

# ACM SAC 2020

The 35<sup>th</sup> Annual ACM Symposium on Applied Computing

PROCEEDINGS OF THE 2020 ACM  
SYMPOSIUM ON APPLIED COMPUTING

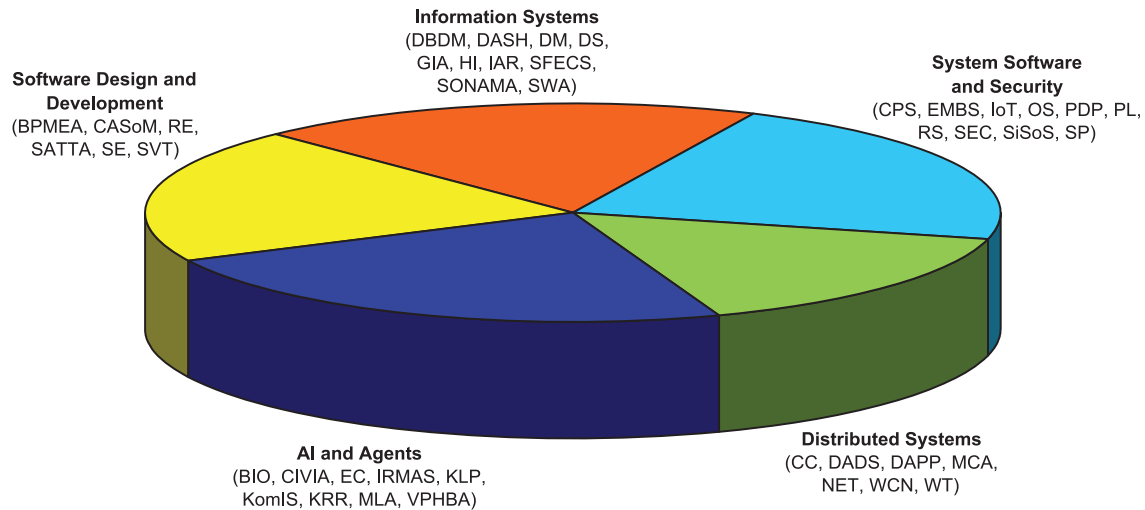
Brno, Czechia  
March 30- April 3, 2020

## Organizing Committee

**Alessio Bechini**  
**Miroslav Bures**  
**Tomas Cerny**  
**Junyoung Heo**  
**Matej Hrusovsky**

**Chih-Cheng Hung**  
**John Kim**  
**Katerina Klatilova**  
**Dana Machova**  
**Vaclav Vashek Matyas**

**Armin Mikler**  
**Juw Won Park**  
**Dongwan Shin**  
**Hossain Shahriar**  
**Eunjee Song**



**Hosted by**  
**Czech Technical University, Czechia**  
**Masaryk University, Czechia**



\*\*\*\*\* SAC 2020 at Glance \*\*\*\*\*

Monday 3/30/2020	Tuesday 3/31/2020	Wednesday 4/1/2020	Thursday 4/2/2020	Friday 4/3/2020
<p>Tutorial Sessions (9:00-12:30)</p> <p>Coffee Break (10:30-11:00)</p>	<p>Opening Remarks (9:00-9:25)</p> <p>Keynote Session (9:25-10:40)</p> <p>Coffee Break (10:40-11:10)</p> <p>AM Breakout Sessions (11:10-12:50)</p>	<p>AM Breakout Sessions (9:00-10:40)</p> <p>Coffee Break (10:40-11:10)</p> <p>AM Breakout Sessions (11:10-12:50)</p> <p>AM Posters Sessions (10:40-12:50)</p>	<p>Keynote Session (9:25-10:40)</p> <p>Coffee Break (10:40-11:10)</p> <p>AM Breakout Sessions (11:10-12:50)</p>	<p>AM Breakout Sessions (9:00-10:40)</p> <p>Coffee Break (10:40-11:10)</p> <p>AM Breakout Sessions (11:10-12:25)</p>
<p>SAC Luncheon for all (tutorial) Registered Attendees (12:30-13:30) (Location: Restaurant)</p>	<p>SAC Luncheon for all Registered Attendees (12:50-14:20) (Location: Restaurant)</p>	<p>SAC Luncheon for all Registered Attendees (12:50-14:20) (Location: Restaurant)</p>	<p>SAC Luncheon for all Registered Attendees (12:50-14:20) (Location: Restaurant)</p>	
<p>Tutorial Sessions (13:30-17:00)</p> <p>Coffee Break (15:00-15:30)</p>	<p>PM Breakout Sessions (14:20-16:00)</p> <p>SRC Posters Exhibit (14:30-18:00)</p> <p>Coffee Break (16:00-16:30)</p> <p>PM Breakout Sessions (16:30-18:35)</p>	<p>PM Breakout Sessions (14:20-16:00)</p> <p>PM Posters Sessions (16:00-18:10)</p> <p>Coffee Break (16:00-16:30)</p> <p>PM Breakout Sessions (16:30-18:35)</p>	<p>PM Breakout Sessions (14:20-16:00)</p> <p>SRC Oral Presentations (14:30-16:30)</p> <p>Coffee Break (16:00-16:30)</p> <p>PM Breakout Sessions (16:30-18:10)</p>	
	<p>SIGAPP Annual Business Meeting (18:40-19:30) (Location: Klinger)</p> <p>SIGAPP Reception (19:30-21:00)</p>	<p>Future SAC Organization Meeting (18:40-19:30) (Location: Klinger)</p>	<p>Track Chairs Business Meeting <i>(working lunch)</i> (13:10-14:00)</p> <p>SAC Banquet (18:30-22:30)</p>	

**\*\*\*\* SAC 2020 Session Schedule \*\*\*\***

<b>Monday March 30, 2020</b>				
<b>Tutorial Sessions – Please see more on Tutorials Page</b>				

<b>Tuesday March 31, 2020</b>				
Room	9:00 - 10:40am	11:10am - 12:50pm	2:20 - 4:00pm	4:30 – 6:35pm
Klinger	<b>Opening Remarks (9:00am)</b>  <b>Keynote Address (9:25am)</b>  <b>Congress A</b>	EMBS-1 (4)	EMBS-2 (1) + CPS (3)	IoT (5)
Libenský		WCN-1 (4)	WCN-2 (4)	NET (5)
Matal		KLP-1 (4)	KLP-2 (4)	KRR (5)
Lacina		PDP (4)	SVT-1 (4)	SVT-2 (5)
Congress B		SONAMA-1 (4)	SONAMA-2 (3)	SWA (5)
Congress C+D			<b>SRC Poster Presentations (2:30pm – 6:00pm)</b>	
<b>SIGAPP Business Meeting (6:40pm – 7:30pm)</b>				
<b>SIGAPP Welcome Reception (7:30pm - 9:00pm)</b>				

<b>Wednesday April 1, 2020</b>				
Room	9:00 - 10:40am	11:10am - 12:50pm	2:20 - 4:00pm	4:30 – 6:35pm
Klinger	SEC-1 (4)	SEC-2 (4)	SEC-3 (2)	CASOM (4)
Libenský	DADS (4)	DAPP-1 (4)	DAPP-2 (4)	SP (5)
Matal	MLA-1 (4)	MLA-2 (4)	MLA-3 (4)	MLA-4 (5)
Lacina	SE-1 (4)	SE-2 (4)	SE-3 (4)	SE-4(3) + SiSoS(2)
Congress B	DM (4)	RS (4)	GIA (4)	HI (5)
Congress C+D	<b>AM Posters Display Session (10:40am – 12:50pm)</b>		<b>PM Posters Display Session (4:00pm – 6:10pm)</b>	
<b>Future SAC Organization Meeting (6:40pm – 7:30pm)</b>				

<b>Thursday April 2, 2020</b>				
Room	9:25 - 10:40am	11:10am - 12:50pm	2:20 - 4:00pm	4:30 – 6:10pm
Klinger	<b>Keynote Address (9:25am)</b>  <b>Congress A</b>	DS (3)	OS-1 (4)	OS-2 (4)
Libenský		CC (4)	SFECS (4)	WT (3)
Matal		IRMAS-1 (4)	IRMAS-2(2)	PL (3)
Lacina		SATTA (4)	RE-1 (4)	RE-2 (3)
Siesta		KomIS (3)	IAR (3)	DASH (3)
Restaurant Lucullus			<b>SRC Oral Presentations (2:30pm – 4:30pm)</b>	
<b>Track Chair Meeting (working lunch, 1:10pm – 2:00pm)</b>				
<b>SAC Banquet (6:30pm – 10:30pm)</b>				

**Friday April 3, 2020**

<b>Room</b>	<b>9:00 - 10:40am</b>	<b>11:10am - 12:50pm</b>	
<b>Klinger</b>	EC (3)	MCA (3)	
<b>Libenský</b>	VPHBA-1 (4)	VPHBA-2 (2) + CIVIA (2)	
<b>Matal</b>	BPMM-1 (4)	BPMM-2 (2)	
<b>Lacina</b>	DBDM-1 (4)	DBDM-2 (1) + BIO (2)	



# SAC 2020

## Introduction

SAC 2020 is a premier international conference on applied computing and technology. Attendees have the opportunity to hear from expert practitioners and researchers about the latest trends in research and development in their fields. SAC 2020 features two keynote speakers on Tuesday and Thursday, from 9:25 to 10:40, respectively. The technical program of the symposium consists of tutorial sessions, regular research paper sessions, poster sessions, and Microsoft-sponsored student research competition (SRC) sessions. Four tutorials are offered on Monday March 20<sup>th</sup>, 2020, and 224 research papers in 42 tracks with different research topics are presented from Tuesday March 31<sup>st</sup> through Friday April 3<sup>rd</sup>, 2020. The sessions for regular research papers start at 9:00 and end at 18:35 (except for Friday when they end at 12:50). Two poster tracks also run on Wednesday April 1<sup>st</sup>, from 10:40 to 12:50 and from 16:00 to 18:10. Finally, SRC posters display session runs on Tuesday from 14:30 to 18:00 and SRC Presentations session runs on Thursday from 14:30 to 16:30.

## ACM SIGAPP

The ACM Special Interest Group on Applied Computing is ACM's primary applications-oriented SIG. Its mission is to further the interests of the computing professionals engaged in the development of new computing applications and applications areas and the transfer of computing technology to new problem domains. SIGAPP offers practitioners and researchers the opportunity to share mutual interests in innovative application fields, technology transfer, experimental computing, strategic research, and the management of computing. SIGAPP also promotes widespread cooperation among business, government, and academic computing activities. Its annual Symposium on Applied Computing (SAC) provides an international forum for presentation of the results of strategic research and experimentation for this interdisciplinary environment. SIGAPP membership fees are: \$15.00 for ACM Non-members, \$15.00 for ACM Professional Members, and \$8.00 for ACM Student Members. For further information on SIGAPP, please contact Jiman Hong at [jiman@ssu.ac.kr](mailto:jiman@ssu.ac.kr) or visit the SIGAPP website at <http://www.acm.org/sigapp>.

## Support

The SRC Program of SAC 2020 is sponsored by Microsoft Research.

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## Symposium Chair Message

**Chih Cheng Hung**

*Kennesaw State University, Kennesaw, GA, USA*

**Tomas Cerny**

*Baylor University, Waco, Texas, USA*

On behalf of the Organizing Committee, we welcome you to the 35<sup>th</sup> Annual ACM Symposium on Applied Computing (SAC 2020), hosted by Czech Technical University and Masaryk University of Czechia. For more than three decades this international forum has been dedicated to computer scientists, engineers, and practitioners for the purpose of presenting their research findings and results in various areas of applied computing. The organizing committee is grateful for your participation in this exciting international event. We hope that this conference proves interesting and beneficial for all of you. The Symposium on Applied Computing is sponsored by the ACM Special Interest Group on Applied Computing (SIGAPP), whose mission is to further the interests of computing professionals engaged in the design and development of new computing applications, interdisciplinary applications areas, and applied research. This conference is dedicated to the study of applied computing research of real-world problems. In addition, this event provides an avenue to discuss and exchange new ideas in the wide spectrum of applied computing areas. We all recognize the importance of updating the latest developments and research in our current areas of expertise.

SAC 2020 offers Technical Tracks and Poster Sessions. The success of the conference can be attributed to the substantial contribution of dedicated Track Chairs and Co-Chairs. Each track maintains a program committee and a set of highly qualified reviewers. We wish to thank the Track Chairs, Co-Chairs, Committee Members and participating reviewers for their hard work and effort to make SAC 2020 a high-quality conference. We also thank our invited keynote speakers, Dr. Irwin King and Dr. Jan

Faigl, for sharing their knowledge and expertise with SAC 2020 attendees. Most of all, we would like to especially thank the authors and presenters for sharing their experience with the rest of us, and all attendees for joining us in Brno, Czechia this year.

The local organizing committee has been a major contributor to the success of the SAC 2020 conference. Our gratitude goes to the Local Arrangement Chairs Dana Machova, Katerina Klatilova and Matej Hrusovsky of Red Hat, Czechia. We extend our thanks to the Publication Chair, Dr. Hossain Shahriar, Kennesaw State University, USA, for his tremendous effort in putting together the conference proceedings, to the Posters Chairs, Dr. Alessio Bechini, University of Pisa, Italy and Dr. Miroslav Bures, Czech Technical University, Czechia, for his hard work to make a successful Poster Program, and to the Tutorials Chair Dr. Vasek Matyas, Masaryk University, Czechia, for arranging an exciting set of Tutorials. A big “thank you” also goes to Dr. Amin Mikler, University of North Texas, USA, for organising the Student Research Competition, as well as to Dr. John Kim, Utica College, USA, for playing the roles of treasurer, and Dr. Junyoung Heo, Hansung University, South Korea, for the role of registration chair and webmaster (and many more), and Drs. Juw Won Park, University of Louisville, USA, and Eunjee Song, Baylor University, USA, for the role of publicity chair. Special thanks to our Program Co-Chairs: Dr. Dongwan Shin, New Mexico Tech, USA, and Dr. Alessio Bechini, University of Pisa, Italy for coordinating and bringing together an excellent Technical Program.

Again, we welcome you to SAC 2020 in the beautiful city of Brno, Czechia. We hope you enjoy the conference and your stay in Brno. Next year, we invite you to participate in SAC 2021.

## Program Chairs Message

**Dongwan Shin**

*New Mexico Tech, New Mexico, USA*

**Alessio Bechini**

*University of Pisa, Pisa, Italy*

Welcome to the 35<sup>th</sup> International Symposium on Applied Computing (SAC 2020). For the past 34 years, SAC has become a major international venue for computing researchers and applied practitioners to convene and share ideas on recent developments in a variety of applied areas of information technology. The success of SAC has been the consolidation of a wide range of applied areas into specialized modules called Tracks. Each of the Tracks is then organized and administered by experts in the respec-

tive areas by instituting program committees, carrying out blind reviews according to the ACM guidelines, and finally selecting the highly qualified papers for the Track. Since its inception nine years ago, the Poster Sessions at SAC have become a tradition, and this year again the Poster will be an integral part of the Technical Program at SAC 2020.

The open Call for Track Proposals and after prescreening the proposals, 42 Tracks were finally accepted for SAC 2020. The prescreening and selections were made based on the success of those Tracks in the previous SACs as well as targeting new and emerging areas. The Call for Papers for these Tracks attracted 915 final paper submissions from over 55 different countries. The submitted papers underwent the blind review process and 224 submissions were finally accepted as full papers for inclusion in the Conference Proceedings and presentation during the Symposium. The final acceptance rate for SAC 2020 is (24.48%) for the overall track. In addition to the accepted full papers, 76 submissions that received high enough review scores were accepted as poster papers for the Posters program. The Student Research Competition (SRC) program, sponsored by Microsoft Research, is designed to provide graduate students the opportunity to meet and exchange ideas with researchers and practitioners in their areas of interest. 42 submissions received and finally 9 (21.4%) papers were accepted for the SRC program.

The Technical Program of SAC 2020 is made possible through the hard work of many people from the scientific community who have volunteered and committed many hours to make it a success. Much credit goes to all Track Chairs for making SAC 2020 Technical Sessions a huge success. Some of the popular Tracks had unprecedented submissions and having three blind reviews for each paper was certainly a major challenge. This year again, we follow the previous years' tradition in organizing various tracks into five different themes. The Symposium Proceedings and the technical presentations are focused around these themes to form a series of related track sessions. On behalf of the entire SAC 2020 Organizing Committee, we congratulate all the authors for having their papers accepted in their respective Tracks, and we wish to thank all of those who made this year's technical program a great success. Specifically, we wish to thank the invited speakers, posters chair, track chairs, reviewers, technical program committee members, session chairs, presenters, and all the attendees. We also wish to convey our special thanks to the local organizing committee lead by Red Hat Czech. We wish you all a pleasant stay in Brno, hope you have a great time at SAC 2020, and you will have the opportunity to share and exchange your ideas and foster new collaborations. We hope to see you all at SAC 2021.



