

COMPASAC 2019

July 15-19 Marquette University

Milwaukee, Wisconsin USA

Data Driven Intelligence for a Smarter World

Conference Program



IEEE



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COMPSAC Sponsors

IEEE / IEEE Computer Society



COMPSAC 2019 is sponsored solely by IEEE and the IEEE Computer Society. IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity. The IEEE Computer Society is the premier source for information, inspiration, and collaboration in computer science and engineering. Connecting members worldwide, the Computer Society empowers the people who advance technology by delivering tools for individuals at all stages of their professional careers. Our trusted resources include international conferences, peer-reviewed publications, a robust digital library, globally recognized standards, and continuous learning opportunities.

2019 Platinum Supporter

Northwestern Mutual Data Science Institute



Northwestern Mutual formed a new partnership with the University of Wisconsin-Milwaukee and Marquette University to create the Northwestern Mutual Data Science Institute. Over the next five years, Northwestern Mutual and its Foundation will contribute \$15 million to support an endowed professorship at each university, fund research, expand university curriculum, and develop K-12 STEM learning opportunities and pre-college programming. Marquette University and UWM will each invest more than \$12 million in data science education and research, bringing the total commitment in this effort to nearly \$40 million.

2019 Supporter

IEEE Future Directions



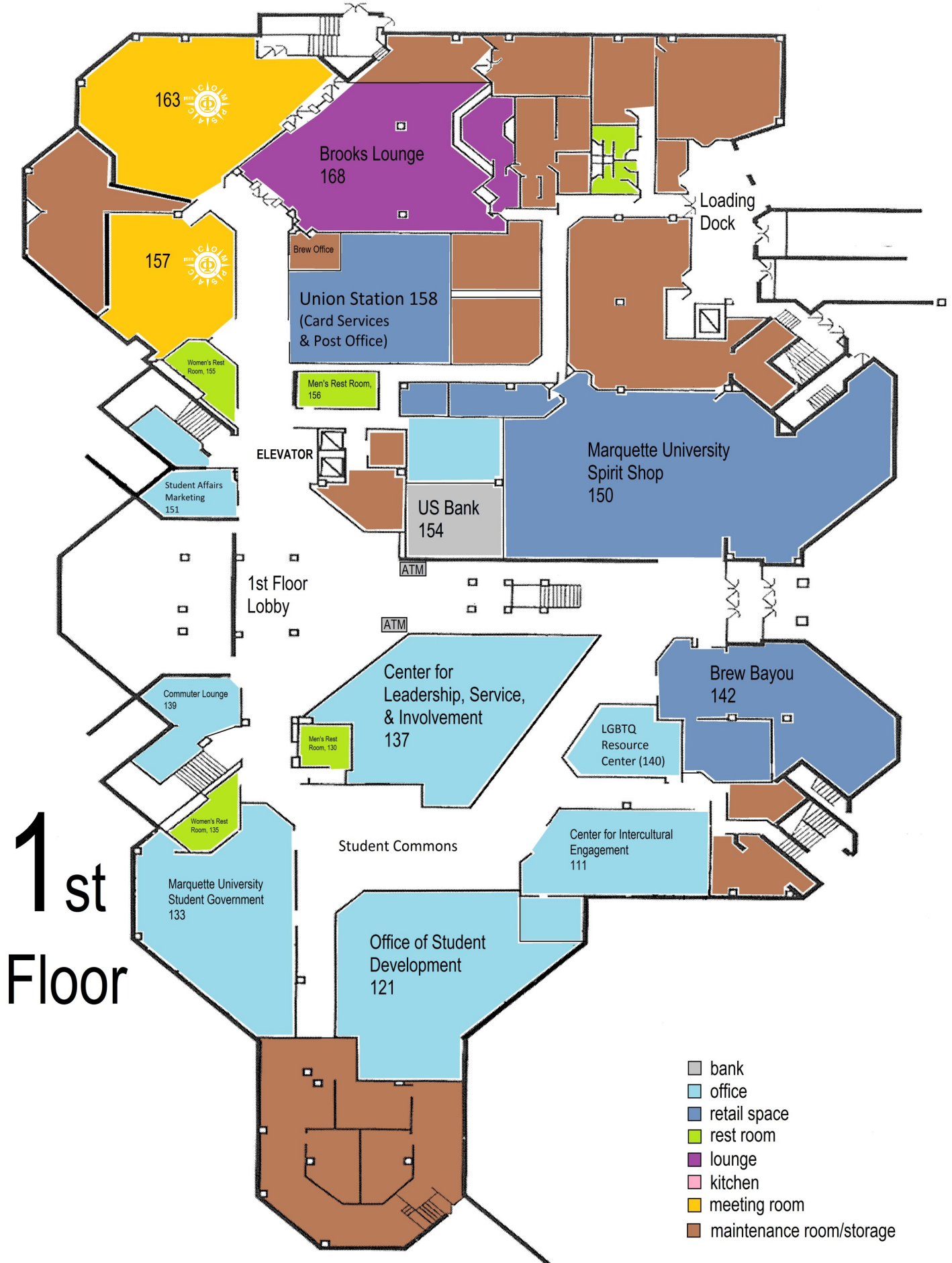
IEEE Future Directions is a COMPSAC supporter. The IEEE Future Directions Committee (FDC) seeks to identify, develop, and promote projects that are value-added for IEEE and its members, bringing together multiple Societies and Councils to provide broad and deep perspective on a particular topic or technology. These projects range from short-term activities to reach a specific goal to Initiatives seeking cross-collaborative engagement among industry, academia, and government striving to develop and deploy various future technologies.

2019 Supporter and COMPSAC 2019 Host

Marquette University



Marquette University is a Catholic, Jesuit university located near the heart of downtown Milwaukee, Wis., that offers a comprehensive range of majors in 11 nationally and internationally recognized colleges and schools. A Marquette education offers students a virtually unlimited number of paths and destinations and prepares them for the world by asking them to think critically about it. Along the way, we ask one thing of every student: Be The Difference.



3rd Floor



- office
- rest rooms
- kitchen
- meeting room
- maintenance room/storage

Monday 7/15	AMU 157	AMU 163	Ballroom A	Ballroom B	Ballroom C	Ballroom D	AMU 254
8:00 - 9:30	ADMNET 1	AIML 1		SCA 1	IEESD 1	DADA 1	
9:30 - 10:00	Coffee Break - Lynch Lounge/Veranda/Ballroom E						
10:00 - 12:00	ADMNET 2	AIML 2	ESAS 1	SCA 2	IEESD 2	DADA 2	CDS 1
12:00 - 1:00	Lunch Break - Lynch Lounge/Veranda/Ballroom E						
1:00 - 2:30	OER 1	AIML 3	ESAS 2	SCA 3	MediComp 1	DADA 3	STA 1
2:30 - 3:00	Coffee Break - Lynch Lounge/Veranda/Ballroom E						
3:00 - 4:15	OER 2	WISH 1	STA 2	NETSAP 1	MediComp 2	DADA 4	
4:15 - 5:30		WISH 2	STA 3	SAPSE 1			
6:00 - 9:00	COMPSAC Welcome Reception Location: AMU Lynch Lounge/Veranda/Ballroom E						
Tuesday 7/16	AMU 157	AMU 163	Ballroom A	Ballroom B	Ballroom C	Ballroom D	AMU 254
8:00 - 9:30	SETA 1	ITiP 1	NCIW 1	EATA 1	DSAT 1	ASYS 1	CELT 1
9:30 - 10:00	Coffee Break - Lynch Lounge/Veranda/Ballroom E						
10:00 - 12:00	Welcome Session - Keynote 1: RJ Ray Liu Location: Weasler Auditorium						
12:00 - 1:00	Lunch Break - Lynch Lounge/Veranda/Ballroom E						
1:00 - 2:30	SETA 2	ITiP 2	NCIW 2	EATA 2	SETA 3	ASYS 2	CELT 2
2:30 - 3:00	Coffee Break - Lynch Lounge/Veranda/Ballroom E						
3:00 - 4:15	Industry Panel: Future of Manufacturing Location: Weasler Auditorium						
4:15 - 5:30	Industry Panel: Future of Financial Services Location: Weasler Auditorium						
Wednesday 7/17	AMU 157	AMU 163	Ballroom A	Ballroom B	Ballroom C	Ballroom D	Ballroom E
8:00 - 9:30	DSAT 2	CAP 1	HCSC 1	ITiP 3	SCH 1	SETA 4	Women in Engineering
9:30 - 10:00	Coffee Break - Lynch Lounge/Veranda/Ballroom E						
10:00 - 12:00	Plenary Panel Honoring IEEE Computer Society Edward J. McCluskey Technical Achievement Award Recipients Location: Weasler Auditorium						
12:00 - 1:00	Lunch Break - Lynch Lounge/Veranda/Ballroom E						

	AMU 157	AMU 163	Ballroom A	Ballroom B	Ballroom C	Ballroom D	AMU 254
1:00 - 2:30	DSAT 3	CAP 2	HCSC 2	ITiP 4	SCH 2	SETA 5	SEPT 1
2:30 - 3:00	Coffee Break - Lynch Lounge/Veranda/Ballroom E						
3:00 - 4:15	Plenary Panel: Agile Methodology Location: Weasler Auditorium						
4:15 - 5:30	Industry Panel: Future of Healthcare Location: Weasler Auditorium						
6:30 - 9:00	COMPSAC Banquet Location: Harley Davidson Museum						
Thursday 7/18	AMU 157	AMU 163	Ballroom A	Ballroom B	Ballroom C	Ballroom D	AMU 254
8:00 - 9:30	SEPT 2	DSAT 4	SETA 6	HCSC 3	SISA 1	MOWU 1	ETA KAPPA NU
9:30 - 10:00	Coffee Break - Lynch Lounge/Veranda/Ballroom E						
10:00 - 12:00	COMPSAC 2020 Preview Keynote 2: Laura Specker Sullivan Location: Weasler Auditorium						
12:00 - 1:00	Lunch Break - Lynch Lounge/Veranda/Ballroom E						
1:00 - 2:30	SEPT 3	DSAT 5	SETA 7	SETA 8	SISA 2	SEPT 4	MOWU 2
2:30 - 3:00	Coffee Break - Lynch Lounge/Veranda/Ballroom E						
3:00 - 4:15	Plenary Panel: Convergence & Transformation of Data Digitally in AI, ML, Autonomous Systems Location: Weasler Auditorium						
4:15 - 5:30	Plenary Panel: President's Panel - IEEE/Computer Society Volunteerism & Membership Serving Humanity with Technology Location: Weasler Auditorium						
Friday 7/19	AMU 157	AMU 163	Ballroom A	Ballroom B	Ballroom C	Ballroom D	AMU 254
8:00 - 9:30	InfoFlow 1	Posters	STPSA 1	MediComp 3	SRS 1	FA 1	MVDA 1
9:30 - 10:00	Coffee Break - Lynch Lounge/Veranda/Ballroom E						
10:00 - 12:00	Keynote 3: Wendy Nilsen Location: AMU Ballroom E						
12:00 - 1:00	Lunch Break - Lynch Lounge/Veranda/Ballroom E						
1:00 - 2:30	QUORS 1	DFM 1	STPSA 2	MediComp 4	SRS 2	FA 2	MVDA 2
2:30 - 3:00	Coffee Break - Lynch Lounge/Veranda/Ballroom E						
3:00 - 4:15	BDCAA 1	DFM 2	SDIM 1	MediComp 5		FA 3	
4:15 - 5:30		DFM 3					



Message from Sorel Reisman COMPSAC Standing Committee Chair

Greetings COMPSAC 2019 attendees. On behalf of myself and the volunteer organizers of this year's event, I'd like to welcome you all to Milwaukee and to Marquette University. On behalf of all of us, I would like to thank Marquette faculty and staff for helping us to organize and for hosting this 43rd annual COMPSAC.

This year, our theme, Data Driven Intelligence for a Smarter World, will be addressed by our keynote speakers: R. J. Ray Liu, IEEE Vice President of Technical Activities who will address some of the communications challenges of IoT; Laura Specker Sullivan, whose expertise, 'techethics' is an important consideration in the design of data-driven autonomous devices; Wendy Nilsen, Program Director for the Smart and Connected Health Program in the Directorate for Computer & Information Science & Engineering at the National Science Foundation – whose expertise is one of the thrusts of the 2019 COMPSAC industry outreach program; and Simon Y. Liu, an old friend from his days as EIC of IEE ITPro, who will talk about digital agriculture, a particularly relevant topic in these climate changing days. Another theme-oriented program is the plenary panel, "Convergence and Transformation of Data Digitally via AI, ML, and Autonomous Systems," organized by the COMPSAC sponsor, IEEE Future Directions under the supervision of our good friend Kathy Grise.

