

IEEE 2018 WORLD CONGRESS ON SERVICES

JULY 2-7, 2018

SAN FRANCISCO, CALIFORNIA, USA

IEEE BigData Congress - IEEE CLOUD - IEEE EDGE - IEEE ICC
IEEE ICIOT - IEEE ICWS - IEEE SCC



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Stephen S. Yau, Arizona State University

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Carl K. Chang, Chair, Iowa State University
Rong N. Chang, IBM
Peter Chen, Carnegie Mellon University
Ernesto Damiani, Universita degli Studi di Milano
Ian Foster, University of Chicago
Dennis Gannon, Indiana University
Michael Goul, Arizona State University
Frank Leymann, University of Stuttgart
Hong Mei, Biejing Institute of Technology
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Welcome to the 2018 IEEE World Congress on Services! The IEEE Computer Society’s Technical Committee on Services Computing (TCSVC) is the technical sponsor of the World Congress on Services, which aims to serve as a platform and umbrella for 7 co-located conferences and to facilitate holistic innovations in Services Computing. The technical program contains information for the following 2018 Congress conferences.

The IEEE International Congress on Big Data (BigData Congress) is the emerging theme-topic conference for quantitative analysis of impact on business insights from Big Data analytics.

2018 General Chairs: Laurence Yang, St. Francis Xavier University and Francisco Herrera, University of Granada
2018 Program Chairs: Shadi Ibrahim, Inria, Isaac Triguero, University of Nottingham, and Bingsheng He, National University of Singapore

The IEEE International Conference on Cloud Computing (CLOUD) is the flagship theme-topic conference for modeling, developing, publishing, monitoring, managing, delivering XaaS (everything as a service) in the context of various types of cloud environments.

2018 General Chairs: Geoffrey C. Fox, Indiana University and Daniel A. Reed, University of Iowa
2018 Program Chairs: Ian Foster, University of Chicago and Argonne National Lab and Jia Zhang, Carnegie Mellon University

The IEEE International Conference on Edge Computing (EDGE) aims to become a premier international forum for researchers and practitioners to exchange the latest technical advances and best practices in edge computing, identify emerging research topics in edge computing, and envision the future of edge computing in terms of the evolution of computing devices and data center clouds.

2018 General Chairs: Andrzej Goscinski, Deakin University and Dennis Gannon, Indiana University
2018 Program Chairs: Hong Zhu, Oxford Brookes, University and Shangguang Wang, Beijing University of Posts & Telecommunications

The IEEE International Conference on Cognitive Computing (ICCC) covers all aspects of Sensing Intelligence (SI) as a Service (**SIaaS**). Cognitive Computing is a sensing-driven-computing (SDC) scheme that explores and integrates intelligence from all types of senses in various scenarios and solution contexts.

2018 General Chairs: Jeffrey Tsai, Asia University and Ernesto Damiani, Universita’ degli Studi di Milano
2018 Program Chairs: Xiaoqing “Frank” Liu, University of Arkansas and Incheon Paik, University of Aizu

The IEEE International Congress on Internet of Things (ICIOT) promotes research and application innovations for a new era in which sensors and other types of sensing devices, wired and wireless networks, platforms and tools, processing/visualization/analysis of data, data integration engines, and applications are interconnected to realize the service value of connected things, people, and virtual Internet spaces.

2018 General Chairs: Rong N. Chang, IBM Research and Manish Parashar, Rutgers University
2018 Program Chairs: Schahram Dustdar, Vienna University of Technology, Austria and Zibin Zheng, Sun Yat-Sen University

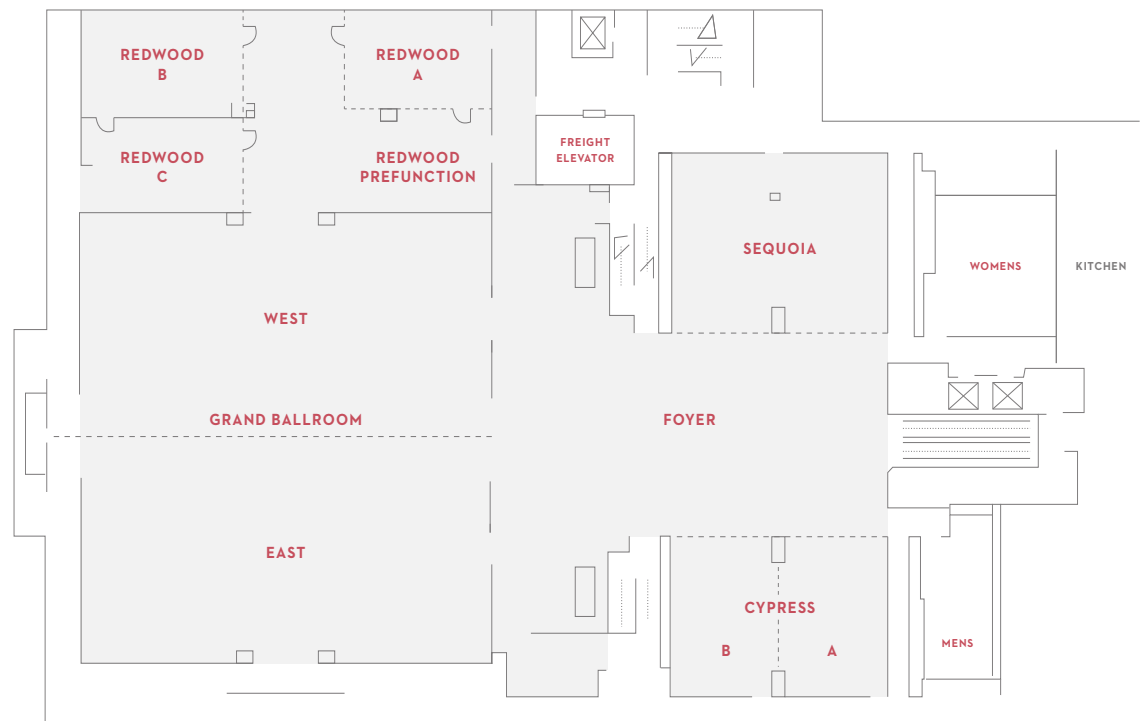
The IEEE International Conference on Web Services (ICWS) has been a prime international forum for both researchers and industry practitioners to exchange the latest fundamental advances in state of the art and practice of Web-based services, identify emerging research topics, and define the future of Web-based services.

2018 General Chairs: Peter Chen, Carnegie Mellon University and Nimish Radia, Ericsson Research
2018 Program Chairs: Bhavani Thuraisingham, University of Texas at Dallas and Yushun Fan, Tsinghua University

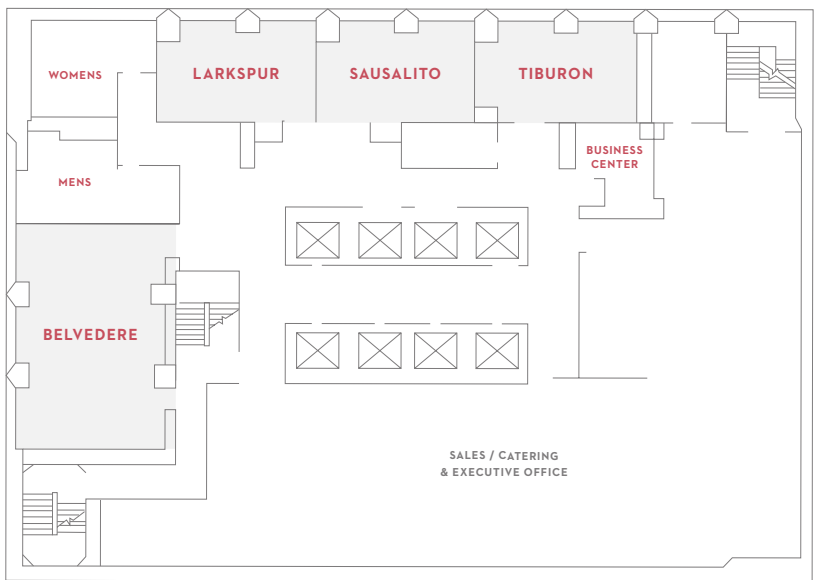
The IEEE International Conference on Services Computing (SCC) is the flagship theme-topic conference for services innovation lifecycle that includes enterprise modeling, business consulting, solution creation, services orchestration, services optimization, services management, services marketing, business process integration and management.