## SAC 2020 Themes

This year SAC tracks are divided into five themes: tracks with relevant topics are grouped into a theme, and a single room is assigned for one theme for oral presentation. Hence related tracks will take place sequentially in the same room in most cases, so as to promote sharing and cross-fertilization of ideas for the whole audience of a theme. Check the program schedule for details. The five themes of SAC 2020 are listed below:

**(AIA) AI and Agents:** Tracks: BIO, CIVIA, EC, IRMAS, KLP, KomIS, KRR, MLA, VPHBA

**(DS) Distributed Systems:** Tracks: CC, DADS, DAPP, MCA, NET, WCN, WT

**(IS) Information Systems:** Tracks: DBDM, DASH, DM, DS, GIA, HI, IAR, SF ECS, SONAMA, SWA

**(SD) Software Design and Development:** Tracks: BPM, CASOM, RE, SATTA, SE, SVT

**(SSS) System Software and Security:** Tracks: CPS, EMBS, IoT, OS, PDP, PL, RS, SEC, SiSoS, SP

## Keynote Speakers

**Tuesday March 31, 2020 9:25 - 10:40**

**Dr. Irwin King**

Department of Computer Science and Engineering  
The Chinese University of Hong Kong  
China

***Title: Graph Embedding from  
Theory to Applications***

### Abstract

Graph embedding refers to the problem of projecting the elements in a graph, including nodes, edges, substructures, or the whole graph, to a low-dimensional space while preserving the graph's structural information. Graph embedding is an essential technique for analyzing various types of large-scale networks such as social networks, traffic networks, semantic networks, etc. To cope with the growing scale and diversifying structure of modern networks, researchers have proposed novel methods for graph embedding for feature engineering. In this talk, we present the recent advances and future directions in the theoretical development graph embedding and introduce some common applications for social network analysis, such as node classification, link prediction, community detection, and social recommendation.

### Speaker's Bio

Prof. King's research interests include machine learning, social computing, AI, web intelligence, data mining, and multimedia information processing. In these research areas, he has over 300 technical publications in journals and conferences. He is an Associate Editor of the Journal of Neural Networks and ACM Transactions on Knowledge Discovery from Data (ACM TKDD). He is President of the International Neural Network Society (INNS) and an IEEE Fellow, Distinguished Member of ACM, and HKIE Fellow. Moreover, he is the General Co-chair of The WebConf 2020, ICONIP 2020, WSDM 2011, RecSys 2013, ACML 2015, and in various capacities in a number of top conferences such as WWW, NIPS, ICML, IJCAI, AAAI, etc. While he was on leave with AT&T Labs Research, San Francisco, he also taught classes as a Visiting Professor at UC Berkeley. He received his B.Sc. degree in Engineering and Applied Science from California Institute of Technology, Pasadena and his M.Sc. and Ph.D. degree in Computer Science from the University of Southern California, Los Angeles.

**Thursday April 1, 2020 9:25 - 10:40**

**Dr. Jan Faigl**

Department of Computer Science  
Czech Technical University in Prague  
Czechia

***Title: Terrain Learning with Multi-legged Walking  
Robots in Autonomous Exploration Missions***

### Abstract

Robotic learning can be described as the robot ability to acquire and utilize the experience of the robot collected during its mission. In a particular scenario of autonomous exploration of a priori unknown environment, a multi-legged walking robot can take advantage of its locomotion capabilities to crawl various rough terrains. However, some of the terrains can be more costly to traverse than others, and therefore, a terrain characterization build online during the mission can support the overall mission performance. Besides, not only terrain learning is supportive in the exploration missions, but also adaptive locomotion control, localization, and terrain mapping have to be addressed to perform the exploration fully autonomously. In the talk, I will present examples of the developed solutions for all such essential building blocks of the autonomous exploration with a small hexapod walking robot. Finally, the talk will also cover an overview of the results achieved by the CTU-CRAS team in the Tunnel Circuit event of the DARPA Subterranean Challenge (SubT).

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## Speaker's Bio

Assoc. Prof. Jan Faigl received Ing. degree in Electrical Engineering, branch Technical Cybernetics, Faculty of Electrical Engineering (FEE), Czech Technical University (CTU), Czechia in 2003 and a Ph.D. degree in Electrical Engineering and Information Technology, branch Artificial Intelligence and Biocybernetics, FEE, CTU, Czechia in 2010. He was a member of the winning team for the Mohamed Bin Zayed International Robotics Challenge (MBZIRC) in Challenge 3 and the 2nd place in Challenge 1. In 2019, he participated in Tunnel Circuit event of the DARPA SubT Challenge as member of the CTU-CRAS team that took the 1st place in DARPA non-funded teams and the 3rd place among all the teams. He has served as Program Committee member in several conferences, chairs of workshops and served as the guest editor of the special issue on "Online decision making in Multi-Robot Coordination" in Autonomous Robots journal. He currently serves as the associate editor of the IEEE Transactions on Automation Science and Engineering (T-ASE). Since 2013, he is leading the Computational Robotics Laboratory (<http://comrob.fel.cvut.cz>) within the Artificial Intelligence Center (<http://aic.fel.cvut.cz>). He is also co-founder of the Center for Robotics and Autonomous Systems (<http://robotics.fel.cvut.cz>). Dr. Faigl had been awarded the Antonin Svoboda Award from the Czech Society for Cybernetics and Informatics in 2011. He received best poster awards for IJCNN 2017, WSOM'16, and WSOM'14, best student paper award WSOM'19, and be the finalist of the best paper awards at RSS'18 and IROS'16. His current research interests include multi-goal planning, robotic information gathering, and robotic systems for autonomous long-term missions with life-long learning, which also comprises unsupervised learning, self-organizing systems, autonomous navigation, aerial systems, and path and motion planning techniques, robotic learning and locomotion control of multi-legged walking robots.

## Other Activities

**SIGAPP Annual Business Meeting:** Tuesday March 31, from 18:40 to 19:30 (Location: Klinger). Open to everyone.

**SIGAPP Reception:** Tuesday March 31, from 19:30 to 21:00 (Location: Congress A). Open to everyone.

**Future SAC Organization Meeting:** Wednesday April 1, from 18:40 to 19:30 (Location: Klinger). Open to everyone.

**Track Chairs Business Meeting (working lunch):** Thursday April 2, from 13:10 to 14:00 (Location: Restaurant). Open for the Organizing Committee and (potential) Track Chairs.

**SAC Banquet:** Thursday April 2, from 18:30 to 22:30. Open for Banquet Ticket holders. See your tickets for full details.

**SAC Best Papers/Best Posters Award:** Thursday April 2. During the SAC Banquet, Program Chairs and Posters Chair will award one best paper for each of the five themes and best posters of this conference.

**SRC Program:** The Student Research Competition program includes Poster Display on Tuesday at 14:30 and Oral Presentations on Thursday (Location: Restaurant Lucullus). Medals and certificates will be given to the top three winners during the SAC Banquet.

**Monday March 30, 2020**

**Mon 9:00–10:30**  
**Rooms: Klinger & Libenský**  
**Tutorials**  
*See tutorial pages for more details*

**Mon 10:30 – 11:00**  
**Coffee Break**

**Mon 11:00–12:30**  
**Rooms: Klinger & Libenský**  
**Tutorials, continued**

**Mon 12:30 – 13:30**  
**Lunch Break**  
(Restaurant)

**Mon 13:30–15:00**  
**Rooms: Klinger & Libenský**  
**Tutorials**  
*See tutorial pages for more details*

**Mon 15:00 – 15:30**  
**Coffee Break**

**Mon 15:30–17:00**  
**Rooms: Klinger & Libenský**  
**Tutorials, continued**

**Tuesday March 31, 2020**

**TUE 9:25–10:40**  
**Room: Congress A**  
**Keynote Address**  
Dr. Irwin King  
*See page 9 for details.*

**TUE 10:40 – 11:10**  
**Coffee Break**

**TUE 11:10 – 12:50**  
**Room: Klinger**  
**(EMBS-1) Embedded Systems**  
**Session Chair:** Shih-Hao Hung,  
National Taiwan University, Taiwan

**Thermal-aware Memory System Synthesis for MPSoCs with 3D-stacked Hybrid Memories**  
*Chia-Yin Liu, Tohoku University, Japan*  
*Yi-Jung Chen, National Chi Nan University, Taiwan*  
*Masanori Hariyama, Tohoku University, Japan*

**On the Reliability of Hardware Event Monitors in MPSoCs for Critical Domains**  
*Javier Barrera, Barcelona Supercomputing Center and Universitat Politècnica de Catalunya, Spain*  
*Leonidas Kosmidis, Barcelona Supercomputing Center, Spain*  
*Hamid Tabani, Barcelona Supercomputing Center, Spain*  
*Enrico Mezzetti, Barcelona Supercomputing Center, Spain*  
*Jaume Abella, Barcelona Supercomputing Center, Spain*  
*Mikel Fernandez, Barcelona Supercomputing Center, Spain*  
*Guillem Bernat, Rapita Systems Ltd., UK*  
*Francisco J. Cazorla, Barcelona Supercomputing Center, Spain*

**CleanET: Enabling Timing Validation for Complex Automotive Systems**  
*Sergi Vilardell, Barcelona Supercomputing Center and Universitat Politècnica de Catalunya, Spain*  
*Isabel Serra, Barcelona Supercomputing Center and Universitat Autònoma de Barcelona, Spain*  
*Hamid Tabani, Barcelona Supercomputing Center, Spain*  
*Jaume Abella, Barcelona Supercomputing Center, Spain*  
*Joan Del Castillo, Universitat Autònoma de Barcelona, Spain*  
*Francisco J. Cazorla, Barcelona Supercomputing Center, Spain*

**IntPred: Flexible, Fast, and Accurate Object Detection for Autonomous Driving Systems**

*Hamid Tabani, Barcelona Supercomputing Center, Spain  
Matteo Fusi, Barcelona Supercomputing Center, Spain  
Leonidas Kosmidis, Barcelona Supercomputing Center, Spain  
Jaume Abella, Barcelona Supercomputing Center, Spain  
Francisco J. Cazorla, Barcelona Supercomputing Center, Spain*

**TUE 11:10 – 12:50**

**Room: Libenský**

**(WCN-1) Wireless Communications and Networking**

**Session Chair:** Limei Peng, Kyungpook University, South Korea

**A New CoAP Congestion Control Scheme Considering Strong and Weak RTT for IoT**

*Junho Seo, Kyungpook National University, South Korea  
Sungwon Lee, Kyungpook National University, South Korea  
Muhammad Toaha Raza Khan, Kyungpook National University, South Korea  
Dongkyun Kim, Kyungpook National University, South Korea*

**Enhanced Clustering Approach for Traffic Regulation in Directional Antennas based Nanonetworks**

*Lina Aliouat, University Bourgogne Franche-Comté, France  
Hakim Mabed, University Bourgogne Franche-Comté, France  
Julien Bourgeois, University Bourgogne Franche-Comté, France*

**Enabling Wireless Ad Hoc Edge Systems with Yggdrasil**

*Pedro Ákos Costa, University of Lisbon, Portugal  
André Rosa, University of Lisbon, Portugal  
João Leitão, University of Lisbon, Portugal*

**A Service-aware Channel Partition and Selection for Advertising in Bluetooth Low Energy Networks**

*Ting-Ting Yang, National Defense University, Taiwan  
Hsueh-Wen Tseng, National Chung-Hsing University, Taiwan*

**TUE 11:10 – 12:50**

**Room: Matal**

**(KLP-1) Knowledge and Language Processing**

**Session Chair:** Mauro Dragoni, FBK, Italy

**Using Word Embeddings for Ontology-Driven Aspect-Based Sentiment Analysis**

*Sophie de Kok, Erasmus University Rotterdam, The Netherlands  
Flavius Frasinca, Erasmus University Rotterdam, The Netherlands*

**Aspect Level Sentiment Classification with Unbiased Attention and TargetEnhanced Representations**

*Peng Liu, Institute of Information Engineering Chinese Academy of Sciences and University of Chinese Academy of Sciences, China  
Tingwen Liu, Institute of Information Engineering Chinese Academy of Sciences and University of Chinese Academy of Sciences, China  
Jinqiao Shi, Beijing University of Posts and Telecommunications, China  
Xuebin Wang, Institute of Information Engineering Chinese Academy of Sciences and University of Chinese Academy of Sciences, China  
Zelin Yin, Institute of Information Engineering Chinese Academy of Sciences and University of Chinese Academy of Sciences, China  
Can Zhao, Institute of Information Engineering Chinese Academy of Sciences and University of Chinese Academy of Sciences, China*

**Better Together - An Ensemble Learner for Combining the Results of Ready-made Entity Linking Systems**

*Renato Stoffalette João, University of Hannover, Germany  
Pavlos Fafalios, FORTH-ICS, Greece  
Stefan Dietze, GESIS - Leibniz Institute for the Social Sciences, Germany*

**Semantic Similarity to Improve Question Understanding in a Virtual Patient**

*Fréjus A.A. Laleye, CEA, France  
Antonia Blanié, APHP, France  
Antoine Brouquet, CEA, France  
Dan Benhamou, APHP, France  
Gaël de Chalendar, CEA, France*

**TUE 11:10 – 12:50**

**Room: Lacina**

**(PDP) Privacy by Design in Practice**

**Session Chair:** Ronald Petric, Commissioner for Data Protection Baden-Wuerttemberg, Germany

**Bringing Privacy Control back to Citizens: DISPEL – A Distributed Privacy Management Platform for the Internet of Things**

*Christoph Stach, University of Stuttgart, Germany  
Clémentine Gritti, Norwegian University of Science and Technology, Norway  
Bernhard Mitschang, University of Stuttgart, Germany*

**A Descriptive Study of Assumptions made in LINDDUN Privacy Threat Elicitation**

*Dimitri Van Landuyt, KU Leuven, Belgium  
Wouter Joosen, KU Leuven, Belgium*

### **Towards Application-Layer Purpose-Based Access Control**

*Frank Pallas, Technische Universität Berlin, Germany*  
*Max-R. Ulbricht, Technische Universität Berlin, Germany*  
*Stefan Tai, Technische Universität Berlin, Germany*  
*Thomas Peikert, Technische Universität Berlin, Germany*  
*Marcel Reppenhausen, Technische Universität Berlin, Germany*  
*Daniel Wenzel, Technische Universität Berlin, Germany*  
*Paul Wille, Technische Universität Berlin, Germany*  
*Karl Wolf, Technische Universität Berlin, Germany*

### **A Framework and Roadmap for Enhancing the Application of Privacy Design Patterns**

*Julio C. Caiza, Universidad Politécnica de Madrid, Spain*  
*Jose M. Del Alamo, Universidad Politécnica de Madrid, Spain*  
*Danny S. Guamán, Universidad Politécnica de Madrid, Spain*

**TUE 11:10 – 12:50**  
**Room: Congress B**

### **(SONAMA-1) Social Network and Media Analysis**

**Session Chair:** Christian Esposito,  
University of Salerno, Italy

### **Comparing Automatically Extracted Topics from Online Suicidal Ideation and the Responses they Invoke**

*Elise Glaser, Colorado College, USA*  
*Alexander Morain, University of Illinois, USA*  
*Jonathan Gemmell, DePaul University, USA*  
*Daniela Raicu, DePaul University, USA*

### **You are what Emojis say about your Pictures: Language-independent Gender Inference Attack on Facebook**

*Bizhan Alipour Pijani, Loria, France*  
*Abdessamad Imine, Loria, France*  
*Michaël Rusinowitch, Loria, France*

### **FOCAS: Penalising Friendly Citations to Improve Author Ranking**

*Jorge Silva, CRACS/INESC TEC and University of Porto, Portugal*  
*David Aparício, CRACS/INESC TEC and University of Porto, Portugal*  
*Pedro Ribeiro, CRACS/INESC TEC and University of Porto, Portugal*  
*Fernando Silva, CRACS/INESC TEC and University of Porto, Portugal*

### **Graph Sampling Methods for Big Complex Networks integrating Centrality, K-core and Spectral Sparsification**

*Seok-Hee Hong, University of Sydney, Australia*  
*Shan Lu, University of Sydney, Australia*

**TUE 12:50 – 14:20**  
**Lunch Break**  
(Restaurant)

**TUE 14:30 – 18:00**

### **SRC Posters Exhibition** **Room: Congress C+D**

*See page 35 for details.*

**TUE 14:20 – 16:00**  
**Room: Klingler**

### **(EMBS-2) Embedded Systems**

**Session Chair:** Shih-Hao Hung, National Taiwan University, Taiwan

### **(CPS) Cyber Physical Systems**

**Session Chair:** Chi-Sheng (Daniel) Shih, National Taiwan University, Taiwan

### **Adaptive Partitioning of Real-Time Tasks on Multiple Processors**

*Luca Abeni, Scuola Superiore Sant'Anna, Italy*  
*Tommaso Cucinotta, Scuola Superiore Sant'Anna, Italy*