This year we are introducing a new industry outreach program with a series of 3 industry panels focusing on the future of health, finance, and manufacturing in this digital age. This program has been organized by the Northwestern Mutual Data Science Institute, a COMPSAC Platinum Supporter. For this program and sponsorship, we can thank our Sponsors Chair, Tom Kaczmarek, Co-director of Marquette's Data Science Institute, and our Industry Chair, Carmel Ruffolo, Marquette's Associate Vice President, Corporate Engagement.

If you've never organized a conference like this before, you can't begin to appreciate the work of the volunteers who selflessly contribute their time to make COMPSAC a success. There are our colleagues who do the hard work overseeing the solicitation and review of the submissions, ensuring the continuing high quality of this conference – notably the General Chairs (Vladimir Getov, Jean-Luc Gaudiot), the Program Chairs-in-Chief (Nariyoshi Yamai, Stelvio Cimato, Morris Chang), the Workshop Chairs (Yuuichi Teranishi, Ji-Jiang Yang, Hong Va Leong), the Fast Abstract Chairs, (Hossain Shahriar, Michiharu Takemoto, Dave Towey, Hiroki Takakura), and our Student Research Symposium Chairs (Susumu Takeuchi, Satish Puri). You can learn more about these wonderful people from the "Organizers" dropdown menu on our website (designed and maintained by our webmaster, Laurel Ming).

In addition to content, there are all the logistics that go into conducting COMPSAC. For this we can thank our Local Arrangements Chair, Praveen Madiraju and our Publicity Chair, Chandana Tamma, faculty members at Marquette who have been essential to organizing this year's event. At the infrastructure level of logistics we have to thank Hossain Shahriar who also serves as Proceedings and Publicity Chair, and our steadfast conference treasurer, Simanta Mitra. From both an operational and moral support standpoint, we continue to value the support of our IPSJ friends who were instrumental in making the 2018 COMPSAC and now the 2019 conference a great success.

Again, this year we are continuing our unique J1C2 and C1J2 journal/conference publication/presentation programs, both of which have attracted the interest of other IEEE conferences. We can thank Atilla Elci and Vladimir Getov for continuing to promote and organize these programs. This year we have continued the IEEE Open Preview program, making all the papers in our program available and free for public viewing in IEEE Xplore, one full month before the conference, thereby showcasing our author/presenters' work to a much wider audience of researchers, earlier than usual. Analytics from last year indicate a much higher interest in our authors' papers in IEEE Xplore than in previous years.

Starting last year, our annual banquet took on a new focus at which we honored the hard work and successes of many of our colleagues. We renamed our annual banquet the COMPSAC Annual Awards Banquet after we were asked by the Computer Society to present there, some of the IEEE Computer Society awards. This year, our banquet will be at the Harley Davidson World Headquarters Museum where we will be presenting the CS Technical Achievement Awards to C.-C. Jay Kuo, Radu Marculescu, and Zhi-Hua Zhou for “outstanding and innovative contributions to the fields of computer and information science and engineering or computer technology.” Be sure to attend the Wednesday morning plenary session where we will meet these colleagues, and learn more about their work. In addition, following in the footsteps of other Merwin Award recipients - including me, last year, John Walz, President Emeritus of the CS will be receiving the 2019 Richard E. Merwin Award for distinguished service. There will be some other surprises at the banquet.

COMPSAC has always been a venue for CS presidents, and this year we continue that tradition with our Presidents Panel highlighting 10 invited CS presidents (Chang, Fujii, Kasahara, Metra, Milojicic, Yau, Gaudiot, Floriani, Land, and yours truly). The other trend we are continuing, under the leadership of Prof. Paolo Montuschi, is the induction of new Eta Kappa Nu IEEE honor society members.

Finally, again, as always, I want to particularly thank to our Standing Committee Vice Chair, Sheikh Iqbal Ahamed, known to all his friends simply as Iqbal. Without his wonderful leadership and our personal friendship, this year’s event would not be as rewarding as the program indicates it will be.



Message from Sheikh Iqbal Ahamed Standing Committee Vice-Chair

On behalf of the COMPSAC 2019 organizers we would like to welcome you to the 43rd Annual IEEE International Computers, Software, and Applications Conference (COMPSAC 2019), held in Milwaukee, Wisconsin USA, July 15-19, 2019. COMPSAC was first held in 1977 in Chicago. We hope you enjoy COMPSAC 2019 in Milwaukee, the largest city in the state of Wisconsin, and the 2nd largest in population in the US Midwest, second only to Chicago. Take some time during your visit and stroll along the Riverwalk, tour our world class breweries and art galleries, and enjoy a sunrise or sunset on Lake Michigan.

The theme of COMPSAC 2019 is “Data Driven Intelligence for a Smarter World.” Computer technologies are producing profound changes in society. Emerging developments in areas such as data driven intelligence use deep learning and other techniques, supported by different types of data. We will address major challenges utilizing this data driven intelligence, which in a few short years will spread rapidly around the globe and become a key part of the world’s infrastructure. COMPSAC 2019 provides a platform for in-depth discussion of such movements and challenges. We support discussions of general methodology for data driven intelligence and a consideration of emerging applications to deploying including Smart Health devices, networked healthcare, wearable computing, internet-of-things, cyber-physical systems, smart cities, and smart planet.

The COMPSAC conference program is supported by several international societies including the Information Processing Society of Japan (IPSJ), Korean Institute of Information Scientist and Engineers (KISE), and China Computer Federation (CCF), and several special technical communities such as IEEE Future Directions. I would like to thank all of our supporters, notably the Northwestern Mutual Data Science Institute and Marquette University. COMPSAC 2019 will host 13 symposiums and 20 workshops, including major workshops on Big Data and Artificial Intelligence. In addition, the program includes three keynote speakers and six plenary panels that will provide an international perspective on data driven intelligence. Finally, it will also bring together funding agency and industry representatives from across the globe to address their vision for Data Driven Intelligence - Challenges and Applications. Thank you for participating in COMPSAC 2019! Enjoy your visit to Milwaukee!

Message from the General Chairs

Jean-Luc Gaudiot, University of California, Irvine, USA

Vladimir Getov, University of Westminster, UK

On behalf of the conference organizers, we welcome you to the 43rd IEEE International COMPuters, Software, and Applications Conference (COMPSAC 2019), held in Milwaukee, Wisconsin, USA, July 15-19, 2019. COMPSAC is the IEEE Computer Society Signature Conference on Computers, Software, and Applications. It is a major international forum for academia, industry, and government to discuss research results and advancements, emerging problems, and future trends in computer and software technologies and applications. The technical program includes keynote addresses, research papers, industrial case studies, plenary and specialized panels, fast abstracts, a doctoral symposium, poster sessions, and a number of workshops on emerging and important topics in computers, software and applications. COMPSAC conference series alternates its meeting among sites in Asia, Europe, and North America.

The theme of this year's COMPSAC is "Data Driven Intelligence for a Smarter World." It is unquestionable that a smarter world must be our future. The autonomous systems technology to enable this world needs to be developed with the same urgency as preserving our planet's environment. COMPSAC 2019 will provide a forum for in-depth presentations and discussions of the technical challenges, successes, and failures of moving from traditional, person-centered and directed activities and services to those that are the focus of autonomous systems. Sessions will include topics and issues related to autonomous computing, wearable computing, the internet-of-things, social networking, cross-domain data fusion, privacy, security and surveillance, cloud computing, big data, physiological computing, self-aware and self-expressive systems, adaptive learning and teaching, and emerging architectures and network issues that affect all these developing technology-driven innovations.

The COMPSAC 2019 conference offers a very rich technical program, which features research sessions for 60 high quality papers, short paper sessions for 57 short papers, all selected from 410 submissions from over 40 countries. In addition, it features 20 workshops, doctoral symposium, 3 keynotes, 4 plenary panels and 3 industry panels.

We would like to thank the program chairs for their dedication and effort to compose such a high-quality technical program, and thank the COMPSAC standing committee, especially Professor Sorel Reisman and Professor Iqbal Ahamed, for their hard work, their dedication and their strong support. We trust that you will enjoy the 2019 COMPSAC technical program, the social events, and the interactions with attendees from many different regions and countries world-wide.

Message from the Program Chairs

Nariyoshi Yamai, Tokyo University of Agriculture & Technology, Japan;

Stelvio Cimato, University of Milan, Italy;

Morris Chang, University of South Florida, USA

Welcome to COMPSAC 2019, the 43rd IEEE Computer Society International Conference on Computers, Software & Applications, hosted by Marquette University, Milwaukee, Wisconsin, USA. "Data Driven Intelligence for a Smarter World" is the theme this year. Extracting meaning and knowledge from big data is crucial for governments and businesses to support their decision making processes. Artificial Intelligence (AI) makes it possible for machines to learn and accomplish tasks by processing large amount of data. Advances in big data technologies triggers the evolution of AI. The impact of this data-driven intelligence on our world increases rapidly, which calls upon ever-more exciting innovations in computers, software, and applications. COMPSAC provides a forum for in-depth discussion of such challenges, both in traditional and in emerging fields, such as education and learning, computer architectures, software engineering, network and web technologies, human/social communications, mobile/wearable computing, the Internet-of-things, cyber-physical systems, security and trust, data analytics, and the smart planet. This

year, we have organized a tightly integrated union of 13 symposia, each focusing on a particular technical segment. Furthermore, we have keynote addresses, fast abstracts sessions, workshops, poster sessions, and panels, all of which facilitate discourse on and deepen the understanding of the challenges we face, by furthering the fundamental contributions needed for advances in computing systems.

We reviewed 257 submissions this year. Using a double-blind system, each paper was reviewed by at least three Program Committee members within each symposium. Symposia Chairs then made recommendations to the entire Program Committee for which papers to accept as regular papers, short papers, or fast abstracts. After discussion at the Program Committee meeting in London on March 29-30, 2019, we accepted 63 regular papers (24.5%), and 50 short papers. Also, 46 papers that were not accepted for the main conference were referred to COMPSAC workshops and fast abstracts, where many were accepted.

We extend our heartfelt gratitude to all the authors that submitted their works this year, and to more than 400 Program Committee Members who volunteered their time and effort to peer-review each paper. Many thanks as well as to the Symposia Chairs, Program Committee members who attended the meeting in London, and those who organized that event. The COMPSAC 2019 Program would not be possible without contributions of several dedicated volunteers, many serving in organizing chair roles for components such as panels, doctoral symposium, fast abstracts, posters, proceedings, finance, registration, publications, publicity, organizing, and submission systems support. The workshop chairs, Yuuichi Teranishi, Ji-Jiang Yang and Hong Va Leong have done an outstanding job coordinating 20 workshops this year. We also recognize the General Chairs, Vladimir Getov and Jean-Luc Gaudiot, for their support and encouragement. Sheikh Iqbal Ahamed has worked tirelessly and diligently for many months to support our efforts and keeping all our activities on track and on schedule as Standing Committee Vice Chair. Sorel Reisman has given the invaluable guidance, advice, and support as COMPSAC Standing Committee Chair.

Message from the Workshop Chairs

Yuuichi Teranishi, National Institute of Information and Communications Technology, Japan

Ji-Jiang Yang, Tsinghua University, China

Hong Va Leong, The Hong Kong Polytechnic University, Hong Kong

It is our pleasure to welcome all you to the workshops of the 43rd IEEE International Computer Software and Application Conference, COMPSAC 2019, which is held in Milwaukee, Wisconsin, USA, organized under the exciting theme of Data-Driven Intelligence for a Smarter World. This year the COMPSAC conference includes 20 workshops covering different aspects of developing computer software and applications.

The workshops nicely complement the main conference and they together create an exciting scientific program for 5 days. According to the COMPSAC tradition, workshops are held during the first (July 15) and during the last (July 19) day of the conference. COMPSAC workshops provide nice place for exchange of ideas and results in different aspects of computer software and applications.