2018 General Chairs: Xiaofei Xu, Harbin Institute of Technology and Michael Goul, Arizona State University
2018 Program Chairs: Ilkay Altintas, University of California, San Diego and Yan Wang, Macquarie University

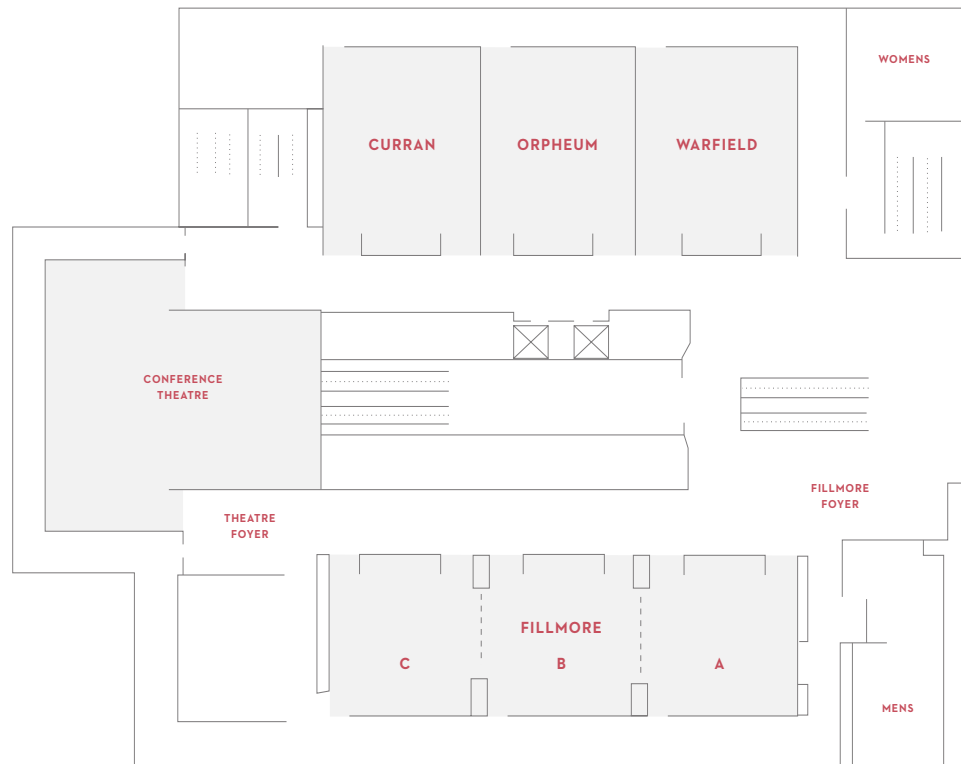
FLOOR PLAN
Ballroom Level



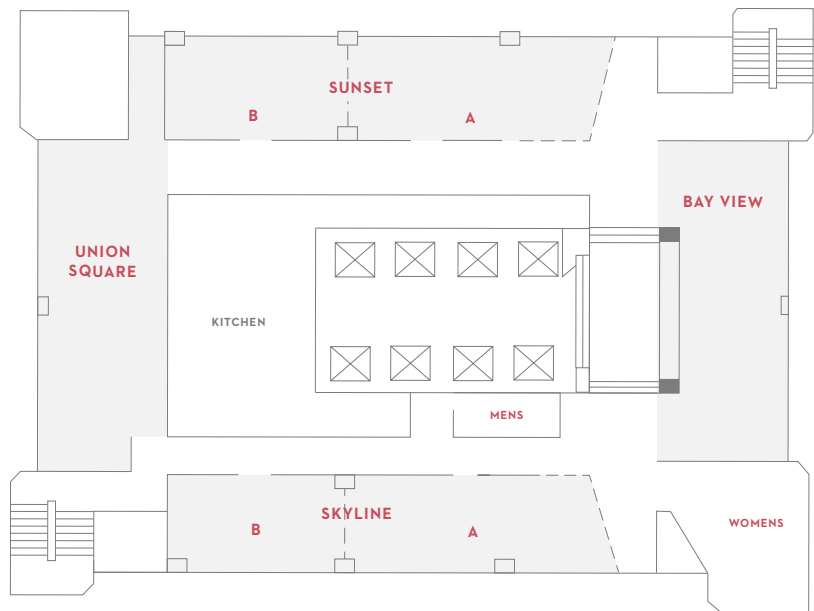
FLOOR PLAN
Second Floor



Theatre Level



36th Floor





**2018 World Congress on Services
Message from the General Chair**

Welcome to the 2018 World Congress on Services. Due to the increasing demands for effective and intelligent applications of information technology to improve the quality and productivity of our life, the research and development in services computing continue to grow and progress rapidly. In this year’s Congress, we have seven affiliated conferences focusing on various important major aspects of services computing: cloud computing, web services, services computing, big data, Internet-of-things, edge computing and cognitive computing. The Congress received a record high number of submitted papers in four categories of papers: regular, work-in-progress, workshop, and concise. After rigorous reviews and to keep high quality of the program, the average acceptance rate of regular papers of the affiliated conferences is less than 20%. The detailed information is included in the messages of the leadership teams in the proceedings of the individual affiliated conferences.

The Congress has four outstanding keynote addresses on impact of AI on services industry by Raj Reddy, blockchain untangled by C. Mohan, data centric smart big services by Xiaofei Xu, and service engineering by Schahram Dustdar. There are four plenary panel sessions on various emerging important issues on services.

The Congress also has the industry program with three sessions to provide the perspectives from industry practitioners on various technologies used in the services industry. In addition, there are four tutorials on the first day of the Congress to provide fundamental information on selected subjects important to services.

To gain the maximum benefits of your participation of the Congress, I suggest you evaluate the extensive six-day technical program early to avoid missing the sessions you would like to attend. Do not forget to join the Congress reception and banquet and take this opportunity to interact with your colleagues and friends from various parts of the world. Also enjoy the San Francisco scenery and the city’s celebration activities of the July 4th holiday.

To organize an international conference of this scale requires many dedicated and talented volunteers and professional staff members, especially during the major transition of the sponsorship of the Congress, as stated in the message of the Steering Committee chair Carl Chang. When I was asked to serve as the general chair of the Congress, I knew it would be a very challenging endeavor, even though I have had experiences in organizing a number of international conferences of various sizes. Since this is a very important task to serve the community in services computing, I decided to accept the invitation without hesitation. It is very gratifying that when I invited many leaders and scholars in the field to join us, most accepted the invitations and committed to making the Congress successful.

Please visit the Organizing Committee roster, especially the leadership team of each affiliated conference, consisting of the general chair and co-chair, and program chair and co-chair(s), who have worked very hard under pressure to promote their conference, get every paper properly reviewed and their conference technical program organized. All other committee chairs and co-chairs have fulfilled their responsibilities well under a very tight schedule. In particular, I would like to thank the Steering Committee chair Carl Chang, who has not only provided guidance to the Congress, but also taken certain heavy-duty responsibilities of the Congress. I also would like to thank the chair of the Technical Committee of Services Computing Rong Chang for his enthusiastic support and engagements in the Congress activities. Finally, I would like to thank the strong support from the IEEE Computer Society, including her professional staff, to the Congress.

Stephen S. Yau



**2018 IEEE World Congress on Services
Message from the Steering Committee Chair**

Back in 2004 when I was serving as the President of IEEE Computer Society, I supported the initiative of fully integrating two conferences on services computing, namely the International Conference on Web Services (ICWS) and the Services Computing Conference (SCC) into the large set of international conferences sponsored by the Computer Society and organized by her volunteers. In 2005, I served as General Chair of IEEE ICWS in Orlando, and in 2006 I co-located both ICWS and SCC with the 30th IEEE Annual Conference on Computer Software and Applications (COMPSAC) in Chicago under the umbrella named the 2006 IEEE Computer Society Congress on Software Technology and Engineering Practice (CoSTEP).

That was the history, of course. After the initial few years many volunteers contributed to the continuous growth of this community and helped expand the set of affiliated conferences from two to eight in 2017. While the IEEE Computer Society has always been the major sponsor of this annual professional event, in recent years its share and influence became unfortunately and undesirably lessened due to the interference of certain uncontrollable factors caused by an incompatible entity. Many lead volunteers felt that collectively we had missed a great opportunity to productively and opportunistically adopt the best-in-class practices; therefore, we are now pressing forward to build a truly exemplary Congress-style joint professional event pursuant to the highest professional standards. In 2018, IEEE Computer Society decided to retake complete accountability and once again provide 100% sponsorship. Professional leaders in services computing from around the world regrouped after the 2017 event and a new Steering Committee was thus formed. Under the proper guidance of the IEEE legal department, the SC spearheaded the restructuring of the Congress organization, rebuilt the infrastructure, and began a long-range plan to elevate the IEEE World Congress on Services to become a genuinely international forum and will move out to Europe for the first time in 2019. I am confident that our community will be pleased to see many changes introduced during the planning and execution of the 2018 event in San Francisco, from the small things such as “ensuring that a technical session must be chaired by a professional not a student room monitor,” to much larger issues such as “an international forum must be able to move outside the US,” etc. Certainly, 2018 marks a new start although it is crystal clear that all of our Congress, with its seven affiliated conferences, will continue its long tradition as an IEEE event. I encourage you to bookmark the website of “IEEE World Congress on Services” for recent developments and locate all past IEEE proceedings serving this community for many years. Note that the keyword “IEEE” will not lead you astray.

It is my pleasure and privilege to introduce the other members of the Steering Committee of the IEEE World Congress on Services.