### **Reinforcing the Energy Efficiency of Cyber-Physical Systems via Direct and Split Cache Consolidation on MLC STT-RAM**

*Shuo-Han Chen, Academia Sinica, Taiwan*  
*Yu-Pei Liang, National Tsing Hua University, Taiwan*  
*Yuan-Hao Chang, Academia Sinica, Taiwan*  
*Yun-Fei Liu, National Tsing Hua University, Taiwan*  
*Chun-Feng Wu, Academia Sinica, Taiwan*  
*Hsin-Wen Wei, Tamkang University, Taiwan*  
*Wei-Kuan Shih, National Tsing Hua University, Taiwan*

### **An Analytics-Based Method for Performance Anomaly Classification in Cyber-Physical Systems**

*Hugo Meyer, University of Amsterdam, The Netherlands*  
*Uraz Odyurt, University of Amsterdam, The Netherlands*  
*Andy D. Pimentel, University of Amsterdam, The Netherlands*  
*Evangelos Paradas, ASML Netherlands B.V., The Netherlands*  
*Ignacio Gonzalez Alonso, ASML Netherlands B.V., The Netherlands*

### **Inter-Task Cache Interference Aware Partitioned Real-Time Scheduling**

*Zhishan Guo, University of Central Florida, USA*  
*Kecheng Yang, Texas State University, USA*  
*Fan Yao, University of Central Florida, USA*  
*Amro Awad, University of Central Florida, USA*

**TUE 14:20 – 16:00**

**Room: Libenský**

**(WCN-2) Wireless Communications and Networking**

**Session Chair:** João Leitão, University of Lisbon, Portugal

**A Secure Network Coding-enabled approach for a Confidential Cluster-based Routing in Wireless Sensor Networks**

*Hana Rhim, Sup'Com, Tunisia*

*Ryma Abbasi, Sup'Com, Tunisia*

*Karim Tamine, Université de Limoges, France*

*Damien Sauveron, Université de Limoges, France*

*Sihem Guemara, Sup'Com, Tunisia*

**Trustworthy Intelligent Industrial Monitoring Architecture for Early Event Detection by Exploiting Social IoT**

*Abdul Rehman, Kyungpook National University, South Korea*

*Anand Paul, Kyungpook National University, South Korea*

*Muhammad Azfar Yaqub, University Islamabad, Pakistan*

*Muhammad Mazhar Ullah Rathore, Hammad Bin Khalifa*

*University, Qatar*

**Distortion Exponent Analysis of Successive Refinement Source Code over Layered Multi-Relay Non-Orthogonal Amplify-Forward Networks**

*Pin-Han Ho, University of Waterloo, Canada*

*Payam Padidar, University of Waterloo, Canada*

*Yancheng Ji, Natong University, China*

*Wei Duan, Natong University, China*

**An Effective AP Placement Scheme for Reliable WiFi Connection in Industrial Environment**

*Han Ul Lee, Seoul National University, South Korea*

*Wha Sook Jeon, Seoul National University, South Korea*

*Dong Guen Jeong, Hankuk University of Foreign Studies, South*

*Korea*

**TUE 14:20 – 16:00**

**Room: Matal**

**(KLP-2) Knowledge and Language Processing**

**Session Chair:** Mauro Dragoni, FBK, Italy

**Mining Micro-Influencers from Social Media Posts**

*Simone Leonardi, Politecnico di Torino, Italy*

*Diego Monti, Politecnico di Torino, Italy*

*Giuseppe Rizzo, LINKS Foundation, Italy*

*Maurizio Morisio, Politecnico di Torino, Italy*

**Decoupled Word Embeddings using Latent Topics**

*Heesoo Park, Sungkyunkwan University, South Korea*

*Jongwuk Lee, Sungkyunkwan University, South Korea*

**Diversity Regularized Autoencoders for Text Generation**

*Hyeseon Ko, Sungkyunkwan University, South Korea*

*Junhyuk Lee, Sungkyunkwan University, South Korea*

*Jinhong Kim, Sungkyunkwan University, South Korea*

*Jongwuk Lee, Sungkyunkwan University, South Korea*

*Hyunjung Shim, Yonsei University, South Korea*

**On Document Representations for Detection of Biased News Articles**

*André Ferreira Cruz, University of Porto, Portugal*

*Gil Rocha, University of Porto, Portugal*

*Henrique Lopes Cardoso, University of Porto, Portugal*

**TUE 14:20 – 16:00**

**Room: Lacina**

**(SVT-1) Software Verification and Testing**

**Session Chair:** Maurizio Leotta, University of Genova, Italy

**Cross-Program Taint Analysis for IoT Systems**

*Amit Mandal, SRM University, India*

*Pietro Ferrara, JuliaSoft SRL, Italy*

*Yuliy Khlyebnikov, Università Ca' Foscari Venezia, Italy*

*Agostino Cortesi, Università Ca' Foscari Venezia, Italy*

*Fausto Spoto, Università di Verona, Italy*

**A Sound Abstract Interpreter for Dynamic Code**

*Vincenzo Arceri, University of Verona, Italy*

*Isabella Mastroeni, University of Verona, Italy*

**Data-Flow-Based Evolutionary Fault Localization**

*Deuslirio Silva-Junior, Federal University of Goiás, Brazil*

*Plinio S. Leitao-Junior, Federal University of Goiás, Brazil*

*Altino Dantas, Federal University of Goiás, Brazil*

*Celso G. Camilo-Junior, Federal University of Goiás, Brazil*

*Rachel Harrison, Oxford Brookes University, UK*

**Estimating Fault Masking using Squeeziness based on Rényi's Entropy**

*Alfredo Ibias, Universidad Complutense de Madrid, Spain*

*Manuel Núñez, Universidad Complutense de Madrid, Spain*

**TUE 14:20 – 16:00**

**Room: Congress B**

**(SONAMA-2) Social Network and Media Analysis**

**Session Chair:** Jorge Silva, University of Porto, Portugal

**Investigation of Biases in Identity Linkage DataSets**

*Rishabh Kaushal, Indraprastha Institute of Information Technology Delhi, India*

*Shubham Gupta, Indraprastha Institute of Information Technology Delhi, India*

*Ponnurangam Kumaraguru, Indraprastha Institute of Information Technology Delhi, India*

**Sponsored Content and User Engagement Dynamics on Instagram**

*Lucas Machado de Oliveira, Universidade Federal de Minas Gerais, Brazil*

*Olga Goussevskaia, Universidade Federal de Minas Gerais, Brazil*

**Wide-spectrum Characterization of Long-Running Political Phenomena on Social Media: The Brexit Case**

*Emre Calisir, Politecnico di Milano, Italy*

*Marco Brambilla, Politecnico di Milano, Italy*

**TUE 16:00 – 16:30**

**Coffee Break**

**TUE 16:30 – 18:35**

**Room: Klinger**

**(IoT) Internet of Things**

**Session Chair:** Jun Zheng, New Mexico Tech, USA

**AutoIoT: A Framework based on User-driven MDE for Generating IoT Applications**

*Thiago Nepomuceno, Fraunhofer-Arbeitsgruppe für Supply Chain Services, Germany*

*Tiago Carneiro, INRIA, France*

*Paulo Henrique Maia, State University of Ceará, Brazil*

*Muhammad Adnan, Fraunhofer-Arbeitsgruppe für Supply Chain Services, Germany*

*Thalyson Nepomuceno, Federal Institute of Ceará, Brazil*

*Alexander Martin, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*

**OVER: Overhauling Vulnerability Detection for IoT through an Adaptable and Automated Static Analysis Framework**

*Vinay Sachidananda, Trustwave, Singapore*

*Suhas Bhairav, iTrust, Singapore University of Technology and Design, Singapore*

*Yuval Elovici, Ben-Gurion University of the Negev, Israel*

**Sensmart: Sensor Data Market for the Internet of Things**

*Ricardo Miranda, Universidade de Lisboa, Portugal*

*Miguel L. Pardal, Universidade de Lisboa, Portugal*

*António Grilo, Universidade de Lisboa, Portugal*

**Embedded Machine Learning-Based Data Reduction in Application-Specific Constrained IoT Networks**

*Adarsh Pal Singh, International Institute of Information Technology Hyderabad, India*

*Sachin Chaudhari, International Institute of Information Technology Hyderabad, India*

**A Smart Speaker Performance Measurement Tool**

*Hyunsu Mun, Chungnam National University, South Korea*

*Hyungjin Lee, ChungNam National University, South Korea*

*Soohyun Kim, Chungnam National University, South Korea*

*Youngseok Lee, Chungnam National University, South Korea*

**TUE 16:30 – 18:35**

**Room: Libenský**

**(NET) Networking**

**Session Chair:** Bacem Mbarek, Masaryk University, Czech Republic

**Enhanced Network Intrusion Detection System Protocol for Internet of Things**

*Bacem Mbarek, Masaryk University, Czechia*

*Mouzhi Ge, Masaryk University, Czechia*

*Tomás Pitner, Masaryk University, Czechia*

**Adapting Priority Schemes to achieve Network Slice Isolation**

*Afonso Oliveira, Universidade de Lisboa, Portugal*

*Teresa Vazão, Universidade de Lisboa, Portugal*

**Spark-Based Port and Net Scan Detection**

*Antonia Affinito, University of Napoli Federico II, Italy*

*Alessio Botta, University of Napoli Federico II, Italy*

*Luigi Gallo, University of Napoli Federico II, Italy*

*Mauro Garofalo, University of Napoli Federico II, Italy*

*Giorgio Ventre, University of Napoli Federico II, Italy*

**Performability Analysis of Services in a Software-Defined Networking Adopting Time-Based**

**Moving Target Defense Mechanisms**

*Júlio Mendonça, Federal University of Pernambuco, Brazil*

*Jin-Hee Cho, Virginia Tech, USA*

*Terrence J. Moore, Army Research Laboratory, USA*

*Frederica F. Nelson, Army Research Laboratory, USA*

*Hyuk Lim, Gwangju Institute of Science and Technology, South Korea*

*Armin Zimmermann, Ilmenau University of Technology, Germany*

*Dong Seong Kim, University of Queensland, Australia*

**Resource Allocation for Edge Computing with Multiple Tenant Configurations**

*Andrea Araldo, Télécom SudParis, France*

*Alessandro Di Stefano, University of Catania, Italy*

*Antonella Di Stefano, University of Catania, Italy*

**TUE 16:30 – 18:35**

**Room: Matal**

**(KRR) Knowledge Representation and Reasoning**

**Session Chair:** Francesco Belardinelli, Imperial College, UK

**On Satisfiability Problem in Modal Logic S5**

*Yakoub Salhi, Université d'Artois, France*

**Formal Verification of Debates in Argumentation Theory**

*Ria Jha, Imperial College London, UK*

*Francesco Belardinelli, Imperial College London, UK*

*Francesca Toni, Imperial College London, UK*

### **A Categorization of Simultaneous Localization and Mapping Knowledge for Mobile Robots**

*Maria A. Cornejo Lupa, Universidad Católica San Pablo, Peru  
Regina P. Ticona-Herrera, Universidad Católica San Pablo, Peru  
Yudith Cardinale, Universidad Simón Bolívar, Venezuela  
Dennis Barrios-Aranibar, Universidad Católica San Pablo, Peru*

### **GrCluster: A Score Function to Model Hierarchy in Knowledge Graph Embeddings**

*Varun Ranganathan, University of Alberta, Canada  
Siddharth Suresh, PES University, India  
Yash Mathur, PES University, India  
Natarajan Subramanyam, PES University, India  
Denilson Barbosa, University of Alberta, Canada*

### **Substitute Selection for a Missing Tool using Robot-Centric Conceptual Knowledge Of Objects**

*Madhura Thosar, Otto-Von-Guericke University, Germany  
Christian A. Mueller, Jacobs University, Germany  
Georg Jaeger, Technische Universität Bergakademie, Germany  
Max Pfingsthorn, OFFIS Institute for Information Technology, Germany  
Michael Beetz, University of Bremen, Germany  
Sebastian Zug, Technische Universität Bergakademie, Germany  
Till Mossakowski, Otto-von-Guericke University, Germany*

**TUE 16:30 – 18:35**  
**Room: Lacina**

### **(SVT-2) Software Verification and Testing**

**Session Chair:** Pietro Ferrara, Università Ca' Foscari di Venezia, Italy

### **Constrained Detecting Arrays for Fault Localization in Combinatorial Testing**

*Hao Jin, Osaka University, Japan  
Ce Shi, Shanghai Lixin University of Accounting and Finance, China  
Tatsuhiko Tsuchiya, Osaka University, Japan*

### **En-Route: On Enabling Resource Usage Testing for Autonomous Driving Frameworks**

*Miguel Alcon, Barcelona Supercomputing Center, Spain  
Hamid Tabani, Barcelona Supercomputing Center, Spain  
Jaume Abella, Barcelona Supercomputing Center, Spain  
Leonidas Kosmidis, Barcelona Supercomputing Center, Spain  
Francisco J. Cazorla, Barcelona Supercomputing Center, Spain*

### **Testing as a Service (TaaS): A Systematic Literature Map**

*Gustavo Girardon, Federal University of Pampa, Brazil  
Victor Costa, Federal University of Pampa, Brazil  
Rodrigo Machado, Federal University of Pampa, Brazil  
Maicon Bernardino, Federal University of Pampa, Brazil  
Guilherme Legramante, Federal University of Pampa, Brazil  
Fábio Paulo Basso, Federal University of Pampa, Brazil  
Elder de Macedo Rodrigues, Federal University of Pampa, Brazil  
Anibal Neto, Federal University of Pampa, Brazil*

### **Taxonomy of Performance Testing Tools: A Systematic Literature Review**

*Victor Costa, Federal University of Pampa, Brazil  
Gustavo Girardon, Federal University of Pampa, Brazil  
Maicon Bernardino, Federal University of Pampa, Brazil  
Rodrigo Machado, Federal University of Pampa, Brazil  
Guilherme Legramante, Federal University of Pampa, Brazil  
Anibal Neto, Federal University of Pampa, Brazil  
Fábio Paulo Basso, Federal University of Pampa, Brazil  
Elder de Macedo Rodrigues, Federal University of Pampa, Brazil*

### **Trends in prioritization of Test Cases: 2017-2019**

*M. del Carmen de Castro-Cabrera, University of Cádiz, Spain  
Antonio García-Domínguez, Aston University, UK  
Inmaculada Medina-Bulo, University of Cádiz, Spain*

**TUE 16:30 – 18:35**  
**Room: Congress B**

### **(SWA) Semantic Web and Applications**

**Session Chair:** Fatiha Saïs, Université Paris-Saclay, France

### **Representation Learning for Entity Type Ranking**

*Md Mostafizur Rahman, National Institute of Informatics, Japan  
Atsuhiko Takasu, National Institute of Informatics, Japan  
Gianluca Demartini, The University of Queensland, Australia*

### **VTREL: A Resource for Visual-Textual-Knowledge Entity Linking**

*Shahi Dost, Fondazione Bruno Kessler and University of Padova, Italy  
Luciano Serafini, Fondazione Bruno Kessler, Italy  
Marco Rospocher, University of Verona, Italy  
Lamberto Ballan, University of Padova, Italy  
Alessandro Sperduti, University of Padova, Italy*

### **Ontology-Based Knowledge Model for Human-Robot Interactive Services**

*Doo Soo Chang, Hanyang University, South Korea  
Gun Hee Cho, Hanyang University, South Korea  
Yong Suk Choi, Hanyang University, South Korea*

### **Injection of Automatically Selected DBpedia Subjects in Electronic Medical Records to boost Hospitalization Prediction**

*Raphaël Gazzotti, Université Côte d'Azur, France  
Catherine Faron-Zucker, Université Côte d'Azur, France  
Fabien Gandon, Université Côte d'Azur, France  
Virginie Lacroix-Hugues, Université Côte d'Azur, France  
David Darmon, Université Côte d'Azur, France*

### **MOMENT: Temporal Meta-Fact Generation and Propagation in Knowledge Graphs**

*Fatiha Saïs, Université Paris-Saclay, France  
Joana E. Gonzales Malaverri, Université Paris-Saclay, France  
Gianluca Quercini, Université Paris-Saclay, France*



**Wednesday April 1, 2020**

**WED 9:00 – 10:40**  
**Room: Klinger**

**(SEC-1) Computer Security**

**Session Chair:** Jeffrey Todd McDonald,  
University of South Alabama, USA

**Interpretable and Adversarially-Resistant Behavioral Malware Signatures**

*Xiao Han, Orange Labs, France*  
*Baptiste Olivier, Orange Labs, France*

**Raccoon: Automated Verification of Guarded Race Conditions in Web Applications**

*Simon Koch, Technische Universität Braunschweig, Germany*  
*Tim Sauer, Technische Universität Braunschweig, Germany*  
*Martin Johns, Technische Universität Braunschweig, Germany*  
*Giancarlo Pellegrino, CISPA Helmholtz Center for Information Security, Germany*