The Lion's Share of contribution to the workshops comes from the linkage with the main research focus of COMPSAC, especially along the software engineering and development aspect. There are 4 related workshops, namely, "Quality Oriented Reuse of Software (QUORS)", "Security Aspects in Processes and Services Engineering (SAPSE)", "Software Test Automation (STA)", and "Security, Trust, and Privacy for Software Applications (STPSA)" contributing to about 20% of the sessions in the workshops.

In response to the smart computing theme this year, i.e., Data-Driven Intelligence for a Smarter World, three new workshops are proposed: "Big Data Computation, Analysis, and Applications (BDCAA)", "Deep Analysis of Data-Driven Applications (DADA)", and "Workshop on Integrated Smart Healthcare (WISH)". The workshops with related scope such as "Advances in AI and Machine Learning: Research & Practice

(AIML)”, “Smart Computing & Applications (SCA)” also successfully contributed to the sessions in the workshops. These workshops have contributed to about 30% of all workshop sessions.

Needless to say, emerging technologies, networking, and applications form the third pillar in COMPSAC tradition with more than half of the contributions.

We are pleased to report that the workshops in COMPSAC 2019 are well-balanced as well as highly interesting. We believe that the topics covered by the workshops are closely related to those contained in the main conference and hope that participants can benefit by interacting between one another to stimulate new research ideas and approaches.

This year we received very large number of papers submitted to the workshops. The total number of accepted papers in all workshops is only 116.

There are two major paths for contributions to workshops. The standard contribution path follows a direct submission to the workshops in response to the worldwide Call for Papers. Each paper submission undergoes a rigorous review process by at least two independent reviewers. This year we received 120 papers submitted to the workshops and 76 high quality papers were selected for presentation (acceptance rate: 63.3%).

Owing to the low acceptance rate in the main conference, some papers receiving highly positive reviews, but unfortunately cannot be accepted due to acceptance rate limitation, were referred to workshops for consideration. These papers had already undergone a rigorous review process and workshop organizers would ensure that they fit into the theme of the workshops, before they can be formally accepted for presentation. This year 40 papers are transferred from the main conference to the workshops.

We hereby thank all authors who submitted papers to the workshops for their support of the conference. Selection process was carefully carried out by the workshop organizers. We would like to thank the organizers of all workshops and the program committee members of workshops for their efforts and excellent job, despite working under a very short review cycle. We also would like to thank all people involved into organizing the COMPSAC 2019 and standing committees for their help, to make COMPSAC 2019 a success.

We hope that participants of COMPSAC 2019 will enjoy nice presentations and in-depth discussions, besides attending keynote speeches and joining the panel on the smart world.

Monday July 15: COMPSAC Workshops

8:00 – 9:30 Workshop Sessions

ADMNET 1: The 7th IEEE International Workshop on Architecture, Design, Deployment and Management of Networks & Applications

Location: AMU 157

Session Chair: Hiroki Kashiwazaki, National Institute of Informatics, Japan

Over-The-Air Provisioning for IoT Wearable Devices via BLE and oneM2M
Wei-Han Chen and Fuchun Lin

A Dynamic Intervals Determination Method Based on Transaction Rates for Real-time IoT Applications
Chaxiong Yukonhiatou, Tomoki Yoshihisa, Tomoya Kawakami, Yuuichi Teranishi and Shinji Shimojo

Analyzing the Effect of Increased Distribution on a Wearable Appliance
Mateus Silva and Ricardo Oliveira

AIML 1: The 2nd IEEE International Workshop on Advances in AI and Machine Learning: Research & Practice

Location: AMU 163

Session Chair: Piyush Saxena, Direct Supply, USA

Multi-scale Discriminative Location-aware Network for Few-Shot Semantic Segmentation
Zihao Dong, Ruixun Zhang, Hongyu Zhou and Xiuli Shao

Research on Evaluation Function of Clustering Algorithm Based on Duty Cycle
Hong Jie Liu, Hong Zhe Xu, Yu Yan and Wen Li

How Smart is your Manufacturing? Build Smarter with AI
Mike McMahon, Dale Mumper, Mitsuko Ihaza and Dominic Farrar

SCA 1: The 2nd IEEE International Workshop on Smart Computing & Applications

Location: Ballroom B

Session Chair: William Cheng-Chung Chu, Tunghai University, Taiwan

Semantic Stream Management Framework for Data Consistency in Smart Spaces
Oluwaseun Bamgboye, Xiaodong Liu and Peter Cruickshank

Utilization of Bio-Ontologies for Enhancing Patent Information Retrieval
Kincho Law, Siddarth Taduri, Jay Kesan and Ram Sriram

Micro-level Analysis and Visualization of Tennis Shot Patterns with Fractal Tables
Shiraj Pokharel, Satish Puri and Ying Zhu

IEESD 1: The 9th IEEE International Workshop on Industrial Experience in Embedded Systems Design

Location: Ballroom C

Session Chairs: Detlef Streitferdt, Technische Universität Ilmenau, Germany
Tiberiu Seceleanu, ABB Corporate Research, Sweden

Modern Architecture for Deep Learning-based Automatic Optical Inspection
Johannes Richter and Detlef Streitferdt

A Data-Driven Approach to Energy Cost Prediction of Dwellings Based on Parallel Regression Model
Yingjie Zhang, Yujie Gong, Daniel Morgan and Ying Zhang

Experiencing Technology Independence
Anton Urvantsev, Morgan Johansson, Nils Muellner and Tiberiu Seceleanu

**DADA 1: The 1st IEEE International Workshop on Deep Analysis of Data-Driven Applications
LSTM Modeling**

Location: Ballroom D

Session Chair: Akbar Namin, Texas Tech University, USA

LiRUL: A Lightweight LSTM based Model for Remaining Useful Life Estimation at the Edge
Olumide Kayode and Ali Tosun

Modeling Genome Data Using Bidirectional LSTM
Neda Tavakoli

A Scalable Framework for Multilevel Streaming Data Analytics using Deep Learning
Shihao Ge, Haruna Isah, Farhana Zulkernine and Shahzad Khan

9:30 – 10:00 Break: AMU Lynch Lounge/Veranda/Ballroom E

10:00 – 12:00 Workshop Sessions

**ADMNET 2: The 7th IEEE International Workshop on Architecture, Design, Deployment and
Management of Networks & Applications**

Location: AMU 157

Session Chair: Hajime Shimada, Nagoya University, Japan

On the Effectiveness of Position-based Routing in Delay/Disruption-Tolerant Networking
Natsuko Kawabata, Yasuhiro Yamasaki and Hiroyuki Ohsaki

On the Predictability of Network Robustness from Spectral Measures
Kazuyuki Yamashita, Yuichi Yasuda, Ryo Nakamura and Hiroyuki Ohsaki

Spread of Anycast and GSLB
Kenichi Yoshida, Kazunori Fujiwara, Akira Sato and Shuji Sannomiya

A Proposal of SDN-FIT System to Evaluate Wide Area Distributed Applications based on Exhaustive FIT
Scenario Generation
Hiroki Kashiwazaki and Shinnosuke Miura

**AIML 2: The 2nd IEEE International Workshop on Advances in AI and Machine Learning: Research
& Practice**

Location: AMU 163

Session Chair: San Murugesan, BRITE Professional Services, Australia

Panel Discussion
The Impact of AI on the Workforce, Now and Five Years into the Future
Moderator: Piyush Saxena, Direct Supply, USA

Feature Boosting in Natural Image Classification
Piyush Saxena, Devansh Saxena, Xiao Nie, Aaron Helmers, Nithin Ramachandran, Nazmus Sakib and
Sheikh Iqbal Ahamed

**ESAS 1: The 14th IEEE International Workshop on E-Health Systems & Web Technologies
Smart Health Systems & Health Data Analysis**

Location: Ballroom A

Session Chair: Rajesh Subramanyan, Siemens, USA

Machine Learning-based Modeling of Big Clinical Trials Data for Adverse Outcome Prediction: A Case Study of Death Events

Ling Tong, Ron Cisler, Michael Cantor and Jake Luo

A Framework for Dengue Surveillance and Data Collection in Pakistan

Komal Minhas, Munazza Tabassum, Rida Rasheed, Assad Abbas, Hasan Ali Khattak and Samee Khan

A Real-time Cardiac Monitoring using a Multisensory Smart IoT System

AKM Jahangir Majumder, Mohamed Elsaadany, Joshua Izaguirre and Donald Ucci

SCA 2: The 2nd IEEE International Workshop on Smart Computing & Applications

Location: Ballroom B

Session Chair: William Cheng-Chung Chu, Tunghai University, Taiwan

From Data-driven to Intelligent-driven: Technology Evolution of Network Security in Big Data Era

Yan Zhu, Yi Zhang, Jing Wang, Weijing Song, Cheng-Chung Chu and Guowei Liu

Intelligent Highway Traffic Forecast Based on Deep Learning and Restructured Road Models

Seungyo Ryu and Dongseung Kim

A Mapping Language for IoT Device Description

Fabian Burzlaff, Maurice Ackel and Christian Bartelt

Development of Mobile Intercloud Applications

Yuxuan Deng and Henry Chan

IEESD 2: The 9th IEEE International Workshop on Industrial Experience in Embedded Systems Design

Location: Ballroom C

Session Chairs: Tiberiu Secoleanu, ABB Corporate Research, Sweden

Detlef Streitferdt, Technische Universität Ilmenau, Germany

Embedded Control System for Decentralized Wastewater Treatment

Tamer Omar, Olusegun Bamgbose, Ibrahim Naffaa and Omar Naffaa

Towards a Framework for Safe and Secure Adaptive Collaborative Systems

Aida Causevic, Alessandro Papadopoulos and Marjan Sirjani

How to Bring Project Management of Embedded Systems to an Appropriate Level of Abstraction for a Discrete Event Model

Maxi Weichenhain, Wolfgang Fengler and Detlef Streitferdt

DADA 2: The 1st IEEE International Workshop on Deep Analysis of Data-Driven Applications NLP

Location: Ballroom D

Session Chair: Aerambamoorthy Thavaneswaran, University of Manitoba, Canada

Social Media and Forecasting Stock Price Change

Joseph Coelho, Dawson d'Almeida, Scott Coyne, Katelyn Mills, Nathan Gilkerson and Praveen Madiraju

TALS: A Framework for Text Analysis, Fine-Grained Annotation, Localisation and Semantic Segmentation
Shatha Jaradat, Nima Dokoochaki, Ummal Wara, Mallu Goswami, Kim Hammar and Mihhail Matskin

Twitter vs News: Concern Analysis of the 2018 California Wildfire Event
Hanxiang Du, Hoang Long Nguyen, Zhou Yang, Hashim Abu-Gellban, Xingyu Zhou, Wanli Xing and Fang Jin

CDS 1: The 7th IEEE International Workshop on Consumer Devices & Systems

Location: AMU 254

Session Chair: Atushi Tagami, KDDI Research, Inc., Japan

A Pen-Grip Shaped Device for Estimating Writing Pressure and Altitude
Tsutomu Terada and Masahiko Tsukamoto

Communication Robot for Elderly based on Robotic Process Automation
Toru Kobayashi, Kenichi Arai, Tetsuo Imai, Shigeaki Tanimoto, Hiroyuki Sato and Atsushi Kanai

Estimation Method of Traffic Volume in Provincial City Using Big-Data
Kazuki Someya, Masashi Saito and Ryoza Kiyohara

Using Smartwatches as Interactive Movie Controller: A Case Study with the Bandersnatch Movie
Thamer Nascimento, Fabrizzio Soares, Marcos Alves Vieira, Juliana Felix, Livia De Campos, Wellington Rodrigues, Wesley De Miranda, Ronaldo Da Costa and Jaline Mombach

12:00 – 1:00 Lunch: Served in the AMU Lynch Lounge/Veranda/Ballroom E

1:00 – 2:30 Workshop Sessions

OER 1: The 3rd IEEE International Workshop on Open Educational Resources for Computer Science & Information Technology

Practices Based on OER

Location: AMU 157

Session Chairs: Edmundo Tovar, Universidad Politécncia de Madrid,
Henry Chan, The Hong Kong Polytechnic University

Prototyping for Internet of Things with Web Technologies: A Case on Project-Based Learning using Scrum
Bahtijar Vogel, Bo Peterson and Blerim Emruli

Mindset for Software Architecture Students
Lotfi Ben Othmane and Monica Lamm

Implementing Cybersecurity into the Wisconsin K-12 Classroom
Hsiao-An Wang, Dennis Brylow and Debbie Perouli

