy Elena Baralis, Politecnico di Torino, Italy)
Graph-based Selective Outlier Ensembles	3
High-Performance Probabilistic Record Linkage via Multi-Dimensional Homomorphisms	•
Pairwise Normalization in SimRank Variants: Problem, Solution, and Evaluation	1
K-mixed Prototypes: A Clustering Algorithm for Relational Data with Mixed Attribute Types 542 Rahmah Brnawy, Taibah University, Saudi Arabia Nematollaah Shiri, Concordia University, Canada	2
Mining Product Opinions with Most Frequent Clusters of Aspect Terms	5
Student Research Abstract: Cryptocurrency World Identification and Public Concerns Detection via Social Media)
Student Research Abstract: Fuzzy-Rule based Approach for Feature Selection in Text Classification 553 Bushra Zaheer Abbasi, COMSATS University Islamabad, Pakistan	3

Andre Carvalho, ICMC, USP, Brazil Carlos Ferreira, INESC Porto, University of Porto, Portugal João Gama, INESC Porto, University of Porto, Portugal Hela Sfar, Télécom SudParis, France Amel Bouzeghoub, Télécom SudParis, France Christian Beyer, Otto-von-Guericke-University Magdeburg, Germany Vishnu Unnikrishnan, Otto-von-Guericke-University Magdeburg, Germany *Uli Niemann, Otto-von-Guericke-University Magdeburg, Germany* Pawel Matuszyk, Otto-von-Guericke-University Magdeburg, Germany Eirini Ntoutsi, Leibniz University Hannover, Germany Myra Spiliopoulou, Otto-von-Guericke-University Magdeburg, Germany Jean Paul Barddal, Pontificia Universidade Católica do Paraná, Brazil Fabrício Enembreck, Pontificia Universidade Católica do Paraná, Brazil Rémi Géraud, École normale supérieure, CNRS, PSL, France Marius Lombard-Platet, École normale supérieure, CNRS, PSL, France David Naccache, École normale supérieure, CNRS, PSL, France **Poster Papers** Jean Antonio Pereira Karax, Pontificia Universidade Católica do Paraná, Brazil Andreia Malucelli, Pontificia Universidade Católica do Paraná, Brazil Jean Paul Barddal, Pontificia Universidade Católica do Paraná, Brazil Streaming Piecewise Linear Approximation for Efficient Data Management in Edge Computing 593 Romaric Duvignau, Chalmers University of Technology, Sweden Vincenzo Gulisano, Chalmers University of Technology, Sweden Marina Papatriantafilou, Chalmers University of Technology, Sweden Vladimir Savic, Qamcom R&T, Sweden

Albert Bifet, LTCI, Telecom ParisTech, France

Theme: Information Systems
DS - Data Streams Track

Track Co-Chairs:

EMBS - Embedde	d Systems Track	
Track Co-Chairs:	Marco Di Natale, Scuola Superiore S. Anna, Italy	
	Li-Pin Chang, National Chiao Tung University, Taiwan	
Track Editorial		597
	Write-Constrained Cache Management to Mitigate Write Amplification for	500
Shuo-Han Chen, Acad		333
Yong-Ching Lin, Natio	onal Tsing Hua University, Taiwan	
Yuan-Hao Chang, Aca		
Ming-Chang Yang, In Tseng-Yi Chen, Yuan Z	e Chinese University of Hong Kong, China Te University Tajwan	
Hsin-Wen Wei, Tamka	·	
	nal Tsing Hua University, Taiwan	
A Time-predictable	Branch Predictor	607
Martin Schoeberl, Tec	hnical University of Denmark, Denmark	
Benjamin Rouxel, INR		
Isabelle Puaut, INRIA	Rennes, France	
Energy-Demand Es	stimation of Embedded Devices using Deep Artificial Neural Networks	617
	n-Alexander-Universität Erlangen-Nürnberg, Germany	
_	drich-Alexander-Universität Erlangen-Nürnberg, Germany	
Wolfgang Schröder-Pi	reikschat, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany	
On Assessing the V	iability of Probabilistic Scheduling with Dependent Tasks	625
Jaume Abella, Barcelo	ona Supercomputing Center, Spain	
	elona Supercomputing Center, Spain	
Francisco J. Cazorla,	Barcelona Supercomputing Center, Spain	
Refresh Optimised	Embedded-DRAM Caches based on Zero Data Detection	635
	r, Indian Institute of Technology Guwahati, India	
Hemangee K. Kapoor,	Indian Institute of Technology Guwahati, India	
Poster Papers		
Impact of Source So	cheduling on End-to-End Latencies in a QoS-aware Avionics Network	643
*	rsité de Toulouse, France	
	Université de Toulouse, France Université de Toulouse, France	
9	iversité de Toulouse, France iversité de Toulouse, France	
Cranbiaal Draguer	Transformations for Embadded Systems	615
Robert Stewart, Heriot	Transformations for Embedded Systems	04 /
	Université de Toulouse, France	
Paulo Garcia, Carleto	n University, Canada	
Idris Ibrahim, Heriot-		
_	riot-Watt University, UK ot-Watt University, UK	
maren manuce, men	or mur ourrestry, OIX	

Theme: System Software and Security

Track Co-Chairs:	Maguelonne Teisseire, UMR TETIS, France Christian Sallaberry, University of Pau and Pays de l'Adour, France Eric Kergosien, University of Lille, France Cyril de Runz, University of Reims, France Thomas Guyet, AGROCAMPUS-OUEST/IRISA, France	
Track Editorial		650
Noudéhouénou L.J. Ho Jean-Loup Guillaume,	proach for Functional Urban Areas Delineation	652
$Chidubem\ Iddianozie,$	ng Paradigm for Spatial Networks University College Dublin, Ireland ersity College Dublin, Ireland	659
Rocio Nahime Torres, Federico Milani, Polit	untain Peaks Discovery: A Comparison Politecnico di Milano, Italy tecnico di Milano, Italy tecnico di Milano, Italy	667
Didier A. Vega-Oliver Moshé Cotacallapa, N Leonardo N. Ferreira, Marcos G. Quiles, Fea Liang Zhao, University Elbert E.N. Macau, Fe	oral Data to Chronological Networks: An Application to Wildfire Analysis os, University of São Paulo, Brazil lational Institute for Space Research, Brazil National Institute for Space Research, Brazil deral University of São Paulo, Brazil y of São Paulo, Brazil ederal University of São Paulo, Brazil lational Institute for Space Research, Brazil	675
Poster Papers		
Roger Peralta-Araniba Cicero A.L. Pahins, Un Joao L.D. Comba, Uni	isual Exploration of Very Large Georeferenced Multidimensional Datasets ar, Universidad Católica San Pablo, Brazil iniversidade Federal do Rio Grande do Sul, Brazil iversidade Federal do Rio Grande do Sul, Brazil iniversidade Católica San Pablo, Brazil	683
Laura Di Rocco, Unive Davide Buscaldi, LIPN Michela Bertolotto, Un Barbara Catania, Univ	aphic Knowledge in Sub-City Level Geolocation ersità di Genova, Italy N, Université Paris 13, France niversity College Dublin, Irealand versità di Genova, Italy Iniversità di Genova, Italy	687

Theme: Information Systems

GIA - GeoInformation Analytics Track

Soon Ki Jung, Kyungpook National University, South Korea Awais Ahmad. University of Milan. Italy Ganesh Kumar P., Anna University, India Jun Wang, The Hong Kong Polytechnic University, China Eugene Yujun Fu, The Hong Kong Polytechnic University, China Grace Ngai, The Hong Kong Polytechnic University, China Hong Va Leong, The Hong Kong Polytechnic University, China Michael Xuelin Huang, Max Planck Institute for Informatics, Germany Changyeol Choi, Hanyang University, South Korea Joohee Jun, Hanyang University, South Korea Jiwoong Heo, Hanyang University, South Korea Kwanguk Kim, Hanyang University, South Korea Malik Junaid Jami Gul, Kyungpook National University, South Korea Anand Paul, Kyungpook National University, South Korea Awais Ahmad, Bahira University, Pakistan Murad Khan, Sarhad University of Science and Information Technology, Pakistan Gwanggil Jeon, Incheon National University, South Korea Takafumi Higashi, Japan Advanced Institute of Science and Technology, Japan Hideaki Kanai, Japan Advanced Institute of Science and Technology, Japan Student Research Abstract Student Research Abstract: Towards Textualising Analytic Provenance for Visual Analytics using Waqas Khawaja, National University of Ireland Galway, Ireland Student Research Abstract: Human-enabled Sustainable Management of Mobile Cloud Sadia Din, Kyungpook National University, South Korea

