

# ACM SAC 2023

The 38<sup>th</sup> Annual ACM Symposium on Applied Computing

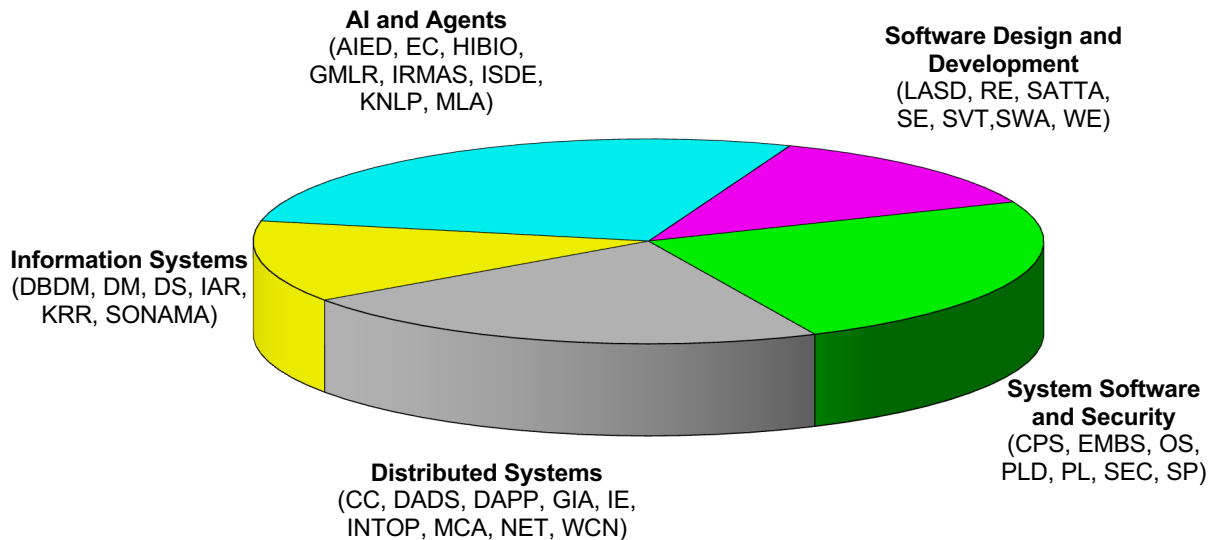
PROCEEDINGS OF THE 2023 ACM  
SYMPOSIUM ON APPLIED COMPUTING

Tallinn, Estonia  
March 27 – March 31, 2023

Organizing Committee

**Peeter Normak**  
**Mart Laapere**  
**Tomas Cerny**  
**Gunnar Piho**  
**Hossain Shahriar**  
**Daniel Irabien Peniche**  
**Junyoung Heo**  
**John Kim**

**Jiman Hong**  
**Juri Uljas**  
**Juw Won Park**  
**Lenuta Alboaie**  
**Mati Mottus**  
**Vladimir Tomberg**  
**Sirli Peda**



Hosted by Tallinn University, Estonia

\*\*\*\*\* SAC 2023 at Glance \*\*\*\*\*

Monday 3/27/2023	Tuesday 3/28/2023	Wednesday 3/29/2023	Thursday 3/30/2023	Friday 3/31/2023
	<p align="center"><b>Opening &amp; Keynote Session</b> (09:30 – 10:40)</p> <p align="center">Coffee Break (10:40 – 11:10)</p> <p align="center"><b>AM Breakout Sessions</b> (11:10 – 12:30)</p>	<p align="center"><b>AM Breakout Sessions</b> (9:00 – 10:30)</p> <p align="center">Coffee Break (10:30 – 11:00)</p> <p align="center"><b>AM Breakout Sessions</b> (11:00 – 12:30)</p> <p align="center"><b>AM Posters Session</b> (10:30 – 12:30)</p>	<p align="center"><b>Keynote Session</b> (09:30 – 10:30)</p> <p align="center">Coffee Break (10:30 – 11:00)</p> <p align="center"><b>AM Breakout Sessions</b> (11:00 – 12:30)</p>	<p align="center"><b>SIGAPP Wrap-up Meeting</b> (09:30 – 10:30)</p> <p align="center"><b>Future of Applied Computing &amp; Convergence of AI</b> (10:30 – 12:30)</p> <p align="center"><b>Track Chairs Business Meeting</b> (10:30 – 12:30)</p>
	<p><b>SAC Luncheon</b> For all Registered Attendees (12:30 – 14:00) At Researchers Forum</p>	<p><b>SAC Luncheon</b> For all Registered Attendees (12:30 – 14:00) At Researchers Forum</p>	<p><b>SAC Luncheon</b> For all Registered Attendees (12:30 – 14:00) At Researchers Forum</p>	<p><b>The Conference Ends at 12:30.</b></p>
<p align="center"><b>Tutorials</b> (14:00 – 17:30) <u><a href="#">Tutorials Program</a></u></p> <p align="center">Coffee Break (15:30 – 16:00)</p>	<p align="center"><b>PM Breakout Sessions</b> (14:00 – 15:30)</p> <p align="center">Coffee Break (15:30 – 16:00)</p> <p align="center"><b>PM Breakout Sessions</b> (16:00 – 18:00)</p> <p align="center"><b>SRC Posters Exhibit</b> (14:00 – 16:00)</p>	<p align="center"><b>PM Breakout Sessions</b> (14:00 – 15:30)</p> <p align="center">Coffee Break (15:30 – 16:00)</p> <p align="center"><b>PM Breakout Sessions</b> (16:00 – 18:00)</p> <p align="center"><b>PM Posters Session</b> (14:30 – 16:30)</p>	<p align="center"><b>PM Breakout Sessions</b> (14:00 – 15:30)</p> <p align="center">Coffee Break (15:30 – 16:00)</p> <p align="center"><b>PM Breakout Sessions</b> (16:00 – 18:00)</p> <p align="center"><b>SRC Oral Presentations</b> (16:00 – 18:00)</p>	
	<p align="center"><b>SIGAPP Annual Business Meeting</b> (18:00 – 18:30)</p> <p align="center"><b>SIGAPP Reception</b> (19:00 – 21:00) At Researchers Forum</p>	<p align="center"><b>Future SAC Organization Meeting</b> (18:00 – 19:00)</p>	<p align="center"><b>SAC Banquet</b> (19:00 – 22:30) At Lennusadam (Maritime Museum)</p>	

## \*\*\*\* SAC 2023 Session Schedule \*\*\*\*

<b>Monday March 27, 2023</b>
<b><i>Tutorial Sessions – Please see more on Tutorials Page</i></b>

Tuesday March 28, 2023				
Room	9:30am – 10:40am	11:10am – 12:30pm	2:00pm - 3:30pm	4:00pm - 6:00pm
A325	Opening/Keynote #1 (Plenary hall : A002)	AIED(3)	GMLR(4)	IRMAS(5)
A121		MCA(2)	WCN(4)	NET(2)/INTOP(3)
A402		PDP(2)	OS-1(4)	OS-2(2)/SP(3)
A346		IAR(2)	KRR-1(4)	SONAMA(5)
A224		WE(3)	SWA(4)	SE(5)
A046				SRC Poster Exhibit (2:00-4:00pm)

Wednesday March 29, 2023				
Room	9:00am – 10:30am	11:00am – 12:30pm	2:00pm - 3:30pm	4:00pm - 6:00pm
A325	MLA(4)	MLA(4)	MLA(4)	MLA(5)
A121	IE-1(4)	IE-2(4)	DADS-1(4)	DADS-2(3)/GIA(2)
A402	SEC-1(4)	SEC-2(4)	EMBS(4)	CPS(5)
A346	DS(4)	DBDM(5)		SRC ORAL Presentation
A224	SATTA(3)	LASD(5)	RE(3)	SVT(5)
A046	AM Poster Session (10:30am-12:30pm)		PM Poster Session (2:30-4:30pm)	

Thursday March 30, 2023				
Room	9:30am – 10:30am	11:00am – 12:30pm	2:00pm - 3:30pm	4:00pm - 6:00pm
A325	Keynote #2 (Plenary hall : A002)	EC(2)	HIBIO-1(4)	HIBIO-2(4)
A121		CC(4)	DAPP-1(4)	DAPP-2(3)
A402		PL(3)	KNLP-1(4)	KNLP-2(3)
A346		DM(4)	ISDE-1(4)	ISDE-2(2)/KRR-2(1)

**Notes:** Please note that the number inside the parentheses is the number of papers scheduled in the session.

Themes and their Tracks	
AI & Agents (8)	AIED(3), EC(2), HIBIO(8), GMLR(4), IRMAS(5), ISDE(6), MLA(17), KNLP(7)
Distributed Systems (9)	CC(4), DADS(7), DAPP(7), GIA(2), IE(8), INTOP(3), MCA(2), NET(2), WCN(4)
Information Systems (6)	DBDM(5), DM(4), DS(4), IAR(2), KRR(5), SONAMA(5)
Software Design & Development (7)	LASD(5), RE(3), SATTA(3), SE(5), SVT(5), SWA(4), WE(3)
System Software & Security (7)	CPS(5), EMBS(4), OS(6), PDP(2), PL(3), SEC(8), SP(3)