Elisa Bertino
Purdue University



Rong N. Chang
IBM



Peter Chen
Carnegie Mellon University



Ernesto Damiani
University of Milan



Ian Foster
University of Chicago



Dennis Gannon
Indiana University



Michael Goul
Arizona State University



Frank Leymann
University of
Stuttgart



Hong Mei
Beijing Institute
of Technology



Stephen S. Yau
Arizona State University

Many volunteers and professional staff made solid contributions to the development of the 2018 program hereby presented. In particular, I would like to acknowledge the outstanding leadership of Stephen S. Yau, the Congress General Chair, and timely guidance of Rong Chang, Chair of IEEE-CS TCSVC that is the sole sponsoring technical committee for IEEE SERVICES. Finally, San Francisco has always been a great city to explore and have fun. I encourage you to find time for some fun besides making contributions to the Congress and benefiting from learning and networking. I wish to see you all again in 2019 in Milan, Italy.

Carl K. Chang

IEEE WORLD CONGRESS ON SERVICES 2018 - Program at a Glance								
MON JULY 2	FILLMORE A	FILLMORE B/C	SEQUOIA	CYPRESS	CONFERENCE THEATER	ORPHEUM	WARFIELD	BELVEDERE
8:30 - 10:00			WISC	BIG DATA WORKSHOP 1	EDGE WIP 1	TUTORIAL 1	TUTORIAL 2	CLOUD SERVERLESS 1
10:00 - 10:30	BREAK							
10:30 - 12:00	CLOUD WIP 1	CLOUD REG 1	WISC	BIG DATA WIP 1	CONCISE 1	TUTORIAL 1	TUTORIAL 2	CLOUD WKSP 1
12:00 - 1:30	LUNCH BREAK							
1:30 - 3:00	CLOUD WIP 2	CLOUD REG 2	CLOUD SERVERLESS 2	BIG DATA WIP 2	CONCISE 2	TUTORIAL 3	TUTORIAL 4	
3:00 - 3:30	BREAK							
3:30 - 5:00	CLOUD WIP 3	CLOUD REG 3	CLOUD SERVERLESS 3	BIG DATA WIP 3	CONCISE 3	TUTORIAL 3	TUTORIAL 4	
TUES JULY 3	FILLMORE A	FILLMORE B/C	SEQUOIA	CYPRESS	CONFERENCE THEATER	ORPHEUM	WARFIELD	BELVEDERE
8:30 - 10:00	CLOUD WKSP 2	CLOUD REG 4	CLOUD REG 5	BIG DATA REG 1	EDGE REG 1	ICIOT REG 1	ICCC REG 1	ICWS REG 1
10:00 - 10:30	BREAK							
10:30 - 12:00	OPENING SESSION: WELCOME AND OPENING REMARKS CONGRESS KEYNOTE 1: RAJ REDDY, <i>IMPACT OF AI ON SERVICES INDUSTRY</i> - LOCATION: BALLROOM							
12:00 - 1:30	LUNCH BREAK							
1:30 - 3:00	CLOUD WKSP 3	CLOUD STUDENT BEST PAPERS	ICWS WKSP 1	SCC WIP 1	EDGE REG 2	ICIOT WIP 1	ICCC REG 2	ICWS REG 2
3:00 - 3:15	BREAK							
3:15 - 4:30	PLENARY PANEL 1: SECURITY AND PRIVACY OF INNOVATIVE CRITICAL SERVICES - LOCATION: BALLROOM							
4:40 - 6:10	CLOUD WKSP 4	CLOUD BEST PAPERS	ICWS WKSP 2	SCC WIP 2	EDGE REG 3	INDUSTRY 1	ICCC WIP 1	ICWS REG 3
6:30	IEEE CONGRESS 2018 RECEPTION - LOCATION: SKYLINE (TOP FLOOR), GRAND HYATT HOTEL							
WED JULY 4	FILLMORE A	FILLMORE B/C	SEQUOIA	CYPRESS	CONFERENCE THEATER	ORPHEUM	WARFIELD	BELVEDERE
8:00 - 9:30	CLOUD WKSP 5	ICWS REG 4	CLOUD REG 6	BIG DATA REG 2	EDGE WKSP 1	ICIOT REG 2	SCC REG 1	CLOUD REG 7
9:30 - 10:00	BREAK							
10:00 - 11:00	CONGRESS KEYNOTE 2: C. MOHAN, <i>BLOCKCHAINS UNTANGLED: PUBLIC, PRIVATE, SMART CONTRACTS, APPLICATIONS, ISSUES</i> - LOCATION: BALLROOM							
11:10 - 12:30	PLENARY PANEL 2: RECENT ADVANCES AND FUTURE DIRECTIONS OF BLOCKCHAIN TECHNOLOGIES AND SERVICES APPLICATIONS - LOCATION: BALLROOM							
12:30 - 2:00	BREAK							
2:00 - 3:30	CLOUD WKSP 7	ICWS WIP 1	CLOUD REG 8	BIG DATA REG 3	EDGE WKSP 2	ICIOT WKSP 1	SCC REG 2	CLOUD WKSP 6
THURS JULY 5	FILLMORE A	FILLMORE B/C	SEQUOIA	CYPRESS	CONFERENCE THEATER	ORPHEUM	WARFIELD	BELVEDERE
8:00 - 9:30		ICWS REG 5	CLOUD REG 9	BIG DATA REG 4	ICCC REG 3	ICIOT REG 3	SCC REG 3	CLOUD WKSP 8
9:30 - 10:00	BREAK							
10:00 - 11:00	CONGRESS KEYNOTE 3: XIAOFEI XU, <i>DATA-CENTRIC SMART BIG SERVICE: NEW CHALLENGES AND NEW DEVELOPMENT</i> - LOCATION: BALLROOM							
11:10 - 12:25	PLENARY PANEL 3: INNOVATIVE SERVICES AND INTEGRATED SOLUTIONS - LOCATION: BALLROOM							
12:25 - 2:00	LUNCH BREAK							
2:00 - 3:30	POSTERS (1-6PM)	ICWS REG 6	CLOUD REG 10	BIG DATA REG 5	INDUSTRY 2	ICIOT REG 4	SCC REG 4	CLOUD WKSP 9

IEEE WORLD CONGRESS ON SERVICES 2018 - Program at a Glance								
3:30 - 4:00	BREAK							
4:00 - 5:30	POSTERS (1-6PM)	ICWS REG 7	CLOUD REG 11	BIG DATA REG 6	ICCC WIP 2	CONCISE 4	SCC REG 5	CLOUD WKSP 10
6:30	IEEE SERVICES CONFERENCE BANQUET - LOCATION: GRAND HYATT HOTEL BALLROOM							
FRI JULY 6	FILLMORE A	FILLMORE B/C	SEQUOIA	CYPRESS	CONFERENCE THEATER	ORPHEUM	WARFIELD	BELVEDERE
8:00 - 9:30		ICWS REG 8	CLOUD REG 12		BIG DATA REG 7	ICIOT WKSP 2	SCC REG 6	CLOUD WIP 4
9:30 - 10:00	BREAK							
10:00 - 11:00	CONGRESS KEYNOTE 4: SCHAHRAM DUSTDAR, <i>SERVICE ENGINEERING THE FABRIC OF IOT, PEOPLE, AND SYSTEMS</i> - LOCATION: BALLROOM							
11:10 - 12:25	PLENARY PANEL 4: BIG DATA-AS-A-SERVICE: HYPE, REALITY, OPPORTUNITIES - LOCATION: BALLROOM							
12:25 - 2:00	LUNCH BREAK							
2:00 - 3:30		ICWS WIP 2	CLOUD REG 13		INDUSTRY 3	CONCISE 5	CLOUD WKSP 11	CLOUD WIP 5
3:30 - 3:45	BREAK							
3:45 - 5:15		ICWS WIP 3	CLOUD REG 14		SCC WIP 3	CONCISE 6	CLOUD WKSP 12	CLOUD WIP 6
5:20 - 6:00	AWARDS SESSION - LOCATION: BALLROOM							
SAT JULY 7	FILLMORE A	FILLMORE B/C	SEQUOIA	CYPRESS	CONFERENCE THEATER	ORPHEUM	WARFIELD	BELVEDERE
8:00 - 9:30	ICWS WKSP 3	CLOUD REG 15			CLOUD WIP 7	ICWS WIP 4	SCC REG 7	SCC REG 8
9:30 - 9:45	BREAK							
9:45 - 11:15	ICWS WKSP 4	CLOUD REG 16			CLOUD WKSP 13	ICWS WIP 5	SCC WKSP	SCC REG 9
11:20 - 12:00					IEEE SERVICES FINAL SESSION			

IEEE World Congress on Services 2018 Congress Reception
Tuesday July 3, 6:30 - 8:30 pm - Location: Skyline (36th Floor, Grand Hyatt Hotel)

IEEE World Congress on Services 2018 Congress Banquet
Thursday July 5, 6:30pm - Location: Ballroom (Grand Hyatt Hotel)

IEEE WORLD CONGRESS ON SERVICES is sponsored solely by IEEE and the IEEE Computer Society,



IEEE  computer society

with community support from the China Computing Federation and IBM Research.
Thank you to all of our sponsors and supporters!