Anand Paul, Kyungpook National University, South Korea

Theme: AI and Agents

Track Co-Chairs:

HCI - Smart Human Computer Interaction Track

HI - Health Inform	atics Track	
Track Co-Chairs:	Anu Mary Chako, National Institute of Technology Calicut, India	
	Gopakumar G, National Institute of Technology Calicut, India	
Track Editorial		728
A Two-Step Approa	nch to Predictive Modeling of Individual-based Environmental Health Risks	729
	University, South Korea	
	ang University, South Korea	
•	ited Arab Emirates University, UAE Arab Emirates University, UAE	
Sada Narayanappa, Lo	·	
	chunhyang University Bucheon Hospital, South Korea	
	unhyang University Bucheon Hospital, South Korea	
Applying Situation-	Awareness for Recommending Phonological Processes in the Children's Speech	739
	catto, Federal University of Santa Maria, Brazil	
João Carlos Damascer	no Lima, Federal University of Santa Maria, Brazil	
	niversity of Santa Maria, Brazil	
	al University of Santa Maria, Brazil	
	Federal University of Santa Maria, Brazil	
Cristiano Cortez da Ro	ocha, Penguin Formula, Portugal	
	on with Parallelization to Optimize the Identification of Causal Genes and	
• •	vays	747
	tional Institute of Technology Calicut, India	
•	onal Institute of Technology Calicut, India	
	al Institute of Technology Calicut, India athew, National Institute of Technology Calicut, India	
-	uinew, National Institute of Technology Caticul, India l Institute of Technology Calicut, India	
•		
Leveraging the Linl Rim Negra, University	k Quality Awareness for Body Node Coordinator (BNC) Placement in WBANs	754
Imen Jemili, University		
•	sité de Bordeaux, France	
	iversité de Bordeaux, France	
Abdelfettah Belghith, K	King Saud University Saudi Arabia, Saudi Arabia	
Nesrine Ouled Abdalla	h, Université de Bordeaux, France	
Resolving Data Inte	roperability in Ubiquitous Health Profile using Semi-Structured	
	sing	762
-	rung Hee University, South Korea	
•	ung Hee University, South Korea	
	Hee University, South Korea	
	Zayed University, UAE Hee University, South Korea	
Sungyoung Lee, Kyung	Tiee Ouversuy, Bouin Rorea	

Theme: Information Systems

Poster Papers

An Iterative Oversampling Approach for Ordinal Classification Francisco Marques, Universidade de Coimbra, Portugal Hugo Duarte, IPO-Porto Research Centre, Portugal João Santos, IPO-Porto Research Centre, Portugal Inês Domingues, IPO-Porto Research Centre and University of Coimbra, Portugal José P. Amorim, IPO-Porto Research Centre and University of Coimbra, Portugal Pedro H. Abreu, University of Coimbra, Portugal	771
IPBN: Alerts Management in Intravenous Electromedical Devices using Bayesian Networks	775
Student Research Abstract	
Student Research Abstract: Mortality Prediction using Medical Notes Mahnaz Koupaee, University of California Santa Barbara, USA	778
Video-Based Decision Support for Behavioral Veterinarians: A Case Study of Canine ADHD	782
Theme: Information Systems IAR - Information Access and Retrieval Track Track Co-Chairs: Gloria Bordogna, Consiglio Nazionale delle Ricerche – CNR IREA, Italy Gabriella Pasi, Università degli Studi di Milano Bicocca -DISCo, Italy	
Track Editorial	786
aMV-LSTM: An Attention-based Model with Multiple Positional Text Matching Thiziri Belkacem, Paul Sabatier University, France Taoufiq Dkaki, Jean Jaures University, France Jose G. Moreno, Paul Sabatier University, France Mohand Boughanem, Paul Sabatier University, France	788
Ask Toscanini! – Architecting a Search Engine for Music Scores beyond Metadata	796
Automatically Assessing the Quality of Wikipedia Contents Elias Bassani, Università degli Studi di Milano-Bicocca and Consorzio C2T, Italy Marco Viviani, Università degli Studi di Milano-Bicocca, Italy	804
Hybrid Molecule-based Information Retrieval Nathalie Charbel, University of Pau and Pays de l'Adour, France Christian Sallaberry, University of Pau and Pays de l'Adour, France Sebastien Laborie, University of Pau and Pays de l'Adour, France Richard Chbeir, University of Pau and Pays de l'Adour, France	808

Vito Walter Anelli, Pol Tommaso Di Noia, Pol Eugenio Di Sciascio, F Azzurra Ragone, Indep Joseph Trotta, Politeca	litecnico di Bari, Italy Politecnico di Bari, Italy pendent Researcher, Italy	816
IoT - Internet of Th	•	
Track Co-Chairs:	Gail-Joon Ahn, Arizona State University, USA Seong-Je Cho, Dankook University, South Korea Jun Zheng, New Mexico Institute of Mining and Technology, USA	
Track Editorial		822
Track Editorial		022
Jordano R. Celestrini, Renato N. Rocha, Fede Estêvão B. Saleme, Fed Celso A.S. Santos, Fed José G. Pereira Filho,	d its Tools for Integrating IoT and BPMN in Agriculture Scenarios Federal University of Espirito Santo, Brazil deral University of Espirito Santo, Brazil deral University of Espirito Santo, Brazil deral University of Espírito Santo, Brazil Federal University of Espírito Santo, Brazil Federal Institute of Espirito Santo, Brazil	824
Imad Berrouyne, IMT	AT Atlantique, France	832
Sourajit Behera, Indian Anurag Choubey, India Chandresh S. Kanani, Yashwant Singh Patel,	arning based Improved Predictive Maintenance using HoT for Turbofan Engines In Institute of Technology Patna, India In Institute of Technology Patna, India Indian Institute of Technology Patna, India Istitute of Technology Patna, India Istitute of Technology Patna, India	842
Penghui Zhang, Arizon Haehyun Cho, Arizona Ziming Zhao, Arizona Adam Doupé, Arizona	State University, USA	851
•		861
Separate Session Ke Suman Bala, Orange, I Dominique Barthel, Or Säid Gharout, Orange,	range, France	870

Mayke Ferreira Arruda,	nt Ontology for Privacy Protection in IoT
Poster Papers	
Gabriel R. Caldas de Aq Claudio M. de Farias, U	y Assessment for Smart Sensor Network
Bardia Safaei, Sharif Ur Ali Asghar Mohammad Maryam Shirbeigi, Shar Amir Mahdi Hosseini M	ay Product Objective Function for Internet of Things Applications
Theme: AI and Age	nts
	Robotics and Multi-Agent Systems Track
	Rui P. Rocha, ISR – University of Coimbra, Portugal Daniel Kudenko, University of York, UK
Track Editorial	
Reinforcement Learn Jacopo Talamini, Unive Eric Medvet, Università	ed Cooperative Tasks: How the Language Expressiveness affects ning
Ayan Dutta, University of Vladimir Ufimtsev, East	ng based Coalition Formation for Multi-Robot Task Allocation
Anna Lukina, Technisch Ashish Tiwari, SRI Inter Scott A. Smolka, Stony E	e-Neighborhood Control for Stochastic Reachability in Multi-Agent Systems 914 e Universität Wien, Austria mational, USA Brook University, USA, USA e Universität Wien, Austria
Marie Ossenkopf, Unive	illanova University, USA
Subspace Clustering Alberto Castellini, Veron Francesco Masillo, Veron Manuele Bicego, Veron Domenico Bloisi, Veron Jason Blum, Verona Uni	ona University, Italy a University, Italy a University, Italy