- Theme (# of Tracks) / Track Name (# of presentations)

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# **The 38<sup>th</sup> Annual ACM Symposium on Applied Computing**

March 27 – March 31, 2023

## **HONORABLE CONFERENCE CHAIR**

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Maart Lanperne, Tallinn University, Estonia

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Tomas Cerny, Baylor University, USA

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John Kim, Utica University, USA

## **REGISTRAR/WEBMASTER**

Junyoung Heo, Hansung University, South Korea

# SAC 2023

## Introduction

SAC 2023 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 2016 features two keynote speakers on Tuesday and Thursday, from 9:00 to 10:40. The technical program of the symposium consists of 37 tracks on different research topics, which run from Monday, April 4 through Friday, April 8, 2016. Regular oral presentation sessions start at 9:00 and end at 18:10 in five parallel sessions. Two poster tracks also run on Wednesday, April 6, from 10:40 to 12:50 and from 16:00 to 18:10. In the Student Research Competition (SRC) program, SRC posters display session runs on Tuesday from 14:30 to 18:10 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 inter-disciplinary 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

Local support for SAC 2023 is provided by Tallinn University and Tallinn University of Technology. Their support has been essential to the success of the Symposium, and it is greatly appreciated. In addition, the City of Tallinn (<https://visittallinn.ee>) proudly sponsors the conference. Finally, the SAC 2023 Student Research Competition Program is sponsored by ACM.



Association for Computing Machinery  
Advancing Computing as a Science & Profession

## Symposium Chair Message

**Jiman Hong**  
*Conference Chair*

**Maart Lanperne**  
*Conference Chair*

On behalf of the Organizing Committee, we welcome you to the 38th Annual ACM Symposium on Applied Computing (SAC 2023), hosted virtually. 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

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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 2023 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 2023 a high-quality conference. We also thank our invited keynote speakers Dr. Pekka Abrahamsson from the University of Jyväskylä in Finland, and Dr. Ted Chang, from Quanta Computer known as the world's biggest computer ODM and laptop computer maker in Taiwan. 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 Tallinn, Estonia this year.

The organizing committee has been a major contributor to the success of the SAC 2023 conference. Our gratitude goes to the Honorable Conference Chair, Dr. Peeter Normak, the Conference Vice Chair Dr. Juri Uljas, and the Local Arrangement Co-Chairs, Dr. Daniel Irabien Peniche, and Sirli Pdea from Tallinn University, Estonia. We extend our sincere appreciation 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. Lenuta Alboae, Alexandru Ioan Cuza University, Romania, and Gunnar Piho, Tallinn University of Technology, Estonia for their hard work to make a successful Poster Program, and to the Tutorial Chair Dr. Vladimir Tomberg, Tallinn University, Estonia, and Dr. Mati Mottus, Tallinn University, Estonia, for organizing the Student Research Competition, as well as to Dr. John Kim, Utica University, USA, for playing the roles of treasurer, and Dr. Junyoung Heo, Hansung University, South Korea, for the role of registration chair and webmaster. Also special thanks to our Program Co-Chairs, Dr. Juw Won Park, University of Louisville, USA, and Dr. Tomas Cerny, Baylor University, USA for coordinating and bringing together an excellent Technical Program.

Again, we welcome you to SAC 2023. We hope you enjoy the conference and stay tuned for next year, we invite you to participate in SAC 2024.

## Program Chairs Message

**Juw Won Park**

*University of Louisville, Kentucky, USA*

**Tomas Cerny**

*Baylor University, Texas, USA*

Welcome to the 38th International Symposium on Applied Computing (SAC 2023). For the past 37 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 respective 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 2023.

The open Call for Track Proposals and after prescreening the proposals, 35 Tracks were finally accepted for SAC 2023. 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 over 738 final paper submissions from over 50 different countries. The submitted papers underwent the blind review process and 175 submissions were finally accepted as full papers for inclusion in the Conference Proceedings and presentation during the Symposium. The final acceptance rate for SAC 2023 is (23.8%) for the overall track. In addition to the accepted full papers, 94 submissions that received high enough review scores were accepted as poster papers for the Posters program. The Student Research Competition (SRC) program, sponsored by ACM, is designed to provide students the opportunity to meet and exchange ideas with researchers and practitioners in their areas of interest. 45 submissions were received and finally, 5 (11%) papers were accepted for the SRC program. Student works can be seen at a poster session on Tuesday from 2 to 4 pm.

The Technical Program of SAC 2023 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 2023 Technical Sessions a huge success. Some of the popular Tracks

had an unprecedented submissions and having three blind reviews for each paper was certainly a major challenge. Once again this year, 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 2023 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 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 Tallinn University, Estonia. We wish you have a great time at SAC 2023, and you will have the opportunity to share and exchange your ideas and foster new collaborations. We hope to see you all at SAC 2024.

## SAC 2023 Themes

This year SAC tracks are divided into five themes: related themes will be associated to one room, hence related tracks will take place sequentially in the same room in most cases, so as to promote sharing and cross-fertilization of ideas through the whole audience of a theme. Check the program schedule for details. The five themes of SAC 2023 are listed below:

**(AIA) AI and Agents:** Tracks: AIED, EC, HIBIO, GLMR, IRMAS, ISDE, MLA, KNLP

**(DS) Distributed Systems:** Tracks: CC, DADS, DAPP, GIA, IE, INTOP, MCA, NET, WCN

**(IS) Information Systems:** Tracks: DBDM, DM, DS, IAR, KRR, SONAMA

**(SD) Software Design and Development:** Tracks: LASD, RE, SATTA, SE, SVT, SWA, WE

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

## Keynote Speakers Room: A325

Tuesday, March 28, 2023 9:30 - 10:40 AM

**Dr. Ted Chang**  
Chief Technology Officer (CTO)  
Vice President and General Manager,  
Quanta Computer

### *Metaverse that Matters*

#### Abstract

Our world is facing different kinds of challenges from radical climate change, energy, food, water shortage to the rapid growth of elderly population. Moreover, COVID pandemics make the situation even more complicated. The whole society has urgent needs for new digital innovation to accelerate the smart transformation against all these instant threats in the new zero contact economics. In this talk, we, as world's largest computer maker, shall share our approach to architect an end-to-end cloud platform, by integrating AI, Big Data, Cloud Computing, IoT, Edge Computing, 5G as well as FinTech, to enable Digital Twins and Metaverse as new tools for real world human-centric computing problems that really matters.

#### Speaker's Bio



Dr. Ted Chang is Chief Technology Officer (CTO), Vice President and General Manager of Quanta Computer, known as the world's biggest computer ODM and laptop computer maker. Along with his role as CTO, he oversees corporate technology strategy and global research partnership. Dr. Chang takes lead of Quanta Research Institute (QRI) for advanced technology research and BU12, a business unit

dedicated to AIoT solutions for e-Health, Smart Medicine and Smart Agriculture.

Appointed by the President of Taiwan (ROC), Dr. Chang has served as the representative to APEC Business Advisory Council (ABAC) since 2019. He serves as Co-Chair of Digital Working Group in ABAC 2022 and as Co-Convenor of Supporting Emergent Technology Taskforce with focus on AI and digital health for ABAC 2021.

Academic wise, Dr. Chang holds various guest professorships in EECS colleges of National Taiwan

University (NTU), National Cheng-Kung University (NCKU), Asia University (AU) and AI college of National YangMing Chao-Tung University (NYCU).

Dr. Chang serves as member of the board for Epoch Foundation, Spring Foundation, Quanta Culture and Education Foundation (QCEF), Chines Medical Advancement Foundation and Ming Dao Culture and Education Foundation. He is member of many advisory and project committees of Ministry of Economic Affairs (MoEA), Ministry of Science and Technology (MoST), Ministry of Health and Welfare (MoHW) as well as major universities in Taiwan on innovation, entrepreneurship and advanced technology

**Thursday March 30, 2023 9:30 - 10:40AM**

**Prof. Pekka Abrahamsson**

Professor of software engineering,  
Tampere University,  
Finland

***AI-assisted Coding Changes Software  
Development Profoundly***

**Abstract**

For many decades now, the software industry has attempted to bridge the productivity gap, develop higher quality code and manage the ever growing complexity of software-intensive systems. The results have been mixed, and as a result, a great majority of today's software is still written manually by human developers. This is about to change rapidly as recent developments in the field of Artificial Intelligence show promising results. While artists and designers have been taken by surprise by OpenAI's DALL-E 2's capabilities in designing unique art, ChatGPT has astonished the rest of the world with its capability of understanding human interaction. AI-assisted coding solutions such as Github's Copilot and Replit's Ghostwriter, among many others, are rapidly developing in a direction where AI generates new code that runs fast with high quality. Little is known about the true capabilities of AI programmers and their impact on the software development industry, education, and research. This talk sheds light on the current state of AI-assisted coding, highlights the research gaps, and proposes a way forward.