IBM Research



Plenary Events

IEEE World Congress on Services 2018 Opening Session
Tuesday July 3, 10:30 - 12:00
Location: Ballroom

Welcome and Opening Remarks
Congress General Chair Stephen S. Yau, Arizona State University

Additional Greetings and Remarks
Congress Steering Committee Chair Carl K. Chang, Iowa State University

Impact of AI on Services Industry
Keynote by Raj Reddy, Carnegie Mellon University

IEEE World Congress on Services Awards Session
Friday July 6, 5:20 - 6:00
Location: Ballroom
Session Chair: Stephen S. Yau, Arizona State University

IEEE World Congress on Services 2018 Final Session
Saturday July 7, 11:20 - 12:00
Location: Conference Theater
Session Chair: Stephen S. Yau, Arizona State University

IEEE WORLD CONGRESS ON SERVICES 2018 - CONGRESS KEYNOTES AND PANELS

FOR FULL SPEAKER INFORMATION AND LINKS,
PLEASE VISIT WWW.CONFERENCES.COMPUTER.ORG/SERVICES/2018/KEYNOTES/

TUESDAY JULY 3



Congress Keynote 1: Raj Reddy, Carnegie Mellon University

Impact of AI on Services Industry

Tuesday July 3, 10:30 - 12:00

Location: Ballroom

Session Chair: Peter Chen, Carnegie Mellon University,

2019 IEEE Services Congress General Chair

Abstract: In this talk we will review recent advances in AI and their potential implications for Services Industries. Recent advances in AI are primarily based on advances in Machine Learning technologies, big data enabled deep learning and automated discovery.

The Services Industry consists of different sectors: human intensive tasks such as managed services, product development tasks such as software, hardware, and chip development, and XaaS services such as IaaS, PaaS, and SaaS. All of the sectors can benefit from continuous monitoring, analysis, understanding, anomaly detection, and action. The Sense Think Act

paradigm that is central to all the AI enabled applications can also be useful in the services sector. AI based intelligent assistants can be used to automate routine aspects of a task, usually leading to improved productivity of 20 to 80%.

There are two types of intelligent agent technologies that assist AI enabled applications. A Cognition Amplifier is a personal enduring autonomic intelligent agent that anticipates what a service provider is trying to do and assists in completing the task with less effort. A Guardian Angel is an enduring autonomic intelligent agent assigned to the IOT class of systems like a Data Center to ensure safety, security and survival. In this talk we will discuss the architecture of these agents.

Speaker Bio: Raj Reddy is a University Professor of Computer Science and Robotics and Moza Bint Nasser Chair at Carnegie Mellon University. He was an Assistant Professor at Stanford University from 1966-69 and a faculty member at Carnegie Mellon since 1969. He served as the founding Director of the Robotics Institute from 1979 to 1991 and the Dean of School of Computer Science from 1991 to 1999. He has been active in AI research for over five decades in the areas of AI, Speech Understanding, Image Understanding, Robotics, Multi-sensor Fusion, and Intelligent Agents. His current research interests include: Technology in Service of Society, Voice Computing for the 3B semi-literate populations at the bottom of the pyramid, Digital Democracy, and Learning Science and Technologies. He is a member of the National Academy of Engineering and the American Academy of Arts and Sciences. He served as co-chair of President Clinton's Information Technology Advisory Committee (PITAC) from 1999 to 2001. He is the recipient of the Legion of Honor in 1984, the ACM Turing Award in 1994, the Padma Bhushan in 2001, the Honda Prize in 2005 and Vannevar Bush Award in 2006.



Plenary Panel 1: Security and Privacy of Innovative Critical Services

Tuesday July 3, 3:15 - 4:30

Location: Ballroom

Panel Chair: Ernesto Damiani, Khalifa University and Universita degli Studi di Milano

Panelists: Gail-Joon Ahn, Arizona State University

Claudio Ardagna, University of Milan

Bhavani Thuraisingham, University of Texas at Dallas

The ongoing digital transformation has made fast roll-out of innovative services and devices a key competitive advantage in a number of business domains, from telecommunications to advanced manufacturing to transportation, energy end even entertainment. Experience has shown that organizations that fall behind may easily be challenged by new entrants, lose market share and even be forced out of the market entirely. However, the same can happen to organizations who do innovate their critical services but in doing so leave the door open to attacks, or cannot guarantee privacy preservation. In the worst case, silos-breaking data-driven innovations, such as customization based on human behavior data, can backfire, increasing the vulnerability of critical services and the likelihood and impact of security breaches. The panel will discuss the new threat landscape for critical services and how privacy and security evolution can become an integral part of service innovation.

IEEE WORLD CONGRESS ON SERVICES 2018 - CONGRESS KEYNOTES AND PANELS

FOR FULL SPEAKER INFORMATION AND LINKS,
PLEASE VISIT WWW.CONFERENCES.COMPUTER.ORG/SERVICES/2018/KEYNOTES/

WEDNESDAY JULY 4



Congress Keynote 2: C. Mohan, IBM Research

Blockchains Untangled: Public, Private, Smart Contracts,

Applications, Issues

Wednesday July 4, 10:00 - 11:00

Location: Ballroom

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

IEEE World Congress on Services Steering Committee Chair

Abstract: The concept of a distributed ledger was invented as the underlying technology of the public or permissionless Bitcoin cryptocurrency network. But the adoption and further adaptation of it for use in the private or permissioned environments is what I consider to be of practical consequence and hence only such private blockchain systems will be the focus of this talk.

Computer companies like IBM, Intel, Oracle, Baidu and Microsoft, and many key players in different vertical industry segments have recognized the applicability of blockchains in environments other than cryptocurrencies. IBM did some pioneering work by architecting and implementing Fabric, and then open sourcing it. Now Fabric is being enhanced via the Hyperledger Consortium as part of The Linux Foundation. A couple of the other efforts include Enterprise Ethereum, Sawtooth and R3 Corda.

While currently there is no standard in the private blockchain space, all the ongoing efforts involve some combination of database, transaction, encryption, virtualization, consensus and other distributed systems technologies. Some of the application areas in which blockchain pilots are being carried out are: smart contracts, derivatives processing, e-governance, Know Your Customer (KYC), healthcare, supply chain management and provenance management.

In this talk, I will describe some use-case scenarios, especially those in production deployment. I will also survey the landscape of private blockchain systems with respect to their architectures in general and their approaches to some specific technical areas. I will also discuss some of the opportunities that exist and the challenges that need to be addressed. Since most of the blockchain efforts are still in a nascent state, the time is right for mainstream database and distributed systems researchers and practitioners to get more deeply involved to focus on the numerous open problems. Extensive blockchain related collateral can be found at Permissioned/Private Blockchains and Databases.

Speaker Bio: C. Mohan has been an IBM researcher for 36 years in the database and related areas, impacting numerous IBM and non-IBM products, the research and academic communities, and standards, especially with his invention of the ARIES family of database locking and recovery algorithms, and the Presumed Abort distributed commit protocol. This IBM (1997), and ACM and IEEE (2002) Fellow has also served as the IBM India Chief Scientist for 3 years (2006-2009).



Plenary Panel 2: Recent Advances and Future Directions of Blockchain Technologies and Services Applications

Wednesday July 4, 11:10 - 12:30

Location: Ballroom

Panel Chair: Peter Chen, Carnegie Mellon University

Panelists: Mic Bowman, Intel

Daniel Buchner, Microsoft

Gregory La Blanc, University of California

C. Mohan, IBM Research

The blockchain technology has recently gained significant attention in both academia and industry. Is this just hype? This panel will focus on several important aspects of the blockchain technology and services applications. For example, what are the impacts on the service industry, particularly the financial sector? What are the hypes and what are not? What makes it fundamentally different from its predecessors? Where does it fit? What are the promising services applications of blockchain technologies in the future?

IEEE WORLD CONGRESS ON SERVICES 2018 - CONGRESS KEYNOTES AND PANELS

FOR FULL SPEAKER INFORMATION AND LINKS,
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THURSDAY JULY 5



Congress Keynote 3: Xiaofei Xu, Harbin University of Technology *Data Centric Smart Big Service: New Challenges and New Development*

Thursday July 5, 10:00 - 11:00

Location: Ballroom

Session Chair: Michael Goul, Arizona State University,
IEEE World Congress on Services Steering Committee Member

Abstract: Information technology has developed into a new phase with the emergence of cloud computing, artificial intelligence, big data, Internet of Things, mobile computing and open source, etc. In the Internet + Services environment, more and more software service resources have been developed and they are further interconnected to form a service ecosystem functionally enriched by big data. This is called “Data-centric Big Service,” a new ecosystem of massive complicated networked services which bridge heterogeneous networks, multiple business domains and the cyber and physical worlds. A lot of new challenges emerge and lead to drastic changes on traditional services computing research

and practice, resulting in Big Service theory and technologies. The recent explosive progress of artificial intelligence facilitates smart services, too. In this talk, the background, concepts, features, architecture, new paradigm, research problems and topics, and new development trends of Big Service are presented. The applications and influences of Big Service on business, technology, society and people’s daily life are also discussed.

Speaker Bio: Xu Xiaofei has been a professor of computer science at Harbin Institute of Technology (HIT) since 1993. He is currently the vice president of Harbin Institute of Technology, and the president of HIT, Weihai campus. He received his Ph.D. Degree in HIT in 1988. His research interests include service computing and service engineering, enterprise computing and enterprise interoperability, software engineering, databases and data mining. He is the author/co-author of more than 300 journal/conference papers, and seven books. He has supervised more than 30 Ph.D. in computer science.