**MANIS: Evading Malware Detection System on Graph Structure**

*Peng Xu, Technical University of Munich, Germany*  
*Bojan Kolosnjaji, Technical University of Munich, Germany*  
*Claudia Eckert, Technical University of Munich, Germany*  
*Apostolis Zarras, Maastricht University, The Netherlands*

**HeadPrint: Detecting Anomalous Communications through Header-based Application Fingerprinting**

*Riccardo Bortolameotti, University of Twente, The Netherlands*  
*Thijs van Ede, University of Twente, The Netherlands*  
*Andrea Continella, University of California Santa Barbara, USA*  
*Thomas Hupperich, University of Muenster, Germany*  
*Maarten H. Everts, University of Twente, The Netherlands*  
*Reza Rafati, Bitdefender, The Netherlands*  
*Willem Jonker, University of Twente, The Netherlands*  
*Pieter Hartel, Delft University of Technology, The Netherlands*  
*Andreas Peter, University of Twente, The Netherlands*

**WED 9:00 – 10:40**  
**Room: Libenský**

**(DADS) Dependable, Adaptive, and Secure Distributed Systems**

**Session Chair:** Karl M. Goeschka,  
UAS Technikum Vienna, Austria

**Black-box Inter-application Traffic Monitoring for Adaptive Container Placement**

*Francisco Neves, University of Minho, Portugal*  
*Ricardo Vilaça, University of Minho, Portugal*  
*José Pereira, University of Minho, Portugal*

**Benchmarking Microservice Performance: A Pattern-based Approach**

*Martin Grambow, Technische Universität Berlin, Germany*  
*Lukas Meusel, Technische Universität Berlin, Germany*  
*Erik Wittern, IBM, Hybrid Cloud Integration, USA*  
*David Bermbach, Technische Universität Berlin, Germany*

**QoE-Aware Auto-Scaling of Heterogeneous Containerized Services (and its application to Health Services)**

*Guilherme Santos, Altran Technologies SA, Portugal*  
*Hervé Paulino, Universidade Nova de Lisboa, Portugal*  
*Tomé Verdasca, Serviços Partilhados do Ministério da Saúde, Portugal*

**Privacy Preserving Cooperative Computation for Personalized Web Search Applications**

*Nesrine Kaaniche, University of Sheffield, UK*  
*Souha Masmoudi, Telecom SudParis, Institut Polytechnique de Paris, France*  
*Souha Znina, Telecom SudParis, Institut Polytechnique de Paris, France*  
*Maryline Laurent, Telecom SudParis, Institut Polytechnique de Paris, France*  
*Levent Demir, Qwant Research, France*

**WED 9:00 – 10:40**  
**Room: Matal**

**(MLA-1) Machine Learning and Its Applications**

**Session Chair:** Jee-Hyong Lee, Sungkyunkwan University, Korea

**Event Ticket Price Prediction with Deep Neural Network on Spatial-Temporal Sparse Data**

*Fei Huang, Microsoft, USA*  
*Hao Huang, GE Global Research, USA*

**GMDH Modelling for Mobile User Throughput Forecasting**

*Isah A. Lawal, Noroff University College, Norway*

**A Novel Network Traffic Classification Approach via Discriminative Feature Learning**

*Lixin Zhao, Chinese Academy of Sciences, China*  
*Lijun Cai, Chinese Academy of Sciences, China*  
*Aimin Yu, Chinese Academy of Sciences, China*  
*Zhen Xu, Chinese Academy of Sciences, China*  
*Dan Meng, Chinese Academy of Sciences, China*

**Applying Fast Matrix Multiplication to Neural Networks**

*Ahmed Khaled, Cairo University, Egypt*  
*Amir F. Atiya, Cairo University, Egypt*  
*Ahmed H. Abdel-Gawad, Cairo University, Egypt*

**WED 9:00 – 10:40**

**Room: Lacina**

**(SE-1) Software Engineering**

**Session Chair:** Byungjeong Lee, University of Seoul, Korea

**Actions and Impediments for Technical Debt Prevention: Results from a Global Family of Industrial Surveys**  
*Sávio Freire, Federal University of Bahia and Federal Institute of Ceará, Brazil*  
*Nicolli Rios, Federal University of Bahia, Brazil*  
*Manoel Mendonça, Federal University of Bahia, Brazil*  
*Davide Falessi, California Polytechnic State University, USA*  
*Carolyn Seaman, University of Maryland Baltimore County, USA*  
*Clemente Izurieta, Montana State University, USA*  
*Rodrigo O. Spinola, State University of Bahia, Brazil*

**What 5 Million Job Advertisements tell us about Testing: A Preliminary Empirical Investigation**  
*Maura Cerioli, Università di Genova, Italy*  
*Maurizio Leotta, Università di Genova, Italy*  
*Filippo Ricca, Università di Genova, Italy*

**A Metric Suite for Evaluating Interactive Scenarios in Video Games: An Empirical Validation**  
*Eleni Paschali, Aristotle University of Thessaloniki, Greece*  
*Apostolos Ampatzoglou, University of Macedonia, Greece*  
*Remi Escurou, École Nationale Supérieure des Mines, France*  
*Alexander Chatzigeorgiou, University of Macedonia, Greece*  
*Ioannis Stamelos, Aristotle University of Thessaloniki, Greece*

**The Current Practices of Changing Secure Software: An Empirical Study**  
*Ameerah Muhsinah Jamil, Iowa State University, USA*  
*Lotfi ben Othmane, Iowa State University, USA*  
*Altaz Valani, Security Compass, Canada*  
*Moataz Abdelkhalek, Iowa State University, USA*  
*Ayhan Tek, Cyber Electra, Canada*

**WED 9:00 – 10:40**

**Room: Congress B**

**(DM) Data Mining**

**Session Chair:** Hasan Jamil, University of Idaho, USA

**Link Prediction via Community Detection in Bipartite Multi-Layer Graphs**  
*Maksim Koptelov, Université de Caen Normandie, France*  
*Albrecht Zimmermann, Université de Caen Normandie, France*  
*Bruno Crémilleux, Université de Caen Normandie, France*  
*Lina Soualmia, University of Rouen Normandy, France*

**Affirmative Action Policies for Top-k Candidates Selection: With an Application to the Design of Policies for University Admissions**  
*Michael Mathioudakis, University of Helsinki, Finland*  
*Carlos Castillo, Universitat Pompeu Fabra, Spain*  
*Giorgio Barnabo, Sapienza University of Rome, Italy*  
*Sergio Celis, Universidad de Chile, Chile*

**Understanding Emotions in SNS Images from Posters' Perspectives**

*Junho Song, Hanyang University, South Korea*  
*Kyungsik Han, Ajou University, South Korea*  
*Dongwon Lee, Pennsylvania State University, USA*  
*Sang-Wook Kim, Hanyang University, South Korea*

**Predicting Disease Genes for Complex Diseases using Random Watcher-Walker**

*Lorenzo Madeddu, Sapienza University of Rome, Italy*  
*Giovanni Stilo, University of L'Aquila, Italy*  
*Paola Velardi, Sapienza University of Rome, Italy*

**WED 10:40 – 11:10**

**Coffee Break**

**WED 11:10 – 12:50**

**Room: Klinger**

**(SEC-2) Computer Security**

**Session Chair:** Jeffrey Todd McDonald, University of South Alabama, USA

**TrustEV: Trustworthy Electric Vehicle Charging and Billing**

*Andreas Fuchs, Fraunhofer SIT, Germany*  
*Dustin Kern, Fraunhofer SIT, Germany*  
*Christoph Krauß, Fraunhofer SIT, Germany*  
*Maria Zhdanova, Fraunhofer SIT, Germany*

**Hybrid Taint Analysis for Java EE**

*Florian D. Loch, SAP Security Research & Karlsruhe Institute of Technology, Germany*  
*Martin Johns, SAP Security Research & Karlsruhe Institute of Technology, Germany*  
*Martin Hecker, SAP Security Research & Karlsruhe Institute of Technology, Germany*  
*Martin Mohr, SAP Security Research & Karlsruhe Institute of Technology, Germany*  
*Gregor Snelting, SAP Security Research & Karlsruhe Institute of Technology, Germany*

**HAL-RD: Cross-Correlating Heterogeneous Alerts and Logs using Resource Dependencies**

*Mahdieh Safarzadeh, Tarbiat Modares University, Iran*  
*Mahdi Abadi, Tarbiat Modares University, Iran*  
*Alireza Nowroozi, Sharif University of Technology, Iran*

**Write-protection Enforcement: Hypervisor-backed Kernel Hardening**

*Ahmed Abdelraoof, Alexandria University, Egypt*  
*Mohamed Azab, Virginia Military Institute, USA*  
*Igor Stoppa, Huawei Research Center, Finland*

**WED 11:10 – 12:50**

**Room: Libenský**

**(DAPP-1) Distributed Applications  
with Blockchain**

**Session Chair:** Jean-Marc Seigneur,  
University of Geneva, Switzerland

**Blockchain Real Estate Relational Value Survey**

Jean-Marc Seigneur, University of Geneva, Switzerland  
Sophie Pusterla, Reputation, France  
Xavier Socquet-Clerc, Reputation, France

**Volatility Effect on the Adoption and Valuation of  
Tokenomics**

Jollen Chen, The Flowchain Foundation, Singapore  
Dung-Cheng Lin, National Taiwan University, Taiwan  
Chuan-Hsiang Han, National Tsing-Hua University, Taiwan

**Design and Implementation of Cast-as-Intended Verifiability  
for a Blockchain-based Voting System**

Christian Killer, University of Zürich, Switzerland  
Bruno Rodrigues, University of Zürich, Switzerland  
Raphael Matile, University of Zürich, Switzerland  
Eder Scheid, University of Zürich, Switzerland  
Burkhard Stiller, University of Zürich, Switzerland

**KYChain: User-Controlled KYC Data Sharing and  
Certification**

Constantin Cătălin Drăgan, University of Surrey, UK  
Mark Manulis, University of Surrey, UK

**WED 11:10 – 12:50**

**Room: Matal**

**(MLA-2) Machine Learning and  
Its Applications**

**Session Chair:** Jee-Hyong Lee,  
Sungkyunkwan University, Korea

**A Data Science Approach to Dynamically Optimizing Bus  
Departure Time**

Shuheng Cao, National Tsing Hua University, Taiwan  
Arbee L.P. Chen, Asia University, Taiwan

**CANTransfer – Transfer Learning based Intrusion  
Detection on a Controller Area Network using  
Convolutional LSTM Network**

Shahroz Tariq, Sungkyunkwan University, South Korea  
Sangyup Lee, Sungkyunkwan University, South Korea  
Simon S. Woo, Sungkyunkwan University, South Korea

**Automatic Baseball Commentary Generation using  
Deep Learning**

Byeong Jo Kim, Hanyang University, South Korea  
Yong Suk Choi, Hanyang University, South Korea

**A Generative Semi-Supervised Classifier for Datasets with  
Unknown Classes**

Stefan Schrunner, Oslo University Hospital, Norway  
Bernhard C. Geiger, Know-Center GmbH, Austria  
Anja Zernig, KAI GmbH, Austria  
Roman Kern, Know-Center GmbH, Austria

**WED 11:10 – 12:50**

**Room: Lacina**

**(SE-2) Software Engineering**

**Session Chair:** Eunjee Song, Baylor University, USA

**How Bugs are Fixed: Exposing Bug-fix Patterns with  
Edits and Nesting Levels**

Md Rakibul Islam, University of New Orleans, USA  
Minhaz F. Zibran, University of New Orleans, USA

**Applying Deep Learning Algorithm to Automatic  
Bug Localization and Repair**

Geunseok Yang, University of Seoul, South Korea  
Kyeongsic Min, University of Seoul, South Korea  
Byungjeong Lee, University of Seoul, South Korea

**On the Measurement of Software Complexity for PLC  
Industrial Control Systems using TIQVA**

Adnan Muslija, Mälardalen University, Sweden  
Eduard Enoiu, Mälardalen University, Sweden

**Benchmarking Elasticity of FaaS Platforms as a Foundation  
for Objective-driven Design of Serverless Applications**

Jörn Kühlenkamp, Technische Universität Berlin, Germany  
Sebastian Werner, Technische Universität Berlin, Germany  
Maria C. Borges, Technische Universität Berlin, Germany  
Dominik Ernst, Technische Universität Berlin, Germany  
Daniel Wenzel, Technische Universität Berlin, Germany

**WED 11:10 – 12:50**

**Room: Congress B**

**(RS) Recommender Systems**

**Session Chair:** Markus Zanker,  
Free University of Bolzano, Italy

**Mixture-Preference Bayesian Matrix Factorization for  
Implicit Feedback Datasets**

Shaowen Peng, Kyushu University, Japan  
Tsunenori Mine, Kyushu University, Japan

**Debiased Offline Evaluation of Recommender Systems: A  
Weighted-Sampling Approach**

Diego Carraro, University College Cork, Ireland  
Derek Bridge, University College Cork, Ireland

### Fair Sequential Group Recommendations

*Maria Stratigi, Tampere University, Finland*  
*Jyrki Nummenmaa, Tampere University, Finland*  
*Evaggelia Pitoura, University of Ioannina, Greece*  
*Kostas Stefanidis, Tampere University, Finland*

### A Recommender System for Investing in Early-Stage Enterprises

*Johannes Luef, Technische Universität Wien, Austria*  
*Christian Ohrfandl, Technische Universität Wien, Austria*  
*Dimitris Sacharidis, Technische Universität Wien, Austria*  
*Hannes Werthner, Technische Universität Wien, Austria*

**WED 10:40 – 12:50**

### Poster Session I

**(CONGRESS C+D)**

Posters of the following Tracks: **BIO, CIVIA, EC, IRMAS, CC, DADS, MCA, NET, WCN, BPMEA, CASOM, RE, SATTA, SE, EMBS, IoT, PDP**

(See page 26 for detailed list of Posters)

**WED 12:50 – 14:20**

### Lunch Break

(Restaurant)

**WED 14:20 – 16:00**

### Room: Klinger

#### **(SEC-3) Computer Security**

**Session Chair:** Jeffrey Todd McDonald,  
University of South Alabama, USA

### WAF-A-MoLE: Evading Web Application Firewalls through Adversarial Machine Learning

*Luca Demetrio, Università di Genova, Italy*  
*Andrea Valenza, Università di Genova, Italy*  
*Gabriele Costa, IMT School for Advanced Studies Lucca, Italy*  
*Giovanni Lagorio, Università di Genova, Italy*

### Polymorphic Circuit Generation using Random Boolean Logic Expansion

*Jeffrey T. McDonald, University of South Alabama, USA*  
*Trinity L. Stroud, University of South Alabama, USA*  
*Todd R. Andel, University of South Alabama, USA*

**WED 14:20 – 16:00**

### Room: Libenský

#### **(DAPP-2) Distributed Applications with Blockchain**

**Session Chair:** Jean-Marc Seigneur, University of Geneva,  
Switzerland

### Authenticated and Auditable Data Sharing via Smart Contract

*Vincent Reniers, KU Leuven, Belgium*  
*Yuan Gao, KU Leuven, Belgium*  
*Ren Zhang, Nervos and KU Leuven, Belgium*  
*Paolo Viviani, University of Torino, Italy*  
*Akash Madhusudan, KU Leuven, Belgium*  
*Bert Lagaisse, KU Leuven, Belgium*  
*Svetla Nikova, KU Leuven, Belgium*  
*Dimitri Van Landuyt, KU Leuven, Belgium*  
*Riccardo Lombardi, Noesis Solutions NV, Italy*  
*Bart Preneel, KU Leuven, Belgium*  
*Wouter Joosen, KU Leuven, Belgium*

### PrivateEx: Privacy Preserving Exchange of Crypto-assets on Blockchain

*Lei Xu, University of Texas Rio Grande Valley, USA*  
*Lin Chen, Texas Tech University, USA*  
*Zhimin Gao, Auburn University at Montgomery, USA*  
*Keshav Kasichaimula, University of Houston, USA*  
*Miguel Fernandez, University of Texas Rio Grande Valley, USA*  
*Bogdan Carbunar, Florida International University, USA*  
*Weidong Shi, University of Houston, USA*

### Toward Scalable Blockchains with Transaction Aggregation

*Sina Rafati Niya, University of Zürich, Switzerland*  
*Fabio Maddaloni, University of Zürich, Switzerland*  
*Thomas Bocek, University of Applied Sciences Rapperswil, Switzerland*  
*Burkhard Stiller, University of Zürich, Switzerland*