**Speaker's Bio**

Dr Pekka Abrahamsson works as a full professor of software engineering at Tampere University in Finland. He received his PhD in Software Engineering in 2002 from the University of Oulu. Before his current position, he served as a full professor at the University of Helsinki (Finland), Free University of Bozen Bolzano (Italy), Norwegian University of Science and Technology



(Norway) and the University of Jyväskylä (Finland). He also worked at VTT Technical Research Centre of Finland as a research professor of software technologies. His research interests are in empirical software engineering, emerging software technologies and the ethics of artificial intelligence. Prof. Abrahamsson is widely recognized for his academic achievements. He is a pioneer in research on Agile software engineering methods and processes. Prof. Abrahamsson is the most cited software engineering researcher in Finland, and he is the first professor of Software Engineering at the Finnish Academy of Science and Letters. He was recently ranked in the all-time top 1% of software engineering scientists globally. He is the co-founder of the Software Startup Research Network (SSRN) and a seasoned expert in leading large research projects.

**Other Activities**

**SIGAPP Annual Business Meeting:** Tuesday, March 28, from 18:00 to 18:30 (Location: **TBD**). Open to everyone.

**SIGAPP Reception:** Tuesday, March 28, from 19:00 to 21:00 (Location: Researchers Forum: Astra building first floor at street level). Open to everyone.

**Future SAC Organization Meeting:** Wednesday, March 29, from 18:00 to 19:00 (Location: **TBD**). Open to everyone.

**Track Chairs Business Meeting:** Thursday, March 31, from 10:30 to 12:30 (Location: **TBD**). Open for the Organizing Committee and (potential) Track Chairs.

**SAC Banquet:** Thursday, March 30, from 19:00 to 22:30. Open for Banquet Ticket holders. See your ticket for full details. During the SAC Banquet, Program Chairs and Posters Chairs 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 from 14:00-16:00 (Location: A046). The works will be presented on Thursday at 16:00 (A346). Medals and certificates will be given to the top three winners.

## Monday March 27, 2023

**Mon 14:00 – 17:30**  
**Rooms: A121, A224, A018, A007**  
**Tutorials**

**T#1: Interaction Design for Behaviour Change**  
Farhat-ul-Ain  
Tallinn University, Estonia

**T#2: Microservice API pattern detection with call graphs**  
Alexander Bakhtin, and Prof. Davide Taibi  
The University of Oulu

**T#3: Safe and Certifiable software design for Trustworthy AI enabled Cyber-Physical Systems**  
Sandeep K.S. Gupta, and Ayan Banerjee  
Arizona State University (ASU),  
Imane Lamrani  
Nikola Motor Company (NMC)

**T#4: Microservice-Based System Visualization Methodology**  
Tomas Cerny and his research team members (Patrick Harris, Mia Gortney and Amr El-Sayed)  
Baylor University

**Mon 15:30 – 16:00**  
**Coffee Break**  
(Researchers Forum - first floor)

## Tuesday March 28, 2023

**TUE 9:30–10:40**  
**Room: A002**  
**(Auditorium Maximum)**

**Keynote Address**  
Dr. Ted Chang  
*See page 5 for details.*

**TUE 10:40 – 11:10**  
**Coffee Break**  
(Researchers Forum - first floor)

**TUE 11:10 – 12:30**  
**Room: A325**  
(AIED) Artificial Intelligence for Education  
Session Chair: Danial Hooshyar, Tallinn University, Estonia

**EdGCon: Auto-Assigner of Iconicity Ratings Grounded by Lexical Properties to Aid in Generation of Technical Gestures**  
Sameena Hossain, Payal Kamboj, Aranyak Maity, Tamiko Azuma, Ayan Banerjee and Sandeep K. S. Gupta

**Image4Assess: Automatic Learning Processes Recognition Using Image Processing**  
Hsin-Yu Lee, Maral Hooshyar, Chia-Ju Lin, Wei-Sheng Wang, and Yueh-Min Huang

**Analysis of AI Models for Student Admissions: A Case Study**  
Kelly Van Busum and Shiao-fen Fang

**TUE 11:10 – 12:30**  
**Room: A121**  
(MCA) Mobile Computing and Applications  
Session Chair: Hong Va Leong, The Hong Kong Polytechnic University, Hong Kong

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

Menglong Cui, Mingsong Lv, Chuancai Gu, Tao Yang, Qiulin Chen and Nan Guan

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

Shakthi Y. Weerasinghe, Arkady Zaslavsky, Seng Loke, Amin Abken, Alireza Hassani and Alexey Medvedev

**TUE 11:10 – 12:30**  
**Room: A402**

(PDP) Privacy by Design in Practice  
Session Chair: Ronald Petrlc, TH Nuremberg, Germany

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

Lucas Dalle Rocha, Geovana Ramos Sousa Silva and Edna Dias Canedo

**Privacy by Design in Software Engineering: An update of a Systematic Mapping Study**

Shirlei Aparecida de Chaves and Fabiane Barreto Vavassori Benitti

**TUE 11:10 – 12:30**  
**Room: A346**

(IAR) Information Access and Retrieval  
Session Chair: Gabriella Pasi, Università degli Studi di Milano Bicocca -DISCo, Italy

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

Otto Benjamin Piramuthu

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

Claudio Lucchese, Federico Marcuzzi and Salvatore Orlando

**TUE 11:10 – 12:30**  
**Room: A224**

**(WE) Web Engineering**

Session Chair: Flavius Frasinca, Erasmus School of Economics, Netherlands

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

Stan Hennekes and Flavius Frasinca

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

Aiden Y. Bai

**Semantic-based Adaptation of Quality of Experience in Web Multimedia Streams**

Giuseppe Loseto, Floriano Scioscia, Michele Ruta, Filippo Gramegna and Ivano Bilenchi

**TUE 12:30 – 14:00**  
**Lunch Break**  
(Conference venue)

**TUE 14:00 – 15:30**  
**Room: A325**

(GLMR) Graph Models for Learning and Recognition

Session Chair: Alessandro D'Amelio, University of Milan, Department of Computer Science, Italy

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

Fattah Muhammad Tahabi, Susan Storey and Xiao Luo

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

Farouk Damoun, Hamida Seba, Jean Hilger and Radu State

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

Paolo Frazzetto, Luca Pasa, Nicolò Navarin and Alessandro Sperduti

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

Waqar Ali, Sebastiano Vascon, Thilo Stadelmann and Marcello Pelillo

**TUE 14:00 – 15:30**  
**Room: A121**

(WCN) Wireless Communications and Networking

Session Chair: Dongkyun Kim, Kyungpook National University, South Korea

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

Ayesha Siddiqi, Junho Seo, Malik Muhammad Saad, Bomi Jeong and Dongkyun Kim

**Fairness Analysis of Deep Reinforcement Learning based Multi-Path QUIC Scheduling**

Ernesto Quevedo Caballero, Michael Jeff Donahoo and Tomas Cerny

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

Sanjay Kumar, Kumar Abhishek, Rutvij H. Jhaveri, Abdulatif Alabdulatif and Rajkumar Gaur

**Towards the support of Industrial IoT applications with TSCH**

Ivanilson F. Vieira Junior, Marilia Curado and Jorge Granjal

**TUE 14:00 – 15:30  
Room: A402**

**(OS-1) Operating Systems**

Session Chair: Bongjae Kim, Chungbuk National University, South Korea

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

Mana Senuki, Kenta Ishiguro and Kenji Kono

**MFence: Defending Against Memory Access Interference in a Disaggregated Cloud Memory Platform**

Jinsoon Lee, Yeonwoo Jung, Suyeon Lee, Safdar Jamil, Sungyong Park, Kwangwon Koh, Hongyeon Kim and Youngjae Kim

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

Jaeseop Kim, Juwon Park, Sung Y. Shin, Austin Hanson, Jaehoon An, Younghwan Kim and Jiman Hong

**Hibernation Execution Interval based Hybrid Boot for Baseboard Management Controllers**

Ajung Kim, Gwangyong Kim, Bongjae Kim and Jiman Hong

**TUE 14:00 – 15:30  
Room: A346**

**(KRR-1) KRR - Knowledge Representation and Reasoning**

Session Chair: Stefano Bistarelli, Università di Perugia, Italy

**Reasoning about Non-Deterministic Observability and Hypothetical Action Occurrences in Multi-Agent Domains**

Loc Huu Pham, Tran Cao Son and Enrico Pontelli

**Dynamic Controllability of Parameterized CSTNUs**

Marco Franceschetti, Roberto Posenato, Carlo Combi and Johann Eder

**Treating Role Assertions as First-class Citizens in Repair and Error-tolerant Reasoning**

Franz Baader, Francesco Kriegel and Adrian Nuradiansyah

**Representing and Manipulating Large Sequences of Argumentation Labellings**

Odinaldo Teixeira Rodrigues

**TUE 14:00 – 15:30  
Room: A224**

**(SWA) Semantic Web and Applications**

Session Chair: Jun Miyazaki, Tokyo Institute of Technology, Japan

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

Loris Bozzato and Luciano Serafini

**Inferring Threatening IoT Dependencies using Semantic Digital Twins Toward Collaborative IoT Device Management**

Amal Guittoum, Francois Aissaoui, Sebastien Bolle, Fabienne Boyer and Noel De Palma