Xu is a fellow and board-member of China Computer Federation (CCF), chair of the Technical Committee on Service Computing of CCF, vice director of the Steering Committee of Higher Education on Software Engineering of China, and vice chair of China association of MOOC on computer education. He is also the leader of the expert group of University-Industry Co-education Program of China Ministry of Education. He is involved in the editorial boards of ten journals. He has been chair or co-chair of conferences, program committees in more than twenty international conferences, including IEEE SCC, ICSS, IESA, CEISEE.



Plenary Panel 3: Innovative Services and Integrated Solutions

Thursday July 5, 11:10 - 12:25

Location: Ballroom

Panel Chair: Lorraine M. Herger, IBM Research

Panelists: Dilip Kandlur, Consultant

Ruoyi Zhou, IBM Research

Xiaofei Xu, Harbin University of Technology

The digital economy can also be referred to synonymously as the service economy. Agility responding to market changes, fast time to market, yet cost efficiency are the overriding constraints of the IT service economy. Both academic research and industrial solutions exist that have utilized maturing technologies, such as automation, service composition, frameworks, and specialization to advance service solutions. Our panelists will share their views on emerging innovations in services and solutions that will take the service economy to the next level.

IEEE WORLD CONGRESS ON SERVICES 2018 - CONGRESS KEYNOTES AND PANELS

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FRIDAY JULY 6



Congress Keynote 4: Schahram Dustdar, Technical University of Vienna *Service Engineering the Fabric of IoT, People, and Systems*

Friday July 6, 10:00 - 11:00

Location: Ballroom

Session Chair: Bhavani Thuraisingham, University of Texas at Dallas,
ICWS 2018 Program Chair

Abstract: In this talk I will explore the integration of people, software services, and things with their data, into a novel resilient ecosystem, which can be modeled, programmed, and deployed on a large scale in an elastic way. This novel paradigm has major consequences on how we view, build, design, and deploy ultra-large scale distributed systems and establishes a novel foundation for an “architecture of value” driven Smart City.

In particular, this keynote talk addresses three novel paradigms for designing the service-oriented information systems of the future: Elastic Computing, Social Compute Units, and Osmotic Computing. These three paradigms serve as a foundation for future large-scale distributed systems. Furthermore, we will discuss our responsibilities as computer scientists, technologists, and researchers for creating technologies, which benefit society in a positive way, thereby strengthening the new fabric of interconnected people, software services, and things into a novel resilient ecosystem.

Speaker Bio: Schahram Dustdar is Professor of Computer Science heading the Distributed Systems Group at the Technical University of Vienna. From 2004-2010 he was also Honorary Professor of Information Systems at the Department of Computing Science at the University of Groningen (RuG), The Netherlands.

From 1999 - 2007 he worked as the co-founder and chief scientist of Caramba Labs Software AG in Vienna (acquired by Engineering NetWorld AG), a venture capital co-funded software company focused on software for collaborative processes in teams. Caramba Labs was nominated for several (international and national) awards: World Technology Award in the category of Software (2001); Top-Startup companies in Austria (Cap Gemini Ernst & Young) (2002); MERCUR Innovationspreis der Wirtschaftskammer (2002).



Plenary Panel 4: Big Data-as-a-Service: Hype, Reality, Opportunities

Friday July 6, 11:10 - 12:25

Location: Ballroom

Panel Chair: Laurence T. Yang, St. Francis Xavier University

Panelists: Schahram Dustdar, Vienna University of Technology

Hemant Jain, University of Tennessee Chattanooga

Huan Liu, Arizona State University

Hong Zhu, Oxford Brookes University

Big data provide timely information and proactive services for humans, also called big data-as-a-service. Although some novel data mining algorithms and learning models together with the advanced high-performance computing technologies have been proposed for some successful applications such as electronic business, machine translation and speech recognition, the essential values of big data-as-a-service is far from being excavated for the emerging areas such as intelligent medical applications, smart city, industrial manufacturing and resources/energy management, etc. Is this just a hype, what is the reality, where are the opportunities? This panel will focus on the discussions of the major challenges, possible systematic solutions for big data organization, representation, cleaning, fusion, learning, analytics and security, as well as how to bridge big data-as-a-service and real applications.

IEEE WORLD CONGRESS ON SERVICES 2018 - TUTORIALS

Tutorial 1: Blockchain in Services Applications

Peter Chen, Carnegie Mellon University

Monday July 2, 8:30 - 12:00

Location: Orpheum

Tutorial Description: *This tutorial is intended for those with little knowledge of blockchain.* The purpose of this tutorial is to provide the attendees the basic concepts of blockchain and some of its applications in the service industry. This tutorial will start with the concept of “trust” as the most fundamental motivation of the blockchain. We will show how to derive the major concepts of blockchain from “trust”. Afterwards, we will explain what will be needed to build a conceptual blockchain system and give examples of service applications. Finally, high-level views and pros and cons of the blockchain will be discussed. The tutorial will be primarily presentation mixed with active interactions with the attendees.

Peter P. Chen is a well-known pioneer in database and software engineering. He is Distinguished Career Scientist at Carnegie Mellon University (CMU) and Professor Emeritus, Louisiana State University (LSU). After a Ph.D. from Harvard University, he was a faculty member at MIT, UCLA, Harvard, LSU, and CMU. He was Honorary Distinguished Chair Professor of Service Sciences at National Tsing Hua University, Taiwan. He is an IEEE, ACM, and AAAS Fellow. He received many awards, including ACM/AAAI Allen Newell Award and IEEE Harry Goode Award. Currently, he is doing research on analytics maturity model, autonomous systems, cyber security, and blockchain systems.

Tutorial 2: Programming Microservices in Service Agent Oriented Language Environment

Hong Zhu, Oxford Brookes University

Monday July 2, 8:30 - 12:00

Location: Warfield

Tutorial Description: *Some software development experience is required.* This tutorial is on programming and managing microservices in a service agent oriented programming language and its integrated DevOps environment. It will blend a presentation and discussion with demonstrations and hands-on exercises. The presentation will be on the basic concepts of microservices, DevOps methodology, and the conceptual model of service agent oriented programming language. The basics of the CAOPLE programming language will be introduced with a number of examples, and the management of their deployment to a cluster of computer and dynamic executions in a cluster using a DevOps environment called CIDE will be demonstrated. *Bring a notebook computer with Windows OS, if you want to have hands-on experiences.*

Hong Zhu is a professor of computer science at Oxford Brookes University, UK, where he chairs the Applied Formal Methods Research Group. He obtained his PhD degree in Computer Science from Nanjing University, China, and worked there until joining Oxford Brookes University. He is on the editorial boards of Journal of Software Testing, Verification and Reliability, Software Quality Journal, International Journal of Big Data Intelligence, and International Journal of Multi-Agent and Grid Systems. His research interests are in software development methodologies, especially methodologies for developing web-based applications. He has published two books and 190 papers in journals and conferences.

Tutorial 3: Big Data Services, Security and Privacy

Bhavani Thuraisingham, The University of Texas at Dallas

Monday July 2, 1:30 - 5:00

Location: Orpheum

Tutorial Description: *Some knowledge of web services, cyber security, and privacy is required.* This tutorial is to address the security and privacy issues for big data services and potential solutions to the problems. We will first provide an overview of the security and privacy considerations for big data services, and then describe the application of data science including stream data analytics and novel class detection for cyber security applications, such as insider threat detection. We will discuss the trends in areas such as adversarial machine learning that take into consideration the attacker’s behavior in developing machine learning techniques. Then, we will discuss some emerging trends in carrying out trustworthy analytics so that the analytics techniques can be secured against malicious attacks. We will focus on the privacy threats due to the collection of massive amounts of data and potential solutions. Finally, we will discuss the integration of services computing, such as cloud-based services, with secure data science including applications in assured information sharing and social media.

Bhavani Thuraisingham is the Louis A. Becher, Jr. Distinguished Professor of Computer Science at The University of Texas at Dallas (UTD) and the Executive Director of UTD’s Cyber Security Research and Education Institute since October 2004. She has 35 years experience working at Honeywell, MITRE, NSF and UTD. She is the recipient of numerous awards, including the IEEE CS 1997 Technical Achievement Award, ACM SIGSAC 2010 Outstanding Contributions Award, and the IEEE CS Services Computing 2017 Research Innovation Award. She is a Fellow of the IEEE and the AAAS. She has published numerous papers and books and is the inventor of six US patents. She received her PhD at the University of Wales, Swansea, UK.

Tutorial 4: Cognitive IT Service Management in Real-World: Challenges, Technologies and Practices

Fanjin Meng, IBM Research

Monday July 2, 1:30 - 5:00

Location: Warfield

Tutorial Description: *No specific prerequisite knowledge or skills are required.* The attendees of this tutorial can expect to understand the importance, key technical challenges, technologies, and practices of cognitive IT Service Management (ITSM) in real-world. With the wide applications of AI technologies, IT services industry is now shifting from people-led and technology-assisted model to a technology-led and people-assisted model. This tutorial reviews the evolution of ITSM and discusses opportunities and challenges of cognitive ITSM in real-world. We present AI-driven ITSM platform and analytics technologies to address these technical challenges. Finally, we share real-world cognitive ITSM practices for large-scale enterprise-level ITSM with demonstration and case sharing.