### TRIDeNT: Towards a Decentralized Threat Indicator Marketplace

*Nikolaos Alexopoulos, Technische Universität Darmstadt, Germany*  
*Emmanouil Vasilomanolakis, Aalborg University, Denmark*  
*Stephane Le Roux, LSV, ENS Paris-Saclay & CNRS, Université Paris-Saclay, France*  
*Steven Rowe, Technische Universität Darmstadt, Germany*  
*Max Mühlhäuser, Technische Universität Darmstadt, Germany*

**WED 14:20 – 16:00**

### Room: Matal

#### **(MLA-3) Machine Learning and Its Applications**

**Session Chair:** Jee-Hyong Lee, Sungkyunkwan  
University, Korea

**Attention History-based Attention for Abstractive Text Summarization**

*Hyunsoo Lee, Sungkyunkwan University, South Korea  
YunSeok Choi, Sungkyunkwan University, South Korea  
Jee-Hyong Lee, Sungkyunkwan University, South Korea*

**Mining Environmental Chemicals with Boosted Trees**

*Natalia Khuri, Wake Forest University, USA*

**Long Bone Fracture Type Classification for Limited Number of CT Data with Deep Learning**

*Keon Myung Lee, Chungbuk National University, South Korea  
Chan Sik Han, Chungbuk National University, South Korea  
Sang Yeon Lee, Chungbuk National University, South Korea  
Seung Myung Choi, Konkuk University, South Korea*

**Similarity-based Calibration Method for Zero-Shot Recognition in Multi-object Scenes**

*Doo Soo Chang, Hanyang University, South Korea  
Gun Hee Cho, Hanyang University, South Korea  
Yong Suk Choi, Hanyang University, South Korea*

**WED 14:20 – 16:00**

**Room: Lacina**

**(SE-3) Software Engineering**

**Session Chair:** Byungjeong Lee, University of Seoul, South Korea

**An Exploratory Study on Extract Method Floss-Refactoring**

*Jaziel S. Moreira, Federal University of Campina Grande, Brazil  
Everton L.G. Alves, Federal University of Campina Grande, Brazil  
Wilkerson L. Andrade, Federal University of Campina Grande, Brazil*

**Customer Requests Matter: Early Stage Software Effort Estimation using K-Grams**

*Kazım Kıvanç Eren, Idea Technology Solutions Inc., Turkey  
Can Özbey, Idea Technology Solutions Inc., Turkey  
Beyza Eken, Istanbul Technical University, Turkey  
Ayşe Tosun, Istanbul Technical University, Turkey*

**FACT- From Actual to Conceptual Tie-ins: A Multi-level Knowledge Graph Structured on Context and Semantics of Software Artefacts**

*Shipra Sharma, Indian Institute of Technology Ropar, India  
Balwinder Sodhi, Indian Institute of Technology Ropar, India*

**TAMAA: UPPAAL-based Mission Planning for Autonomous Agents**

*Rong Gu, Mälardalen University, Sweden  
Eduard Enoiu, Mälardalen University, Sweden  
Cristina Secleanu, Mälardalen University, Sweden*

**WED 14:20 – 16:00**

**Room: Congress B**

**(GIA) Geographical Information Analytics**

**Session Chair:** Cyril de Runz, University of Tours, France

**Learning Locality Maps from Noisy Geospatial Labels**

*Manjeet Dahiya, Delhivery, India  
Devendra Samatia, Delhivery, India  
Kabir Rustogi, Delhivery, India*

**Sampling Strategies to Create Moving Regions from Real World Observations**

*Rogério Luís C. Costa, University of Aveiro, Portugal  
Enrico Miranda, University of Aveiro, Portugal  
Paulo Dias, University of Aveiro, Portugal  
José Moreira, University of Aveiro, Portugal*

**Automatic Flood Detection in Sentinel-2 Images using Deep Convolutional Neural Networks**

*Pallavi Jain, Technological University Dublin, Ireland  
Bianca Schoen-Phelan, Technological University Dublin, Ireland  
Robert Ross, Technological University Dublin, Ireland*

**Exploring Frequency-based Approaches for Efficient Trajectory Classification**

*Francisco Vicenzi, Universidade Federal de Santa Catarina, Brazil  
Lucas May Petry, Universidade Federal de Santa Catarina, Brazil  
Camila Leite da Silva, Universidade Federal de Santa Catarina, Brazil  
Luis Otavio Alvares, Universidade Federal de Santa Catarina, Brazil  
Vania Bogorny, Universidade Federal de Santa Catarina, Brazil*

**WED 16:00 – 16:30**

**Coffee Break**

**WED 16:00 – 18:10**

**Poster Session II**

**(CONGRESS C+D)**

Posters of the following Tracks: **KLP, KOMIS, KRR, MLA, VPHBA, DAPP, WT, DM, DS, GIA, HI, IAR, SF ECS, SONAMA, SWA, PL, RS, SP**

*(See page 28 for detailed list of Posters)*

**WED 16:30 – 18:35**

**Room: Klinger**

**(CASoM) Code Analysis and  
Software Mining**

**Session Chair:** Tomas Cerny, Baylor University, USA

**Logging Statements' Prediction based on Source Code Clones**

*Sina Gholamian, University of Waterloo, Canada*

*Paul A.S. Ward, University of Waterloo, Canada*

**Identification of Data Propagation Paths for Efficient  
Dynamic Information Flow Tracking**

*Sanoop Mallissery, National Chiao Tung University, Taiwan*

*Yu-Sung Wu, National Chiao Tung University, Taiwan*

*Chih-Hao Hsieh, National Chiao Tung University, Taiwan*

*Chun-An Bau, National Chiao Tung University, Taiwan*

**Comparing Identifiers and Comments in Engineered and  
Non-Engineered Code: A Large-Scale Empirical Study**

*Otávio Augusto Lazzarini Lemos, Universidade Federal de São  
Paulo, Brazil*

*Marcelo Suzuki, Universidade Federal de São Paulo, Brazil*

*Adriano Carvalho de Paula, Universidade Federal de São  
Paulo, Brazil*

*Claire Le Goes, Carnegie Mellon University, USA*

**Is there a Correlation between Code Comments and Issues?  
- An Exploratory Study**

*Vishal Misra, Indian Institute of Technology Tirupati, India*

*Sai Krupa Reddy Jakku, Indian Institute of Technology Tirupati,  
India*

*Sridhar Chimalakonda, Indian Institute of Technology Tirupati,  
India*

**WED 16:30 – 18:35**

**Room: Libenský**

**(SP) Software Platforms**

**Session Chair:** Lenuta Alboaie, Alexandru Ioan Cuza  
University of Iasi, Romania

**Smart Home Platform supporting Decentralized Adaptive  
Automation Control**

*Paolo Arcaini, National Institute of Informatics, Japan*

*Raffaella Mirandola, Politecnico di Milano, Italy*

*Elvinia Riccobene, Università degli Studi di Milano, Italy*

*Patrizia Scandurra, University of Bergamo, Italy*

*Alberto Arrigoni, University of Bergamo, Italy*

*Daniele Bosc, University of Bergamo, Italy*

*Federico Modica, University of Bergamo, Italy*

*Rita Pedercini, University of Bergamo, Italy*

**Time Series Analysis for Enhancing the Recognition of  
License Plate Number in Video Stream of IoT Camera**

*Bada Kim, Hansung University, South Korea*

*Doohyuk Chang, Hansung University, South Korea*

*Junyoung Heo, Hansung University, South Korea*

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

**AppGen: A Framework for Automatic Generation of Data  
Collection Apps**

*Mostafa Alaa, German University in Cairo, Egypt*

*Alia El Bolock, German University in Cairo and Ulm University,  
Egypt*

*Mostafa Abas, German University in Cairo, Egypt*

*Slim Abdennadher, German University in Cairo, Egypt*

*Cornelia Herbert, Ulm University, Germany*

**Counterfeiting Scalable Detection Image based System for  
E-commerce**

*Robert-Ioan Onesim, Alexandru Ioan Cuza University of Iasi,  
Romania*

*Andrei Pricop, Alexandru Ioan Cuza University of Iasi, Romania*

*Lenuta Alboaie, Alexandru Ioan Cuza University of Iasi, Romania*

*Andrei Panu, Alexandru Ioan Cuza University of Iasi, Romania*

**Smart Transportation Platform for Private Transportation**

*Vially Kazadi Mutombo, Soongsil University, South Korea*

*Yena Lee, Soongsil University, South Korea*

*Heejin Kim, Soongsil University, South Korea*

*Youngwan Kim, Soongsil University, South Korea*

*Natalia Weronika Debska, Soongsil University, South Korea*

*Jiman Hong, Soongsil University, South Korea*

**WED 16:30 – 18:35**

**Room: Matal**

**(MLA-4) Machine Learning and  
Its Applications**

**Session Chair:** Jee-Hyong Lee, Sungkyunkwan University,  
Korea

**Robust ECG R-peak Detection using LSTM**

*Juho Laitala, University of Turku, Finland*

*Mingzhe Jiang, University of Turku, Finland*

*Elise Syrjälä, University of Turku, Finland*

*Emad Kasaeyan Naeini, University of California Irvine, USA*

*Antti Airola, University of Turku, Finland*

*Amir M. Rahmani, University of California Irvine, USA*

*Nikil D. Dutt, University of California Irvine, USA*

*Pasi Liljeberg, University of Turku, Finland*

**Understanding Features on Evolutionary Policy**

**Optimizations: Feature Learning Difference between  
Gradient-based and Evolutionary Policy Optimizations**

*Sangyeop Lee, Seoul National University, South Korea*

*Myoung Hoon Ha, KAIST, South Korea*

*Byoungro Moon, Seoul National University, South Korea*

**Data Augmentation and Semi-supervised Learning for Deep  
Neural Networks-based Text Classifier**

*Heereen Shim, Philips Research and KU Leuven, The Netherlands*

*Stijn Luca, Ghent University, Belgium*

*Dietwig Lowet, Philips Research, The Netherlands*

*Bart Vanrumste, KU Leuven, Belgium*

**Analysis of Label Noise in Graph-based Semi-supervised Learning**

*Bruno Klaus de Aquino Afonso, Federal University of São Paulo, Brazil*

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

**TextCSN: A Semi-Supervised Approach for Text Clustering using Pairwise Constraints and Convolutional Siamese Networks**

*Lucas Akayama Vilhagra, Federal University of Mato Grosso do Sul, Brazil*

*Eraldo Rezende Fernandes, Federal University of Mato Grosso do Sul, Brazil*

*Bruno Magalhães Nogueira, Federal University of Mato Grosso do Sul, Brazil*

**WED 16:30 – 18:35**

**Room: Lacina**

**(SE-4) Software Engineering**

**Session Chair:** Eunjee Song, Baylor University, USA

**(SiSoS) Software Intensive Systems-of-Systems**

**Session Chair:** Eduard Baranov, UCLouvain, Belgium

**A Structural Modeling Notation for the Typed Functional Paradigm**

*Yusuf Moosa Motara, Rhodes University, South Africa*

**Dealing with Uncertainty in Model Transformations**

*Youness Laghouaouta, Le Mans University, France*

*Pierre Laforcade, Le Mans University, France*

**On Investigating Metamodel Inaccurate Structures**

*Elyes Cherfa, University South Brittany and Segula Engineering, France*

*Soraya Kesraoui, Segula Engineering, France*

*Chouki Tibermacine, LIRMM & CNRS, France*

*Regis Fleurquin, University South Brittany, France*

*Salah Sadou, University South Brittany, France*

**Modeling and Verification Method for an Early Evaluation of Systems of Systems Interactions**

*Ronan Baduel, University of Toulouse, France*

*Julian Ober, University of Toulouse, France*

*Jean-Michel Bruel, University of Toulouse, France*

**Topology-Aware Distributed Smart Grid Control using a Clustering-Based Utility Maximization Approach**

*Marius Stübs, Universität Hamburg, Germany*

*Hanko Ipach, Hamburg University of Technology, Germany*

*Christian Becker, Hamburg University of Technology, Germany*

**WED 16:30 – 18:35**

**Room: Congress B**

**(HT) Health Informatics**

**Session Chair:** Anu Mary Chacko, NIT Calicut, Indai

**Respiration Signal based Two Layer Stress Recognition across Non-verbal and Verbal Situations**

*Munhee Lee, Yonsei University, South Korea*

*Junhyung Moon, Yonsei University, South Korea*

*Dongmi Cheon, Yonsei University, South Korea*

*Juneil Lee, Yonsei University, South Korea*

*Kyoungwoo Lee, Yonsei University, South Korea*

**Explaining Reasoning Algorithms with Persuasiveness: A Case Study for a Behavioural Change System**

*Ivan Donadello, Fondazione Bruno Kessler, Italy*

*Mauro Dragoni, Fondazione Bruno Kessler, Italy*

*Claudio Eccher, Fondazione Bruno Kessler, Italy*

**An Agent Program in an IoT System to Recommend Activities to Minimize Childhood Obesity Problems**

*Jerffeson Teixeira de Souza, Ceará State University, Brazil*

*Gustavo Augusto Lima de Campos, Ceará State University, Brazil*

*Cleilton Rocha, Instituto Atlântico, Brazil*

*Eriko Werbet, Instituto Atlântico, Brazil*

*Leonardo Ferreira da Costa, Instituto Atlântico, Brazil*

*Rodrigo Teixeira de Melo, Instituto Atlântico, Brazil*

*Lucas Vieira Alves, Instituto Atlântico, Brazil*

**Evaluating Semantic Textual Similarity in Clinical Sentences using Deep Learning and Sentence Embeddings**

*Rui Antunes, University of Aveiro, Portugal*

*João Figueira Silva, University of Aveiro, Portugal*

*Sérgio Matos, University of Aveiro, Portugal*

**Rule-Based Extraction of Family History Information from Clinical Notes**

*João Rafael Almeida, Universidade de Aveiro, Portugal*

*Sérgio Matos, University of Aveiro, Portugal*

**Thursday April 2, 2020**

**Thu 9:25–10:40**

**Room: Congress A**

**Keynote Address**

**Dr. Jan Faigl**

*See page 6 for details.*

**Thu 10:40 – 11:10**

**Coffee Break**

**THU 11:10 – 12:50**

**Room: Klinger**

**(DS) Data Streams**

**Session Chair:** Joao Gama, INESC TEC, Portugal

**Fraud Detection using Heavy Hitters: A Case Study**

*Bruno Veloso, INESC TEC, Portugal*

*Carlos Martins, WeDo Technologies, Portugal*

*Raphael Espanha, WeDo Technologies, Portugal*

*Raul Azevedo, WeDo Technologies, Portugal*

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

**SOHUPDS: A Single-pass One-phase Algorithm for Mining High Utility Patterns over a Data Stream**

*Bijay Prasad Jaysawal, National Cheng Kung University, Taiwan*

*Jen-Wei Huang, National Cheng Kung University, Taiwan*

**Cost-sensitive Learning for Imbalanced Data Streams**

*Lucas Loezer, Pontifícia Universidade Católica do Paraná, Brazil*

*Fabricao Enembreck, Pontifícia Universidade Católica do Paraná, Brazil*

*Jean Paul Barddal, Pontifícia Universidade Católica do Paraná, Brazil*

*Alceu de Souza Britto Jr., Pontifícia Universidade Católica do Paraná, Brazil*

**THU 11:10 – 12:50**

**Room: Libenský**

**(CC) Cloud Computing**

**Session Chair:** Priya Chandran, NIT Calicut, India

**Using Application Knowledge to Reduce Cold Starts in FaaS Services**

*David Bermbach, Technische Universität Berlin, Germany*

*Ahmet-Serdar Karakaya, Technische Universität Berlin, Germany*

*Simon Buchholz, Technische Universität Berlin, Germany*

**King Louie: Reproducible Availability Benchmarking of Cloud-hosted DBMS**

*Daniel Seybold, Ulm University, Germany*

*Stefan Wesner, Ulm University, Germany*

*Jörg Domaschka, Ulm University, Germany*

**On Making Xen Detect Hypercalls and Memory Accesses for Simulating Virtualization-Enabled Processors**

*Swapneel C. Mhatre, National Institute of Technology Calicut, India*

*Priya Chandran, National Institute of Technology Calicut, India*

**Feasibility of Container Orchestration for Adaptive Performance Isolation in Multi-tenant SaaS Applications**

*Eddy Truyen, KU Leuven, Belgium*

*André Jacobs, KU Leuven, Belgium*

*Stef Verreydt, KU Leuven, Belgium*

*Emad Heydari Beni, KU Leuven, Belgium*

*Bert Lagaisse, KU Leuven, Belgium*

*Wouter Joosen, KU Leuven, Belgium*

**THU 11:10 – 12:50**

**Room: Matal**

**(IRMAS-1) Intelligent Robotics and Multi-Agent Systems**

**Session Chair:** Rui P. Rocha, University of Coimbra, Portugal

**Optimized Directed Roadmap Graph for Multi-Agent Path Finding using Stochastic Gradient Descent**

*Christian Henkel, University of Stuttgart, Germany*

*Marc Toussaint, University of Stuttgart, Germany*

**Topology-based Group Routing in Partially Known Environments**

*Jory Denny, University of Richmond, USA*

*Benjamin T. Fine, Ramapo College of New Jersey, USA*

**Greedy Randomized Adaptive Search Procedure for Close Enough Orienteering Problem**

*Petra Štefaníková, Czech Technical University in Prague, Czechia*

*Petr Váňa, Czech Technical University in Prague, Czechia*

*Jan Faigl, Czech Technical University in Prague, Czechia*

**A Distributed Approach for Autonomous Cooperative Transportation in a Dynamic Multi-robot Environment**

*Amar Nath, Indian Institute of Technology Roorkee, India*

*Arun AR, Indian Institute of Technology Roorkee, India*

*Rajdeep Niyogi, Indian Institute of Technology Roorkee, India*

**THU 11:10 – 12:50**

**Room: Lacina**

**(SATTA) Software Architecture: Theory, Technology, and Applications**

**Session Chair:** Matteo Camilli, Free University of Bozen-Bolzano, Italy

**Engineering Trustable Choreography-based Systems using Blockchain**

*F. Corradini, University of Camerino, Italy*

*A. Marcelletti, University of Camerino, Italy*

*A. Morichetta, University of Camerino, Italy*

*A. Polini, University of Camerino, Italy*

*B. Re, University of Camerino, Italy*

*F. Tiezzi, University of Camerino, Italy*



**Detecting Architectural Integrity Violation Patterns using Machine Learning**

*Alla Zakurdaeva, Carleton University, Canada  
Michael Weiss, Carleton University, Canada  
Steven Muegge, Carleton University, Canada*