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

Ahmad Zainul Ihsan, Said Fathalla and Stefan Sandfeld

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

Shi-Jun Luo, Hyoil Han, Qiong Chang and Jun Miyazaki

**TUE 14:00 – 16:00  
SRC Posters Exhibition  
Room: A046**

**Why and Where Software Developers are (not) using Project Data in Agile Retrospectives**

Leon Bein

**Unsupervised Key Term Extraction of Tornado Narratives from NOAA Storm Events Database**

Emma L. McDaniel

**SplitChain, Blockchain with fully decentralised dynamic sharding resilient to fast adaptive adversaries**

Arthur Rauch

**A Hybrid Approach to Design Embedded Software Using JavaScript's Non-blocking Principle**

Fernando Oliveira

**TUE 15:30 – 16:00  
Coffee Break**

(Researchers Forum - first floor)

**TUE 16:00 – 18:00**  
**Room: A325**

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

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

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

Alessandro Trapasso, Sofia Santilli, Luca Iocchi and Fabio Patrizi  
**Multi-Robot Expansive Planning and Trajectory  
Evaluation for Tracking and Localization of Marine  
Life**

Kehlani A. Fay, Michael Giordano, Alberto Soto, Christopher M.  
Clark, Emily Spurgeon, James Anderson and Christopher G. Lowe

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

Zuyuan Zhu, Gautham P. Das and Marc Hanheide

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

Pedro Silva and Rui P. Rocha

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

Qin Yang and Ramviyas Parasuraman

**TUE 16:00 – 18:00**  
**Room: A121**

**(NET) Networking**

Session Chair: Mário M. Freire, University of Beira Interior,  
Portugal

**(INTOP) Interoperability**

Session Chair: Young-Gab Kim Department of Computer &  
Information Security, Sejong University, South Korea

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

Roy Friedman, Or Goaz and Dor Hovav

**Topology Analysis of the XRP Ledger**

Vytautas Tumas, Sean Rivera, Damien Magoni and Radu State

**Interoperability of Heterogeneous Systems of  
Systems: Review of Challenges, Emerging  
Requirements and Options**

Mersedeh Sadeghi, Alessio Carenini, Oscar Corcho, Matteo Rossi,  
Riccardo Santoro and Andreas Vogelsang

**Relation Modeling on Knowledge Graph for  
Interoperability in Recommender Systems**

SeungJoo Lee, Seokho Ahn and Young-Duk Seo

**Model-Driven Integration and the OSLC Standard: a  
Mapping of Applied Studies**

Bruno Marcelo Soares Ferreira, Fábio Paulo Basso, Rafael dos  
Santos Torres, Rafael Zancan Frantz, Diego Kreutz, Maicon  
Bernardino and Elder de Macedo Rodrigues

**TUE 14:00 – 15:30**  
**Room: A402**

**(OS-2) Operating Systems**

Session Chair: Bongjae Kim, Chungbuk National  
University, South Korea

**(SP) Software Platforms**

Session Chair: Jinman Jung, Inha University, South Korea

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

Jiwoong Won, Sangwoon Yun, ahn jemin, Jong-Chan Kim and  
Kyungtae Kang

**zCeph: Achieving High Performance On Storage  
System Using Small Zoned ZNS SSD**

Jin Yong Ha and Heon Young Yeom

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

Arne Koschel, Kim Chi Tran, Alexander Grunewald, Moritz Lange,  
Anna Pakosch and Irina Astrova

**Detecting Suspicious Conditional Statement using  
App Execution Log**

Sumin Lee, Minhoo Park and Jiman Hong

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

In-pyo Hong, Gyu-ho Choi, Pan-koo Kim and Chang Choi

**TUE 16:00 – 18:00**  
**Room: A346**

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

Session Chair: Sang-Wook Kim, Hanyang University,  
South Korea

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

Junhee Lee, Flavius Frasinca and Maria Mihaela Truşcă

**SocioPedia: Visualizing Social Knowledge over Time**

Tra My Nguyen and Jason Jung

**Personalized Prediction of Offensive News  
Comments by Considering the Characteristics of  
Commenters**

Teruki Nakahara and Taketoshi Ushiyama

**Topic Aware Influential Member Detection in  
Meetup**

Arpan Dam, Suryansh Kumar, Debarati Bhattacharjee, Sayan Pathak and Bivas Mitra

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

Yeonjung Lee, Mert Ozer, Steven R. Corman and Hasan Davulcu

**TUE 16:00 – 18:00**

**Room: A224**

**(SE) Software Engineering**

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

**Specialization of Run-time Configuration Space at Compile-time: An Exploratory Study**

Xhevahire Tërnavá, Mathieu Acher and Benoit Combemale

**PyLC: A Framework for Transforming and Validating PLC Software using Python and Pynguin Test Generator**

Mikael Ebrahimi Salari, Eduard Paul Enoiu, Wasif Afzal and Cristina Seceleanu

**Survey on Trust in Software Engineering for Autonomous Dynamic Ecosystems**

Barbora Buhnova, David Halasz, Danish Iqbal and Hind Bangui

**Applying Gamification to Prioritize Requirements in Agile Projects**

Daniel Silva, Maria Lencastre Pinheiro de Menezes E. Cruz, João Pimentel, JAELSON CASTRO and Luiza Lira

**MCRRepair: Multi-Chunk Program Repair via Patch Optimization with Buggy Block**

Jisung Kim and Byungjeong Lee

**Wednesday March 29, 2023**

**WED 9:00 – 10:30**

**Room: A325**

**(MLA) Machine Learning and its Applications**

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

**Prediction of readmissions in hospitalized children and adolescents by machine learning**

Nayara C. da Silva, Marcelo K. Albertini, Andre R. Backes and Georgia G. Pena

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

Kanghyeon Seo and Jihoon Yang

**FedFAME: A Data Augmentation Free Framework based on Model Contrastive Learning for Federated Semi-Supervised Learning**

Shubham Malaviya, Manish Shukla, Pratik Korat and Sachin Lodha

**Analysis of active semi-supervised learning**

Lilian Berton, Felipe Baz Mitsuiishi and Didier Vega Oliveros

**WED 9:00 – 10:30**

**Room: A121**

**(IE-1) IoT and Edge Computing**

Session Chair: Sabur Baidya, University of Louisville, USA

**An Energy-efficient FaaS Edge Computing platform over IoT Nodes: Focus on Consensus Algorithm**

David Fernandez Blanco, Frederic Le Mouel, Trista Lin and Julien Ponge

**Software Aging in a Real-Time Object Detection System on an Edge Server**

Kengo Watanabe, Fumio Machida, Ermeson Andrade, Roberto Pietrantuono and Domenico Cotroneo

**Dynamic Load Balancing of RDF Reasoning in Fog-Computing Environments**

Yuma Kokubo and Toshiyuki Amagasa

**Reducing Power Consumption during Server Maintenance on Edge Computing Infrastructures**

Felipe Pfeifer Rubin, Paulo Severo Souza and Tiago Ferreto

**WED 9:00 – 10:30**

**Room: A402**

**(SEC-1) Computer Security**

Session Chair: Sasa Radomirovic, School of Mathematical and Computer Sciences, Heriot-Watt University, UK

**Free Willy: Prune System Calls to Enhance Software Security**

Charlie Groh, Sergej Proskurin and Apostolis Zarras

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

Konrad Hohentanner, Philipp Zieris and Julian Horsch

**ARGANIDS: a novel Network Intrusion Detection System based on adversarially Regularized Graph Autoencoder**

Andrea Venturi, Matteo Ferrari, Mirco Marchetti and Michele Colajanni

**Realism versus Performance for Adversarial Examples Against DL-based NIDS**

Huda Ali Alatwi and Charles Morisset

**WED 9:00 – 10:30**  
**Room: A346**

(DS) Data Streams  
Session Chair: Joao Gama, University of Porto, Portugal

**An active learning budget-based oversampling approach for partially labeled multi-class imbalanced data streams**

Gabriel J. Aguiar and Alberto Cano

**Aging and rejuvenating strategies for fading windows in multi-label classification on data streams**

Martha Roseberry, Saso Dzeroski, Albert Bifet and Alberto Cano

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

Paula Silva, João Vinagre and Joao Gama

**Transformer based Early Classification for Real-time Human Activity Recognition in Smart Homes**

Tae-Hoon Lee, Hyunju Kim and Dongman Lee

**WED 9:00 – 10:30**  
**Room: A224**

(SATTA) Software Architecture: Theory, Technology, and Applications  
Session Chair: Matteo Camilli, Politecnico di Milano, Italy

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

Sebastian Herold and Zipani Tom Sinkala

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

Ana Petrovska, Thomas Hutzelmann and Stefan Kugele

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

Stef Verreydt, Dimitri Van Landuyt and Wouter Joosen

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

(Researchers Forum - first floor)