Alessandro Farinelli, Verona University, Italy Sergio Peigner, Université de Lyon, France	
Support Vector Regression based Sensor Localization using UAV Rolif Lima, Tata Consultancy Services, India Kaushik Das, Tata Consultance Services, India Debasish Ghose, Indian Institute of Science Bangalore, India	938
Trail Formation using Large Swarms of Minimal Robots Pere Molins, University of Bristol, UK Sabine Hauert, University of Bristol, UK	946
Poster Papers	
RoboPlanner : Autonomous Robotic Action Planning via Knowledge Graph Queries	953
Social Robot Navigation based on HRI Non-verbal Communication: A Case Study on Avocado Harvesting Juan Pablo Vasconez, Universidad Técnica Federico Santa María, Chile Leonardo Guevara, Universidad Técnica Federico Santa María, Chile Fernando Auat Cheein, Universidad Técnica Federico Santa María, Chile	957
Student Research Abstract	
Student Research Abstract: Taking Stigmergy out of the Lab and into the Field	961
Theme: AI and Agents	
KLP - Knowledge and Language Processing Track	
Track Co-Chairs: Mauro Dragoni, Fondazione Bruno Kessler (FBK), Italy Marco Rospocher, University of Verona, Italy	
Track Editorial	965
A Case-based Approach using Phonological Knowledge for Identifying Error Patterns in Children's Speech Maria Helena Franciscatto, Federal University of Santa Maria, Brazil João Carlos Damasceno Lima, Federal University of Santa Maria, Brazil Celio Trois, Federal University of Santa Maria, Brazil Vinícius Maran, Federal University of Santa Maria, Brazil Márcia Keske Soares, Federal University of Santa Maria, Brazil Cristiano Cortez da Rocha, Penguin Formula, Portugal	968
Detecting Reliable Novel Word Senses: A Network-Centric Approach Abhik Jana, Indian Institute of Technology Kharagpur, India Animesh Mukherjee, Indian Institute of Technology Kharagpur, India Pawan Goyal, Indian Institute of Technology Kharagpur, India	976

Exploring Lexico-Semantic Patterns for Aspect-Based Sentiment Analysis
Few-shot Classification in Named Entity Recognition task
Out-of-context Fine-grained Multi-word Entity Classification 1001 Guillaume Jacquet, European Commission, Italy Jakub Piskorski, European Commission, Italy Sophie Chesney, Queen Mary University of London, UK
Populating the Knowledge Base of a Conversational Agent: Human vs. Machine
Same but Different: Distant Supervision for Predicting and Understanding Entity Linking Difficulty Renato Stoffalette João, University of Hannover, Germany Pavlos Fafalios, University of Hannover, Germany Stefan Dietze, GESIS Leibniz Institute for the Social Sciences, Germany
Study of Linguistic Features Incorporated in a Literary Book Recommender System
Unveiling Middle-Level Concepts through Frequency Trajectories and Peaks Analysis
Vocabulary based Community Detection and Characterization
Poster Papers
A Hybrid Deep Learning Network for Modelling Opinionated Content

Simon Mille, Universita Stamatia Dasiopoulou,	ar-based NLG System for Verbalization of Structured Data
Siwen Guo, University Sviatlana Höhn, Univer	st: Evaluating the Effect of Time Gaps in a Personalized Sentiment Model 1057 of Luxembourg, Luxembourg sity of Luxembourg, Luxembourg University of Luxembourg, Luxembourg
Pinar Arslan, Universit Michele Corazza, Unive Elena Cabrio, Universi	ersité Côte d'Azur, France
Theme: AI and Age	ents
Komis - Knowledg	je Discovery meets Information Systems Track
Track Co-Chairs:	Fabio Mercorio, University of Milano-Bicocca, Italy Mario Mezzanzanica, University of Milano-Bicocca, Italy Antonio Picariello, University of Naples "Federico II", Italy
Track Editorial	
Ricardo Baeza-Yates, N Alfredo Cuzzocrea, Uni Domenico Crea, Univer	
How to Implement a Michele Ianni, Universi Elio Masciari, ICAR-C. Giuseppe M. Mazzeo, F Carlo Zaniolo, UCLA,	NR, Italy Cacebook, USA
On-line Aggregation Maurizio Toccu, Univer Giuseppe Psaila, Univer Davide Altomare, Enel	rsity of Bergamo, Italy
Topic-based Indexin Ciro Sorrentino, Univer Ester Giallonardo, Uni Eugenio Zimeo, Univer	versity of Sannio, Italy

VisCrimePredict: A	System for Crime Trajectory Prediction and Visualisation from	
	Sources	. 1099
	urne University of Technology, Australia	
	ad Forkan, Swinburne University of Technology, Australia	
	e University of Technology, Australia	
	an, Swinburne University of Technology, Australia University of Technology, Australia	
	e Oniversity of Technology, Australia llos, Swinburne University of Technology, Australia	
	e University of Technology, Australia	
Rajiv Ranjan, Newcastl		
Poster Papers		
-	sed Community Detection approachersity of Naples "Federico II", Italy	. 1107
	mation by Aerial Images Analysis and Deep Learning	. 1111
Donatello Conte, Unive	• •	
Pierre Gaucher, Univer	• •	
Carlo Sansone, Univers	sity of Naples Federico II, Italy	
Theme: AI and Age	ents	
KRR - Knowledge	Representation and Reasoning Track	
Track Co-Chairs:	Stefano Bistarelli, Università di Perugia, Italy	
	Martine Ceberio, Univerity of Texas El Paso, USA	
	Eric Monfroy, Universidad Técnica Federico Santa María, Valparaíso, Chile and	
	Université de Nantes, France	
	Francesco Santini, Università di Perugia, Italy	
Track Editorial		. 1115
Conflict History bas	ed Search for Constraint Satisfaction Problem	. 1117
	seille University, LIS, France	
Cyril Terrioux, Aix Man	rseille University, LIS, France	
Expressive Cardinal	ity Constraints on ALCSCC Concepts	. 1123
	che Universität Dresden, Germany	
Inferential Equivale	nce, Normal Forms, and Isomorphisms of Knowledge Bases in Institutions of	
		. 1131
Christoph Beierle, Ferr	uUniversität in Hagen, Germany	
Interpretations and	Models for Assumption-Based Argumentation	. 1139
•	Federal do Ceará, Brazil	
João Alcântara, Univer	sidade Federal do Ceará, Brazil	
	neration of the Preferred Extensions of Abstract Argumentation Frameworks	. 1147
v	Iniversity of Calabria, Italy	
Sergio Greco, Universi	• •	
Francesco Parisi, Univ	ersity of Calabria, Italy	

Representing and Comparing Large Sets of Extensions of Abstract Argumentation Frameworks 1154 Odinaldo Rodrigues, King's College London, UK
Poster Papers
Hybrid Temporal Situation Calculus
Student Research Abstract
Student Research Abstract: Automatic Derivation of Formulas by Graph Embedding and Pattern Matching Network
Student Research Abstract: Modelling the Dynamics of Forgetting and Remembering by a System of Belief Changes
Theme: Distributed Systems MCA - Mobile Computing and Applications Track Track Co-Chairs: Hong Va Leong, The Hong Kong Polytechnic University, China Sheikh Iqbal Ahamed, Marquette University, USA
Track Editorial
A Multi-Objective Indoor Localization Service for Smartphones
A Scalable and Accurate Feature Representation Method for Identifying Malicious Mobile Applications
Acousess: Smartphone-based Logger to Assess Acoustical Conditions – Subjective Noise Conditions on some Circumference and Intraindividual Variation

Ismat Chaib Draa, Univ Fabien Bouquillon, Univ Smail Niar, Université	or Improving Mobile User Satisfaction	200
Jung-Hyun Lee, Korea Woo-Jong Ryu, Korea	vacy-preserving Contextual Advertising Platform on Mobile Devices	208
Poster Papers		
Legitimate User Ide Muhammad Ahmad, Ind Adil Mehmood Khan, Ind Manuel Mazzara, Innop Salvatore Distefano, Un Amjad Ali, Korea Unive	niversity of Messina, Italy	216
Student Research Ab	stract	
Student Research A Muntazir Mehdi, Ulm U	bstract: Smart Mobile Crowdsensing for Tinnitus Research	220
Theme: Distributed	Systems	
	vices, DevOps, and Service-Oriented Architecture Track	
Track Co-Chairs:	Luís Cruz-Filipe, University of Southern Denmark, Denmark	
	Elisabetta Di Nitto, Politecnico di Milano, Italy Jacopo Mauro, University of Southern Denmark, Denmark	
	-	22.4
Track Editorial	Jacopo Mauro , University of Southern Denmark, Denmark	224
Mario Cardarelli, Univ Ludovico Iovino, Gran Paolo Di Francesco, G. Amleto Di Salle, Univer Ivano Malavolta, Vrije	Sasso Science Institute, Italy ran Sasso Science Institute, Italy	225
Amjad Ibrahim, Technik Stevica Bozhinoski, Tec	ration for Microservice Architecture	235