An Approach for Developing a Conceptual Quality Model by Changing the Learner Behavior with OER
Ahmed Alzaghouli and Edmundo Tovar Caro

AIML 3: The 2nd IEEE International Workshop on Advances in AI and Machine Learning: Research & Practice

Location: AMU 163

Session Chair: Mohammad Adibuzzaman, Purdue University, USA

An Electrocardiogram Inter-patient Heartbeat Classification by Extreme Learning Machine
NvsIs Indira D and Jagadeeswara Rao Annam

A Teaching Assistant Robot Design Tool Base on Knowledge Chunks Reuse
Takeshi Morita, Naoya Takahashi, Mizuki Kosuda and Takahira Yamaguchi

Identifying Buildings with Ramp Entrances Using Convolutional Neural Networks
Jiawei Wu, Wenliang Hu, Joseph Coelho, Paromita Nitu, Praveen Madiraju, Roger O Smith and Sheikh Iqbal Ahamed

Modeling the Structured Porous Network using Stacked Ensemble Learning
Mehdi Nekouei and Sara Sartoli

ESAS 2: The 14th IEEE International Workshop on E-Health Systems & Web Technologies Applications on Health Systems

Location: Ballroom A

Session Chair: Stelvio Cimato, Stelvio Cimato, Università degli Studi di Milano, Italy

Educational App Proposal to Support Pregnant Women
Daniel Scherer and José George Dias de Souza

World's First Retransmission of Medical Images in an Operating Room via DICOM-RTV: Technical Details
Saad El Jaouhari, Patrick Hardy, Guillaume Pasquier, Pierrick Gutter, Eric Poiseau, Cédric Moubri-Tournes, Stéphane Leduc, Sébastien Vincendeau, Laurent Bourgeois, Bernard Gibaud and Emmanuel Cordonnier

SCA 3: The 2nd IEEE International Workshop on Smart Computing & Applications

Location: Ballroom B

Session Chair: Wang Feng-Jian, National Chiao Tung University, Taiwan

Improving the Detection of Sequential Anomalies Associated with a Loop
Fahmi Faisal, Pei-Shu Huang and Wang Feng-Jian

A Smart Role Mapping Recommendation System
Lijuan Diao, Huaduo Wang, Sultan Alsarra, I-Ling Yen and Farokh Bastani

MediComp 1: The 6th IEEE International Workshop on Medical Computing Enhanced Predictive Mining

Location: Ballroom C

Session Chair: Hossain Shahriar, Kennesaw State University, USA

An Improved Semi-Supervised Learning Method on Cataract Fundus Image Classification
Wenai Song, Ying Cao, Zhiqiang Qiao, Qing Wang and Ji-Jiang Yang

A Novel Grading Method of Cataract Based on AWM
Changshuai Huo, Faheem Akhtar and Pengzhi Li

Bi-dimensional Representation of Patients for Diagnosis Prediction
Weijing Wang, Chenkai Guo, Jing Xu and Ao Liu

DADA 3: The 1st IEEE International Workshop on Deep Analysis of Data-Driven Applications Software, Risk & Security

Location: Ballroom D

Session Chair: Mikio Aoyama, Nanzan University, Japan

A Speech Data-Driven Stakeholder Analysis Methodology
Yuta Shirasaki, Yuya Kobayashi and Mikio Aoyama

Fuzzy Value-at-Risk Forecasts Using a Novel Data-Driven Neuro Volatility Predictive Model
Aerambamoorthy Thavaneswaran, Ruppa Thulasiram, Zimo Zhu, Md. Erfanul Hoque and Nalini Ravishanker

Detecting Phishing Websites through Deep Reinforcement Learning
Moitrayee Chatterjee and Akbar-Siami Namin

**STA 1: The 11th IEEE International Workshop on Software Test Automation
Measuring & Analysis**

Location: AMU 254

Session Chair: Tiberiu Seceleanu, ABB Corporate Research, Sweden

Mitigating Threats to Validity in Empirical Software Engineering: A Traceability Case Study
Nasser Mustafa, Yvan Labiche and Dave Towey

Short-term Performance Metrics Forecasting for Virtual Machine to Support Anomaly Detection Using Hybrid ARIMA-WNN Model
Juan Qiu, Qingfeng Du, Wei Wang, Kanglin Yin, and Liang Chen

2:30 – 3:00 Break: AMU Lynch Lounge/Veranda/Ballroom E

3:00 – 4:15 Workshop Sessions

**OER 2: The 3rd IEEE International Workshop on Open Educational Resources for Computer
Science & Information Technology**

Cooperation with OER

Location: AMU 157

Session Chairs: Edmundo Tovar, Universidad Politécnicia de Madrid,
Henry Chan, The Hong Kong Polytechnic University

Keynote: Online National Master in AI? An extremely successful model of collaboration based on OER
Tiziana Margaria, University of Limerick and Lero, The Irish Software Research Centre

Panel: Transnational Cooperation with OER

Panelists: Edmundo Tovar, Universidad Politécnicia de Madrid

Henry Chan, The Hong Kong Polytechnic University

Dave Towey, University of Nottingham Ningbo China

Claudio di Martini, Politecnico de Torino

WISH 1: The 1st IEEE International Workshop on Integrated Smart Healthcare

Location: AMU 163

Session Chair: Vaskar Raychoudhury, Miami University, USA

Keynote: Big Data in Healthcare: Promises, Challenges and Opportunities
Mohammad Adibuzzaman, PhD, Regenstrief Center for Healthcare Engineering, Purdue University

Activity Segmentation Using Wearable Sensors for DVT/PE Risk Detection
Austin Gentry, Brent Lee, William Mongan, Owen Montgomery and Kapil Dandekar

Scalable Motor Movement Recognition from Electroencephalography using Machine Learning
Abbie Popa, Aditi Sharma, Shivee Singh, Brian Wright, Alan Perry and Diane Myung-Kyung Woodbridge

STA 2: The 11th IEEE International Workshop on Software Test Automation

Invited Talk & Software Faults

Location: Ballroom A

Session Chair: Rajesh Subramanyan, Siemens USA

Invited Talk: Challenges in Testing Intelligent Software Systems

Mikio Aoyama

Software Fault Proneness Prediction with Group Lasso Regression: On Factors that Affect Classification Performance

Katerina Goseva-Popstojanova, Mohammad Ahmad and Yasser Alshehri

NETSAP 1: The 9th IEEE International Workshop on Network Technologies for Security, Administration and Protection

Location: Ballroom B

Session Chair: Atsushi Tagami, KDDI Research Inc., Japan

Towards Enhancement of Fault Traceability Among Multiple Hazard Analyses in Cyber-Physical Systems

Daneth Horn, Nazakat Ali and Eui Hong Jang

Automatic Whitelist Generation for SQL Queries Using Web Application Tests

Komei Nomura, Kenji Rikitake and Ryosuke Matsumoto

Detecting Successful Attacks from IDS Alerts Based on Emulation of Remote Shellcodes

Yo Kanemoto, Kazufumi Aoki, Makoto Iwamura, Jun Miyoshi, Daisuke Kotani, Hiroki Takakura and Yasuo Okabe

MediComp 2: The 6th IEEE International Workshop on Medical Computing

Data-driven Knowledge Discovery & Decision Making

Location: Ballroom C

Session Chair: Minhua Lu, Shenzhen University, China

Viscoelasticity Measurements of Knee Muscles with Simulated Knee Osteoarthritis Treated by Novel Chinese Medicine: A Preliminary Study

Siyan Fang, Lixia Hu, Bin Du, Haoteng Zheng, Minhua Lu and Rui Mao

Towards Clinical Decision Support for Veteran Mental Health Crisis Events using Tree Algorithm

Md Fitrat Hossain, Olawunmi George, Nadiyah Johnson, Mark Flower, Lisa Rein, Jose Lizarraga Mazaba, Zeno Franco, Praveen Madiraju, Kantinka Hooyer and Sheikh Iqbal Ahamed

Semi-automatic Construction Method of Chronic Obstructive Pulmonary Disease Knowledge Graph

Xin-Hong Jia, Wen-Ai Song, Wei-Yan Li, Ji-Jiang Yang, Qing Wang, Ting Yang, Ke Huang and Jun Li

Observational Measures for Effective Profiling of Healthcare Staffs' Security Practices

Prosper Yeng, Bian Yang and Einar Snekkenes

DADA 4: The 1st IEEE International Workshop on Deep Analysis of Data-Driven Applications Visualization

Location: Ballroom D

Session Chair: Tommy Dang, Texas Tech University, USA

COMEX: Identifying Mislabeled Human Behavioral Context Data Using Visual Analytics
Hamid Mansoor, Walter Gerych, Luke Buquicchio, Kavın Chandrasekaran, Elke Rundensteiner and Emmanuel Agu

SpacePhaser: Phase Space Embedding Visual Analytics
Ngan Nguyen and Tommy Dang

4:15 – 5:30 Workshop Sessions

WISH 2: The 1st IEEE International Workshop on Integrated Smart Healthcare

Location: AMU 163

Session Chair: Ferdaus Ahmed Kawsar, East Tennessee State University, USA

Personalized Pain Study Platform using Evidence-based Continuous Learning Tool
Amit Kumar Saha, G M Tanimul Ahsan, Md Osman Gani and Sheikh Iqbal Ahamed

Drunk Selfie: Intoxication Detection from Smartphone Facial Images
Colin Willoughby, Ian Banatoski, Paul Roberts and Emmanuel Agu

STA 3: The 11th IEEE International Workshop on Software Test Automation Performance and Tools

Location: Ballroom A

Session Chair: Mihhail Matskin, Royal Institute of Technology, Sweden

SPL-AT Gherkin: A Gherkin Extension for Automated Feature-Oriented Testing of Software Product Lines
Tugkan Tuglular and Sercan Şensülün

Towards Transforming User Requirements to Test Cases Using MDE and NLP
Sai Chaithra Allala, Juan P Sotomayor, Dionny Santiago, Tariq M. King and Peter J. Clarke

Comparison of Runtime Testing Tools for Microservices
Juan P. Sotomayor, Sai Chaithra Allala, Patrick Alt, Justin Phillips, Tariq M. King and Peter J. Clarke

SAPSE 1: The 11th IEEE International Workshop on Security Aspects for Process and Services Engineering

Location: Ballroom B

Session Chair: Stelvio Cimoto, Università degli Studi di Milano, Italy

Making the Pedigree to Your Big Data Repository: Innovative Methods, Solutions, and Algorithms for Supporting Big Data Privacy in Distributed Settings via Data-Driven Paradigms
Alfredo Cuzzocrea and Ernesto Damiani

Generating Real Time Cyber Situational Awareness Information
Through Social Media Data Mining
Ariel Rodriguez and Koji Okamura

6:00 – 9:30 COMPSAC Welcome Reception

Location: AMU Lynch Lounge/Veranda/Ballroom E

Remarks from Marquette University Provost

Tuesday July 16: COMPSAC Main Conference

8:00 – 9:30 Conference Sessions

SETA 1: Software Engineering Technologies & Applications

Location: AMU 157

Session Chair: Yu Zhou

Statically-directed Assertion Recommendation for C Programs
Cong Wang, Le Kang, Renwei Zhang and Weiliang Yin

An Empirical Study on API-Misuse Bugs in Open-Source C Programs
Zuxing Gu, Jiecheng Wu, Jiayang Liu, Min Zhou and Ming Gu

Characterization and Prediction of Popular Projects on GitHub
Junxiao Han, Shuiguang Deng, Xin Xia, Dongjing Wang and Jianwei Yin

ITiP 1: IT in Practice

Location: AMU 163

Session Chair: Irena Bojanova, NIST, USA

Enhanced Detection of Crisis-related Microblogs by Spatiotemporal Feedback Loops
Christian Meurisch, Zain Hamza, Bekir Bayrak and Max Mühlhäuser

AssistantGraph: An Approach for Reusable and Composable Data-driven Assistant Components
Christian Meurisch, Bekir Bayrak and Max Mühlhäuser

Integrating Static Code Analysis Toolchains

Matthias Kern, Ferhat Erata, Markus Iser, Carsten Sinz, Frederic Loiret, Stefan Otten and Eric Sax

Producing Green Computing Images to Optimize Power Consumption in OLED-based Displays
Sorath Asnani, Maria Giulia Canu and Bartolomeo Montrucchio