**An Architectural Style for Internet of Things Systems**

*Lidiane Santos, Federal University of Rio Grande do Norte, Brazil  
Eduardo Silva, Federal University of Rio Grande do Norte, Brazil  
Thais Batista, Federal University of Rio Grande do Norte, Brazil  
Everton Cavalcante, Federal University of Rio Grande do Norte, Brazil  
Jair Leite, Federal University of Rio Grande do Norte, Brazil  
Flavio Oquendo, Université Bretagne Sud, France*

**An Overview of Reference Architectures for Cloud of Things**

*Diógenes Dias, University of São Paulo, Brazil  
Flávia C. Delicato, Fluminense Federal University, Brazil  
Paulo F. Pires, Fluminense Federal University, Brazil  
Atslands R. Rocha, Federal University of Ceará, Brazil  
Elisa Y. Nakagawa, University of São Paulo, Brazil*

**THU 11:10 – 12:50  
Room: Siesta**

**(KomIS) Knowledge Discovery meets Information Systems**

**Session Chair:** Fabio Mercorio, University of Milano-Bicocca, Italy

**Selecting Suitable Configurations for Automated Link Discovery**

*Carlos R. Rivero, Rochester Institute of Technology, USA  
David Ruiz, University of Seville, Spain*

**An E-sports Video Highlight Generator using Win-Loss Probability Model**

*Seok-Kyu Kang, Sungkyunkwan University, South Korea  
Jee-Hyong Lee, Sungkyunkwan University, South Korea*

**Conflict or Cooperation? Predicting Future Tendency of International Relations**

*Peng Chen, Kyoto University, Japan  
Adam Jatowt, Kyoto University, Japan  
Masatoshi Yoshikawa, Kyoto University, Japan*

**Thu 12:50 – 14:20  
Lunch Break  
(Restaurant)**

**THU 14:30 – 16:30**

**SRC Oral Presentation  
Room: Restaurant Lucullus**

*See page 31 for details.*

**THU 14:20 – 16:00  
Room: Klinger**

**(OS-1) Operating Systems**

**Session Chair:** Bongjae Kim, Sun Moon University, Korea

**An Exploration of Targeted Provenance for Reliability**

*Robert Roy, Florida State University, USA  
Erika Dennis, Florida State University, USA  
An-I Andy Wang, Florida State University, USA  
Peter Reiher, University of California Los Angeles, USA  
Sarah Diesburg, University of Northern Iowa, USA*

**Fast Journaling made simple with NVM**

*Woong Sul, Hanyang University, South Korea  
Kihwang Kim, Hanyang University, South Korea  
Minsoo Ryu, Hanyang University, South Korea  
Hyungsoo Jung, Hanyang University, South Korea  
Hyuck Han, Dongduk Women's University, South Korea*

**GPU Swap-aware Scheduler: Virtual Memory Management for GPU Applications**

*Su-Wei Yang, National Taiwan University of Science and Technology, Taiwan  
Zhao-Wei Qiu, National Taiwan University of Science and Technology, Taiwan  
Ya-Shu Chen, National Taiwan University of Science and Technology, Taiwan*

**An Efficient Garbage Collection in Java Virtual Machine via Swap I/O Optimization**

*Hyojeong Lee, Seoul National University, South Korea  
Qichen Chen, Seoul National University, South Korea  
Heon Young Yeom, Seoul National University, South Korea  
Yongseok Son, Chung-Ang University, South Korea*

**THU 14:20 – 16:00  
Room: Libenský**

**(SFECS) Sustainability of Fog/Edge Computing Systems**

**Session Chair:** Christian Esposito, University of Salerno, Italy

**An Experiment-Driven Performance Model of Stream Processing Operators in Fog Computing Environments**

*HamidReza Arkian, University of Rennes 1, France  
Guillaume Pierre, University of Rennes 1, France  
Johan Tordsson, Elastisys AB, Sweden  
Erik Elmroth, Elastisys AB, Sweden*

**Access Control Method using Electrocardiogram Signal for Fog Computing Security**

*Jin Su Kim, Chosun University, South Korea  
Min Gu Kim, Chosun University, South Korea  
Myung-Won Lee, Chosun University, South Korea  
Sung Bum Pan, Chosun University, South Korea*

**Situation Awareness via Information Hovering in Post-disaster Communications**

*Gaetano Manzo, University of Bern and University of Applied Sciences and Arts of Western Switzerland, Switzerland  
Flavian Bonvin, University of Applied Sciences and Arts of Western Switzerland, Switzerland  
Christian Esposito, University of Salerno, Italy  
Torsten Braun, University of Bern, Switzerland  
Gianluca Rizzo, University of Applied Sciences and Arts of Western Switzerland, Switzerland*

**A Comparative Survey of Connectivity Models in Vehicular Networks**

*Mingzhou Liang, Hohai University, China  
Yu Shen, Hohai University, China  
Xin Su, Hohai University, China  
Xiaofeng Liu, Hohai University, China  
Chang Choi, Cachon University, South Korea*

**THU 14:20 – 16:00  
Room: Matal**

**(IRMAS-2) Intelligent Robotics and Multi-Agent Systems**

**Session Chair:** Rui P. Rocha, University of Coimbra, Portugal

**Towards a Distributed Planning of Decision Making under Uncertainty for a Fleet of Robots**

*Paul Jourdan, INRA Occitanie-Toulouse, France  
Guillaume Lozenguez, IMT Lille Douai, France  
Luc Fabresse, IMT Lille Douai, France  
Noury Bouraqadi, IMT Lille Douai, France*

**A Model Transformation Approach to Constructing Agent-oriented Design Models for CPS/IoT Systems**

*Hiroyuki Nakagawa, Osaka University, Japan  
Shinpei Ogata, Shinshu University, Japan  
Yoshitaka Aoki, Nihon Unisys, Ltd., Japan  
Kazuki Kobayashi, Shinshu University, Japan*

**THU 14:20 – 16:00  
Room: Lacina**

**(RE-1) Requirement Engineering**

**Session Chair:** Julio Leite, Pontificia Universidade Católica do Rio de Janeiro, Brazil

**Managing Sessions of Creative Requirements Elicitation and Assessment**

*Rafael Pinto, Federal Institute of Rio Grande do Norte, Brazil  
Lyrene Silva, Federal University of Rio Grande do Norte, Brazil  
Ricardo Valentim, Federal University of Rio Grande do Norte, Brazil*

**A Process to Support the Creation of iStar Extensions**

*Enyo Gonçalves, Universidade Federal do Ceará and Universidade Federal de Pernambuco, Brazil  
João Araujo, Universidade Nova de Lisboa, Portugal  
Jaelson Castro, Universidade Federal de Pernambuco, Brazil*

**Towards a Library of Usability Requirements**

*Alberto Rodrigues da Silva, Universidade de Lisboa, Portugal  
Carolina Lisboa Sequeira, Universidade de Lisboa and Universidade Aberta, Portugal*

**Lessons Learned about Oral-auditory and Visual-spatial Communication in Requirements Engineering with Deaf Stakeholders**

*Antônio C.F. Silva, Instituto Federal do Mato Grosso, Brazil  
Cássio L. Rodrigues, Universidade Federal de Goiás, Brazil  
Neuma Chaveiro, Universidade Federal de Goiás, Brazil  
Renata R.O. Garcia, Universidade Federal de Goiás, Brazil  
Soraya B.R. Duarte, Instituto Federal de Goiás, Brazil  
Mariá A.R. Araújo, Universidade Federal de Goiás, Brazil  
Vinícius B. Santos, Universidade Federal de Goiás, Brazil  
Karina R.G. Silva, Universidade Federal de Goiás, Brazil  
Paulo M.S. Rodrigues, Universidade Federal de Goiás, Brazil  
Luila M. Oliveira, Universidade Federal de Goiás, Brazil  
Caio César Silva Sousa, Universidade Federal de Goiás, Brazil*

**THU 14:20 – 16:00  
Room: Siesta**

**(IAR) Information Access and Retrieval**

**Session Chair:** Gloria Bordogna, CNR-IREA, Italy

**Evaluating the Usefulness of Citation Graph and Document Metadata in Scientific Document**

**Recommendation for Neophytes**

*Bissan Audeh, University of Lyon, France  
Michel Beigbeder, University of Lyon, France  
Christine LARGERON, University of Lyon, France  
Diana Ramírez-Cifuentes, University of Lyon, France*

**Forward and Backward Feature Selection for Query Performance Prediction**

*Sébastien Déjean, University of Toulouse, France*  
*Radu Tudor Ionescu, University of Bucharest, Romania*  
*Josiane Mothe, University of Toulouse, France*  
*Md Zia Ullah, CNRS, France*

**Iterative Learning to Rank from Explicit Relevance Feedback**

*Mateus Pereira, Dalhousie University, Canada*  
*Elham Etemad, Dalhousie University, Canada*  
*Fernando Paulovich, Dalhousie University, Canada*

**THU 16:00 – 16:30**

**Coffee Break**

**THU 16:30 – 18:10**

**Room: Klingler**

**(OS-2) Operating Systems**

**Session Chair:** Bongjae Kim, Sun Moon University, Korea

**An Efficient Tification of the Linux Kernel for Minimizing Resource Consumption**

*Takuya Shizukuishi, Future University Hakodate, Japan*  
*Katsuya Matsubara, Future University Hakodate, Japan*

**Two-Tier Garbage Collection for Persistent Object**

*Dokeun Lee, Hanyang University, South Korea*  
*Youjip Won, KAIST, South Korea*  
*Yongjun Park, Hanyang University, South Korea*  
*Seongjin Lee, Gyeongsang National University, South Korea*

**Efficient Scheme for Compressing and Transferring Data in Hadoop Clusters**

*Seungyeon Lee, Soongsil University, South Korea*  
*Jusuk Lee, Soongsil University, South Korea*  
*Yongmin Kim, Soongsil University, South Korea*  
*Kicheol Park, Soongsil University, South Korea*  
*Jiman Hong, Soongsil University, South Korea*  
*Junyoung Heo, Hansung University, South Korea*

**Near Real-Time Scheduling in Cloud-Edge Platforms**

*Vasile-Daniel Balteanu, University Politehnica of Bucharest, Romania*  
*Alexandru Neculai, University Politehnica of Bucharest, Romania*  
*Catalin Negru, University Politehnica of Bucharest, Romania*  
*Florin Pop, University Politehnica of Bucharest, Romania*  
*Adrian Stoica, TERRASIGNA SRL, Romania*

**THU 16:30 – 18:10**

**Room: Libenský**

**(WT) Web Technologies**

**Session Chair:** Francesco Poggi, University of Modena and Reggio Emilia, Italy

**XIEv: Dynamic Analysis for Crawling and Modeling of Web Applications**

*Manuel Leithner, SBA Research, Austria*  
*Dimitris E. Simos, SBA Research, Austria*  
*Poster Papers*

**A Browserless Architecture for extracting Web Prices**

*Jorge Lloret-Gazo, University of Zaragoza, Spain*

**An Elastic Net Regularized Matrix Factorization Technique for Recommender Systems**

*Bianca Mitroi, Erasmus University Rotterdam, The Netherlands*  
*Flavius Frasinca, Erasmus University Rotterdam, The Netherlands*

**THU 16:30 – 18:10**

**Room: Matal**

**(PL) Programming Languages**

**Session Chair:** Barrett Bryant, University of North Texas, USA

**Inferring Types and Effects via Static Single Assignment**

*Leonardo Filipe Rigon, Santa Catarina State University, Brazil*  
*Paulo Torrens, Santa Catarina State University, Brazil*  
*Cristiano Vasconcellos, Santa Catarina State University, Brazil*

**On the Nature of Cooperative Scheduling in Active Objects**

*Vlad Serbanescu, Centrum Wiskunde and Informatica, The Netherlands*  
*Frank de Boer, Centrum Wiskunde and Informatica, The Netherlands*

**Analyses of a Model-Based Real-Time Language Embedded in C++**

*Tadeus Prastowo, University of Trento, Italy*  
*Luigi Palopoli, University of Trento, Italy*  
*Luca Abeni, Scuola Superiore Sant'Anna, Italy*  
*Giuseppe Lipari, Université de Lille 1, France*

**THU 16:30 – 18:10**

**Room: Lacina**

**(RE-2) Requirement Engineering**

**Session Chair:** Julio Leite, Pontificia Universidade Católica do Rio de Janeiro, Brazil

**Goal-based Configuration Analysis for Networks of Collaborative Cyber-physical Systems**

*Jennifer Brings, University of Duisburg-Essen, Germany  
Marian Daun, University of Duisburg-Essen, Germany  
Thorsten Weyer, University of Koblenz-Landau, Germany  
Klaus Pohl, University of Duisburg-Essen, Germany*

**Incorporating the Voice of the Customer into Mass-Market Software Product Management**

*Dana Naous, University of Lausanne, Switzerland  
Andrea Giessmann, SAP SE, Germany  
Christine Legner, University of Lausanne, Switzerland*

**Towards the Improvement of Natural Language Requirements Descriptions: TheC&L Tool**

*Edgar Sarmiento-Calisaya, Universidad Nacional de San Agustín de Arequipa, Peru  
Edward Hinojosa Cárdenas, Universidad Nacional de San Agustín de Arequipa, Peru  
Victor Cornejo-Aparicio, Universidad Nacional de San Agustín de Arequipa, Peru  
Guina Sotomayor Alzamora, Universidad Nacional del Altiplano de Puno, Peru*

**THU 16:30 – 18:10**

**Room: Siesta**

**(DASH) Data-driven Analysis for Software and Hardware Co-Dependability**

**Session Chair:** Jong-Hyouk Lee, Sangmyung University, Korea

**ARTAS: Automatic Research Trend Analysis System for Information Security**

*Seungsoo Park, Hannam University, South Korea  
Manhee Lee, Hannam University, South Korea*

**A Format-preserving encryption FF1, FF3-1 using Lightweight Block Ciphers LEA and, SPECK**

*Wonyoung Jang, Soonchunhyang University, South Korea  
Sun-Young Lee, Soonchunhyang University, South Korea*

**ACIDroid: A Practical App Cache Integrity Protection System on Android Runtime**

*Jusop Choi, Sungkyunkwan University, South Korea  
Soolin Kim, Sungkyunkwan University, South Korea  
Junsung Cho, Sungkyunkwan University, South Korea  
Kuyju Kim, Sungkyunkwan University, South Korea  
Seok Hong, Samsung Research, South Korea  
Hyoungshick Kim, Sungkyunkwan University, South Korea*

**Friday April 3, 2020**

**FRI 9:00 – 10:40**

**Room: Klingner**

**(EC) Applications of Evolutionary Computing**

**Session Chair:** Laura Melgar García, the Pablo de Olavide University of Seville, Spain

**Leveraging Asynchronous Parallel Computing to Produce Simple Genetic Programming Computational Models**

*Aliyu Sani Sambo, Birmingham City University, UK  
R. Muhammad Atif Azad, Birmingham City University, UK  
Yevgeniya Kovalchuk, Birmingham City University, UK  
Vivek Padmanaabhan Indramohan, Birmingham City University, UK  
Hanifa Shah, Birmingham City University, UK*

**Profiled Glucose Forecasting using Genetic Programming and Clustering**

*Sergio Contador, Universidad Rey Juan Carlos, Spain  
J. Manuel Velasco, Universidad Complutense de Madrid, Spain  
Oscar Garnica, Universidad Complutense de Madrid, Spain  
J. Ignacio Hidalgo, Universidad Complutense de Madrid, Spain*