Reactive Microservices for the Internet of Things: A Case Study in Fog Computing	1243
Transparent Tracing of Microservice-based Applications Matheus Santana, Federal University of Pernambuco, Brazil Adalberto Sampaio Jr., Federal University of Pernambuco, Brazil Marcos Andrade, Federal University of Pernambuco, Brazil Nelson S. Rosa, Federal University of Pernambuco, Brazil	1252
Poster Papers	
A Model-driven Workflow for Distributed Microservice Development Florian Rademacher, Dortmund University of Applied Sciences and Arts, Germany Jonas Sorgalla, Dortmund University of Applied Sciences and Arts, Germany Sabine Sachweh, Dortmund University of Applied Sciences and Arts, Germany Albert Zündorf, Universität Kassel, Germany	1260
Theme: AI and Agents	
MLA - Machine Learning and its Applications Track Track Co-Chairs: Keon Myung Lee, Chungbuk National University, South Korea Jee-Hyong Lee, Sungkyunkwan University, South Korea	
An Adaptive Framework for Applying Machine Learning in Smart Spaces Sachin Bhardwaj, Chungbuk National University, South Korea Keon Myung Lee, Chungbuk National University, South Korea Jee-Hyong Lee, Sungkyunkwan University, South Korea	1263
Causality Relationship Among Attributes Applied in an Educational Data Set	1271
Evolving MIMO Multi-Layered Artificial Neural Networks using Grammatical Evolution	1278
Exact Gaussian Process Regression with Distributed Computations Duc-Trung Nguyen, EURECOM, France Maurizio Filippone, EURECOM, France Pietro Michiardi, EURECOM, France	1286
GAN is a Friend or Foe? A Framework to Detect Various Fake Face Images Shahroz Tariq, SUNY Korea, South Korea Sangyup Lee, SUNY Korea, South Korea Hoyoung Kim, SUNY Korea, South Korea Youjin Shin, SUNY Korea, South Korea Simon S. Woo, SUNY Korea, South Korea	1296

How Do Implementation Bugs Affect the Results of Machine Learning Algorithms?
Dario Olianas, Università di Genova, Italy
Filippo Ricca, Università di Genova, Italy
Nicoletta Noceti, Università di Genova, İtaly
Influence Maximization for Effective Advertisement in Social Networks: Problem,
Solution, and Evaluation
Suk-Jin Hong, Hanyang University, South Korea Yun-Yong Ko, Hanyang University, South Korea
Moonjeung Joe, Gyeongnam National University of Science and Technology, South Korea
Sang-Wook Kim, Hanyang University, South Korea
Marlon – A Domain-Specific Language for Multi-Agent Reinforcement Learning on Networks 1322
Tim Molderez, Vrije Universiteit Brussel, Belgium
Bjarno Oeyen, Vrije Universiteit Brussel, Belgium
Coen De Roover, Vrije Universiteit Brussel, Belgium Wolfgang De Meuter, Vrije Universiteit Brussel, Belgium
Trongang De Meuter, The Chiversiten Drusser, Beignum
Population Anomaly Detection through Deep Gaussianization
David Tolpin, Offtopia, Israel
Real-Time Botnet Detection using Nonnegative Tucker Decomposition
Hideaki Kanehara, Waseda University, Japan
Yuma Murakami, Waseda University, Japan Jumpei Shimamura, Clwit Inc., Japan
Takeshi Takahashi, National Institute of Information and Communications Technology, Japan
Daisuke Inoue, National Institute of Information and Communications Technology, Japan
Noboru Murata, Waseda University, Japan
Convolutional Neural Network with Structural Input for Visual Object Tracking
Arif Mahmood, Information Technology University, Pakistan
Soon Ki Jung, Kyungpook National University, South Korea
Poster Papers
A TROUBLE OF THE STATE OF THE S
An Efficient Deep Learning Platform for Detecting Objects
Younggwan Kim, Soongsil University, South Korea
Juw Won Park, University of Louisville, USA
Sung Y. Shin, South Dakota University, USA
Jiman Hong, Soongsil University, South Korea
M I' I I ID I'' WI'ID A A I' C CCD' MILL 1255
Machine Learning based Real-Time Vehicle Data Analysis for Safe Driving Modeling
Pamul Yadav, Ulsan National Institute of Science and Technology, South Korea Sangsu Jung, MtoV Inc., South Korea
Dhananjay Singh, Hankuk University of Foreign Studies, South Korea

Yvan Lucas, Universita Pierre-Edouard Portie Léa Laporte, INSA Lye Sylvie Calabretto, INS Olivier Caelen, ATOS Liyun He-Guelton, AT	er, INSA Lyon, France on, France A Lyon, France Worldline, France	1359
	ous Authentication System using a Biologically Inspired Machine Learning Study	1362
	rican University of Beirut, Lebanon	1302
	can University of Beirut, Lebanon	
Theme: Distribute	d Systems	
NET - Networking	Track	
Track Co-Chairs:	Mário M. Freire, University of Beira Interior, Portugal	
	Marília Curado, University of Coimbra, Portugal	
	Ivan Ganchev, University of Limerick, Ireland and University of Plovdiv "Paisii Hilendarski", Bulgaria,	
Ricardo Borges Almei Victor Covalski, Feder Roger Machado, Fede Diórgenes Yuri Leal d Adenauer Corrêa Yam Lucas Medeiros Dona	hitectural Model for Network Security Exploring Situational Awareness	1365
On Simplifying Co.	ngestion Window Handling for CMT-SCTP	1373
1 0	ner, Technological Federal University of Paraná, Brazil	1373
	Technological Federal University of Paraná, Brazil	
Anelise Munaretto, Te	chnological Federal University of Paraná, Brazil	
Andreas Fischer, Deg	ween Quantum Circuit Design Automation and Virtual Network Embedding gendorf Institute of Technology, Germany Institute of Technology, Austria	1378
Reducing Energy C	Consumption in SDN-based Data Center Networks through Flow	
	tegies	1384
	terato, Pontificia Universidade Católica do Rio Grande do Sul, Brazil	
0	Pontificia Universidade Católica do Rio Grande do Sul, Brazil	
	Institute of Education, Science and Technology, Brazil arques, Pontifícia Universidade Católica do Rio Grande do Sul, Brazil	
0	Souza, Pontificia Universidade Católica do Rio Grande do Sul, Brazil Souza, Pontificia Universidade Católica do Rio Grande do Sul, Brazil	

Poster Papers

Helge Parzyjegla, Uni Christian Wernecke, U Gero Mühl, Universitä Eike Schweissguth, Un	tent-based Publish/Subscribe with OpenFlow versität Rostock, Germany Iniversität Rostock, Germany it Rostock, Germany niversität Rostock, Germany niversität Rostock, Germany niversität Rostock, Germany	. 1392
Student Research A	bstract	
Radio Technology f	Abstract: Extending LoRa Networks: Dynamic Routing Protocols and Sub-GHz for Very Long Range Mesh Networks	. 1396
Theme: System So	ftware and Security	
NGPS - Next Gene	eration Programming Paradigms and Systems Track	
Track Co-Chairs:	Davide Ancona, Università di Genova, Italy	
	Frédéric Loulergue, Northern Arizona University, USA	
	Mirko Viroli, Alma Mater Studiorum - Università di Bologna, Italy	
	Danilo Pianini, Alma Mater Studiorum - Università di Bologna, Italy	
Track Editorial		. 1398
Arvid Jakobsson, Huav Frédéric Dabrowski, U	ters in BSPlib	. 1400
Track Co-Chairs:	George Hamer, South Dakota State University, USA	
	Bongjae Kim, Sun Moon Univeristy, South Korea	
	Jaeheung Lee, Daejeon University, South Korea	
	tailed Mathematical Model for the Aircraft Landing Problem on a Single and ystem	1408
Meriem Ben Messaoua	d, University of Tunis, Tunisia ersity of Tunis, Tunisia	
Binary Transforma	tion of Applications to run on Bare PCs	1416
Rasha Almajed, Towso	on University, USA	
Ramesh Karne, Towso		
Alexander Wijesinha, I	Towson University, USA	
Jaeheong Ahn, Univers Choulseung Hyun, Uni Donghee Lee, Univers	x Allocation for Memory-Technology Storage Targeted File Systems sity of Seoul, South Korea iversity of Seoul, South Korea ity of Seoul, South Korea ity of Seoul, South Korea itional Institute of Science and Technology, South Korea	. 1424
,	V 0/	

A Robust and Secure Backup System for Protecting Malware 1432 Myungjoon Shon, Soongsil University, South Korea Heejin Kim, Soongsil University, South Korea Kicheol Park, Soongsil University, South Korea Juw Won Park, University of Louisville, USA Kwanghee Won, South Dakota State University, USA Jiman Hong, Soongsil University, South Korea
HPanal: A Framework for Analyzing Tradeoffs of Huge Pages
Multithreaded Double Queuing for Balanced CPU-GPU Memory Copying
My Cloudy Time Machine: A Scalable Microservice-based Platform for Data Processing in Cloud-Edge Systems – A Proof of Concept for the ROBIN-Cloud Project
Poster Papers
A Rendezvous Node Selection Protocol for Drone-based Data Collection 1459 Hong Min, Hoseo University, South Korea Kwangsoo Jo, Hoseo University, South Korea Jinman Jung, Hannam University, South Korea Bongjae Kim, Sun Moon University, South Korea Junyoung Heo, Hansung University, South Korea
Predicting 24-hours Ahead Photovoltaic Power Output using Forecast Information