Fanjin Meng is a Senior Technical Staff Member at IBM Research. Her current research focuses on applying advanced analytics into large-scale IT operations data, such as metrics, logs, events, and tickets, to detect anomalies and accelerate problem diagnosis. She received numerous awards, including the best paper award from IEEE CLOUD 2013. She has published more than 20 papers and had more than 20 patents and patent applications. She serves as a technical program committee co-chair/member for top international conferences and a reviewer of international journals. She joined IBM Research after receiving her Ph.D. degree from Beihang University in 2004.

IEEE WORLD CONGRESS ON SERVICES 2018 - INDUSTRY PROGRAM

The purpose of the industry program is to invite a number of industry experts in the important aspects of services to present and discuss their insight, best practices, practical issues, observations, and data analytics of real-world systems and applications, as well as the potential impact on the future services technologies and applications.

Session 1: Big Data and Cognitive Computing

Tuesday July 3, 4:40 - 6:10

Location: Orpheum

Session Chair: Samir Tata, LG Silicon Valley Lab

Evolution of Big Data Messaging – A Look Back and the Path Forward

Kartik Paramasivam, Director of Engineering, LinkedIn

In this presentation we will start in the nineties with the emergence of enterprise messaging (mqSeries,ActiveMQ, TIBCO,MSMQ etc.) and how in 20 years the industry evolved into big-data messaging (Kafka,Kinesis,EventHub etc.) . In this talk, I will explore what led us to big-data messaging and the architectural differences between enterprise messaging and big-data messaging systems. I will discuss some of the hard problems around exactly once processing, pub-sub, data mirroring and the different solutions. I will also explain how the evolution of big-data messaging also pushed a revolution in event(stream) processing frameworks. To close I will take a stab at predicting where the industry is headed and the challenges these or new systems will have to overcome to get in the next 10 years. This will include the needs that arise from the mass migration of applications from the batch processing paradigms (hadoop/spark) to real time stream processing.

Data Science and the Art of Producing Entertainment at Netflix

Ritwik Kumar, Director, Science & Analytics, Netflix

Netflix has released hundreds of Originals and plans to spend \$8 billion over the next year on content. Creators of these stories pour their hearts and souls into turning ideas into joy for our viewers. The sublime art of doing this well is hard to describe, but it necessitates a careful orchestration of creative, business and technical decisions. In this talk I will focus on the latter two—business & technical decisions that surround a production and how machine learning, optimization and data analytics are being leveraged to achieve unprecedented logistical scale and operational efficiencies at Netflix Studio.

Session 2: AI and Optimization in Service Management
Thursday July 5, 2:00 - 3:30
Location: Conference Theater
Session Chair: Maja Vukovic, IBM

Monitoring Services in the Internet of Things: An Optimization Approach
Aly Megahed, Research Staff, IBM

Devices in Internet of Things (IoT) often offer services that allow tenants to access data of different metrics collected from sensors connected to these devices. Given that such monitoring services are usually invoked within devices that have limited IT resource capacities, it is impossible to collect data of all metrics in the application’s context with a very high frequency. In this talk, we propose a framework that determines which metrics to monitor, monitoring start times, the optimal allocation of metrics to devices, and the optimal monitoring frequency of these metrics, without exceeding different device-specific time-varying resource capacities. Our approach is also adaptive; it gives updated solutions whenever a trigger happens in the system necessitating the need for a change in the previous optimal decisions. We provide an implementation of our approach and present numerical results showing its usage and limitations. At the heart of our approach is an integer programming optimization model that might be hard to solve for large-sized IoT systems. Thus, we present another predictive model that predicts for the user whether our optimization-based approach would be appropriate for her system or not. That is, whether the optimization model is predicted to give optimal solutions within some user-given optimality gaps in a time less than or equal to some user-given maximum allowed time. We also present extension ideas for our solution approach.

AIOps: Experiences and Challenges
Anup Kalia, Jin Xiao, Maja Vukovic, Research Staff, IBM

Service Management provides a set of processes for providing IT services to customers, such as incident and change management. In this talk, we discuss challenges and opportunities for AI and automation in the service management processes. Specifically, challenges arise from distributed knowledge about the operating environment, coupled with resource constraints and human error and complexity and heterogeneity of the IT environments to name a few. We present a system that employs AI to process and automate service requests, coupled with a chatbot interface. We discuss how we manage and process natural-language based request, coming from ticketing systems, emails and chats and map them to automation offerings. We further present our methodology for in-context parameter extraction and recommendation to help the user refine their request to the point where approvals and automatic executions can be made against a backend automation execution engine. To this end, we provide:- intelligent service request dispatch and assistance (against federated service catalogs and automation APIs)- in-context recommendation and validation of user request for the specific automation offering the user is interested in, reducing error and confusion from user- orchestrate and manage approval of change requests across multiple parties in a secure and consistent way (applying blockchain technology). We demonstrate our prototype in action and discuss research agenda in this domain.

Session 3: Cloud Computing and IoT
Friday July 6, 2:00 - 3:30
Location: Conference Theater
Session Chair: Hemant Jain, The University of Tennessee at Chattanooga

Modeling and Simulation of IoT and 5G Applications
Wael Guibene, Sr. Systems Engineer, Intel Corporation

IoT/M2M and Vehicular communications (V2X) emerged as two killer applications of 5G standards. Using Intel Simulation Tools and Technologies (CoFluent, Simics and Docea), we show how to model and simulate connected cars scenarios and E2E IoT deployments. Using Intel CoFluent helps make early stage architectural analysis on the modem side and helps simulating and understanding HW and SW interactions. These early stage decisions can help design more efficient communication protocols, optimize TCO and predict power consumption..

Microservices: How Loose is Loosely Coupled?
John Rofrano, Research Staff, IBM

Microservice architecture is a popular design pattern for DevOps deployments of cloud native applications. It’s single purpose, loosely coupled, bounded context design lends itself to the independent life cycle required to quickly deploy and scale in the cloud. Docker containerization of these services further aids in the zero down-time deployments of these

horizontally scalable services. But how do you keep them loosely coupled? How do they communicate without knowing about each other? and how do you keep all of those containers patched from new vulnerabilities that are being discovered every day? This talk discusses the implementation of a Container Vulnerability Remediation Services that itself is designed as a collection of loosely coupled microservices that communicate via publish/subscribe messaging model using Kafka, Could Functions (OpenWhisk), and REST APIs implemented in Python Flask. This design keeps each microservice independent and replaceable, while enabling expandability for new services to participate in business functions without any pre-determined knowledge of the business workflow.

IEEE WORLD CONGRESS ON SERVICES 2018
WOMEN IN SERVICES COMPUTING

The 2nd IEEE Women in Services Computing Workshop will be held on 7/2, aiming to provide an international forum for women and those passionate about gender equity in the field of Services Computing to explore the barriers and issues around underrepresentation and models for increasing the pipeline. Specifically, this workshop will expose participants to possibilities and opportunities in Services Computing careers.

Session 1: Monday July 2, 8:30-10:00
Location: Sequoia
Opening Welcome, Jia Zhang, Carnegie Mellon University
Opening Keynote, Bhavani Thuraisingham, University of Texas Dallas

TED Speeches
Predictive Analytics: Shubhi Asthana, Research Staff Member & Software Engineer, IBM Almaden Research Center
Briefing Meninas Project – GeoBigdata: Maristela Holanda, Faculty, University of Brazil
Big Data in cyber Security: Pallabi Parveen, Software Engineer, AT&T
Defense Research: Manchun Fang, Defense Scientist, Defense Research and Development
Cognitive Services: Maja Vukovic, Research Staff Member and Manager, IBM Research
Model-driven Engineering in Cloud Computing: Stéphanie Challita, Ph.D. student, Inria & University of Lille
Usage Pattern Recognition in Canadian Armed Forces: Fanjing Meng, Research Staff Member, IBM Research
Data Privacy: Liyue Fan, Faculty, University at Albany, SUNY
IoT in Connected Vehicle: Mari Abe, Research Staff Member and Software Engineer, IBM

Session 2: Monday July 2, 10:30 - 12:00
Location: Sequoia
Panel
Panelists: Mari Abe, IBM Japan
Bhavani Thuraisingham, University of Texas at Dallas
Maja Vukovic, IBM Research
Jia Zhang, Carnegie Mellon University

Focused Group Discussions
Research Collaboration Network
Moderator: Georgia Kapitsaki, University of Cyprus

Female in Services Computing Career
Moderator: Sana Belguith, The University of Auckland

Experience Sharing and Mentoring
Moderator: Franziska Schorr, Technical University of Denmark