**Proof Searching in HOL4 with Genetic Algorithm**

*M. Zohaib Nawaz, National University of Sciences and Technology, Pakistan  
Osman Hasan, National University of Sciences and Technology, Pakistan  
M. Saqib Nawaz, Herbin Institute of Technology (Shenzhen), Shenzhen, China  
Philippe Fournier-Viger, Herbin Institute of Technology (Shenzhen), Shenzhen, China  
Meng Sun, Peking University, China*

**FRI 9:00 – 10:40**

**Room: Libenský**

**(VPHBA-1) Video Processing for Human Behavioral Analysis**

**Session Chair:** Donatello Conte, Computer Science Laboratory of Tours, France

**Lightweight Network Architecture for Real-Time Action Recognition**

*Alexander Kozlov, Intel Corp., Russia  
Vadim Andronov, Intel Corp., Russia  
Yana Gritsenko, Intel Corp., Russia*

**Robust, Efficient and Privacy-Preserving Violent Activity Recognition in Videos**

*Javed Imran, Indian Institute of Technology Roorkee, India  
Balasubramanian Raman, Indian Institute of Technology Roorkee, India  
Amitesh Singh Rajput, Indian Institute of Technology Roorkee, India*

**Markerless Gait Analysis in Stroke Survivors based on Computer Vision and Deep Learning: A Pilot Study**

*Matteo Moro, Universita' degli Studi di Genova, Italy  
Giorgia Marchesi, Universita' degli Studi di Genova, Italy  
Francesca Odone, Universita' degli Studi di Genova, Italy  
Maura Casadio, Universita' degli Studi di Genova, Italy*

**A Decision Level Fusion Approach for Deception Detection based on Speech and Behavioral Cues**

*Safa Chebbi, Sup'Com, Tunisia  
Sofia Ben Jebara, Sup'Com, Tunisia*

**FRI 9:00 – 10:40  
Room: Matal**

**(BPMM-1) Business Process Management & Modeling**

**Session Chair:** Marco Brambilla, Politecnico di Milano, Italy

**Process Discovery using In-database Minimum Self Distance Abstractions**

*Alifah Syamsiyah, Eindhoven University of Technology, The Netherlands  
Sander J.J. Leemans, Queensland University of Technology, Australia*

**Event-Log Abstraction using Batch Session Identification and Clustering**

*Massimiliano de Leoni, University of Padua, Italy  
Safa Düндar, Micro Focus, The Netherlands*

**Resource-Centric Process Mining: Clustering using Local Process Models**

*Landelin Delcoucq, University of Mons, Belgium  
Fabian Lecron, University of Mons, Belgium  
Philippe Fortemps, University of Mons, Belgium  
Wil.M.P van der Aalst, RWTH Aachen, Germany*

**Comparing BPMN to BPMN + DMN for IoT Process Modelling: A Case-Based Inquiry**

*Faruk Hasić, KU Leuven, Belgium  
Estefania Serral, KU Leuven, Belgium  
Monique Snoeck, KU Leuven, Belgium*

**FRI 9:00 – 10:40  
Room: Lacina**

**(DBDM-1) Databases and Big Data Management**

**Session Chair:** Junping Sun, Nova Southeastern University, USA

**An Analysis of Mapping Strategies for Storing RDF Data into NoSQL Databases**

*Luiz Henrique Zambom Santana, Universidade Federal de Santa Catarina, Brazil  
Ronaldo dos Santos Mello, Universidade Federal de Santa Catarina, Brazil*

**DEMETER: Hardware-assisted Database Checkpointing**

*Hyeonseok Oh, Hanyang University, South Korea  
Hyeongwon Jang, Hanyang University, South Korea  
Jaeun Kim, Hanyang University, South Korea  
Jongbin Kim, Hanyang University, South Korea  
Hyuck Han, Dongduk Women's University, South Korea  
Sooyong Kang, Hanyang University, South Korea  
Hyungsoo Jung, Hanyang University, South Korea*

**Enhancing Recursive Graph Querying on RDBMS with Data Clustering Approaches**

*Lucas C. Scabora, Universidade de São Paulo, Brazil  
Gabriel Spadon, Universidade de São Paulo, Brazil  
Paulo H. Oliveira, Universidade de São Paulo, Brazil  
Jose F. Rodrigues Jr., Universidade de São Paulo, Brazil  
Caetano Traina Jr., Universidade de São Paulo, Brazil*

**Schema-agnostic Blocking for Streaming Data**

*Tiago Brasileiro Araújo, Federal University of Campina Grande, Brazil  
Kostas Stefanidis, Tampere University, Finland  
Carlos Eduardo Santos Pires, Federal University of Campina Grande, Brazil  
Jyrki Nummenmaa, Tampere University, Finland  
Thiago Pereira da Nóbrega, Federal University of Campina Grande, Brazil*

**FRI 10:40 – 11:10  
Coffee Break**

**FRI 11:10 – 12:50**  
**Room: Klinger**

**(MCA) Mobile Computing and Applications**

**Session Chair:** Herbert Kuchen from University of Munster, Germany

**A Model-Driven Approach to Cross-Platform Development of Accessible Business Apps**

*Christoph Rieger, University of Münster, Germany*  
*Daniel Lucrédio, Federal University of São Carlos, Brazil*  
*Renata Pontin M. Fortes, ICMC-USP, Brazil*  
*Herbert Kuchen, University of Münster, Germany*  
*Felipe Dias, ICMC-USP, Brazil*  
*Lianna Duarte, ICMC-USP, Brazil*

**Prongle: Lightweight Communication over Unassociated Wi-Fi**

*Otto Waltari, University of Helsinki, Finland*  
*Jussi Kangasharju, University of Helsinki, Finland*

**A Game-theoretic approach for the Multi-objective Frequency Assignment Problem in Mobile Networks**

*Fatma Laidoui, École nationale Supérieure d'Informatique, Algeria*  
*Fatima Benbouzid-Si Tayeb, École nationale Supérieure d'Informatique, Algeria*  
*Malika Bessedik, École nationale Supérieure d'Informatique, Algeria*  
*Fatima Zahra Laidi, École nationale Supérieure d'Informatique, Algeria*

**FRI 11:10 – 12:50**  
**Room: Libenský**

**(VPHBA-2) Video Processing for Human Behavioral Analysis**

**Session Chair:** Donatello Conte, Computer Science Laboratory of Tours, France

**(CIVIA) Computational Intelligence and Video & Image Analysis**

**Session Chair:** TBA

**Appearance Features for Online Multiple Camera Multiple Target Tracking**

*Quoc Cuong Le, University of Tours, France*  
*Moncef Hidane, INSA Centre Val de Loire, France*

**Siamese-rPPG Network: Remote Photoplethysmography Signal Estimation from Face Videos**

*Yun-Yun Tsou, National Tsing Hua University, Taiwan*  
*Yi-An Lee, National Tsing Hua University, Taiwan*  
*Chiou-Ting Hsu, National Tsing Hua University, Taiwan*  
*Shang-hung Chang, Linkou Chang Gung Memorial Hospital, Taiwan*

**EvoU-Net: An Evolutionary Deep Fully Convolutional Neural Network for Medical Image Segmentation**

*Tahereh Hassanzadeh, University of New South Wales, Australia*  
*Daryl Essam, University of New South Wales, Australia*  
*Ruhul Sarker, University of New South Wales, Australia*

**M2P3: Multimodal Multi-Pedestrian Path Prediction by Self-Driving Cars with Egocentric Vision**

*Atanas Poibrenski, iMotion Germany GmbH, Germany*  
*Matthias Kusch, German Research Center for Artificial Intelligence, Germany*  
*Igor Vozniak, German Research Center for Artificial Intelligence, Germany*  
*Christian Müller, German Research Center for Artificial Intelligence, Germany*

**FRI 11:10 – 12:50**  
**Room: Matal**

**(BPMM-2) Business Process Management & Modeling**

**Session Chair:** Marco Brambilla, Politecnico di Milano, Italy

**Enhancing Business Processes with Trustworthiness using Blockchain: A Goal-Oriented Approach**

*Haan Johnng, University of Texas at Dallas, USA*  
*Doohwan Kim, Chungbuk National University, South Korea*  
*Grace Park, State Farm, USA*  
*Jang-Eui Hong, Chungbuk National University, South Korea*  
*Tom Hill, Fellows Consulting Group, LLC, USA*  
*Lawrence Chung, University of Texas at Dallas, USA*

**Improving Mobile Business Process Monitoring with Enhanced NFV MANO: A Method to Elicit Connectivity Requirements from Process Models**

*Giovanni Meroni, Politecnico di Milano, Italy*  
*Marouan Mizmizi, Politecnico di Milano, Italy*  
*Pierluigi Plebani, Politecnico di Milano, Italy*  
*Luca Reggiani, Politecnico di Milano, Italy*

**FRI 11:10 – 12:50**  
**Room: Lacina**

**(DBDM-1) Databases and Big Data Management**

**Session Chair:** Junping Sun, Nova Southeastern University, USA

**(BIO) Bioinformatics and Computational Biology**

**Session Chair:** TBA

**Memory Efficient Fork-based Checkpointing Mechanism for In-Memory Database Systems**

*Jiwoong Park, Seoul National University, South Korea*  
*Yunjae Lee, Seoul National University, South Korea*  
*Heon Young Yeom, Seoul National University, South Korea*  
*Yongseok Son, Chung-Ang University, South Korea*

**Formal Analysis of the Biological Circuits using Higher-order-logic Theorem Proving**

*Sa'ed Abed, Kuwait University, Kuwait  
Adnan Rashid, National University of Sciences and Technology, Pakistan  
Osman Hasan, National University of Sciences and Technology, Pakistan*

**De Novo Drug Design using Self Attention Mechanism**

*Vedang Mandhana, Pune Institute of Computer Technology, India  
Rutuja Taware, Pune Institute of Computer Technology, India*

**POSTERS LISTING**

**WED 10:40 - 12:50**

**Poster Session I**

**(Location: Congress C+D)**

**(BIO) Survey of Public Assay Data: Opportunities and Challenges to Understanding Antimicrobial Resistance**

*Akshay Agarwal, IBM Research, USA  
Gowri Nayar, IBM Research, USA  
James Kaufman, IBM Research, USA*

**(BIO) Classification of 3D Interpolated EEG Signals using Hybrid R-3DCNN**

*Vedang Mandhana, Pune Institute of Computer Technology, India  
Rutuja Taware, Pune Institute of Computer Technology, India*

**(BPM) A Subprocess Discovery Framework for Process Model Modularization and Abstraction**

*Sergio Angelastro, Università di Bari, Italy  
Stefano Ferilli, Università di Bari, Italy*

**(CASoM) Towards Summarizing Program Statements in Source Code Search**

*Victor J. Marin, Rochester Institute of Technology, USA  
Iti Bansal, Rochester Institute of Technology, USA  
Carlos R. Rivero, Rochester Institute of Technology, USA*

**(CASoM) Comparing Maintainability Index, SIG Method, and SQALE for TechnicalDebt Identification**

*Peter Střečanský, Masaryk University, Czechia  
Stanislav Chren, Masaryk University, Czechia  
Bruno Rossi, Masaryk University, Czechia*

**(CASoM) Evaluating Techniques for Method-Exact Energy Measurements: Towards a Framework for Platform-Independent Code-Level Energy Measurements**

*Felix Rieger, Philipps-Universität Marburg, Germany  
Christoph Bockisch, Philipps-Universität Marburg, Germany*

**(CASoM) Semantic Code Clone Detection for Enterprise Applications**

*Jan Svacina, Baylor University, USA  
Jonathan Simmons, Baylor University, USA  
Tomas Cerny, Baylor University, USA*

**(CC) Multi-objective Load Balancing in Distributed Computing Environment: An Evolutionary Computing Approach**

*Avadh Kishor, Indian Institute of Technology, India  
Rajdeep Niyogi, Indian Institute of Technology, India*

**(CC) Towards a Formal Model for Composable Container Systems**

*Fabio Burco, University of Udine, Italy  
Marino Miculan, University of Udine, Italy  
Marco Peressotti, University of Southern Denmark, Denmark*

**(CIVIA) FINE: Improving Time and Precision of Segmentation Techniques for Vertebral Compression Fractures in MRI**

*Jonathan S. Ramos, University of São Paulo, Brazil  
Mirela T. Cazzolato, University of São Paulo, Brazil  
Marcello H. Nogueira-Barbosa, University of São Paulo, Brazil  
Agma J.M. Traina, University of São Paulo, Brazil*

**(DADS) Towards a Replication Service for Data-Intensive Fog Applications**

*Jonathan Hasenburg, Technische Universität Berlin, Germany  
Martin Grambow, Technische Universität Berlin, Germany  
David Bermbach, Technische Universität Berlin, Germany*

**(DADS) ALISI: A Lightweight Identification System based on Iroha**

*Giuseppe Bernieri, University of Padua, Italy  
Mauro Conti, University of Padua, Italy  
Matteo Sovilla, University of Padua, Italy  
Federico Turrin, University of Padua, Italy*

**(DADS) Spatial Bloom Filter in Named Data Networking: A Memory Efficient Solution**

*Filippo Berto, University of Padua, Italy  
Luca Calderoni, University of Bologna, Italy  
Mauro Conti, University of Padua, Italy  
Eleonora Losiouk, University of Padua, Italy*

**(EC) High-Content Screening Images Streaming Analysis using the STriGen Methodology**

*Laura Melgar-García, Universidad Pablo de Olavide, Spain  
David Gutiérrez-Avilés, Universidad Pablo de Olavide, Spain  
Cristina Rubio-Escudero, Universidad de Sevilla, Spain  
Alicia Troncoso, Universidad Pablo de Olavide, Spain*

**(EC) Vulnerability Coverage for Adequacy Security Testing**

*Shuvalaxmi Dass, Texas Tech University, USA  
Akbar Siami Namin, Texas Tech University, USA*

**(EMBS) Early Eviction and Swapping for MLC STT-RAM-based LLC**

*Ping Cheng, National Taiwan University of Science and Technology, Taiwan  
Jen-Wei Hsieh, National Taiwan University of Science and Technology, Taiwan*

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**(EMBS) Security based Design Space Exploration for CPS**

Lukas Gressl, Graz University of Technology, Austria  
Alexander Rech, Graz University of Technology, Austria  
Christian Steger, Graz University of Technology, Austria  
Andreas Sinnhofer, NXP Semiconductors Austria GmbH, Austria  
Ralph Weissnegger, CISCO Semiconductor GmbH, Austria

**(EMBS) VIRA: A Virtualization Assisted Deterministic System-Level Simulation**

Hsin-I Wu, National Tsing Hua University, Taiwan  
Ren-Song Tsay, National Tsing Hua University, Taiwan  
Hsu-Hsun Chin, National Tsing Hua University, Taiwan

**(IoT) Empowering Personalized Feedback on Hot Water Usage: A Field Study with Shower Meters**

Sebastian A. Günther, University of Bamberg, Germany  
Carlo Stingl, University of Bamberg, Germany  
Vlad C. Coroamă, ETH Zurich, Switzerland  
Samuel Schöb, Massachusetts Institute of Technology, USA  
Thorsten Staake, University of Bamberg, Germany

**(IoT) SeCon-NG: Implementing a Lightweight Cryptographic Library based on ECDH and ECDSA for the Development of Secure and Privacy-Preserving Protocols in Contiki-NG**

Eugene Frimpong, Tampere University, Finland  
Antonios Michalakis, Tampere University, Finland

**(IoT) Towards a Heterogeneous IoT Privacy Architecture**

Sanonda Datta Gupta, University of Maine, USA  
Sepideh Ghanavati, University of Maine, USA

**(IRMAS) Agents in Dynamic Contexts, a System for Learning Plans**

Francesco Lanza, Università degli Studi di Palermo, Italy  
Patrick Hammer, Temple University, USA  
Valeria Seidita, Università degli Studi di Palermo, Italy  
Pei Wang, Temple University, USA  
Antonio Chella, Università degli Studi di Palermo, Italy

**(IRMAS) Dynamic Proxemia Modeling Approach (DPMA) for Navigation and Interaction with a Group of Persons**

Abir Bellarbi, Université des sciences et de la technologie  
Houari Boumediène, Algeria  
Abdel-illah Mouaddib, GREYC, France  
Nouara Achour, USTHB, Algeria  
Noureddine Ouadah, CDTA, Algeria

**(IRMAS) On Finding Time-efficient Trajectories for Fixed-wing Aircraft using Dubins Paths with Multiple Radii**

Kristýna Kučerová, Czech Technical University in Prague, Czechia  
Petr Váňa, Czech Technical University in Prague, Czechia  
Jan Faigl, Czech Technical University in Prague, Czechia