**WED 10:30 – 12:30**  
**AM Poster Session**

**Room: A046**

*See page 19 for details.*

**WED 11:00 – 12:30**  
**Room: A325**

(MLA) Machine Learning and its Applications

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

**S-ViT: Sparse Vision Transformer for Accurate Face Recognition**

Geunsu Kim, Gyudo Park, Soohyeok Kang and Simon Woo

**Finite Multivariate McDonald's Beta Mixture Model Learning Approach in Medical Applications**

Darya Forouzanfar, Narges Manouchehri and Nizar Bouguila

**Sec2vec: Anomaly Detection in HTTP Traffic and Malicious URLs**

Mateusz Gniewkowski, Henryk Maciejewski, Tomasz Surmacz and Wiktor Walentyłowicz

**Semi-Supervised Hybrid Predictive Bi-Clustering Trees for Drug-Target Interaction Prediction**

André Alves, Pedro C. B. Ilídio and Ricardo Cerri

**WED 11:00 – 12:30**  
**Room: A121**

(IE-2) IoT and Edge Computing

Session Chair: Sabur Baidya, University of Louisville, USA

**The not-so-easy task of taking heavy-lift ML models to the edge: a performance-watt perspective**

Lucas Caetano Meireles Pereira, Bruna Guterres, Kauê Sbrissa, Amanda Mendes, Francisca Vermeulen, Lisl Lain, Marié Smith, Javier Martinez, Paulo Drews, Nelson Duarte Filho, Vinicus Oliveira, Silvia Botelho and Marcelo Pias

**Swapping training optimizers and tiny partial datasets to improve performance of lighter neural networks for edge devices**

Alexandre M. Nascimento, Vinicius V. Melo and Marcio P. Basgalupp

**Design and Implementation of a Blockchain-based e-Voting system by using the Algorand platform**

Christian Esposito and Chang Choi

**Towards Deployment of Mobile Robot driven Preference Learning for User-State-Specific Thermal Control in A Real-World Smart Space**  
Geon Kim, Hyunju Kim, Dongman Lee and Youngjae Kim

**WED 11:00 – 12:30**  
**Room: A402**

**(SEC-2) Computer Security**  
Session Chair: Sasa Radomirovic, School of Mathematical and Computer Sciences, Heriot-Watt University, UK

**RMC-PVC: A Multi-Client Reusable Verifiable Computation Protocol**  
Gael Marcadet, Pascal Lafourcade and Léo Robert

**The EVIL Machine: Encode, Visualize and Interpret the Leakage**  
Valence Cristiani, Maxime Lecomte and Philippe Maurine

**Scalable Coercion-Resistant E-Voting under Weaker Trust Assumptions**  
Thomas Haines, Johannes Müller and Iñigo Querejeta-Azurmendi

**Generic Privacy Preserving Private Permissioned Blockchains**  
Frederic A. Hayek, Mirko Koscina, Pascal Lafourcade and Charles Olivier-Anclin

**WED 11:00 – 12:30**  
**Room: A346**

**(DBDM) Databases and Big Data Management**  
Session Chair: Dr. Bongjae Kim, Chungbuk National University, Korea

**A Comparative Performance Evaluation of Multi-Model NoSQL Databases and Polyglot Persistence**  
Dimitri Van Landuyt, Vincent Reniers, Julien Benaouda, Ansar Rafique and Wouter Joosen

**NF-Log: Revisiting Log Writes in relational database for efficient persistent memory utilization**  
Sara Zguem, Qichen Chen and Heon Young Yeom

**Exploring alternatives of Complex Event Processing execution engines in demanding cases**  
Styliani Kyrama and Anastasios Gounaris

**OCC2T: An Early-Read Dual-Track OCC Algorithm For Mixed Mode Systems**  
Abdullah A. Alhajri, Arshad h. Jhumka and Richard Kirk

**MUTUAL: Multi-Domain Sentiment Classification via Uncertainty Sampling**  
Katerina Katsarou, Roxana Maria Jeney and Kostas Stefanidis

**WED 11:00 – 12:30**  
**Room: A224**

**(LASD) Lean and Agile Software Development**  
Session Chair: Adam Przybylek, Gdansk University of Technology

**Towards a Recommender System-based Process for Managing Risks in Scrum Projects**  
Ademar França de Sousa Neto, Felipe Ramos, Danyllo Albuquerque, Emanuel Dantas, Mirko Perkusich, Hyggo Almeida and Angelo Perkusich

**Tailoring Hybrid Software Processes in a Medium-size Software Company**  
Jacqueline Marín, Julio Ariel Hurtado, María Cecilia Bastarrica and Luis Silvestre

**Challenges in Large-Scale Agile Software Development Projects\***

Hina Saeeda, Muhammad Ovais Ahmad and Tomas Gustavsson

**An Exploratory Study About Non-functional Requirements Documentation Practices in Agile Teams**  
Shahraz Nasir, EDUARDO GUERRA, Luciana Zaina and Jorge Melegati

**Which Challenges Do Exist With Agile Culture in Practice?**  
Thorben Kuchel, Michael Neumann, Philipp Diebold and Eva-Maria Schön

**WED 12:30 – 14:00**  
**Lunch Break**  
(Conference venue)

**WED 14:00 – 15:30**  
**Room: A325**

**(MLA) Machine Learning and its Applications**  
Session Chair: Keon Myung Lee, Chungbuk National University, Cheongju, Korea

**Are alternatives to backpropagation useful for training Binary Neural Networks? An experimental study in image classification**  
Ben Crulus, Barthelemy Serres, Cyril DE RUNZ and Gilles Venturini

**SLResNet: Neural-Network-Based End-to-End Structure Light 3D Reconstruction for Endoscope**  
Chi-Sheng Shih, Yu-Shian Lin, Kai Ju Chang and Chin Kang Chang

**Machine Learning Applied on Hydraulic Actuator Control**

Thomaz Pereira da Silva Junior, Everson da Silva Flores, Wagner Santos da Rosa and Fabio Augusto Pires Borges

**MultiPathGAN: Structure Preserving Stain Normalization using Unsupervised Multi-domain Adversarial Network with Perception Loss**

Haseeb Nazki, Ognjen Arandjelović, InHwa Um and David James Harrison

**WED 14:00 – 15:30**  
**Room: A121**

(DADS-1) Dependable and Adaptive Distributed Systems

Session Chair: Karl M. Göschka, Vienna University of Technology

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

Tommaso Puccetti, Andrea Ceccarelli, Tommaso Zoppi and Andrea Bondavalli

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

Cláudia Brito, Pedro Ferreira, Bernardo Portela, Rui Oliveira and João Paulo

**Deduplication vs Privacy Tradeoffs in Cloud Storage**

Rodrigo Marques Silva, Cláudio Jose Correia, Miguel Correia and Luís Rodrigues

**Acala: Aggregate Monitoring for Geo-Distributed Cluster Federations**

Chih-Kai Huang and Guillaume Pierre

**WED 14:00 – 15:30**  
**Room: A402**

(EMBS) Embedded Systems

Session Chair: Chien-Chung Ho, National Cheng Kung University, Taiwan

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

Nikolaos Andriotis, Alejandro Serrano-Cases, Sergi Alcaide, Jaume Abella, Francisco J Cazorla, Yang Peng, Andrea Baldovin, Michael Paulitsch and Vladimir Tsymbal

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

Roger Pujol, Mohamed Hassan, Hamid Tabani, Jaume Abella and Francisco J Cazorla

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

Atharva Tekawade and Suman Banerjee

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

Tsung-Yen Wang, Shao-Hua Wang, Chia-Heng Tu and Wen-Yew Liang

**WED 14:00 – 15:30**  
**Room: A224**

(RE) Requirement Engineering

Session Chair: Maria Lencastre, Universidade de Pernambuco, Brazil

**A Multi-layered Collaborative Framework for Evidence-driven Data Requirements Engineering for Machine Learning-based Safety-critical Systems**

Sangeeta Dey and Seok-Won Lee

**Towards a FAIR Dataset for non-functional requirements**

María Isabel Limaylla Lunarejo, Nelly Condori Fernandez and Miguel Luaces

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

Samedi Heng, Konstantinos Tsilonis and Yves Wautelet

**Why and Where Software Developers are (not) using Project Data in Agile Retrospectives**

Leon Bein

**Unsupervised Key Term Extraction of Tornado Narratives from NOAA Storm Events Database**

Emma L. McDaniel

**SplitChain, Blockchain with fully decentralised dynamic sharding resilient to fast adaptive adversaries**

Arthur Rauch

**A Hybrid Approach to Design Embedded Software Using JavaScript's Non-blocking Principle**

Fernando Oliveira

**WED 14:30 – 16:30**  
**PM Poster Session**  
**Room: A046**

**WED 15:30 – 16:00**  
**Coffee Break**  
(Researchers Forum - first floor)

**WED 16:00 – 18:00**

**Room: A325**

(MLA) Machine Learning and its Applications

Session Chair: Keon Myung Lee, Chungbuk National University, Cheongju, Korea

**Discrete Wavelet Coefficient-based Embeddable Branch for Ultrasound Breast Masses Classification**  
Mingue Song and Yanggon Kim

**ACL TA-DA: A Dataset for Text Summarization and Generation**  
Min Su Park and Eunil Park

**Gradient-based Counterfactual Generation for Sparse and Diverse Counterfactual Explanations**  
Chan Sik Han and Keon Myung Lee

**Rotated-DETR: an End-to-End Transformer-based Oriented Object Detector for Aerial Images**  
Jinbeom Kim, GilJun Lee, Taejune Kim and Simon Woo

**Interpretable ML enhanced CNN Performance Analysis of cuBLAS, cuDNN and TensorRT**  
Zhumakhan Nazir, Vladislav Yarovenko and Jurn-Gyu Park