NCIW 1: Networks, Communications, Internet & Web Technologies

Location: Ballroom A

Session Chair: Tomoki Yoshihisa, Osaka University, Japan

C2P2: Content-Centric Privacy Platform for Privacy-Preserving Monitoring Services
Kalika Suksomboon, Zhishu Shen, Kazuaki Ueda and Atsushi Tagami

Predicting Network Outages Based on Q-drop in Optical Network
Yohei Hasegawa and Masato Uchida

HeteroTSDB: An Extensible Time Series Database for Automatically Tiering on Heterogeneous Key-Value Stores

Yuuki Tsubouchi, Asato Wakisaka, Ken Hamada, Masayuki Matsuki, Hiroshi Abe and Ryosuke Matsumoto

FastContainer: A Homeostatic System Architecture High-speed Adapting Execution Environment Changes
Ryosuke Matsumoto, Uchio Kondo and Kentaro Kuribayashi

EATA 1: Emerging Advances in Technology & Applications

Location: Ballroom B

Session Chair: Toyokazu Akiyama, Kyoto Sangyo University, Japan

DirectFlow: A Robust Method for Ocular Torsion Measurement
Bruno Stahl, Leonardo Soares, Vincenzo Sangalli, Pedro Klein, Rafael Copstein and Marcio Pinho

Pothole Detection in Asphalt: An Automated Approach to Threshold Computation based on the Haar Wavelet Transform
Ricardo Rodrigues, Marcia Pasin, Alice Kozakevicius and Vinicius Morengo

DSAT 1: Data Sciences, Analytics & Technologies

Location: Ballroom C

Session Chair: Kathy Grise, IEEE Future Directions, USA

How the Academics Qualification Influence the Students Learning Development
Edna Canedo, Rhandy de Carvalho, Heloise Acco Tives Leão, Ruyther da Costa and Pedro Henrique Costa

Alchemy: Stochastic Feature Regeneration for Malicious Network Traffic Classification
Bo Hu, Atsutoshi Kumagai, Kazunori Kamiya, Kenji Takahashi, Daniel Dalek, Ola Soderstrom, Kazuya Okada, Yuji Sekiya and Akihiro Nakao

Purchasing Behavior Analysis Based on Customer's Data Portrait Model
Jing Sun, Huiqun Zhao, Mushan Wen and Zimu Li

On Recommender Systems Based on Autoencoder and Differential Privacy
Jiahui Ren, Xian Xu, Zhihuan Yao and Huiqun Yu

ASYS 1: Autonomous Systems

Location: Ballroom D

Session Chair: Mihhail Matskin, KTH, Sweden

Cooperative UAVs Gas Monitoring using Distributed Consensus
Daniele Facinelli, Matteo Larcher, Davide Brunelli and Daniele Fontanelli

Increasing Self-Adaptation in a Hybrid Decision-Making and Planning System with Reinforcement Learning
Christopher-Eyk Hrabia, Patrick Marvin Lehmann and Sahin Albayrak

ALLiveSim: An Extensible Virtual Environment for Training Autonomous Vehicles
Jerome Leudet, Francois Christophe, Tommi Mikkonen and Tomi Männistö

CELT 1: Computing Education & Learning Technologies

Location: AMU 254

Session Chair: Tiziana Margaria, University of Limerick and Lero, Ireland

A Declarative Approach for an Adaptive Framework for Learning in Online Courses
Dhananjay Pandit and Ajay Bansal

Empowering Engagement through Automatic Formative Assessment
Alice Barana, Marina Marchisio and Sergio Rabellino

VISA: A Supervised Approach to Indexing Video Lectures with Semantic Annotations
Luca Cagliero, Laura Farinetti and Lorenzo Canale

9:30 – 10:00 Break: AMU Lynch Lounge/Veranda/Ballroom E

10:00 – 12:00 Welcome Session
Location: Weasler Auditorium

Sheikh Iqbal Ahamed, COMPSAC Standing Committee Vice Chair
Sorel Reisman, COMPSAC Standing Committee Chair
Michael R. Lovell, President of Marquette University

Keynote 1: K.J. Ray Liu, University of Maryland-College Park; Origin Wireless
Wireless AI: Smart Radios for Smart Life

12:00 – 1:00 Lunch Break: AMU Lynch Lounge/Veranda/Ballroom E

1:00 – 2:30 Conference Sessions

SETA 2: Software Engineering Technologies & Applications

Location: AMU 157

Session Chair: Tugkan Tuglular, Izmir Institute of Technology, Turkey

SENSORY: Leveraging Code Statement Sequence Information for Code Snippets Recommendation
Lei Ai, Zhiqiu Huang, Weiwei Li, Yu Zhou and Yaoshen Yu

Supporting Consistency in the Heterogeneous Design of Safety-Critical Software
Andrés Paz and Ghizlane El Boussaidi

A Heuristic Approach to Break Cycles for the Class Integration Test Order Generation
Miao Zhang, Jacky Keung, Yan Xiao Md Alamir Kabir, and Shuo Feng

Assessing the Significant Impact of Concept Drift on Software Defect Prediction
Md Alamgir Kabir, Jacky Keung, Kwabena Ebo Benniny and Zhang Miao

ITiP 2: IT in Practice

Location: AMU 163

Session Chair: San Murugesan, BRITE Professional Services, Australia

Keynote Address: Simon Y. Liu, Associate Administrator, US Agricultural Research Service
Digital Agriculture: Application, Adoption, and Transformation

NCIW 2: Networks, Communications, Internet & Web Technologies

Location: Ballroom A

Session Chair: Victor Clincy, Kennesaw State University, USA

Hybrid Cellular-DTN for Vehicle Volume Data Collection in Rural Areas
Yuuichi Teranishi, Takashi Kimata, Eiji Kawai and Hiroaki Harai

Modeling Restrained Epidemic Routing on Complex Networks
Natsuko Kawabata, Yasuhiro Yamasaki and Hiroyuki Ohsaki

Sparse Representation of Network Topology with K-SVD Algorithm
Ryotaro Matsuo, Ryo Nakamura and Hiroyuki Ohsaki

EATA 2: Emerging Advances in Technology & Applications

Location: Ballroom B

Session Chair: Hiroyuki Sato, University of Tokyo, Japan

An Ontology Enhanced User Profiling Algorithm Based on Application Feedback
Xin Dong, Tong Li and Zhiming Ding

A Dataflow Application Deployment Strategy for Hierarchical Networks
Shintaro Ishihara, Satoshi Tanita and Toyokazu Akiyama

SETA 3: Software Engineering Technologies & Applications

Location: Ballroom C

Session Chair: Carl K. Chang, Iowa State University, USA

In Search of Scientific Agile
Robert Ward and Carl K. Chang

Learning-based Anomaly Cause Tracing with Synthetic Analysis of Logs from Multiple Cloud Service Components

Yue Yuan, Han Anu, Wenchang Shi, Bin Liang, Bo Qin

Using Client-based Class Cohesion Metrics to Predict Class Maintainability

Musaad Alzahrani, Saad Alqithami, Austin Melton

ASYS 2: Autonomous Systems

Location: Ballroom D

Session Chair: Shatha Jaradat, KTH, Sweden

Learning Distributed Cooperative Policies for Security Games via Deep Reinforcement Learning

Hassam Sheikh, Ladislau Boloni and Mina Razghandi

The SAMBA Approach for Self-Adaptive Model-Based Online Testing of Services Orchestrations

Lucas Leal, Andrea Ceccarelli and Eliane Martins

Visual Tracking with Autoencoder-Based Maximum A Posteriori Data Fusion

Yevgeniy Reznichenko, Enrico Prampolini, Abubakar Siddique, Henry Medeiros and Francesca Odone

CELT 2: Computing Education & Learning Technologies

Location: AMU 254

Session Chair: Henry Chan, The Hong Kong Polytechnic University, Hong Kong, China

A Mobile System to Increase Efficiency of the Lecturers when Preventing Academic Dishonesty During Written Exams

Pedro Maroco, João Cambeiro and Vasco Amaral

Study TOUR for Computer Science Students

Henry Chan, Hong Va Leong and Grace Ngai

2:30 – 3:00 Break: AMU Lynch Lounge/Veranda/Ballroom E

3:00 – 4:15 Industry Panel: Future of Manufacturing

Location: Weasler Auditorium

Panelists: Michael Cook, University Partnerships Program Director, Rockwell Automation

Richard Vincent, Chief Business Officer, Foxconn Industrial Internet

Chad Steighner, Vice President Information Technology, Clarios

Amy Meyer, Vice President – Technical Services, Kohler

4:15 – 5:30 Industry Panel: Future of Financial Services
Location: Weasler Auditorium

Panelists: Jon Nordhausen, VP, Product Strategy, Fiserv
Souheil Badran, Executive Vice President of Innovation, Northwestern Mutual
Sean Seeling, Chief Data Officer, Wintrust

Wednesday July 17: COMPSAC Main Conference

8:00 – 9:30 Conference Sessions

DSAT 2: Data Sciences, Analytics & Technologies

Location: AMU 157

Session Chair: Kathy Grise, IEEE Future Directions, USA

Matrix Factorization Model with Dual Preferences for Rating Prediction

Yuan Li and Kedian Mu

View-Adaptive Weighted Deep Transfer Learning for Distributed Time-Series Classification

Sreyasee Das Bhattacharjee, William J. Tolone, Ashish Mahabal, Mohammed Elshambakey, Isaac Cho and Stanislav G. Djorgovski

Multi-Source Heterogeneous Core Data Acquisition Method in Edge Computing Nodes

Hong Xia, Mingdao Zhao, Yanping Chen, Xiaodong Jin, Zhongmin Wang, Zhong Yu and Jingwei Yang

CAP 1: Computer Architecture & Platforms

Location: AMU 163

Session Chair: Cristina Seceleanu, Malärdaalen University, Sweden

Invited Talk: Actor-based Design Platform for System of Systems

Marjan Sirjani

Detecting Malicious Attacks Exploiting Hardware Vulnerabilities Using Performance Counters

Congmiao Li and Jean-Luc Gaudiot

HCSC 1: Human Computing & Social Computing

Location: Ballroom A

Session Chair: Shamim Ahmed, Western Washington University, USA

Optimal Hand Sign Selection Using Information Theory for Custom Sign-Based Communication

Tokio Takahashi and Masato Uchida

Touch-based Ontology Browsing on Tablets and Surfaces

Fulvio Corno, Luigi De Russis and Luisa Barrera León

Investigating Differences in Gaze and Typing Behavior Across Age Groups and Writing Genres

Jun Wang, Eugene Yujun Fu, Grace Ngai and Hong Va Leong

ITiP 3: IT in Practice

Location: Ballroom B

Session Chair: Piyush Saxena, Direct Supply, USA

LIPs : A Protocol for Leadership Incentives for Heterogeneous and Dynamic Platoons
Brian Ledbetter, Samuel Wehunt, Mohammad Rahman and Mohammad Manshaei

[J1C2] Risk Assessment Methods for Cloud Computing Platforms
Tim Weil

[J1C2] Employer Branding in the IT Industry: An Employer View
Amir Dabirian

[J1C2] Transmuting Information to Knowledge with an Enterprise Knowledge Graph
Jans Aasman

SCH 1: Smart & Connected Health

Location: Ballroom C

Session Chair: Hossain Shahriar, Kennesaw State University, USA

Improving Classification of Breast Cancer by Utilizing the Image Pyramids of Whole-Slide Imaging and Multi-Scale Convolutional Neural Networks
Li Tong, Ying Sha and May D. Wang

Compliance Checking of Open Source EHR Applications for HIPPA and ONC Security and Privacy Requirements
Maryam Farhadi, Hisham Haddad and Hossain Shahriar

Generation of Infectious Disease Alerts through the Use of Geolocation
Antonio Sarasa Cabezuelo

[J1C2] Computer Vision Based Systems for Human Pupillary Behavior Evaluation: A Systematic Review of the Literature
Cleyton Silva, Cristhiane Gonçalves, Eduardo Nery, Joyce Siqueira, Fabrizzio Soares, Rodrogio Albernaz Bezerra, Hedenir Monteiro Pinheiro, Eduardo Nery Rossi Camillo, Augusto Paranhos Junior and Ronaldo da Costa

SETA 4: Software Engineering Technologies & Applications

Location: Ballroom D

Session Chair: AKM Jahangir Majumder, University of South Carolina Upstate

ParaAim: Testing Android Applications Parallel at Activity Granularity
Chun Cao, Jing Deng, Ping Yu, Zhiyong Duan and Xiaoxing Ma