Focused Groups Report

Closing
Bhavani Thuraisingham, University of Texas at Dallas

Session 3: Group Lunch - Monday July 2, 12:00 - 1:15

IEEE Big Data Congress 2018 (BigData 2018) Technical Program	
Monday July 2	
8:30-10:00	BigData 2018 Workshop Papers Session 1 Location: Cypress Session Chair: Arun Balaji Buduru, Indraprastha Institute of Information Technology
(WKSP) <i>An Architecture for Cost Optimization in the Processing of Big Geospatial Data in Public Cloud Providers</i> Joao Bachiega, Marco Reis, Maristela Holanda and Aleteia Araujo	
(WKSP) <i>A Fast and Incremental Development Life Cycle for Data Analytics as a Service</i> Claudio Agostino Ardagna, Valerio Bellandi, Paolo Ceravolo, Ernesto Damiani, Beniamino Di Martino, Salvatore D’An- gelo and Antonio Esposito	
(WKSP) <i>XRT: Programming-Language Independent MapReduce on Shared-Memory Systems</i> Erik Selin and Herna Viktor	
(WKSP) <i>Estimation of Types of States in Partial Observable Network Systems</i> Sayantan Guha	
10:30-12:00	BigData 2018 Work in Progress Papers Session 1 Location: Cypress Session Chair: Bradley Taylor, The Catholic University of America
(WIP) <i>Autoencoder Evaluation and Hyper-parameter Tuning in an Unsupervised Setting</i> Ellie Ordway-West and Pallabi Parveen	
(WIP) <i>Learning a Joint Low-rank and Gaussian Model in Matrix Completion with Spectral Regularization and Expecta- tion Maximization Algorithm</i> Gang Wu and Ratnesh Kumar	
(WIP) <i>DynMDL: A Parallel Trajectory Segmentation Algorithm</i> Eleazar Leal and Le Gruenwald	
(WIP) <i>Insights on Apache Spark Usage by Mining Stack Overflow Questions</i> Leonardo Jimenez Rodriguez, Xiaoran Wang and Jilong Kuang	
(WIP) <i>Biparti Majority Learning with Tensors</i> Chia-Lun Lee, Shun-Wen Hsiao and Fang Yu	
1:30 – 3:00	BigData 2018 Work in Progress Papers Session 2 Location: Cypress Session Chair: Liyue Fan, University at Albany - SUNY
(WIP) <i>An OWL Ontology for Supporting Semantic Services in Big Data Platforms</i> Domenico Redavid, Roberto Corizzo and Donato Malerba	
(WIP) <i>Graph-based Data Relevance Estimation for Large Storage Systems</i> Vinodh Venkatesan, Taras Lehinevych, Giovanni Cherubini, Andrii Glybovets and Mark Lantz	
(WIP) <i>BigDataStack: A Holistic Data-driven Stack for Big Data Applications and Operations</i> Dimosthenis Kyriazis, Christos Doulkeridis, Panagiotis Gouvas, Ricardo Jimenez-Peris, Ana Juan Ferrer, Leonidas Kalli- politis, Pavlos Kranas, George Kousiouris, Craig Macdonald, Richard McCreadie, Apostolos Papageorgiou, Marta Pati-	

no-Martinez, Stathis Plitsos, Dimitris Pouloupoulos, Antonio Paradell, Paula Ta-Shma, Constantinos Vassilakis and Valerio Vianello	
(WIP) <i>Stream Analytics and Adaptive Windows for Operational Mode Identification of Time-Varying Industrial Systems</i> Athar Khodabakhsh, Ismail Ari, Mustafa Bakir and Serhat Murat Alagoz	
(WIP) <i>Latency Measurement of Fine-Grained Operations in Benchmarking Distributed Stream Processing Frameworks</i> Giselle van Dongen, Bram Steurtewagen and Dirk Van den Poel	
3:30 – 5:00pm	BigData 2018 Work in Progress Papers Session 3 Location: Cypress Session Chair: Giovanni Cherubini, IBM Zurich Research Laboratory
(WIP) <i>Large Scale Predictive Analytics for Hard Disk Remaining Useful Life Estimation</i> Preethi Anantharaman, Mu Qiao and Divyesh Jadav	
(WIP) <i>Adaptive Trip Recommendation System: Balancing Travelers Among POIs with MapReduce</i> Sara Migliorini, Damiano Carra and Alberto Belussi	
(WIP) <i>A Personalized Travel Recommendation System Using Social Media Analysis</i> Joseph Coelho, Paromita Nitu and Praveen Madiraju	
(WIP) <i>Time Series Sanitization with Metric-based Differential Privacy</i> Liyue Fan and Luca Bonomi	
(WIP) <i>Towards Optimal Snapshot Materialization to Support Large Query Workload for Append-only Temporal Databases</i> Mohammadamin Beirami, Ken Pu and Ying Zhu.	
(WIP) <i>Categorical Models for BigData</i> Laurent Thiry, Heng Zhao and Michel Hassenforder	
Tuesday, July 3	
8:30-10:00	BigData 2018 Regular Papers Session 1 Big Data Models and Algorithms Location: Cypress Session Chair: Framl Soqicora, Federal University of Santa Catarina
(REG) <i>Compile-Time Code Generation for Embedded Data-Intensive Query Languages</i> Leonidas Fegaras and Md Hasanuzzaman Noor	
(REG) <i>λ-blocks: Data Processing with Topologies of Blocks</i> Matthieu Caneill and Noël De Palma	
(REG) <i>Incorporating Word Embedding into Cross-lingual Topic Modeling</i> Chia-Hsuan Chang, San-Yih Hwang and Tou-Hsiang Xui	

Wednesday, July 4

8:00 – 9:30 **BigData 2018 Regular Papers Session 2**
Big Data Mining and Visualization
Location: Cypress
Session Chair: Somayeh Moazeni, Stevens Institute of Technology

(REG) *On the Usage of the Probability Integral Transform to Reduce the Complexity of Multi-way Fuzzy Decision Trees in Big Data Classification Problems*
Mikel Elkano, Mikel Uriz, Humberto Bustince and Mikel Galar

(REG) *Useful ToPIC: Self-tuning Strategies to Enhance Latent Dirichlet Allocation*
Stefano Proto, Evelina Di Corso, Francesco Ventura and Tania Cerquitelli

(REG) *A Survey of Current End-user Data Analytics Tool Support*
Hourieh Khalajzadeh, Mohamed Abdelrazek, John Grundy, John Hosking and Qiang He

2:00 – 4:00 **BigData 2018 Regular Papers Session 3**
Big Data - Smart Cities and IoT
Location: Cypress
Session Chair: Chen Yuan, GEIRI North America

(REG) *Treepedia 2.0: Applying Deep Learning for Large-scale Quantification of Urban Tree Cover*
Bill Yang Cai, Xiaojiang Li, Ian Seiferling and Carlo Ratti

(REG) *Short-Term Traffic Prediction Using Long Short-Term Memory Neural Networks*
Zainab Abbas, Ahmad Al-Shishtawy, Sarunas Girdzijauskas and Vladimir Vlassov

(REG) *A Data-Driven Approach to Predict an Individual Customer’s Call Arrival in Multichannel Customer Support Centers*
Somayeh Moazeni

(REG) *Analysing Customer Engagement of Turkish Airlines Using Big Social Data*
Fie Sternberg, Kasper Hedegaard Pedersen, Niklas Klve Ryelund, Raghava Rao Mukkamala and Ravi Vatrapi

Thursday July 5

8:00 – 9:30 **BigData 2018 Regular Papers Session 4**
Big Data - Health and Applications
Location: Cypress
Session Chair: San-Yih Hwang, National Sun Yat-Sen University

(REG) *Diagnosis Recommendation Using Machine Learning Scientific Workflows*
Ishtiaq Ahmed, Shiyong Lu, Changxin Bai and Fahima Amin Bhuyan

(REG) *Nowcasting Events from Twitter Social Media with Semi-Supervised Learning*
Jin Soung Yoo and David Kim

(REG) *Big Web Colors: Analyzing the World Top Sites*
Massimo Marchiori

2:00 – 3:30 **BigData 2018 Regular Papers Session 5**
Big Data Management
Location: Cypress
Session Chair: Vladimir Vlassov, KTH Royal Institute of Technology

(REG) *Towards a Better Replica Management for Hadoop Distributed File System*
Hilmi Egemen Ciritoglu, Takfarinas Saber, Teodora Sandra Buda, John Murphy and Christina Thorpe

(REG) *Budget-Transfer: A Low Cost Inter-Service Data Storage and Transfer Scheme*
Galen Deal, Yang Peng and Hua Qin

(REG) *GDedup: Distributed File System Level Deduplication for Genomic Big Data*
Paul Bartus and Emmanuel Arzuaga

4:00 – 5:30 **BigData 2018 Regular Papers Session 6**
Big Data Analytics
Location: Cypress
Session Chair: John Grundy, Monash University

(REG) *A Fourier-Based Data Minimization Algorithm for Fast and Secure Transformation of Big Genomic Datasets*
Mohammed Aledhari, Marianne Di Pierro and Fahad Saeed

(REG) *Performance Modeling and Task Scheduling in Distributed Graph Processing*
Daniel Presser, Frank Siqueira and Fabio Reina

(REG) *Exploration of Bi-Level PageRank Algorithm for Power Flow Analysis Using Graph Database*
Chen Yuan, Yi Lu, Kewen Liu, Guangyi Liu, Renchang Dai and Zhiwei Wang