**WED 16:00 – 18:00**

**Room: A121**

(DADS-2) Dependable and Adaptive Distributed Systems

Session Chair: Karl M. Göschka, Vienna University of Technology

(GIA) GeoInformation Analytics  
Session Chair: Luis Miralles, Technological University Dublin, Ireland

**Cost-effective Data Upkeep in Decentralized Storage Systems**  
Racin Nygaard, Hein Meling and John Ingve Olsen

**Stateful Adaptive Streams with Approximate Computing and Elastic Scaling**  
Joao Francisco, Miguel E. Coimbra, Pedro Fernandes Neto, Felix Freitag and Luis Veiga

**Fluidity: Location-Awareness in Replicated State Machines**  
Johannes Köstler, Hans P. Reiser, Franz J. Hauck and Gerhard Habiger

**Graph-based semi-supervised classification for similar wildfire dynamics**  
Lilian Berton, Pedro Leyria de Oliveira and Didier Vega Oliveros

**POI types characterization based on geographic feature embeddings**

Salatiel Dantas Silva, Claudio E. C. Campelo and Maxwell Guimaraes de Oliveira

**WED 16:00 – 18:00**

**Room: A402**

(CPS) Cyber-Physical Systems

Session Chair: Chun-Han Lin, National Taiwan Normal University, Taiwan

**RAB: Recomputation Aided Backup for Energy Efficient Non-volatile Processors**  
Shuo Xu, Huichuan Zheng, Hao Zhang and Mengying Zhao

**CCFlash: A Correlation-Aware Compression Approach in Flash Memory**  
Jianqiang Chen, Qionxia Huang, Jiebin Zhai and Zhirong Shen

**BcBench: Exploring Throughput Processor Designs based on Blockchain Benchmarking**  
Xiurui Pan, Yue Chen, Shushu Yi and Jie Zhang

**Enhancing Polar Codes Efficiency on 3D Flash Memory by Exploiting Multiple Error Variations**  
Yajuan Du, Ziye Wang, Yao Zhou and Taiyu Zhou

**Traffic Intersections as Agents: A model checking approach for analysing communicating agents**  
Thamilselvam B, Yenda Ramesh, Subrahmanyam Kalyanasundaram and MVP Rao

**WED 16:00 – 18:00**

**Room: A346**

SRC ORAL Presentation

**WED 16:00 – 18:00**

**Room: A224**

(SVT) Software Verification and Testing  
Session Chair: Pascale Le Gall, CentraleSupélec Paris-Saclay University, France

**Formalizing an Efficient Runtime Assertion Checker for an Arithmetic Language with Functions and Predicates**  
Thibaut Benjamin and Julien Signoles

**Ownership-Based Owicki-Gries Reasoning**  
Mikhail Semenyuk and Brijesh Dongol

**Multi-thread Combinatorial Test Generation with SMT solvers**  
Andrea Bombarda, Angelo Gargantini and Andrea Calvagna

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

Nicolas Berthier, Steven De Oliveira, Nikolai Kosmatov, Delphine Longuet and Romain Soulat

**Exhaustive Branch Coverage with TreeFrog**  
Nicky Williams

**Thursday March 30, 2023**

**THU 9:30 – 10:30 Auditorium**  
**Keynote Address**  
Prof. Pekka Abrahamsson  
*See page 6 for details.*

**THU 10:30 – 11:00**  
**Coffee Break**  
(Researchers Forum - first floor)

**THU 11:00 – 12:30**  
**Room: A325**  
(EC) Applications of Evolutionary Computing  
Session Chair: Angela Troncoso, Universidad Pablo de Olavide - CtraSpain

**Quality Diversity Evolutionary Learning of Decision Trees**

Andrea Ferigo, Leonardo Lucio Custode and Giovanni Iacca

**A bioinspired ensemble approach for multi-horizon reference evapotranspiration forecasting in Portugal**

Manuel Jesús Jiménez Navarro, Martínez Ballesteros, Isabel Sofia Brito, Francisco Martínez Alvarez and Gualberto Asencio Cortes

**THU 11:00 – 12:30**  
**Room: A121**  
(CC) Cloud Computing  
Session Chair: S D Madhu Kumar, NIT Calicut, India

**A Semantic Evidence-based Approach to Continuous Cloud Service Certification**

Christian Banse, Immanuel Kunz, Nico Haas and Angelika Schneider

**Digital Forgetting Using Key Decay**  
Marwan Adnan Darwish and Apostolis Zarras

**On the Measurement of Performance Metrics for Virtualization-Enhanced Architectures**  
Swapneel Chandrakant Mhatre and Priya Chandran

**COSTA: A cost-driven solution for migrating applications in multi-cloud environments**  
Leandro Costa Silva, Robson Wagner Albuquerque de Medeiros and Nelson Souto Rosa

**THU 11:00 – 12:30**  
**Room: A402**  
(PL) Programming Languages  
Session Chair: Barrett Bryant, University of North Texas, USA

**Type-based Termination Analysis for Parsing Expression Grammars**

Elton M. Cardoso, Regina Sarah Monferrari Amorim de Paula, Daniel Freitas Pereira, Leonardo Vieira Santos Reis and Rodrigo Geraldo Ribeiro

**Optimizing the Order of Bytecode Handlers in Interpreters using a Genetic Algorithm**

Wanhong Huang, Stefan Marr and Tomoharu Ugawa

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

Marco Giunti, Herve' Paulino and António Ravara

**THU 11:00 – 12:30**  
**Room: A346**  
(DM) Data Mining  
Session Chair: Hasan Jamil, University of Idaho, USA

**Elastic Data Binning for Transient Pattern Analysis in Time-Domain Astrophysics**

Thanapol Phungtua-eng, Yoshitaka Yamamoto and Shigeyuki Sako

**Real-life Performance of Fairness Interventions - Introducing A New Benchmarking Dataset for Fair ML**

Daphne Lenders and Toon Calders

**Enforcement of Minimal Size and Area Constraints before and while Mining Patterns in Fuzzy Tensors**

Loïc Cerf

**Identify "Dangerous" Rules to Reduce Side Effects in Association Rule Hiding**

Peng Cheng and James Pang Yan

**THU 12:30 – 14:00**

**Lunch Break**  
(Conference venue)

**THU 14:00 – 15:30**

**Room: A325**

(HIBIO-1) Health Informatics and  
Bioinformatics

Session Chair: Anu Mary Chacko, National Institute of  
Technology Calicut, India

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

Heithem Sliman, Imen Megdiche, Sami Yangui, Aida Drira, Ines  
Drira and Elyes Lamine

**Mapping Strategies for Declarative Queries over  
Online Heterogeneous Biological Databases for  
Intelligent Responses**

Hasan Jamil and Kallol Naha

**MGCMA: Multi-scale Generator with Channel-wise  
Mask Attention to generate Synthetic Contrast-  
enhanced Chest Computed Tomography**

Jeongho Kim, Yun-Gyoo Lee, Donggeun Ko, Taejune Kim, Soo-Youn  
Ham and Simon Woo

**Automatic Detection of Signalling Behaviour from  
Assistance Dogs as they Forecast the Onset of  
Epileptic Seizures in Humans**

Hitesh Raju, Ankit Sharma, Aoife Smeaton and Alan Smeaton

**THU 14:00 – 15:30**

**Room: A121**

(DAPP-1) Decentralized Applications  
with Blockchain, DLT and Crypto-  
Currencies

Session Chair: Jean-Marc Seigneur, University of  
Geneva

**SBvote: Scalable Self-Tallying Blockchain-Based  
Voting**

Ivana Stančíková and Ivan Homoliak

**Ethereum Proof-of-Stake under Scrutiny**

Ulysse Pavloff, Yackolley Amoussou-Guenou and Sara  
Tucci

**DEDACS: Decentralized and dynamic access control  
for smart contracts in a policy-based manner**

Kristof Jannes, Vincent Reniers, Wouter Lenaerts, Bert Lagaisse  
and Wouter Joosen

**Distributed Key Generation with Smart Contracts  
using zk-SNARKs**

Michael Sober, Max Kobelt, Giulia Scaffino, Dominik Kaaser and  
Stefan Schulte

**THU 14:00 – 15:30**

**Room: A402**

(KNLP-1) Knowledge and Natural  
Language Processing

Session Chair: Mauro Dragoni, Fondazione Bruno  
Kessler, Trento, Italy

**Dynamic Named Entity Recognition**

Tristan Luiggi, Vincent Guigue, Laure Soulier, Siwar Jendoubi and  
Aurelien Baelde