A Comparative Study of the Effectiveness of Meta-Heuristic Techniques in Pairwise Testing
Salim Ali Khan Mohammad, Sathvik Vamshi Valepe, Subhrakanta Panda and B.S.A.S Rajita

An Adaptive Approach to Recommending Obfuscation Rules for Java Bytecode Obfuscators
Yanru Peng, Yuting Chen and Beijun Shen

Panel: IEEE Women in Engineering

Location: Ballroom E

Session Chair: Chandana Tamma, Marquette University, USA

9:30 – 10:00 Break: AMU Lynch Lounge/Veranda/Ballroom E

**10:00 – 12:00 Plenary Panel Honoring IEEE Computer Society Edward J. McCluskey
Technical Achievement Award Recipients
PCIC Report
Best Paper Award**

Panel Chairs: Cecilia Metra, 2019 IEEE Computer Society President
Paolo Montuschi, IEEE Computer Society Awards Chair

Panelists: C.C. Jay Kuo, University of Southern California, IEEE Computer Society Technical Achievement Award Winner
Radu Marculescu, Carnegie Mellon University, IEEE Computer Society Technical Achievement Award Winner
Zhi-Hua Zhou, Nanjing University, IEEE Computer Society Technical Achievement Award Winner

12:00 – 1:00 Lunch Break: AMU Lynch Lounge/Veranda/Ballroom E

1:00 – 2:30 Conference Sessions

DSAT 3: Data Sciences, Analytics & Technologies

Location: AMU 157

Session Chair: William Chu, Tunghai University, Taiwan

Chinese Social Media Entity Linking Based on Effective Context with Topic Semantics
Chengfang Ma, Ying Sha, Jianlong Tan, Li Guo, and Huailiang Peng

Identification of Cybersecurity Specific Content Using the Doc2Vec Language Model
Otgonpurev Mendsaikhan, Hirokazu Hasegawa, Yukiko Yamaguchi and Hajime Shimada

Semantic Data-Driven Microservices
Ivan L. Salvadori, Alexis Huf and Frank Siqueira

Big Data Analytics in Telecommunication Using state-of-the-art Big Data Framework in a Distributed Computing Environment: A Case Study
Mohit Ved and Rizwanahmed B

CAP 2: Computer Architectures & Platforms

Location: AMU 163

Session Chair: Cristina Seceleanu, Malärdaalen University, Sweden

Research on Index Mechanism of HBase Based on Coprocessor for Sensor Data
Feng Ye, Songjie Zhu, Yuansheng Lou, Yong Chen, Qian Huang and Zihao Liu

Testing Performance-Isolation in Multi-core Systems
Jakob Danielsson, Marcus Jägemar, Tiberiu Seceleanu, Moris Behnam and Mikael Sjödin

HCSC 2: Human Computing & Social Computing

Location: Ballroom A

Session Chair: Katsunori Oyama, Nihon University, Japan

Application of Reconstructed Phase Space in Autism Intervention
Piyush Saxena, Devansh Saxena, Xiao Nie, Aaron Helmers, Nithin Ramachandran, Alana McVey, Amy Van Hecke and Sheikh Iqbal Ahamed

Using Gamification to Motivate Occupants to Energy Efficiency in a Social Setting of a Building Automation System

Joana Pereira, João Cambeiro, Vasco Amaral and Armanda Rodrigues

A Tale of the Social-side of ASD

Moushumi Sharmin, Kurt Price, Md Forhad Hossain, Cody Pranger, Md. Monsur Hossain and Shameem Ahmed

ITiP 4: IT in Practice

Location: Ballroom B

Session Chair: Tim Weil, Alcohol Monitoring Systems, USA

A Game-Theoretic Analysis of Pricing Competition between Aggregators in V2G Systems

Md Golam Moula Mehedi Hasan, Mohammad Rahman, Mohammad Manshaei and Walid Saad

Information Exposure (IEX): A New Class in the Bugs Framework (BF)

Irena Bojanova, Yaacov Yesha, Paul Black and Yan Wu

DroidPatrol: A Static Analysis Plugin For Secure Mobile Software Development

Hossain Shahriar, Kai Qian, Md Arabin Islam Talukder, Dan Lo, Mohammad Rahman, Fan Wu and Sheikh Ahamed

Open Source Fog Architecture for Industrial IoT Automation Based on Industrial Protocols

Mohammad Ghazivakili, Claudio Demartini, Mauro Guerrera and Bartolomeo Montrucchio

SCH 2: Smart & Connected Health

Location: Ballroom C

Session Chair: Sahra Sedigh, Missouri University of Science & Technology, USA

The Causes Analysis of Ischemic Stroke Transformation into Hemorrhagic Stroke using PLS (partial least square)-GA and Swarm Algorithm

Chihhsiong Shih, You-Wei Chang and Cheng Chung Chu

Fully Automatic Intervertebral Disc Segmentation Using Multimodal 3D U-Net

Chuanbo Wang, Ye Guo and Zeyun Yu

Comparing Health Outcomes in San Francisco and Boston Metro Areas

Swapna Gokhale

SETA 5: Software Engineering Technologies & Applications

Location: Ballroom D

Session Chair: Anyndya Iqbal

AutoPer: Automatic Recommender for Runtime-Permission in Android Applications

Gao Hongcan, Guo Chenkai, Wu Yanfeng, Dong Naipeng, Hou Xiaolei, Xu Sihan and Xu Jing

Metrics Driven Architectural Analysis Using Dependency Graphs for C Language Projects

Devansh Tiwari, Hironori Washizaki, Yoshiaki Fukazawa, Tomoyuki Fukuoka, Junji Tamaki, Nobuhiro Hosotani and Munetaka Kohama

Identifying the Challenges of the Blockchain Community from StackExchange Topics and Trends

Irfan Alahi, Mubassher Islam, Amiangshu Bosu and Anindya Iqbal

SEPT 1: Security, Privacy & Trust in Computing

Location: AMU 254

Session Chair: Mohammad Zulkernine, Queen's University, Canada

Dynamic Data Publishing with Differential Privacy via Reinforcement Learning
Ruichao Gao and Xuebin Ma

Enforcing Optimal Moving Target Defense Policies
Jianjun Zheng and Akbar Siami Namin

Automatic Detection of NoSQL Injection Using Supervised Learning
Md Rafid Ul Islam, Md. Saiful Islam, Zakaria Ahmed, Dr. Anindya Iqbal and Dr. Rifat Shahriyar

2:30 – 3:00 Break: AMU Lynch Lounge/Veranda/Ballroom E

3:00 – 4:15 Plenary Panel: Agile, Continuous Integration, and DevOps
Location: Weasler Auditorium

Chair: Carl K. Chang, Iowa State University

Panelists: Wikerson de Lucena Andrade, Universidade Federal de Campina Grande, Brazil

Mikio Aoyama, Nanzan University, Japan

Edmundo Tovar, Universidad Politécnica de Madrid, Spain

Robert Ward, Iowa State University, USA

4:15 – 5:30 Industry Panel: Future of Healthcare
Location: Weasler Auditorium

Panel Chair: Zeno Franco, Medical College of Wisconsin

Panelists: Randall Kirk, EVP & Chief Scientist, Direct Supply, USA

Eric Abbott, Systems Director, Strategy, Innovation, Product and Marketing Management,
Advanced Aurora

Angela Johnson, Chief Information Security Officer & VP of IS Infrastructure,
Children's Hospital of Wisconsin

Scott Slavic, Principal Engineer, GE Healthcare

Roger Smith, Director, R2D2 Center at the University of Wisconsin-Milwaukee

6:30 – 9:00 COMPSAC 2019 Banquet: Harley Davidson Museum

Thursday July 18: COMPSAC Main Conference

8:00 – 9:30 Conference Sessions

SEPT 2: Security, Privacy & Trust in Computing

Location: AMU 157

Session Chair: Eun-Sun Cho, Chungnam National University, South Korea

Exploration into Gray Area: Efficient Labeling for Malicious Domain Name Detection
Naoki Fukushima, Daiki Chiba, Mitsuaki Akiyama and Masato Uchida

Precise and Robust Detection of Advertising Fraud
Fumihiro Kanei, Daiki Chiba, Kunio Hato and Mitsuaki Akiyama

Raising the Bar Really High: An MTD Approach to Protect Data in Embedded Browsers

Fadi Mohsen and Haadi Jafarian

DSAT 4: Data Sciences, Analytics & Technologies

Location: AMU 163

Session Chair: Ali Hurson, Missouri University of Science & Technology, USA

Keyword-Based Semi-Supervised Text Classification

Karl Severin, Swapna Gokhale and Aldo Dagnino

TypoWriter: A Tool to Prevent Typosquatting

Ishtiyaque Ahmad, Md Anwar Parvez and Anindya Iqbal

Vehicle Travel Time Estimation by Sparse Trajectories

Mingyang Jiang and Tianqi Zhao

SETA 6: Software Engineering Technologies & Applications

Location: Ballroom A

Session Chair: Tiziana Margaria, University of Limerick and Lero, Ireland

An Empirical Study on the Spreading of Fault Revealing Test Cases in Prioritized Suites

Wesley Nunes Marques Torres, Everton Leandro Galdino Alves and Patrícia Duarte de Lima Machado

Supporting Decision Makers in Search-based Product Line Architecture Design using Clustering

Willian Marques Freire, Carlos Vinícius Bindewald, Aline M. M. Miotto Amaral and Thelma Elita Colanzi

Execution Enhanced Static Detection of Android Privacy Leakage Hidden by Dynamic Class Loading

Yufei Yang, Wenbo Luo, Yu Pei, Minxue Pan and Tian Zhang

HCSC 3: Human Computing & Social Computing

Location: Ballroom B

Session Chair: Moushumi Sharmin, Western Washington University, USA

Analyzing Happiness: Investigation on Happy Moments using a Bag-of-words Approach and Related Ethical Discussions

Riddhiman Adib, Nathan Lang, Eyad Aldawod, Nina Lasswell and Shion Guha

Long-term Monitoring of NIRS Signals for Mental Health Assessment

Labiblaiss Rahman and Katsunori Oyama

SISA 1: Smart IoT Systems & Applications

Location: Ballroom C

Session Chair: AKM Jahangir Majumder, University of South Carolina Upstate, USA

Sensor Networks and Data Management in Healthcare: Emerging Technologies and New Challenges

Matthew Pike, Nasser Mustafa, Dave Towey and Vladimir Brusic

Multi-Breath: Separate Respiration Monitoring for Multiple Persons with UWB Radar

Yanni Yang, Jiannong Cao, Xiulong Liu and Xuefeng Liu

sEmoD: A Personalized Emotion Detection Using a Smart Holistic Embedded IoT System

Tanner M. McWhorter, Yezhou Ni, Hanqing Nie, Jacob Iarve, Akm Jahangir Majumder and Donald Ucci

MOWU 1: Mobile, Wearable & Ubiquitous Computing

Location: Ballroom D

Session Chair: Hiroyuki Sato, University of Tokyo, Japan

Barrier Detection using Sensor Data from Multiple Modes of Transportation with Data Augmentation
Yuki Kurauchi, Naoto Abe, Hiroshi Konishi and Hitoshi Seshimo

An Energy Efficient Pedestrian Heading Estimation Algorithm using Smartphones
Yankan Yang, Baoqi Huang and Runze Yang

Eta Kappa Nu

Location: AMU 254

Session Chair: Paolo Montuschi, Politecnico di Torino, Italy; Nancy Ostin, IEEE/HKN

Informational session

New member introductions

9:30 – 10:00 Break: Ballroom E/Lynch Lounge/Veranda

10:00 – 12:00 COMPSAC 2020 Preview

Keynote 2

Laura Specker Sullivan, College of Charleston

**Is a Smarter World a Better World? Key Questions at the Intersection
of Technology, Intelligence, and Ethics**

Location: Weasler Auditorium

12:00 – 1:00 Lunch Break: AMU Lynch Lounge/Veranda/Ballroom E

1:00 – 2:30 Conference Sessions

SEPT 3: Security, Privacy & Trust in Computing

Location: AMU 157

Session Chair: Victor Clincy, Kennesaw State University, USA

Efficient SVM Based Packer Identification with Binary Diffing Measures
Yeongcheol Kim, Joon-Young Paik, Seokwoo Choi and Eun-Sun Cho