Track Co-Chairs:	Ronald Petrlic, Federal Commissioner for Data Protection and Freedom of Information, Germany Christoph Sorge, Saarland University, Germany	
Track Editorial		1465
Mina Namazi, Univers Cihan Eryonucu, Bilke Erman Ayday, Bilkent	nt University, Turkey	1467
Wallet Platform Fatbardh Veseli, Capg Jetzabel Serna Olvera, Tobias Pulls, Karlstad	Goethe University Frankfurt, Germany	1475
	ty of Padua, Italy sity of Padua, Italy	1484
Amir Shayan Ahmadian Daniel Strüber, Univer	System Design Modeling based on Privacy Features n, University of Koblenz Landau, Germany sity of Koblenz Landau, Germany of Koblenz Landau, Germany	1492
Privacy Settings in Christoph Stach, Unive	d Privacy Requirements Elicitation – EPICUREAN: An Approach to Simplify IoT Applications with Respect to the GDPR ersity of Stuttgart, Germany eity of Stuttgart, Germany	1500
Poster Papers		
Jihye Kim, Kookmin U. Hankyung Ko, Hanyan	icated Image Locker for Video niversity, South Korea g University, South Korea University, South Korea	1508
A Comparison of Sy Pierre Dewitte, KU Leuver Kim Wuyts, KU Leuver Laurens Sion, KU Leuve Dimitri Van Landuyt, F Ivo Emanuilov, KU Leu Peggy Valcke, KU Leu Wouter Joosen. KU Le	n, Belgium ven, Belgium KU Leuven, Belgium uven, Belgium ven, Belgium	1512

Theme: System Software and Security

PDP - Privacy by Design in Practice Track

PL - Programmin	g Languages Track	
Track Co-Chairs:	Barrett R. Bryant, University of North Texas, USA	
	Rajeev Raje, Indiana University-Purdue University-Indianapolis, USA	
Track Editorial		1516
An Attribute Lang	uage Definition for Adaptable Parsing Expression Grammars	1518
Elton M. Cardoso, Un	niversidade Federal de Ouro Preto, Brazil	
Rodrigo G. Ribeiro, U	Iniversidade Federal de Ouro Preto, Brazil	
Leonardo V.S. Reis, U	Iniversidade Federal de Juiz de Fora, Brazil	
Mariza A.S. Bigonha,	Universidade Federal de Minas Gerais, Brazil	
Roberto S. Bigonha, U	Iniversidade Federal de Minas Gerais, Brazil	
Vladimir O. Di Iorio,	Universidade Federal de Viçosa, Brazil	
CPEG: A Typed Tr	ree Construction from Parsing Expression Grammars with Regex-Like Captures	1526
Daisuke Yamaguchi,	Yokohama National University, Japan	
Kimio Kuramitsu, Jap	oan Women's University, Japan	
Musket: A Domain	-Specific Language for High-Level Parallel Programming with	
Algorithmic Skelet	ons	1534
Christoph Rieger, Uni	iversity of Münster, Germany	
Fabian Wrede, Univer	rsity of Münster, Germany	
Herbert Kuchen, Univ	versity of Münster, Germany	
PureMEM: A Stru	ctured Programming Model for Transiently Powered Computers	1544
Caglar Durmaz, Ege	·	
	Ege University, Turkey	
Geylani Kardas, Ege		
	ual Solutions from Encapsulated Search with a Potentially Infinite Search Space	1552
Jan C. Dageförde, Un	iversity of Münster, Germany	
Herbert Kuchen, Univ	versity of Münster, Germany	
π: Towards a Simp	ole Formal Semantic Framework for Compiler Construction	1562
	iversidade Federal Fluminense, Brazil	
Poster Papers		
Applying a Data-ce	entric framework for Developing Model Transformations	1570
	, Federal University of Paraná, Brazil	
0	Fabro, Federal University of Paraná, Brazil	
Fvr: A Memory-sa	fe and Thread-safe Systems Programming Language	1574
	ity of Duisburg-Essen, Germany	
	iversity of Duisburg-Essen, Germany	
	Iniversity of Duisburg-Essen, Germany	
Parallel Programm	ning with Coq: Map and Reduce Skeletons on Trees	1578
	ern Arizona University, USA	2.0
* *	Northern Arizona University, USA	

Theme: System Software and Security

RE - Requirements	s Engineering Track	
Track Co-Chairs:	Maria Lencastre, Universidade de Pernambuco, Brazil	
	João Araújo, NOVA LINCS, Universidade Nova de Lisboa, Portugal	
Track Editorial		1582
Luis H. Garcia Paucar, Nelly Bencomo, Aston		1584
Feng Chen, National In Norah Power, University J.J. Collins, University	• •	1592
Applicability and Li Marian Daun, Universi Viktoria Stenkova, Univ Lisa Krajinski, Univers Jennifer Brings, Univer Torsten Bandyszak, Un	Collaborative Groups of Cyber-Physical Systems with GRL: Reflections on mitations based on Two Studies Conducted in Industry	1600
Security Requireme Romain Laborde, Unive Sravani Teja Bulusu, U Ahmad Samer Wazan, E Francois Barrere, Univ	lology to Help Security Architects in Eliciting High-Level Network nts ersity Paul Sabatier, France Iniversity Paul Sabatier, France Versity Paul Sabatier, France versity Paul Sabatier, France Iniversity Paul Sabatier, France Iniversity Paul Sabatier, France	1610
Requirements for Pr Youssou Ndiaye, University Oliver Barais, University Arnaud Blouin, University Ahmed Bouabdallah, Il Nicolas Aillery, Orango	ty Rennes, France sity Rennes, France MT Atlantique, France	1620
Poster Papers		
M. Masin, IBM, Israel F. Palumbo, Università J. Adriaanse, TNO, The H. Myrhaug, Ambiesen	se, UK tà della Svizzera Italiana, Switzerland nia Space, Spain	1629

Theme: Software Design and Development

Student Research Abstract

	Abstract: SRCMIMM: Managing Requirements Change Activities in Global	1.622
	t <mark>ent</mark> bar, Chongqing University, China	1633
Thome: System So	ftware and Security	
•	•	
	er Systems: Theory and Applications Track	
Track Co-Chairs:	Markus Zanker, Free University of Bozen-Bolzano, Italy	
	Li Chen, Hong Kong Baptist University, China Panagiotis Symeonidis, Free University of Bozen-Bolzano, Italy	
	Yong Zheng, Illinois Institute of Technology, USA	
Track Editorial		1637
		1.620
	Diversification of Recommendations	1639
	ty College Cork, Ireland Sity College Cork, Ireland	
Global versus Indiv	vidual Accuracy in Contextual Multi-Armed Bandit	1647
Nicolas Gutowski, ER	IS, ESEO-TECH, France	1017
Tassadit Amghar, Uni	versité d'Angers - LERIA, France	
Olivier Camp, ERIS, I		
Fabien Chhel, ERIS, E	ESEO-TECH, France	
Matrix Factorization	on based Heuristics for Constraint-based Recommenders	1655
	raz University of Technology, Austria	
v	Graz University of Technology, Austria	
•	niversity of Technology, Austria	
Muesluem Atas, Graz	University of Technology, Austria	
	mmendations with Fairness	1663
Dimitris Sacharidis, T	echnische Universität Wien, Austria	
Towards Explainin	g Recommendations through Local Surrogate Models	1671
_	ul University of Campina Grande, Brazil	
Leandro Marinho, Fed	deral University of Campina Grande, Brazil	
Poster Papers		
CoRE: A Cold-star	t Resistant and Extensible Recommender System	1679
	ity College Dublin, Ireland	
*	nity College Dublin, Ireland	
	rinity College Dublin, Ireland	
-	Trinity College Dublin, Ireland ity College Dublin, Ireland	
Seamus Lawless, Irini	ny Conege Duoini, Ireiana	