**(MCA) AppSpeedXray: A Mobile Application Performance Measurement Tool**

Hyunsu Mun, Chungnam National University, South Korea  
Youngseok Lee, Chungnam National University, South Korea

**(NET) Advanced System for the Prevention and Early Detection of Forest Fires (ASPIres)**

Peter Peinl, Fulda University of Applied Sciences, Germany  
Rossitza Goleva, New Bulgarian University, Bulgaria  
Jugoslav Ackoski, Military Academy Skopje, North Macedonia

**(NET) SOM-based Behavioral Analysis for Virtualized Network Functions**

Giacomo Lanciano, Scuola Normale Superiore and Scuola Superiore Sant'Anna, Italy  
Antonio Ritacco, Scuola Superiore Sant'Anna, Italy  
Tommaso Cucinotta, Scuola Superiore Sant'Anna, Italy  
Marco Vannucci, Scuola Superiore Sant'Anna, Italy  
Antonino Artale, Vodafone, Italy  
Luca Basili, Vodafone, Italy  
Enrica Sposato, Vodafone, Italy  
Joao Barata, Vodafone, Portugal

**(PDP) Using Natural Language Processing to Detect Privacy Violations in Online Contracts**

Paulo Silva, University of Coimbra, Portugal  
Carolina Gonçalves, University of Coimbra, Portugal  
Carolina Godinho, University of Coimbra, Portugal  
Nuno Antunes, University of Coimbra, Portugal  
Marilia Curado, University of Coimbra, Portugal

**(PDP) PEEPLL: Privacy-Enhanced Event Pseudonymisation with Limited Linkability**

Ephraim Zimmer, University of Hamburg, Germany  
Christian Burkert, University of Hamburg, Germany  
Tom Petersen, University of Hamburg, Germany  
Hannes Federrath, University of Hamburg, Germany

**(RE) Request for Comments: Conversation Patterns in Issue Tracking Systems of Open-Source Projects**

Michael Rath, Technical University Ilmenau, Germany  
Patrick Mäder, Technical University Ilmenau, Germany

**(RE) Towards a Non-Functional Requirements Discovery Approach for Persuasive Systems**

Nelly Condori-Fernandez, Universidade da Coruña, Spain  
Joao Araujo, Universidade Nova de Lisboa, Portugal  
Alejandro Catala, Universidade de Santiago de Compostela, Spain  
Patricia Lago, Vrije Universiteit Amsterdam, The Netherlands

**(RE) Defining Agile Requirements Change Management: A Mapping Study**

Danyllo Albuquerque, Federal University of Campina Grande, Brazil  
Everton Guimarães, The Pennsylvania State University, USA  
Mirko Perkusich, Federal University of Campina Grande, Brazil  
Alexandre Costa, Federal University of Campina Grande, Brazil  
Emanuel Dantas, Federal University of Campina Grande, Brazil  
Felipe Ramos, Federal University of Campina Grande, Brazil  
Hyggo Almeida, Federal University of Campina Grande, Brazil

**(SATTA) Modeling Microservice Architecture: A Comparative Experiment Towards the Effectiveness of Two Approaches**

Jonas Sorgalla, Dortmund University of Applied Sciences and Arts, Germany  
Florian Rademacher, Dortmund University of Applied Sciences and Arts, Germany  
Sabine Sachweh, Dortmund University of Applied Sciences and Arts, Germany  
Albert Zündorf, University of Kassel, Germany



**(SE) UC2Map: Automatic Translation of Use Case Maps from Specification**

Saurabh Tiwari, DA-IICT Gandhinagar, India  
Rishab Arora, DA-IICT Gandhinagar, India  
Ashray Bharambe, DA-IICT Gandhinagar, India

**(SE) Chaining Model Transformations to Develop a System Model Verification Tool : Application to Capella State Machines and Data Flows Models**

Christophe Duhil, Thales Defense Mission System, France  
Jean-Philippe Babau, Université de Bretagne Occidentale, France  
Eric Lépicier, Thales Defense Mission System, France  
Jean-Luc Voirin, Thales Defense Mission System, France  
Juan Navas, Thales Corporate Engineering, France

**(SE) Verification of Forensic Readiness in Software Development: A Roadmap**

Lukáš Daubner, Masaryk University, Czechia  
Martin Macák, Masaryk University, Czechia  
Barbora Bůhnová, Masaryk University, Czechia  
Tomáš Pitner, Masaryk University, Czechia

**(SE) An Investigation of the Project Management Approaches of Agile and Plan-Based Companies**

Ilya Khomyakov, Innopolis University, Russia  
Ruzilya Mirgalimova, Innopolis University, Russia  
Alberto Sillitti, Innopolis University, Russia

**WED 16:00 - 18:10**  
**Poster Session II**  
**(Location: Congress C+D)**

**(DAPP) Self-Sovereign Identity on Public Blockchains and the GDPR**

Galia Kondova, University of Applied Sciences and Arts Northwestern Switzerland, Switzerland  
Jörn Erbguth, University of Geneva, Switzerland

**(DAPP) Truver - A Blockchain for Verifying Credentials**

Ahmed Taha, STRD, Germany  
Ahmed Zakaria, STRD, Germany

**(DAPP) An n/2 Byzantine Node Tolerate Blockchain Sharding Approach**

Yibin Xu, Cardiff University, UK  
Yangyu Huang, Guilin University of Electronic Technology, China

**(DM) Applying Binary Decision Diagram to Extract Concepts from Triadic Formal Context**

Julio Neves, Pontificia Universidade Catolica de Minas Gerais, Brazil  
Kaio Ananias, Pontificia Universidade Catolica de Minas Gerais, Brazil  
Cristiane Nobre, Pontificia Universidade Catolica de Minas Gerais, Brazil  
Luis Zarate, Pontificia Universidade Catolica de Minas Gerais, Brazil  
Mark Song, Pontificia Universidade Catolica de Minas Gerais, Brazil

**(DM) Constraining Deep Representations with a Noise Module for Fair Classification**

Mattia Cerrato, Università di Torino, Italy  
Roberto Esposito, Università di Torino, Italy  
Laura Li Puma, Intesa Sanpaolo Innovation Center, Italy

**(DM) Characterization of Long-lived and Non-long lived Profiles through Biclustering**

Marta D.M. Noronha, Pontifical University Catholic of Minas Gerais, Brazil  
Marcos W. Rodrigues, Pontifical Catholic University of Minas Gerais, Brazil  
Caio E. Ribeiro, University of Kent, UK  
Cristiane N. Nobre, Pontifical Catholic University of Minas Gerais, Brazil  
Mark A.J. Song, Pontifical Catholic University of Minas Gerais, Brazil  
Luis E. Zárate, Pontifical Catholic University of Minas Gerais, Brazil

**(DS) Scale Invariant Learning from Trapezoidal Data Streams**

Jeevithan Alagurajah, University of Louisiana at Lafayette, USA  
Xu Yuan, University of Louisiana at Lafayette, USA  
Xindong Wu, Mininglamp Technology, China

**(DS) A Stream Reasoning Framework based on a Multi-Agents Model**

Wafaa Mebrek, Télécom SudParis, France  
Amel Bouzeghoub, Télécom SudParis, France

**(GIA) Mining Association Rules in Asymmetric Data for Territorial Evolution Modeling**

Asma Gharbi, University of Paris 8, France  
Cyril de Runz, University of Tours, France  
Herman Akdag, University of Paris 8, France  
Sami Faiz, ISAAM, Tunisia

**(GIA) A Contextual Edit Distance for Semantic Trajectories**

Clement Moreau, University of Tours, France  
Thomas Devogele, University of Tours, France  
Veronika Peralta, University of Tours, France  
Laurent Etienne, University of Tours, France

**(HI) Deep Learning from Spontaneous Reporting Systems Data to Detect ADR Signals**

Cheng-Hao Wang, National University of Kaohsiung, Taiwan  
Wen-Yang Lin, National University of Kaohsiung, Taiwan

**(IAR) Unsupervised Cross-Modal Audio Representation Learning from Unstructured Multilingual Text**

Alexander Schindler, Austrian Institute of Technology, Austria  
Sergiu Gordea, Austrian Institute of Technology, Austria  
Peter Knees, Technische Universität Wien, Austria

**(IAR) Retrieval of Visiting Paths through Relevant Resources and Services for Enabling Smart Communities**

Gloria Bordogna, CNR IREA, Italy  
Luca Frigerio, CNR IREA, Italy  
Anna Rampini, CNR IREA, Italy

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**(KLP) Personalizing Large-scale Text Classification by Modeling Individual Differences**

*Jungho Lee, Korea University, South Korea  
Byung-Ju Choi, Korea University, South Korea  
Yeachan Kim, Korea University, South Korea  
Kang-Min Kim, Korea University, South Korea  
Woo-Jong Ryu, Korea University, South Korea  
SangKeun Lee, Korea University, South Korea*

**(KLP) Adapting Deep Learning for Sentiment Classification of Code-Switched Informal Short Text**

*Muhammad Haroon Shakeel, Lahore University of Management Sciences, Pakistan  
Asim Karim, Lahore University of Management Sciences, Pakistan*

**(KomIS) Some Lessons Learned using Health Data Literature for Smart Information Retrieval**

*Mario Ciampi, ICAR-CNR, Italy  
Giuseppe De Pietro, ICAR-CNR, Italy  
Elio Masciari, Federico II University, Italy  
Stefano Silvestri, ICAR-CNR, Italy*

**(KomIS) A Deep Learning based Chatbot for Cultural Heritage**

*Giancarlo Sperli, University of Naples "Federico II", Italy*

**(KRR) Argumentation for All**

*Nikolaos Spanoudakis, Technical University of Crete, Greece  
Konstantinos Kostis, Technical University of Crete, Greece  
Katerina Mania, Technical University of Crete, Greece*

**(MLA) Large-Scale Machine Learning for Business Sector Prediction**

*Mitch N. Angenent, Leiden University, The Netherlands  
António Pereira Barata, Leiden University, The Netherlands  
Frank W. Takes, Leiden University, The Netherlands*

**(MLA) Attentive Recurrent Text Categorisation Models using Word-Category Cross Embedding on Financial Comments**

*Macedo Maia, University of Passau, Germany  
Vivian S. Silva, University of Passau, Germany  
Markus Endres, University of Passau, Germany  
André Freitas, University of Manchester, UK  
Siegfried Handschuh, University of St. Gallen, Switzerland*

**(PL) Usability Heuristics for Domain-Specific Languages (DSLs)**

*Eduardo Mosqueira-Rey, University of A Coruña, Spain  
David Alonso-Rios, University of A Coruña, Spain*

**(PL) Distributed futures for Efficient Data Transfer between Parallel Processes**

*Pierre Leca, Huawei Technologies Co., Ltd., France  
Wijnand Suijlen, Huawei Technologies Co., Ltd., France  
Ludovic Henrio, University of Lyon, France  
Françoise Baude, Université Côte d'Azur, France*

**(PL) Expressing Disambiguation Filters as Combinators**

*José Nuno Macedo, University of Minho, Portugal  
João Saraiva, University of Minho, Portugal*

**(RS) Modeling User Exposure with Recommendation Influence**

*Masahiro Sato, Fuji Xerox, Japan  
Jannajay Singh, Fuji Xerox, Japan  
Sho Takemori, Fuji Xerox, Japan  
Takashi Sonoda, Fuji Xerox, Japan  
Qian Zhang, Fuji Xerox, Japan  
Tomoko Ohkuma, Fuji Xerox, Japan*

**(RS) Designing a Recommender System for Board Games**

*Michael Ion, Technische Universität Wien, Austria  
Dimitris Sacharidis, Technische Universität Wien, Austria  
Hannes Werthner, Technische Universität Wien, Austria*

**(SFECS) Comparison of Simulators for Fog Computing**

*Christian Kunde, University of Duisburg-Essen, Germany  
Zoltán Ádám Mann, University of Duisburg-Essen, Germany*

**(SONAMA) Signed Heterogeneous Network Embedding in Social Media**

*Fatemeh Salehi Rizi, University of Passau, Germany  
Michael Granitzer, University of Passau, Germany*

**(SONAMA) Topology and Robustness Analysis of Temporal Air Transport Network**

*Humberto Hayashi Sano, Universidade Federal de São Paulo, Brazil  
Lilian Berton, Federal University of São Paulo, Brazil*

**(SONAMA) Finding Interest Groups from Twitter Lists**

*Mohamed Benabdelkrim, INSA Lyon, France  
Jean Savinien, EM Lyon, France  
Céline Robardet, Insa Lyon, France*

**(SONAMA) Influence Maximization through User Interaction Modeling**

*David Oriedi, University of Reims, France  
Cyril de Runz, University of Tours, France  
Zahia Guessoum, University of Reims, France  
Amine Ait Younes, University of Reims, France  
Henry Nyongesa, Dedan Kimathi University of Technology, Kenya*

**(SP) Sophisticated PV Prediction Platform using Optimized PV Physical Model**

*Hyunho Ji, Korea Electronics Technology Institute, South Korea  
Taehyoung Kim, Korea Electronics Technology Institute, South Korea  
Kyung Sun Ham, Korea Electronics Technology Institute, South Korea*

**(SP) Day-Ahead Photovoltaic Power Forecasting using Numerical Weather Prediction**

*Taehyoung Kim, Korea Electronics Technology Institute, South Korea  
Jaeho Park, Korea Electronics Technology Institute, South Korea  
Kyung Sun Ham, Korea Electronics Technology Institute, South Korea*

**(SP) Internet of Things based Virtual Display Platform to Provide a Screen**

Seoyeon Kim, Hannam University, South Korea  
Jaehyeok Jeong, Hannam University, South Korea  
Inhwan Na, coForward co., Ltd., South Korea  
Young-Sun Yun, Hannam University, South Korea  
Seongbae Eun, Hannam University, South Korea  
Jinman Jung, Hannam University, South Korea

**(SWA) Towards the Semantic Formalization of Science**

Said Fathalla, University of Bonn, Germany; Alexandria University, Egypt  
Sören Auer, University of Hannover, Germany  
Christoph Lange, RWTH Aachen University, Germany

**(VPHBA) Template Co-updating in Multi-modal Human Activity Recognition Systems**

Annalisa Franco, University of Bologna, Italy  
Antonio Magnani, University of Bologna, Italy  
Dario Maio, University of Bologna, Italy

**(VPHBA) Towards a Data-Driven Method for RGB Video-Based Hand Action Quality Assessment in Real Time**

Tianyu Wang, Shanghai Jiao Tong University, China  
Minhao Jin, Shanghai Jiao Tong University, China  
Jingying Wang, Shanghai Jiao Tong University, China  
Yijie Wang, Shanghai Jiao Tong University, China  
Mian Li, Shanghai Jiao Tong University, China

**(WCN) Evaluation of Fog Topologies in Fog Planning for IoT Task Scheduling**

Zhiming He, Kyungpook National University, South Korea  
Limei Peng, Kyungpook National University, South Korea

**(WT) Censorship-resistant Web Annotations based on Ethereum and IPFS**

João Santos, Universidade de Lisboa, Portugal  
Nuno Santos, Universidade de Lisboa, Portugal  
David Dias, Protocol Labs, USA

**(WT) RAMLFlask: Managing Artifact Coupling for Web APIs**

Stefan Sobernig, WU Vienna, Austria  
Michael Maurer, Independent Developer, Austria  
Mark Strembeck, WU Vienna, Austria

**Student Research  
Competition Program**

**(BIO) Student Research Abstract: Multimodal Deep Learning based Approach for Cells State Classification**

Paula Raissa Silva, University of Porto, Portugal

**(CC) Student Research Abstract: Cloud Computing is a Cost Saver only if...: Towards a Model for Cloud Cost Estimation**

Rasha Makhlof, Brandenburg University of Technology, Germany

**(CPS) Student Research Abstract: ReLUSyn: Synthesizing Stealthy Attacks for Deep Neural Network-Based Safety-Critical Cyber-Physical Systems**

Aarti Kashyap, University of British Columbia, Canada

**(DAPP) Student Research Abstract: Etherolic: A Practical Security Analyzer for Smart Contracts**

Mohammadreza Ashouri, University of Potsdam, Germany

**(DAPP) Student Research Abstract: A Blockchain-Based Protocol for Message Exchange in aICS Network**

Ricardo Brandão, Military Institute of Engineering, Brazil

**(DM) Student Research Abstract: Coping for Missing Content and Missing Links in Document Network Embedding**

Jean Dupuy, Université de Lyon, France

**(MLA) Student Research Abstract: Extracting Architectural Patterns of Deep Neural Networks for Disease Detection**

Mafalda Falcão Ferreira, University of Porto, Portugal

**(SATTA) Student Research Abstract: A Toolchain for Model-Based Development of a Robot Application**

Mickaël Trezzy, Université de Toulouse, France

**(SWA) Student Research Abstract: Towards an Ontology for Personalized Hotel Room Recommendation**

Ronald Ochieng Ojino, University of Dar es Salaam, Tanzania

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