CTRL-ALT-LED: Leaking Data from Air-Gapped Computers via Keyboard LEDs
Mordechai Guri, Andrey Daidakulov, Boris Zadov, Dima Bykhovsky and Yuval Elovici

The Sponge Structure Modulation Application to Overcome the Security Breaches for the MD5 and SHA-1
Hash Functions
Zeyad Al-Odat and Samee Khan

DSAT 5: Data Sciences, Analytics & Technologies

Location: AMU 163

Session Chair: Sahra Sedigh, Missouri University of Science & Technology, USA

Xu: An Automated Query Expansion and Optimization Tool
Morgan Gallant, Haruna Isah, Farhana Zulkernine and Shahzad Khan

Parallel Discovery of Trajectory Companions from Heterogeneous Streaming Data
Yongyi Xian, Chuanfei Xu, Sameh Elnikety, and Yan Liu

SETA 7: Software Engineering Technologies & Applications

Location: Ballroom A

Session Chair: Hiroyuki Sato, University of Tokyo, Japan

Deep-AutoCoder: Learning to Complete Code Precisely with Induced Code Tokens

Xing Hu, Rui Men, Ge Li and Zhi Jin

ConRS: A Requests Scheduling Framework for Increasing Concurrency Degree of Server Programs

Biyun Zhu, Ruijie Meng, Zhenyu Zhang and W.K. Chan

LAC: Locating and Applying Consistent and Repetitive Changes

Sushma Sakala, Vamshi Krishna Epuri, Samuel Sungmin Cho and Myoungkyu Song

Dockerfile TF Smell Detection Based on Dynamic and Static Analysis Methods

Zhigang Lu, Jiwei Xu, Tao Wang and Tao Huang

SETA 8: Software Engineering Technologies & Applications

Location: Ballroom B

Session Chair: Dave Towey, University of Nottingham Ningbo China, China

Empirical Analysis of the Growth and Challenges of New Programming Languages

Partha Chakraborty, Rifat Shahriyar and Anindya Iqbal

Featured Event Sequence Graphs for Model-Based Incremental Testing of Software Product Lines

Tugkan Tuglular, Mutlu Beyazit and Dilek Öztürk

Time-aware and Location-based Personalized Collaborative Recommendation for IoT Services

Rumeng Shao, Hongyan Mao and Jinpeng Jiang

[J1C2] An Extended Abstract of “Metamorphic Testing: Testing the Untestable”

Sergio Segura, Dave Towey, Zhi Quan Zhou and T.Y. Chen

SISA 2: Smart IoT Systems & Applications

Location: Ballroom C

Session Chair: Hironori Washizaki, Waseda University, Japan

RIVER-MAC: A Receiver-Initiated Asynchronously Duty-Cycled MAC Protocol for the Internet of Things

Mathew Wymore and Daji Qiao

GeneSIS: Continuous Orchestration and Deployment of Smart IoT Systems

Nicolas Ferry, Phu H. Nguyen, Hui Song, Pierre-Emmanuel Novac, Stéphane Lavirotte, Jean-Yves Tigli and Arnor Solberg

Degree Distribution of Wireless Networks for Mobile IoT Applications

Renato Ferrero and Filippo Gandino

SEPT 4: Security, Privacy & Trust in Computing

Location: Ballroom D

Session Chair: Stelvio Cimato, University of Milan, Italy

CSKES: A Context-based Secure Keyless Entry System

Juan Wang, Karim Lounis and Mohammad Zulkernine

Privacy Is the Best Policy: A Framework for BLE Beacon Privacy Management
Emmanuel Bello-Ogunu, Mohamed Shehab and Nazmus Sakib Miazi

[J1C2] Safety and Security Co-Analyses: A Systematic Literature Review
Elena Lisova, Irfan Sljivo and Aida Causevic

MOWU 2: Mobile, Wearable & Ubiquitous Computing

Location: AMU 254

Session Chair: Morris Chang, University of South Florida, USA

Towards an Effective and Efficient Machine-Learning-Based Framework for Supporting Event Detection in Complex Environments

Alfredo Cuzzocrea, Enzo Mumolo, Marco Tessarotto and Giorgio Mario Grasso

Towards Predicting Risky Behavior among Veterans with PTSD by Analyzing Gesture Patterns

Tanvir Roushan, Riddhiman Adib, Nadiyah Johnson, Olawunmi George, Md Fitrat Hossain, Zeno Franco, Katinka Hooyer and Sheikh Iqbal Ahamed

2:30 – 3:00 Break: AMU Lynch Lounge/Veranda/Ballroom E

3:00 – 4:15 Plenary Panel: Convergence and Transformation of Data Digitally in AI, ML, Autonomous Systems

Location: Weasler Auditorium

Chair: Kathy Grise, IEEE Future Directions, USA

Panelists: Jesse Lowe, University of Missouri Kansas City C.I.B.I.T. Lab

Nicholas Napp, Xmark Labs

Robert Saracco, EIT ICTLABS Italy and EIT Digital

Michael Zimmer, Marquette University, USA

4:15 – 5:30 President's Panel: IEEE/Computer Society Volunteerism & Membership Serving Humanity with Technology

Location: Weasler Auditorium

Co-Chairs: Kathy Land, 2009 IEEE Computer Society President

Dejan Milojicic, 2014 IEEE Computer Society President

Panelists: Cecilia Metra, 2019 IEEE Computer Society President

Hironori Kasahara, 2018 IEEE Computer Society President

Jean-Luc Gaudiot, 2017 IEEE Computer Society President

John Walz, 2012 IEEE Computer Society President

Sorel Reisman, 2011 IEEE Computer Society President

Carl K. Chang, 2004 IEEE Computer Society President

Stephen S. Yau, 1974-75 IEEE Computer Society President

Friday July 19: COMPSAC Workshops

8:00 – 9:30 Workshop Sessions

InfoFlow 1: The 2nd IEEE International Workshop on Information Flow Oriented Approaches in Internet of Things and Cyber-Physical Systems

Location: AMU 157

Session Chair:

Hybrid Approach for Enabling Hierarchical Fog Networks in an IoT Deployment
Nuwan Jayawardene and Pumudu Fernando

OpenFlow Based Information Flow Control Considering Route Switching Cost
Kosuke Gotani, Hiroyuki Takahira, Misumi Hata, Luis Guillen, Satoru Izumi and Toru Abe

A Comparative Approach on the use of Unmanned Aerial Vehicles kind of Fixed-Wing and Rotative Wing Applied to the Precision Agriculture Scenario
Robison Brito, Mainara Lorencena, Jose Felipe Loureiro and Eduardo Todt

Poster Session

Location: AMU 163

STPSA 1: The 14th IEEE International Workshop on Security, Trust & Privacy for Software Applications

Location: Ballroom A

Session Chair: Mohammad Hossein Manshaei, Florida International University, USA

Identification of the Effects of Code Changes on the Security of Software
Moataz Abdelkhalek, Lotfi Ben Othmane and Ameerah-Muhsinah Jamil

User Behaviour-Based Access Control for Social Media with Qualitative Research and Bayesian Modelling
Sara McCloskey and John Herbert

Designing Good Security Metrics
George Yee

MediComp 3: The 6th IEEE International Workshop on Medical Computing Enhanced Predicting Mining

Location: Ballroom B

Session Chair: Jing Xu, Nankai University, China

Multi-scale Network with the Deeper and Wider Residual Block for MRI Motion Artifact Correction
Weiliang Zhang, Qinyan Zhang, Ji-Jiang Yang and Qing Wang

Classification of Pulmonary Nodules by Using Improved Convolutional Neural Networks
Jing Gao, Huanqing Zhang and Ruifang Shen

Supervised and Unsupervised Analytics of Intensive Care Unit Data
Rehnuma Afrin, Hisham Haddad and Hossain Shahriar

Student Research Symposium 1

Location: Ballroom C

Session Chair: Susumu Takeuchi, NTT Corporation, Japan

Experimental Comparison of Pure Flooding and Its Variants on Raspberry Pi in Small Scale Ad Hoc Networks

Sangwoo Jung and Ki-Il Kim

Threshold-Driven Class Decomposition

Mohammed Hamdi, Rashmi Pethe, Annapoorani Sevugan Chetty and Dae-Kyoo Kim

Parallelization of Plane Sweep based Voronoi Construction with Compiler Directives

Anmol Paudel, Jie Yang and Satish Puri

Analysis of the Evolution of the Influence of Central Nodes in a Twitter Social Network

Minami Uehara and Sho Tsugawa

Fast Abstract 1

Location: Ballroom D

Session Chair: Michiharu Takemoto, NTT Labs, Japan

Toward an Optimal Anomaly Detection Pattern in Wireless Sensor Networks

Muhammad Alfian Amrizal, Luis Guillen and Takuo Suganuma

Application and Research of Image-Based Modeling and 3D Printing Technology in Intangible Cultural Heritage Quanzhou Marionette Protection

Chao Gao, Junfeng Yao, Kaini Huang and Kai Qian

Logistic Regression and Random Forest for Effective Imbalanced Classification

Hanwu Luo, Xiubao Pan, Qingshun Wang, Shasha Ye and Ying Qian

Improving Prediction Accuracy for Logistic Regression on Imbalanced Datasets

Hao Zhang, Zhuolin Li, Lixin Tao, Prabir Bhattacharya, Ying Qian and Hossain Shahriar

IoT Malware Analysis

Victor Clincy and Hossain Shahriar

Blockchain Development Platform Comparison

Victor Clincy and Hossain Shahriar

Protecting Data in Android External Data Storage

Hao Zhang, Zhuolin Li, Dan Lo, Ying Qian, Hossain Shahriar and Fan Wu

Achievements Visualization in Programming Education

Kaisei Hanayama, Shinsuke Matsumoto, Yoshiki Higo and Shinji Kusumoto

MVDA 1: The 7th IEEE International Workshop on Modeling and Verifying Distributed Applications

Models & Systems

Location: AMU 254

Session Chair: Yousra BenDaly Hlaoui, University of Tunis/University of El Manar

Optimization System for Dynamic Flight Planning for Groups of Drones using Cooperation with Mobile Recharge Bases by Means of Multiagent System and Recursive Auctions

Robison Brito, José Loureiro, Eduardo Todt and Andre Guedes

A Discrete Model of IEEE 1588-2008 Precision Time Protocol with Clock Servo using PI Controller

Ryuichiro Maegawa, Daiki Matsui, Yasuhiro Yamasaki and Hiroyuki Ohsaki

Fluid-based Modeling of Large-Scale IEEE 802.15.4 Wireless Sensor Networks

Kei Katayama and Hiroyuki Ohsaki

9:30 – 10:00 Break / SRS Posters: AMU Lynch Lounge/Veranda/Ballroom E

10:00 – 12:00 Keynote 3

Wendy Nilsen, NSF

Creating a Smart and Connected Health System

Location: AMU Ballroom E

12:00 – 1:00 Lunch Break: AMU Lynch Lounge/Veranda/Ballroom E

1:00 – 2:30 Workshop Sessions

QUORS 1: 13th IEEE International Workshop on Quality Oriented Reuse of Software

Location: AMU 157

Session Chair: Oluwaseun Bamgboye, Edinburgh Napier University, UK

Automatic Multi-Class Non-Functional Software Requirements Classification Using Neural Networks

Cody Baker, Lin Deng, Suranjan Chakraborty and Josh Dehlinger

Mob Programming: A System Literature Review

Makoto Shiraishi, Hironori Washizaki, Yoshiaki Fukazawa and Joseph Yoder

Research on the Realizability of Microservice Interaction Contract Based on CSP#

Ruiqiong Wu, Qing Duan, Fei Dai, Hongji Yang, Yi Zhang and Biseng Xie

DFM 1: The 8th IEEE International Workshop on Data Flow Models and Extreme-Scale Computing

Location: AMU 163

Session Chair: Stéphane Zuckerman, Université Paris-Seine, Université de Cergy-Pontoise, ENSEA, CNRS

Invited Talk: Dataflow: Best of Times or Worst of Times?