Preselection of Documents for Personalized Recommendations of Job Postings based on Word Embeddings	
Guillermo Carbonell, U	Iniversity of Duisburg-Essen, Germany Iniversity of Duisburg-Essen, Germany Sity of Duisburg-Essen, Germany
Theme: Software D	esign and Development
SATTA - Software	Architecture: Theory, Technology, and Applications Track
Track Co-Chairs:	Marcello M. Bersani, Politecnico di Milano, Italy
	Sungwon Kang, Korea Advanced Institute of Science and Technology, South Korea Patrizia Scandurra, DIGIP, University of Bergamo, Italy
Track Editorial	
Yun Zhang, University of Xiwei Xu, University of Suhrid Satyal, University Shiping Chen, University	ture for Data Exploration as a Service of New South Wales, Australia New South Wales, Australia ty of New South Wales, Australia ty of New South Wales, Australia of New South Wales, Australia
Aiding the Realization Marco Autili, University Amleto Di Salle, University Francesco Gallo, University Claudio Pompilio, University Massimo Tivoli, University	rsity of L'Aquila, Italy ersity of L'Aquila, Italy versity of L'Aquila, Italy
Aymen Daoudi, Univers Ghizlane ElBoussaidi, I Naouel Moha, Universi	ly of MVC-based Architectural Patterns in Android Apps
Panagiotis Kouros, Uni Theodore Chaikalis, Un Elvira-Maria Arvanitou Alexander Chatzigeorgi Apostolos Ampatzoglou	sed Technical Debt Management

	fication on Software Architecture Knowledge Management: A Student	1721
	ocus Group Studyannes Kepler University, Austria	1/31
	nannes Kepler University, Austria	
Theme: Software I	Design and Development	
SE - Software Eng	gineering Track	
Track Co-Chairs:	Tao Zhang, Harbin Engineering University, China Byungjeong Lee, University of Seoul, South Korea Eunjee Song, Baylor University, USA	
	Luigee Bong, Buytor Oniversity, Ob.1	
Track Editorial		1741
A Model-Driven A	pproach for Behavior-Driven GUI Testing	1742
Hendrik Bünder, itemi	is AG, Germany	
Herbert Kuchen, Univ	versity of Münster, Germany	
	to Automatic Query Reformulation for IR-based Bug Localization	1752
	kwan University, South Korea	
Eunseok Lee, Sungkyu	inkwan University, South Korea	
On the Classification	on of Software Change Messages using Multi-label Active Learning	1760
	r Institute of Management of Sousse, Tunisia	
	ouer, Rochester Institute of Technology, USA Mohammad Bin Fahd University, Saudi Arabia	
-	oud, Higher Institute of Management of Tunis, Tunisia	
		1770
	scale JUnit-Test Analysis in the Wild	1/68
,	ia aetta Svizzera Hattana, Switzertana Sidad Privada Boliviana, Bolivia	
	rsità della Svizzera Italiana, Switzerland	
Live and Global Co	onsistency Checking in a Collaborative Engineering Environment	1776
	öls, Johannes Kepler University, Austria	1770
Atif Mashkoor, Johann	nes Kepler University, Austria	
Alexander Egyed, Joh	annes Kepler University, Austria	
MarValous: Machi	ne Learning based Detection of Emotions in the Valence-Arousal Space in	
	ing Text	1786
	iversity of New Orleans, USA	
	University of New Orleans, USA iversity of New Orleans, USA	
Minnaz I . Zioran, On	iversity of New Orleans, OSA	
NodeMOP: Runtin	ne Verification for Node.js Applications	1794
Filippo Schiavio, Univ	versità della Svizzera Italiana, Switzerland	
	ità della Svizzera Italiana, Switzerland	
Daniele Bonetta, Orac Andrea Rosà Univers	zie, USA ità della Svizzera Italiana, Switzerland	
	rsità della Svizzera Italiana, Switzerland	
Parallal Proparty C	Checking with Staged Symbolic Execution	1902
Junye Wen, Texas Stat		1002
Guowei Yang, Texas S	·	

Revisiting Continuous Deployment Maturity: A Two-Year Perspective 1810 Simo Mäkinen, University of Helsinki, Finland Timo Lehtonen, Solita Ltd, Finland Terhi Kilamo, Tampere University of Technology, Finland Mikko Puonti, Solita Ltd, Finland Tommi Mikkonen, University of Helsinki, Finland Tomi Männistö, University of Helsinki, Finland
Runtime Observable and Adaptable UML State Machines: Models@run.time Approach
A Case Study of Systematic Top-down Design of Cyber-physical Models with Integrated Validation and Formal Verification
Toward a Declarative Language to Generate Explorable Sets of Models Théo Le Calvar, Université d'Angers - LERIA, France Fabien Chhel, ERIS, ESEO-TECH, France Frédéric Jouault, ERIS, ESEO-TECH, France Frédéric Saubion, Université d'Angers - LERIA, France
Usability Evaluation of VR products in Industry – A Systematic Literature Review
Using Design Sprint as a Facilitator in Active Learning for Students in the Requirements Engineering Course: An Experience Report
Poster Papers
Classifying Software Issue Reports through Association Mining
Mining Constraints for Monitoring Systems of Systems
Privacy Preserving 2-party Queries on Bipartite Graphs with Private Set Intersection
Synthesising Call Sequences from OCL Operational Contracts

Marcel Heimlich, Texa	Time Parametrized Testing of Local Variables	374
Towards a Requirer Gonçalo Miguéis, FCT João Araujo, FCT/UNI Ana Moreira, FCT/UNI	., Portugal	378
Danielle Gaither, Univ Kaushik Madala, Unive Hyunsook Do, Universi	ng the Syntax and Semantics of Requirements Models	381
Student Research Ab	stract	
	ostract: Empirical Study on Developer's Perception regarding Reward Practices 18 National University, Pakistan	385
Theme: System Soj	tware and Security	
SEC - Computer S	ecurity Track	
Track Co-Chairs:	Giampaolo Bella, Università di Catania, Italy Rosario Giustolisi, IT University of Copenhagen, Denmark	
Track Editorial		388
Rui Xu, Chinese Acade Xiaojun Chen, Chinese	Password Model with Memorable Unit-Based Recurrent Neural Networks	390
Valentin Zieglmeier, Te Severin Kacianka, Tech Thomas Hutzelmann, T	e IDS Testbed for Connected Vehicles schnical University of Munich, Germany enical University of Munich, Germany echnical University of Munich, Germany Technical University of Munich, Germany	398
Jay Ligatti, University Cagri Cetin, University Shamaria Engram, Uni Jean-Baptiste Subils, U		006
Detection of Algorit Jan Spooren, KU Leuve Davy Preuveneers, KU Lieven Desmet, KU Leu Peter Janssen, , Belgiu Wouter Joosen, KU Leu	Leuven, Belgium wen, Belgium m)16

Enabling Change-Driven Workflows in Continuous Information Security Management
Secure Multi-Execution in Android
Spectre without Shared Memory
Static Security Evaluation of an Industrial Web Application 1952 Gebrehiwet B. Welearegai, University of Potsdam, Germany Max Schlueter, University of Potsdam, Germany Christian Hammer, University of Potsdam, Germany
The ROP Needle: Hiding Trigger-based Injection Vectors via Code Reuse
Towards Automated Network Mitigation Analysis 1971 Patrick Speicher, Saarland University, Germany Marcel Steinmetz, Saarland University, Germany Jörg Hoffmann, Saarland University, Germany Michael Backes, Saarland University, Germany Robert Künnemann, Saarland University, Germany
Student Research Abstract
Student Research Abstract: "Hard to Understand, Easy to Ignore": An Automated Approach to Predict Mobile App Permission Requests
Student Research Abstract: Digital Forensics in the Internet of Things

SFECS - Sustaina	bility of Fog/Edge Computing Systems Track	
Track Co-Chairs:	Christian Esposito, University of Napoli "Federico II", Italy Florin Pop, University POLITEHNICA of Bucharest, and National Institute of Research and Development in Informatics, Romania Chang Choi, Chosun University, South Korea	
Track Editorial		1986
Maria Teresa Gonzalez	v .	1988
Maria Rita Palattella, Ridha Soua, University Abdelmajid Khelil, Lan	he Key for Seamless Connectivity Handover in Future Vehicular Networks Luxembourg Institute of Science and Technology, Luxembourg of Luxembourg, Luxembourg adshut University of Applied Science, Germany sity of Luxembourg, Luxembourg	1996
Cellular Networks . Devarani Devi Ningom	Optimization for Multicast D2D Communications Underlaying LTE-A Uplink Sebam, Chosun University, South Korea University, South Korea	2001
Zakaria Maamar, Zaye Thar Baker, Liverpool Noura Faci, Université Emir Ugljanin, State U Mohammed Al Khafaji	John Moores University, UK	2008
Jeongin Kim, Chosun U	Delling Correction Method of Twitter Message University, South Korea University, South Korea University, South Korea	2016
Theme: System Soj	ftware and Security	
	intensive Systems-of-Systems Track	
Track Co-Chairs:	Flavio Oquendo, IRISA - UMR CNRS — Univ. Bretagne Sud, France Khalil Drira, LAAS - CNRS — Univ. Toulouse, France Axel Legay, Université catholique de Louvain, Belgium Thais Vasconcelos Batista, DIMAp — UFRN, Brazil	
Track Editorial		2020
Damir Nešić, Royal Ins Mattias Nyberg, Royal	ct-Line Safety Cases from Contract-Based Specifications	2022