**FREDA: Flexible Relation Extraction Data  
Annotation**

Michael Strobl, Amine Trabelsi and Osmar Zaiane

**Zero-Shot Taxonomy Mapping for Document  
Classification**

Lorenzo Bongiovanni, Giuseppe Rizzo, Fabrizio Dominici and Luca  
Bruno

**REFORMIST: Hierarchical Attention Networks for  
Multi-Domain Sentiment Classification with Active  
Learning**

Katerina Katsarou, Nabil Douss and Kostas Stefanidis

**THU 14:00 – 15:30**

**Room: A346**

(ISDE-1) Intelligent Systems for Digital  
Era

Session Chair: Tarmo Robal, TalTech, Estonia

**Finding Indicator Diseases of Psychiatric Disorders  
in BigData using Clustered Association Rule Mining**

Markus Bertl, Mahtab Shahin, Peeter Ross and Dirk Draheim

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

Shuheng Cao, Syauki Aulia Thamrin and Arbee L.P. Chen

**Multimodal Semantographic Metalanguage (MSM):  
A novel methodology for digital enablement of semi-  
literate**

Prawaal Sharma, Poonam Goyal and Navneet Goyal

**Modeling a Conversational Agent using BDI  
Framework**

Alexandre Yukio Ichida and Felipe Meneguzzi

**THU 15:30 – 16:00**  
**Coffee Break**  
(Researchers Forum - first floor)

**THU 16:00 – 18:00**  
**Room: A425**  
(HIBIO-2) Health Informatics and  
Bioinformatics  
Session Chair: Anu Mary Chacko, India

**Personalized Graph Attention Network for  
Multivariate Time-series Change Analysis: A Case  
Study on Long-term Maternal Monitoring**  
Yuning Wang, Iman Azimi, Mohammad Feli, Amir M. Rahmani and  
Pasi Liljeberg

**Diversity-Promoting Ensemble for Medical Image  
Segmentation**  
Mariana-Iuliana Georgescu, Radu Tudor Ionescu and Andreea  
Iuliana Miron

**Automatic Pain Assessment with Ultra-short  
Electrodermal Activity Signal**  
xinwei ji, Tianming Zhao, Wei Li and Albert Y. Zomaya

**The Case for tinyML in Healthcare CNNs for Real-  
Time On-Edge Blood Pressure Estimation**  
Bailian Sun, Safin Bayes, Abdelrhman Mohamed Abotaleb and  
Mohamed Hassan

**THU 16:00 – 18:00**  
**Room: A121**  
(DAPP-2) Decentralized Applications  
with Blockchain, DLT and Crypto-  
Currencies  
Session Chair: Jean-Marc Seigneur, University of  
Geneva

**A Technology Readiness Level for Blockchain**  
Garry Clawson

**Towards automated verification of Bitcoin-based  
decentralised applications**  
Stefano Bistarelli, Andrea Bracciali, Rick Klomp and Ivan Mercanti

**PoRt: Non-Interactive Continuous Availability Proof  
of Replicated Storage**  
Reyhaneh Rabaninejad, Bin Liu and Antonis Michalas

**THU 16:00 – 18:00**  
**Room: A402**  
(KNLP-2) Knowledge and Natural  
Language Processing  
Session Chair: Mauro Dragoni, Fondazione Bruno  
Kessler, Trento, Italy

**BERTEPro : A new Sentence Embedding Framework  
for the Education and Professional Training domain**  
Guillaume Lefebvre, Haytham Elghazel, Theodore Guillet,  
Alexandre Aussem and Matthieu Sonnati

**Arabic Aspect Category Detection for Hotel Reviews  
based on Data Augmentation and Classifier Chains**  
Asma Ameer, Sana Hamdi and Sadok Ben Yahia

**A Biomedical Entity Extraction Pipeline for Oncology  
Health Records in Portuguese**  
Hugo Oliveira Sousa, Alipio Mario Jorge, Arian Pasquali, Catarina  
Sousa Santos and Mario Amorim Lopes

**THU 16:00 – 18:00**  
**Room: A346**  
(ISDE-2) Intelligent Systems for Digital  
Era  
Session Chair: Tarmo Robal, TalTech, Estonia  
(KRR-2) Knowledge Representation and  
Reasoning  
Session Chair: : Stefano Bistarelli, Università di  
Perugia, Italy

**On The Shift to Decentralised Identity Management  
in Distributed Data Exchange Systems**  
Mariia Bakhtina, Raimundas Matulevicius, Ahmed Awad and  
Petteri Kivimaki

**Deep-Learning based Trust Management with Self-  
Adaptation in the Internet of Behavior**  
Hind Bangui, Emilia Cioroica, Mouzhi Ge and Barбора Buhnova

**Optimal Repairs in Ontology Engineering as Pseudo-  
Contractions in Belief Change**  
Franz Baader

**Friday March 31, 2023**

## POSTERS LISTING

**WED 10:30 – 12:30**  
**AM Poster Session**  
**Room: A046**

### (CC) Cloud Computing

#### **CEDCES: A Cost Effective Deadline Constrained Evolutionary Scheduler for Task Graphs in Multi-Cloud System**

Atharva Tekawade and Suman Banerjee

#### **AI Enabled Cloud Service to detect Conversion Fraud in E-commerce**

ABHAY NARAYAN, Disha Galve and anu Chacko

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

#### **An Extensible Framework for Implementing Byzantine Fault-Tolerant Protocols**

hanish gogada, hein meling, Leander Jehl and John Ingve Olsen

#### **Proof of Swarm Based Ensemble Learning for Federated Learning Applications**

Ali Raza, Kim Phuc Tran, Ludovic Koehl and Shujun Li

#### **Defektor: An Extensible Tool for Fault Injection Campaign Management in Microservice Systems**

Goncalo Baptista, Jaime Correia, Andre Bento, Joao Soares, Antonio Ferreira, Joao Duraes, Raul Barbosa and Filipe Araujo

#### **Maude Specification of Nets-Within-Nets: A Formal Model of Adaptable Distributed Systems**

lorenzo capra and Michael Köhler-Bußmeier

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

#### **NFT Trust Survey**

Jean-Marc Seigneur and Suzana Moreno

#### **RESTChain: a Blockchain-based Mediator for REST Interactions in Service Choreographies**

Francesco Donini, Alessandro Marcelletti, Andrea Morichetta and Andrea Polini

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

Soroush Farokhnia and Amir Kafshdar Goharshady

### (EC) Applications of Evolutionary Computing

#### **Evolutionary computation to explain deep learning models for time series forecasting**

Angela del Robledo Troncoso Garcia, Alicia Troncoso Lora, Francisco Martínez-Álvarez and Maria Martínez Ballesteros

#### **Optimal Location of Charging Stations for Electric Vehicles: An Effective and Efficient Heuristic Approach**

Alfredo Cuzzocrea, Luigi Canadà, Riccardo Nicolichia and Luca Roldo

### (GIA) GeoInformation Analytics

#### **Detecting Road Intersections from Satellite Images using Convolutional Neural Networks**

Fatmaelzahraa Eltaher, Luis Miralles-Pechuán, Jane Courtney and Susan Mckeever

#### **A general methodology for building multiple aspect trajectories**

Francesco Lettich, Chiara Pugliese, Chiara Renso and Fabio Pinelli

### (HIBIO) Health Informatics and Bioinformatics

#### **Parallel construction of RNA databases for extensive lncRNA-RNA interaction prediction**

Iñaki Amatria-Barral, Jorge González-Domínguez and Juan Touriño

#### **Unsupervised Forecasting and Anomaly Detection of ADLs in Single-resident Elderly Smart Homes**

Zahraa Shahid, Saguna Saguna and Christer Åhlund

#### **Mobile Freeze-Net with Attention-based Loss Function for Covid-19 Detection from an Imbalanced CXR Dataset**

Santanu Roy and Rahul Khurana

#### **Patient-GAT: Sarcopenia Prediction using Multi-modal Data Fusion and Weighted Graph Attention Networks**

Cary Xiao, Nam Pham, Erik A. Imel and Xiao Luo

#### **An ML Model for Mental Health Monitoring using Facial Emotion Detection and Analyzing Social Media Posts**

Shafna V and SD Madhu Kumar

### (IE) IoT and Edge Computing

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

Jui Mhatre and Ahyoung Lee

#### **Efficient Resource Augmentation of Resource Constrained UAVs Through EdgeCPS**

Sangil Ha, Euteum Choi, Dongbeom Ko, Sungjoo Kang and Seongjin Lee

### (INTOP) Interoperability

#### **Interoperable Access Control Framework for Services Demanding High Level Security among Heterogeneous IoT Platforms**

Jahoon Koo, Giluk Kang and Young-Gab Kim

**WiFi-enabled Occupancy Monitoring in Smart Buildings with a Self-Adaptive Mechanism**

Muhammad Salman, Young-Duk Soe and Youngtae Noh

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

**Optimising Redundancy in Distributed Sensor Networks**

Cyril Monette and James Wilson

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

James C. Ward and Edmund R. Hunt

**(ISDE) Intelligent Systems for Digital Era**

**An Efficient Feature-based Method for People Counting**

Daniel Helmer, Heiko Hinkelmann and Thomas Hollstein

**Migration from HL7 Clinical Document Architecture (CDA) to Fast Health Interoperability Resources (FHIR) in the Infectious Disease Information System of Estonia**

Igor Bossenko, Kerli Linna, Gunnar Piho and Peeter Ross

**AI4CITY - An Automated Machine Learning Platform for Smart Cities**

Pedro José Pereira, Carlos Gonçalves, Lara Lopes Nunes, Paulo Cortez and André Pilastrri