Erik Altman, IBM

Toward A High-Performance Emulation Platform for Brian-Inspired Intelligent Systems - Exploring Dataflow-Based Execution Model and Beyond

Si-han Zeng, Jose Monsalve and Siddhisanket Raskar

A Disparity Computation Framework

Gabriel Vieira, Fabrizzio Soares, Junio Lima, Gustavo Laureano, Ronaldo Costa, Hugo Nascimento and Júlio Ferreira

STPSA 2: The 14th IEEE International Workshop on Security, Trust & Privacy for Software

Applications

Location: Ballroom A

Session Chair: Debbie Perouli, Marquette University, USA

Toward Machine Learning based Analyses on Packed Firmware
Seoksu Lee, Joon-Young Paik, Rize Jin and Eun-Sun Cho

Identifying Security Features for Proximity Identification
Juan Wang, Karim Lounis and Mohammad Zulkernine

Continuous User Authentication Based on Context-Emphasized Behavior Profiling
Shen Fu, Mathew L. Wymore, Neil Gong and Daji Qiao

Hands-on File Proactive Control Education for Secure Software Development
Hossain Shahriar, Mohammad Rahman, Hongmei Chi, Sheikh Ahamed, Fan Wu

MediComp 4: The 6th IEEE International Workshop on Medical Computing Data-driven Knowledge Discovery & Decision Making

Location: Ballroom B

Session Chair: Praveen Madiraju, Marquette University, USA

Prediction and Study of Applicability of Medical Gels to Patients
Bo Liu, Mengmeng Huang, Kelu Yao, Lan Wei, Xiaolu Fei and Wang Qing

Drug Specification Named Entity Recognition Base on BiLSTM-CRF Model
Wei-Yan Li, Wen-Ai Song, Xin-Hong Jia, Ji-Jiang Yang, Qing Wang, Ting Yang, Ke Huang and Jun Li

AMCNet: Attention-based Multiscale Convolutional Network for DCM MRI Segmentation
Chao Luo, Canghong Shi, Xian Zhang, Jing Peng, Yucheng Chen and Xiaojie Li

Student Research Symposium 2

Location: Ballroom C

Session Chair: Satish Puri, Marquette University, USA

Spam Domain Detection Method Using Active DNS Data and Mail Reception Log
Kenya Dan, Naoya Kitagawa, Shuji Sakuraba and Nariyoshi Yamai

A Traffic Distribution System among Multiple Terminals Using MPTCP in Multihomed Network Environment
Ryuji Asakura, Reido Horigome, Nariyoshi Yamai, Naoya Kitagawa and Satoshi Ohzahata

A Modified Smart Contract Execution Environment for Safe Function Calls
Sooyeon Lee and Eun-Sun Cho

Optimized Division of Exploration Areas in Multi-robot Systems Considering Static and Dynamic Charging Stations
Robison Cris Brito, Nicolas Saque, Diego Addan Gonçalves, Fabio Favarim, Eduardo Todt

Fast Abstract 2

Location: Ballroom D

Session Chair: Dave Towey, University of Nottingham Ningbo China, China

CloneTM: A Code Clone Detection Tool Based on Latent Dirichlet Allocation
Sandeep Reddivari and Mohammed Salman Khan

VisioTM: A Tool for Visualizing Source Code Based on Topic Modeling
Sandeep Reddivari and Mohammed Salman Khan

A Protocol for Preventing Transaction Commitment without Recipient's Authorization on Blockchain
Ryosuke Yamauchi, Yoko Kamidoi and Shin'Ichi Wakabayashi

Rogue Wireless Access Point Detection using Delay Fluctuation in Backbone Network
Ziwei Zhang, Hirokazu Hasegawa, Yukiko Yamaguchi and Hajime Shimada

Trust-oriented Live Video Distribution Architecture
Tomoki Yoshihisa, Satoru Matsumoto, Tomoya Kawakami and Yuuichi Teranishi

Detecting No-Sleep Bugs Using Sequential Reference Counts
Priyanka Bharat Sakhare and Dae-Kyoo Kim

A Linear Regression Approach to Modeling Software Characteristics for Classifying Similar Software
Hyun-Il Lim

Load Balancing Algorithm for Multiple UAVs Relayed Tactical Ad Hoc Networks
Sangwoo Jung, Bongsoo Roh, Jaehyun Ham and Ki-Il Kim

Garbage Weight Estimation System, Sai Mullangi, Thulasidhar Kattamreddy, Shanthan Ramadugu and Wook-Sung Yoo

MVDA 2: The 7th IEEE International Workshop on Modeling and Verifying Distributed Applications

Formal Approaches

Location: AMU 254

Session Chair: Yousra BenDaly Hlaoui, University of Tunis/University of El Manar

A Grammar based Approach to BPMN Model Semantic Preservation using Refinement
Salma Ayari, Yousra Bendali Hlaoui and Leila Ben Ayed

Formal Verification of Blockchain Smart Contract based on Colored Petri Net Models
Zhentian Liu and Jing Liu

From BPMN2 to Event B: A Specification and Verification Approach of Workflow Applications
Ahlem Ben Younes, Yosra Ben Daly Hlaoui, Leila Ben Ayed and Mayssa Bessifi

2:30 – 3:00 Break / SRS Posters: AMU Lynch Lounge/Veranda/Ballroom E

3:00 – 4:15 Workshop Sessions

BDCAA 1: The 1st IEEE International Workshop on Big Data Computation, Analysis, and Applications

Location: AMU 157

Session Chair: Shameem Ahmed, Western Washington University, USA

Open Science, Business Analytics, and FAIR Digital Objects
George Strawn

Job-aware Optimization of File Placement in Hadoop
Makoto Nakagami, Jose A. B. Fortes and Saneyasu Yamaguchi

An Emperical Study on Application of Big Data Analytics to Automate Service Desk Business Process
Dan Lo, Karl Kevin Tiba, Sergiu Buciumas, and Frank Ziller

DFM 2: The 8th IEEE International Workshop on Data Flow Models and Extreme-Scale Computing

Location: AMU 163

Session Chair: Jean-Luc Gaudiot, University of California at Irvine, USA

Position Paper: Extending Codelet Model for Dataflow Software Pipelining using Software-Hardware Co-design

Siddhisanket Raskar, Thomas Applencourt, Kalyan Kumaran and Guang Gao

A Functional Programming Model for Embedded Dataflow Applications
Christoph Kühbacher, Christian Mellwig, Florian Haas and Theo Ungerer

An Evaluation of An Asynchronous Task Based Dataflow Approach for Uintah
Alan Humphrey and Martin Berzins

SDIM 1: The 2nd IEEE International Workshop on Secure Digital Identity Management Security, Blockchain & Cryptosystem

Location: Ballroom A

Session Chair: Hideaki Goto, Tohoku University, Japan

Encrypted QR code based Optical Challenge-Response Authentication by Mobile Devices for Mounting Concealed File System

Yong Jin and Masahiko Tomoishi

An Interactive and Continuous Authorization Scheme by using Belnap Logic
Hiroyuki Sato and Sridhar Nikita

Polysizemic Encryption: Towards a Variable-Length Output Symmetric-Key Cryptosystem
Jacob Hendricks, Brandon Burke and Thoshitha Gamage

A Privacy-Preserving and Fully Decentralized Storage and Sharing System on Blockchain
Gen Li and Hiroyuki Sato

MediComp 5: The 6th IEEE International Workshop on Medical Computing Healthcare Supported Technologies & Applications

Location: Ballroom B

Session Chair: Ji-Jiang Yang, Tsinghua University, China

Non-Invasive Technologies for Smart Healthcare
Lori Kim, Hossain Shahriar and Chi Zhang

A Scalable Automated Diagnostic Feature Extraction System for EEGs
Abbie Popa, Prakhar Agrawal, Divya Bhargavi, Gokul Krishna G, Xiao Han, Neha Tevathia, Nicholas Ross, Diane Myung-Kyung Woodbridge, Barbie Zimmerman-Bier and William Bosl

Blockchain-Based Interoperable Electronic Health Record Sharing Framework
Gracie Carter, Hossain Shahriar and Sweta Sneha

Fast Abstract 3

Location: Ballroom D

Session Chair: Hiroki Takakura, National Institute of Informatics, Japan

Topic Shift Detection in Online Discussions using Structural Context and Word Embedding
Yingcheng Sun and Kenneth Loparo

Virtualization for Flexibility and Network-Aware on 5G Mobile Devices
Kien Nguyen, Li Zhe-Tao and Hiroo Sekiya

A Clicked - URL Feature for Transactional Query Identification
Yingcheng Sun and Kenneth Loparo

Context Aware Image Annotation in Multiple-Instance Active Learning with Batch Mode
Yingcheng Sun and Kenneth Loparo

Basic Concept of Emergency Optical Network Planning Using Multiagent-based Flexible and Autonomous Network Control
Satoru Izumi, Masaki Shiraiwa, Goshi Sato, Sugang Xu and Takuo Suganuma

Basic Design of Network Control Method Based on Disaster Risk of OpenFlow C/M-Plane
Satoru Izumi, Hiroyuki Takahira, Kosuke Gotani, Misumi Hata, Luis Guillen, Toru Abe and Takuo Suganuma

Predicting Opioid Use Disorder (OUD) Using A Random Forest
Adway Wadekar

An Improved Semi-Supervised Learning Method on Cataract Fundus Image Classification
Wenai Song, Ying Cao, Zhiqiang Qiao, Qing Wang and Ji-Jiang Yang

4:15 – 5:30 Workshop Sessions

DFM 3: The 8th IEEE International Workshop on Data Flow Models and Extreme-Scale Computing

Location: AMU 163

Session Chair Stéphane Zuckerman, Université Paris-Seine, Université de Cergy-Pontoise, ENSEA, CNRS

Panel: Execution and Programming Models: Extreme Scale and Beyond

Chair: Stéphane Zuckerman, Université Paris-Seine, Université de Cergy-Pontoise, ENSEA, CNRS

Panelists: Erik Altman, IBM, USA

Hironori Kasahara, Waseda University, Japan

Karthikeyan Sankaralingam, U. of Wisconsin, USA,

Jean-Luc Gaudiot, U. of California, Irvine, USA

Guang R. Gao, U. of Delaware, USA

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COMPSAC 2020

Madrid, Spain

July 13-17, 2020

COMPSAC is the IEEE Computer Society Signature Conference on Computers, Software and Applications. It is a major international forum for academia, industry, and government to discuss research results and advancements, emerging challenges, and future trends in computer and software technologies and applications. The theme of COMPSAC 2020 is “Driving Intelligent Transformation of the Digital World”.

Staying relevant in a constantly evolving digital landscape is a challenge faced by researchers, developers, and producers in virtually every industry and area of study. Once limited to software-enabled devices, the ubiquity of digitally-enabled systems makes this challenge a universal issue. Furthermore, as relevance fuels change, many influencers will offer solutions that benefit their own priorities. Fortunately, history has shown that the building blocks of digital change are forged by those conducting foundational research and development of digital systems and human interactions. Artificial Intelligence is not new, but is much more utilized in everyday computing now that data and processing resources are more economically viable, hence widely available. The opportunity to drive the use of this powerful tool in transforming the digital world is yours. Will your results help define the path ahead, or will you relegate those decisions to those with different priorities for utilizing intelligence in digital systems? COMPSAC has been and continues to be a highly respected venue for the dissemination of key research on computer and software systems and applications, and has influenced fundamental developments in these fields for over 40 years. COMPSAC 2020 is your opportunity to add your mark to this ongoing journey, and we highly encourage your submission!

COMPSAC 2020, organized as a tightly integrated union of symposia, will focus on technical aspects of issues relevant to intelligent transformation of the digital world. The technical program will include keynote addresses, research papers, industrial case studies, fast abstracts, a doctoral symposium, poster sessions, and workshops and tutorials on emerging and important topics related to the conference theme. Highlights of the conference will include plenary and specialized panels that will address the technical challenges facing researchers and practitioners who are driving fundamental changes in intelligent systems and applications. Panels will also address cultural and societal challenges for a society whose members must continue to learn to live, work, and play in the environments the technologies produce.

Authors are invited to submit original, unpublished research work, as well as industrial practice reports. Simultaneous submission to other publication venues is not permitted except as highlighted in the COMPSAC 2020 J1C2 & C1J2 program. All submissions must adhere to IEEE Publishing Policies, and will be vetted through the IEEE CrossCheck portal. Further info is available at www.compsac.org.

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Important Dates

Workshops proposals due: 15 October 2019

Workshops acceptance notification: 30 November 2019

Main conference papers due: 20 January 2020

Paper notification: 3 April 2020

Camera-ready and registration due: 15 May 2020



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Photo: King Felipe III in Major Square, Madrid

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