Theme: Information Systems

Towards a Fractionation-based Verification: Application on SysML Activity Diagrams
Poster Papers
The Preliminary Results of a Mapping Study of Deployment and Orchestration for IoT
Data-Driven Environment Modeling for Adaptive System-of-Systems 2044 Yong-Jun Shin, Korea Advanced Institute of Science and Technology, South Korea Young-Min Baek, Korea Advanced Institute of Science and Technology, South Korea Eunkyoung Jee, Korea Advanced Institute of Science and Technology, South Korea Doo-Hwan Bae, Korea Advanced Institute of Science and Technology, South Korea
Theme: Information Systems
SONAMA - Social Network and Media Analysis Track
Track Co-Chairs: Sang-Wook Kim, Hanyang University, South Korea
Track Editorial
A Computationally Efficient Multi-modal Classification Approach of Disaster-related Twitter Images 2050 Yara Rizk, American University of Beirut, Lebanon Hadi Samer Jomaa, American University of Beirut, Lebanon Mariette Awad, American University of Beirut, Lebanon Carlos Castillo, Universitat Pompeu Fabra, Brazil
Brand Community Analysis on Social Networks using Graph Representation Learning
Collaboration Profiles and their Impact on Musical Success Mariana O. Silva, Universidade Federal de Minas Gerais, Brazil Laís M. Rocha, Universidade Federal de Minas Gerais, Brazil Mirella M. Moro, Universidade Federal de Minas Gerais, Brazil
Community Evolution Prediction in Dynamic Social Networks using Community Features' Change Rates
Event Detection for Exploring Emotional Upheavals of Depressive People

Identification of Credulous Users on Twitter
KidsGUARD: Fine Grained Approach for Child Unsafe Video Representation and Detection
Multidimensional Analysis of Hot Events from Social Media Sources
Poster Papers
A Tool for Spatio-Temporal Analysis of Social Anxiety with Twitter Data
Evaluating Neural Word Embeddings Created from Online Course Reviews for Sentiment Analysis 2124 Danilo Dessì, University of Cagliari, Italy Mauro Dragoni, Fondazione Bruno Kessler, Italy Gianni Fenu, University of Cagliari, Italy Mirko Marras, University of Cagliari, Italy Diego Reforgiato Recupero, University of Cagliari, Italy
Knapsack-based Reverse Influence Maximization for Target Marketing in Social Networks
Predicting Event Attendance exploring Social Influence
Semantic Analysis for Paraphrase Identification using Semantic Role Labeling

SP - Software Pla	tforms Track	
Track Co-Chairs:	Jinman Jung, Hannam University, South Korea Jun Huang, Chongqing University of Posts and Telecom, China	
Track Editorial		2139
Jinwoo Lee, Soongsil Yena Lee, Soongsil Un Ming Jin, Soongsil Un John Kim, Utica Colle	iversity, South Korea	2140
Gibeom Song, Hannar	nentation of Emulab-based Malware Analysis Service through EmuLib In University, South Korea University, South Korea	2146
Junghoon Kim, Samsu Sundoo Kim, Hanyang	O stack Design for Wearable Device ing Electronics, South Korea g University, South Korea g University, South Korea outh Korea	2152
Poster Papers		
Turbines consideri Taehyoung Kim, Kore Jaehyun Kim, Korea E Jieun Lee, Korea Elec	ementation Wind Farm Real-time Simulator with Various Types of Wind ng Wake Effect a Electronics Technology Institute, South Korea Electronics Technology Institute, South Korea tronics Technology Institute, South Korea ea Electronics Technology Institute, South Korea	2160
	for Collecting and Sharing Software Metrics Data	2164
Theme: Software	Design and Development	
SVT - Software Vertrack Co-Chairs:	erification and Testing Track Matthias Guedemann, Diffblue Ltd., UK Leonardo Mariani, University of Milano Bicocca, Italy	
Predrag Filipovikj, M Guillermo Rodriguez-	t <mark>e Checking of Simulink Models</mark> älardalen University, Sweden Navas, Mälardalen University, Sweden älardalen University, Sweden	2168
	erbilt University, USA	2178

Theme: System Software and Security

Allan Blanchard, Inria Nikolai Kosmatov, CEA	s: Comparison of Two Proof Approaches for a List Module	2186
Ramon Janssen, Radbo	utations to Specifications: The Corner Cases of ioco	2196
	aporal Properties of Functions for Runtime Verification s, University of Manchester and CERN, UK of Manchester, UK	2206
	Information Flows – An Abstract Interpretation-based Hyperanalysis for	
	iversity of Verona, Italy rsity of Verona, Italy	2215
•	npiler Equivalence on C++ Object-Oriented Mutation Operators Universidad de Cádiz, Spain idad de Sevilla, Spain	2224
Mihai Herda, Karlsruh Shmuel Tyszberowicz, S Joachim Müssig, Karls	Test Case Generation for Information-Flow Properties e Institute of Technology, Germany Southwest University, China ruhe Institute of Technology, Germany Isruhe Institute of Technology, Germany	2231
Theme: Informatio	n Systems	
· ·	Veb 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	
Track Editorial		2239
Mirko Cesarini, Univer Fabio Mercorio, Unive Mario Mezzanzanica, U Vincenzo Moscato, Uni	g Networks of Computer Scientists as a Graph sity of Milano-Bicocca, Italy rsity of Milano-Bicocca, Italy Iniversity of Milano-Bicocca, Italy versity of Naples Federico II, Italy iversity of Naples Federico II, Italy	2240
Emir Muñoz, National Pasquale Minervini, Un	Ality Constraints on Neural Link Predictors University of Ireland Galway, Ireland niversity College London, UK onal University of Ireland Galway, Ireland	2243
Barbara Catania, Univ	iversità di Genova, Italy	2251

GeoSensor: Semantifying Change and Event Detection over Big Data Nikiforos Pittaras, NCSR "Demokritos" and University of Athens, Greece George Papadakis, University of Athens, Greece George Stamoulis, University of Athens, Greece Giorgos Argyriou, University of Athens, Greece Efi Karra Taniskidou, University of Athens, Greece Emmanouil Thanos, University of Athens, Greece George Giannakopoulos, NCSR "Demokritos", Greece Manolis Koubarakis, University of Athens, Greece	. 2259
How Many and What Types of SPARQL Queries can be Answered through Zero-Knowledge Link Traversal? Pavlos Fafalios, Leibniz University of Hanover, Germany Yannis Tzitzikas, FORTH-ICS, Greece	. 2267
Improving the Performance of Querying Multidimensional RDF Data using Aggregates	. 2275
Partitioning and Local Matching Learning of Large Biomedical Ontologies Amir Laadhar, Toulouse Institute of Computer Science Research, France Faiza Ghozzi, University of Sfax, Tunisia Imen Megdiche, Toulouse Institute of Computer Science Research, France Franck Ravat, Toulouse Institute of Computer Science Research, France Olivier Teste, Toulouse Institute of Computer Science Research, France Faiez Gargouri, University of Sfax, Tunisia	. 2285
Semi-Automatic Ontology-Driven Development Documentation – Generating Documents from RDF Data and DITA Templates	. 2293
Using Contemporary Constraints to Ensure Data Consistency David Abián, University of Zaragoza, Spain Jorge Bernad, University of Zaragoza, Spain Raquel Trillo-Lado, University of Zaragoza, Spain	. 2303
Poster Papers	
The Scientific Events Ontology of the OpenResearch.org Curation Platform Said Fathalla, Universität Bonn and Alexandria University, Germany Sahar Vahdati, Universität Bonn, Germany Sören Auer, Leibniz University of Hannover and TIB Leibniz Information Center for Science and Technology, Germany Christoph Lange, Universität Bonn and Fraunhofer IAIS, Germany	. 2311
Student Research Abstract	
Student Research Abstract: User's Profile Ontology-Based Semantic Model for Personalized Hotel Room Recommendation in the Web of Things	. 2314