**(MCA) Mobile Computing and Applications**

**Exploiting Machine-learning Prediction for Enabling Real-time Pixel-scaling Techniques in Mobile Camera Applications**

Shih-En Wei, Sheng-Da Tsai and Chun-Han Lin

**(MLA) Machine Learning and its Applications**

**Prediction of readmissions in hospitalized children and adolescents by machine learning**

Nayara C. da Silva, Marcelo K. Albertini, Andre R. Backes and Georgia G. Pena

**Robust DeepFake Detection Method based on Ensemble of ViT and CNN**

Hyunsoo Ha, Minsang Kim, Songhun Han and Sangjun Lee

**ComplAI: Framework for Multi-factor Assessment of Black-Box Supervised Machine Learning Models**

Arkadipta De, Satya Swaroop Gudipudi, Sourab Panchanan and Maunendra Sankar Desarkar

**Estimating Phenotypic Characteristics of Tuberculosis Bacteria**

Derek James Sloan, Evelin Dombay, Wilber Sabiiti, Bariki Mtafya and Ognjen Arandelović

**Show, Prefer and Tell: Incorporating User Preferences into Image Captioning**

Annika Lindh, Robert Ross and John Kelleher

**IMG-NILM: A Deep learning NILM approach using energy heatmaps**

Jonah Edmonds and Zahraa S. Abdallah

**Convolutional Method for Modeling Video Temporal Context Effectively in Transformer**

Hae Sung Park and Yong Suk Choi

**Federated Hyperparameter Optimisation with Flower and Optuna**

Juan Marcelo Parra-Ullauri, Xunzheng Zhang, Anderson Bravalheri, Reza Nejabati and Dimitra Simeonidou

**Classification by Frequent Association Rules**

Md Rayhan Kabir and Osmar Zaiane

**MAFD: A Federated Distillation Approach with Multi-head Attention for Recommendation Tasks**

Aming Wu and Young-Woo Kwon

**Adaptive Feature Selection Using an Autoencoder and Classifier: Applied to a Radiomics Case**

N. Netten, Mortaza Shoae Bargh, Sunil Choenni, Tony Busker and Reza Zare Hassanpour

**(NET) Networking**

**Time-limited Bloom Filter**

Ana Rodrigues, Ariel Shtul, Carlos Baquero and Paulo Sergio Almeida

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

Sijia Tian and Vassilios Vassilakis

**(WCN) Wireless Communications and Networking**

**Machine Learning for VRUs accidents prediction using V2X data**

Bruno Ribeiro, Maria Joao Nicolau and Alexandre Santos

**WED 14:30 – 16:30**

**PM Poster Session**

**Room: A046**

**(CPS) Cyber-Physical Systems**

**Efficient Sanitization Design for LSM-based Key-Value Store over 3D MLC NAND Flash**

Liang-Chi Chen, Shu-Qi Yu, Chien-Chung Ho, Wei-Chen Wang and Yung-Chun Li

**Towards a High-interaction Physics-aware Honeynet for Industrial Control Systems**

Marco Lucchese, Massimo Merro, Federica Paci and Nicola Zannone

**IoMiRCA: Root cause analysis in IoT-extended 5G microservice environments**

Zeno Heeb, Onur Kalinagac, Wissem Soussi and Gürkan Gür

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## (DBDM) Databases and Big Data Management

### **HSMR-RAID: Enabling a Low Overhead RAID-5 System over a Host-managed Shingled Magnetic Recording Disk Array**

Ting-Yu Lin and Tseng-Yi Chen

### **On evaluating text similarity measures for customer data deduplication**

Pawel Boiński, Mariusz Sienkiewicz, Robert Wrembel, Bartosz Bębel and Witold Andrzejewski

### **EHS: An Efficient Hashing Scheme for Persistent Memory**

Dereje Regassa, Dongkyu Sung, Sunggon Kim, Heon Young Yeom and Yongseok Son

## (DM) Data Mining

### **A fully automated and scalable Parallel Data Augmentation for Low Resource Languages using image and text analytics**

Prawaal Sharma, Poonam Goyal, Navneet Goyal and Vishnupriyan K. R

### **Summarizing Fuzzy Tensors with Sub-Tensors**

Victor Henrique Silva Ribeiro and Loïc Cerf

### **Discovering Process Models that Support Desired Behavior and Avoid Undesired Behavior**

Ali Norouzfzar and Wil van der Aalst

### **Multivariate Time Series Evapotranspiration Forecasting using Machine Learning Techniques**

Chalachew Muluken Liyew, Rosa Meo, Elvira Di Nardo and Stefano Ferraris

## (DS) Data Streams

### **Accelerating the quality control of genetic sequences through stream processing**

Óscar Castellanos-Rodríguez, Roberto R. Expósito and Juan Touriño

### **Online adaptive learning for out-of-round railway wheels detection**

Afonso Lourenço, Jorge Meira and Goretí Marreiros

### **Estimating Instantaneous Vehicle Emissions**

Thiago Andrade and Joao Gama

## (EMBS) Embedded Systems

### **ASCOM: Affordable Sequence-aware Contention Modeling in Crossbar-based MPSoCs**

Jeremy Jens Giesen León, Enrico Mezzetti, Jaume Abella and Francisco J Cazorla

## (KRR) Knowledge Representation and Reasoning

### **Breaking Symmetry for Knowledge Compilation**

Andrea Balogh and Barry O'Sullivan

### **Translating FOL-theories into SROIQ-Boxes**

Fatima Danash and danielle ziebelin

## (LASD) Lean and Agile Software Development

### **Agile GUI Testing by computing novel Mobile App Coverage Using Appium Tool**

SANGHARATNA GODBOLEY, DEBASISH DALEI, Ravichandra Sadam and Durga Prasad Mohapatra

### **Differences in performance, scalability, and cost of using microservice and monolithic architecture**

Przemysław Jatkiewicz and Szymon Okrój

## (OS) Operating Systems

### **Hot-patching Platform for Executable and Linkable Format Binary Application for System Resilience**

haegeon jeong, Jinsung An and Kyungtae Kang

### **Comparative Study on Fuchsia and Linux Device Driver Architecture**

Taejoon Song and YoungJin Kim

## (PL) Programming Languages

### **Synchronous cooperative threading model in MSSL**

Darine Rammal, Wadoud Bousdira and Frédéric Dabrowski

## (SE) Software Engineering

### **Source Code Metrics for Software Defects Prediction**

Dominik Arne Rebro, Stanislav Chren and Bruno Rossi

### **Deriving metrics for software architectures from the "protected entry points" security patterns**

Monica Johana Buitrago, Isabelle Borne and Jérémy BUISSON

### **Optimization of the Product Configuration System of Renault**

hao xu, Souheib Baarir, Tewfik Ziadi, Siham ESSODAIGUI, Yves BOSSU and Lom Messan Hillah

### **A Performant and Secure Single Sign-On System Using Microservices**

Mahyar Tourchi Moghaddam, Andreas Edal Pedersen, William Walter Lillebroe Bolding and Torben Worm

## (SONAMA) Social Network and Media Analysis

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

Jamie Knott, Haiyue Yuan, Matthew Boakes and Shujun Li

### **Graph Convolutional Neural Network for Multimodal Movie Recommendation**

Prabir Mondal, Daipayan Chakder, SUBHAM RAJ, Sriparna Saha and Naoyuki Onoe

## (SP) Software Platforms

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

Jeongtaek Lim, Minho Kim, Kyung Sun Ham and Taehyoung Kim

**Optimal Charging Method for Effective Li-ion  
Battery Life Extension Based on Reinforcement  
Learning**

Minho Kim, Jeongtaek Lim, Kyung Sun Ham and Taehyoung Kim

**(SVT) Software Verification and Testing**

**A formal analysis of Dutch Generic Integral Tunnel  
Design models**

Kevin H.J. Jilissen, Peter Dieleman and Jan Friso Groot

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

Matthias Gdemann and Peter Schrammel

**(SWA) Semantic Web and Applications**

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

Gal Engelberg, Mattia Fumagalli, Adrian Kuboszek, Dan Klein,  
Pnina Soffer and Giancarlo Guizzardi

**CEM: an Ontology for Crime Events in Newspaper  
Articles**

Federica Rollo, Laura Po and Alessandro Castellucci

**(KNLP) Knowledge and Natural Language  
Processing**

**Call Reason Prediction using Hierarchical Models**

Vijay Varna Malladi and Suman Roy

**A General and NLP-based Architecture to perform  
Recommendation: A Use Case for Online Job Search  
and Skills Acquisition**

Ruben Alonso, Danilo Dessi, Antonello Meloni and Diego Reforgiato  
Recupero

**Impact of Character n-grams Attention Scores for  
English and Russian News Articles Authorship  
Attribution**

Liliya Makhmutova, Robert Ross and Giancarlo Salton

**(WE) Web Engineering**

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

Eduardo Mosqueira-Rey, David Alonso-Rios and Nerea Vazquez-  
Callejon

**Proxy-based Web Prefetching Exploiting Long Short-  
Term Memory**

Jiwoong Won, Wenbo Zou, ahn jemin, Jiseoup Lim, Gun-woo Kim  
and Kyungtae Kang

## Venue

**Astra Building, Narva road 29,  
in Tallinn University,  
Tallinn, Estonia**



## Welcome Reception

**March 28, 2023  
Tuesday at 7:00pm  
Researchers Forum  
Astra Building 1<sup>st</sup> Floor**



## Banquet

**March 30, 2023  
Thursday at 7:00pm  
Lennusadam  
Maritime Museum**