UE - Usability Eng	ineering Track	
Track Co-Chairs:	Eduardo Mosqueira Rey, University of A Coruña, Spain	
	Vicente Moret Bonillo, University of A Coruña, Spain	
	David Alonso Ríos, University of A Coruña, Spain	
Track Editorial		2317
_	of In-Car Auditory-Vocal Interfaces on Visuospatial Sketchpad based on a	
	Pattern Test	2319
	and The University of Tokyo, Japan Iniversity of Tokyo, Japan	
	Motor Corporation, Japan	
	n Motor Corporation, Japan	
Masamitsu Furukawa,	Nissan Motor Corporation, Japan	
	an Motor Corporation, Japan	
	ssan Motor Corporation, Japan	
	niversity of Tokyo, Japan iversity of Tokyo, Japan	
Rafael Fontinele Ribein Matheus de Meneses C Pedro Almir Martins de	Discovery based on the Automatic Detection of Usability Smells	2328
Poster Papers		
Isaiah Liljestrand, New	orado School of Mines, USA	2336
-	aluation Focused on Viewpoints and Embodiment	2340
	versidade de Fortaleza, Brazil o Rodrigues, Universidade de Fortaleza, Brazil	
Theme: Software D	Design and Development	
VSPLE - Variability	y and Software Product Line Engineering Track	
Track Co-Chairs:	Abdelhak-Djamel Seriai, University of Montpellier, France	
	Tewfik Ziadi, University Pierre et Marie Curie, France	
	lity Metamodel for Enabling Unified End-to-End Traceability in Software	22.4.4
	and University of Applied Sciences and Arts, Germany	2344
	University of Gothenburg, Sweden	
	le & Cie. KG, Germany	
Sabine Sachweh, Dortn	nund University of Applied Sciences and Arts, Germany	

Theme: Software Design and Development

Evaluating Variability at the Software Architecture Lev <i>Ana Paula Allian, University of São Paulo, Brazil Bruno Sena, University of São Paulo, Brazil</i>	rel: An Overview
Elisa Yumi Nakagawa, University of São Paulo, Brazil	
Test Case Selection using Structural Coverage in Softwa Constrained Scenarios	
Urtzi Markiegi, Mondragon Unibertsitatea, Spain Aitor Arrieta, Mondragon Unibertsitatea, Spain	
Leire Etxeberria, Mondragon Unibertsitatea, Spain Goiuria Sagardui, Mondragon Unibertsitatea, Spain	
Poster Papers	
Towards Variant Management and Change Impact Ana	
Process-Product Lines	
Muhammad Atif Javed, Mälardalen University, Sweden Barbara Gallina, Mälardalen University, Sweden	
Anna Carlsson, OHB Sweden, Sweden	
Theme: Distributed Systems	
WCN - Selected Areas of Wireless Communication	s and Networking Track
Track Co-Chairs: Dongkyun Kim, Kyungpook National Wei Wang, San Diego State Universit	University, South Korea
Track Editorial	
A Matching based Coexistence Mechanism between eME Anupam Kumar Bairagi, Kyung Hee University, South Korea Md. Shirajum Munir, Kyung Hee University, South Korea Madyan Alsenwi, Kyung Hee University, South Korea Nguyen H. Tran, The University of Sydney, Australia Choong Seon Hong, Kyung Hee University, South Korea	BB and uRLLC in 5G Wireless Networks 2377
A New CoAP Congestion Control Scheme using Messag Minseok Kim, Kyungpook National University, South Korea Sungwon Lee, Kyungpook National University, South Korea Muhammad Toaha Raza Khan, Kyungpook National University, Junho Seo, Kyungpook National University, South Korea Yeongjoon Bae, Kyungpook National University, South Korea Yonghwan Jeong, Kyungpook National University, South Korea Dongkyun Kim, Kyungpook National University, South Korea	
An Adaptive Energy Efficient Scheme for Energy Const Bilal Jan, FATA University, Pakistan Haleem Farman, Islamia College Peshawar, Pakistan Murad Khan, Sarhad University of Science & Technology, Pakis Syed Hassan Ahmed, Georgia Southern University, USA	
Energy-Aware Medium Access Control for Energy-Har Dohyung Kim, Kangwon National University, South Korea Youngbae Ko, Ajou University, South Korea	vesting Machine-to-Machine Networks 2399

On the Feasibility of using IEEE 802.11ad mmWave for Accurate Object Detection Hossein Ajorloo, University College Cork, Ireland Cormac J. Sreenan, University College Cork, Ireland Adrian Loch, IMDEA Networks Institute, Spain Joerg Widmer, IMDEA Networks Institute, Spain	2406
Reliability of ADS-B Communications: Novel Insights based on an Experimental Assessment	2414
SoftH: Soft Handover Multicriteria Mechanism Guilherme R.M. de Oliveira, Pontifical Catholic University of Minas Gerais, Brazil Carlos Renato Storck, Centro Federal de Educação Tecnológica de Minas Gerais, Brazil Fátima Duarte-Figueiredo, Pontifical Catholic University of Minas Gerais, Brazil	2422
Poster Papers	
A New Fuzzy/Evidential Approach to Address the Area Coverage Problem in Mobile Wireless Sensor Networks Adda Boualem, Ecole Nationale Supérieur d'informatique, Algeria Youcef Dahmani, Ibn Khaldoun University, Algeria Marwane Ayaida, CReSTIC, University of Reims Champagne-Ardenne, France Cyril de Runz, CReSTIC, University of Reims Champagne-Ardenne, France	2430
Theme: Information Systems WICE - Web-based Technologies for Interactive Computing Education Track Track Co-Chairs: Maiga Chang, Athabasca University, Canada Hasan Jamil, University of Idaho, USA Track Editorial	2434
A Web-Based E-Assessment Tool for Design Patterns in UML Class Diagrams	2433
Anchoring Interactive Points of Interest on Web-based Instructional Video: Effects on Students' Interaction Behavior and Perceived Experience Maria da Graça C. Pimentel, University of São Paulo, Brazil Cristiane A. Yaguinuma, Federal Institute of São Paulo, Brazil Diogo S. Martins, Federal University of ABC, Brazil Isabela Zaine, University of São Paulo, Brazil	2445
Integrating Context-Awareness and Multi-Criteria Decision Making in Educational Learning	2453
Meet Cyrus – The Query by Voice Mobile Assistant for the Tutoring and Formative Assessment of	
SQL Learners Josue Espinosa Godinez, University of Idaho, USA Hasan M. Jamil, University of Idaho, USA	2461

Poster Papers

Resources for Healthcare Workflow Modeling and Analysis Hossain Shahriar, Kennesaw State University, USA Chi Zhang, Kennesaw State University, USA Md Arabin Islam Talukder, Kennesaw State University, USA Sheikh Iqbal Ahamed, Marquette University, USA		2469
Niels Heller, Ludwig M Sebastian Mader, Ludw	of its Parts: Designing Learning Formats from Core Components	2473
Theme: Distributed	Systems	
WT - Web Technol	ogies Track	
Track Co-Chairs:	Francesco Poggi, University of Bologna, Italy Cristian Mateos, UNICEN University - Tandil, Argentina Tim A. Majchrzak, University of Agder - Kristiansand, Norway	
Track Editorial		2477
Luiz S.S. Baglie, São Po Diego R.C. Dias, Feder Marcelo P. Guimarães,	of Studies on Interactive 3D Information Visualization for the Web aulo State University, Brazil val University of São João Del Rei, Brazil Federal University of São Paulo, Brazil aulo State University, Brazil	2479
Lexicalised Domain Donatas Meškelė, Eras	d Solution for Sentence-Level Aspect-Based Sentiment Analysis using a Ontology and a Neural Attention Model	2489
Hoai Viet Nguyen, Colo Luigi Lo Iacono, Colog	rge-Scale Explorative Study of Web Caching	2497
Martin Garriga, Nation	etamodel to Increase Retrievability of Heterogeneous Services	2507
Ena Tominaga, Tokyo I Yoshitaka Arahori, Tok	zer of JavaScript's async/await Execution Order Institute of Technology, Japan Institute of Technology, Japan Institute of Technology, Japan Institute of Technology, Japan	2515
Poster Papers		
Yong Zheng, Illinois Ins	ommendations via Sequential Predictions stitute of Technology, USA vis Institute of Technology, USA	2525

Utility-Based Multi-Criteria Recommender Systems	2529
Yong Zheng, Illinois Institute of Technology, USA	
Computational Thinking with the Web Crowd using CodeMapper	2532
Patrick Vanvorce, University of Idaho, USA	
Hasan M. Jamil, University of Idaho, USA	