Friday, July 6

8:00 – 9:30 **BigData 2018 Regular Papers Session 7**
Architecture Solution & Quality of Big Data Service
Location: Conference Theater
Session Chair: Claudio Agostino Ardagna, Universita’ degli Studi di Milano

(REG) *Dynamic Model Evaluation to Accelerate Distributed Machine Learning*
Simon Caton, Srikumar Venugopal, Shashi Bhushan, Vidya Sankar Velamuri and Kostas Katrinis

(REG) *Sensor Data Based System-level Anomaly Prediction for Smart Manufacturing*
Jianwu Wang, Chen Liu, Meiling Zhu and Pei Guo

(REG) *Big Data Quality: A Survey*
Ikbale Taleb, Mohamed Adel Serhani and Rachida Dssouli

IEEE International Conference on Cloud Computing
(CLOUD 2018)
Technical Program

Monday July 2

8:30am – 10:00	CLOUD 2018 Serverless Workshop Session 1 Location: Belvedere
Welcome and intro to Serverless computing Keynote: <i>Serverless: Where Have We Come? Where Are We Going?</i> Stephen J. Fink, Chief Architect, Watson Programming Models, IBM	
10:30am – 12:00	CLOUD 2018 Workshop Session 1 Location: Belvedere Session Chair: Aleksander Slominski, IBM Research
(WKSP) <i>Evaluation of Production Serverless Computing Environments</i> Hyungro Lee, Kumar Satyam, Geoffrey Fox	
(WKSP) <i>Serverless Data Analytics with Flint</i> Yongbin Kim, Jimmy Lin	
(WKSP) <i>Making Serverless Computing More Serverless</i> Zaid Al-Ali, Sepidh Goodarzy, Ethan Hunter, Sangtae Ha, Richard Han, Eric Keller, Eric Rozner	
(WKSP) <i>Challenges for Scheduling Scientific Workflows on Cloud Functions</i> Joanna Kijak, Piotr Martyna, Maciej Pawlik, Bartosz Balis, Maciej Malawski	
10:30am – 12:00	CLOUD 2018 Work in Progress Papers Session 1 Cloud Management and Operations Location: Fillmore A Session Chair: Kaikai Liu, San Jose State University
(WIP) <i>Revolver: Vertex-centric Graph Partitioning Using Reinforcement Learning</i> Mohammad Hasanzadeh Mofrad, Rami Melhem and Mohammad Hammoud	
(WIP) <i>Supporting Mixed Workloads in OpenStack-based Clouds</i> Fabio Morais, Giovanni Farias, Marcus Carvalho, Francisco Brasileiro, João Mafra, Alessandro Fook, Raquel Lopes and Daniel Turull	
(WIP) <i>EMARS: Efficient Management and Allocation of Resources in Serverless</i> Aakanksha Saha, Sonika Jindal and Aakanksha Saha	
(WIP) <i>Optimal Cloud Resource Selection Method Considering Hard and Soft Constraints and Multiple Conflicting Objectives</i> Courtney Powell, Katsunori Miura and Masaharu Munetomo	
(WIP) <i>Distributed Hybrid Cloud Management Platform Based on Rule Engine</i> Peng Xu, Jingwei Su and Zhongbao Zhang	
10:30am – 12:00	CLOUD 2018 Regular Papers Session 1 Cloud Management Location: Fillmore B/C Session Chair: Ta Duong, Nanyang Technological University

(REG) *Automated Enforcement of SLA for Cloud Services*
Shahin Vakilinia, Catherine Truchan, James Kempf and Halima Elbiaze

(REG) *Cost-benefit Analysis of Public Clouds for Off-loading In-house HPC Jobs*
Akhila Prabhakaran and Lakshmi Jagarlamudi

(REG) *Latency-Aware Task Assignment and Scheduling in Collaborative Cloud Robotic Systems*
Shenghui Li, Zibin Zheng, Jia Zhang

1:30 – 3:00 CLOUD 2018 Serverless Workshop Session 2
Location: Sequoia

Invited Talk: *Conquering Serverless: Solutions for Organizations*
Chase Douglas, Co-founder and CTO of Stackery.io

Invited Talk: *Challenges for Serverless Native Cloud Applications*
Ben Kehoe, Cloud Robotics Research Scientist, iRobot

Invited Talk: *NumPyWren: Storage-enabled Scaling of Serverless Supercomputing*
Eric Jonas, UC Berkeley EECS and RISE Lab

Invited Talk: *Building and Teaching a Complete Serverless Solution*
Donald F. Ferguson, CTO and Co-Founder Sparq TV, Professor of Practice, Columbia University

1:30 – 3:00 CLOUD 2018 Work in Progress Papers Session 2
Cloud Infrastructure
Location: Fillmore A
Session Chair: Aaron Elliott, Royal Military College of Canada

(WIP) *Dependability Quantification of Cloud-centric Authentication Frameworks(also presented in poster session)*
Durbadal Chattaraj and Monalisa Sarma

(WIP) *Content Rating Technique for Cloud-oriented Content Delivery Network Using Weighted Slope One Scheme*
Bhavya Deep and Rajesh Bose

(WIP) *Handling Co-Resident Attacks: A Case for Cost-Efficient Dedicated Resource Provisioning*
Duong Ta

(WIP) *A Disturbing Question: What is the Economical Impact of Cloud Computing?*
Felipe Ferraz, Francisco Ribeiro and Carlos Sampaio

(WIP) *Saranyu: Using Smart Contracts and Blockchain for Cloud Tenant Management*
James Kempf, Nanjangud Narendra, Sambit Nayak, Anshu Shukla

(WIP) *FPGAVirt: A Novel Virtualization Framework for FPGAs in the Cloud*
Joel Mandebi Mbongue, Festus Hategekimana, Danielle Tchuinkou Kwadjo, David Andrews and Christophe Bobda

1:30 – 3:00 CLOUD 2018 Regular Papers Session 2
Cloud Performance (1)
Location: Fillmore B/C
Session Chair: Wei Wang, University of Texas at San Antonio

(REG) *Performance and Behavior Characterization of Amazon EC2 Spot Instances*
Thanh-Phuong Pham, Sasko Ristov and Thomas Fahringer

(REG) *Performance Interference-Aware Vertical Elasticity for Cloud-hosted Latency-Sensitive Applications*
Shashank Shekhar, Hamzah Abdelaziz, Anirban Bhattacharjee, Aniruddha Gokhale and Xenofon Koutsoukos

(REG) *Estimating Cloud Application Performance Based on Micro-Benchmark Profiling*
Joel Scheuner and Philipp Leitner

3:30 – 5:00 **CLOUD 2018 Serverless Workshop Session 3**
 Location: Sequoia

Invited Talk: *How Microservices and Serverless Computing Enable the Next Generation of Machine Intelligence*
Diego M. Oppenheimer, CEO, Algorithmia

Panel: *Future of Serverless in Industry and Academia*
Panelists: Stephen J. Fink, Eric Jonas, Diego M. Oppenheimer, Chase Douglas, Donald Ferguson, Ben Kehoe, and paper authors

3:30 – 5:00 **CLOUD 2018 Work in Progress Papers Session 3**
 Clouds for Science and Engineering
 Location: Fillmore A
 Session Chair: Ying-Feng Hsu, Osaka University

(WIP) *Technological, Organizational and Environmental (TOE) Factors That Influence the Adoption of Cloud based Service SMEs in India*
Nitirajsingh Sandu and Ergun Gide

(WIP) *Federated Galaxy: Biomedical Computing at the Frontier*
Enis Afgan, Vahid Jalili, Nuwan Goonasekera, James Taylor and Jeremy Goecks

(WIP) *Software Greenability: A Case Study of Cloud-based Business Applications Provisioning*
Hayri Acar, Hind Benfenatki, Jean-Patrick Gelas, Catarina Ferreira Da Silva, Gulfem I. Alptekin, Nabila Benharkat and Parisa Ghodous

(WIP) *HarmonicIO: Scalable Data Stream Processing for Scientific Datasets*
Preechakorn Torruangwatthana, Hakan Wieslander, Ben Blamey, Andreas Hellander and Salman Zubair Toor

(WIP) *High-resolution Ocean Winds: Hybrid-cloud Infrastructure for Satellite Imagery Processing*
Rémi Sahl, Paco Dupont, Christophe Messenger, Marc Honnorat and Tran Vu La

(WIP) *ORGODEX: Service Portfolios for the Cloud*
Aaron Elliott and Scott Knight

3:30 – 5:00 **CLOUD 2018 Regular Papers Session 3**
 Cloud Applications
 Location: Fillmore B/C
 Session Chair: Alfredo Cuzzocrea, University of Trieste

(REG) *Oases: An Online Scalable Spam Detection System for Social Networks*
Hailu Xu, Liting Hu, Pinchao Liu, Yao Xiao, Wentao Wang, Jai Dayal, Qingyang Wang and Yuzhe Tang

(REG) *Bandwidth Optimal Data/Service Delivery for Connected Vehicles via Edges*
Deepak Gangadharan, Oleg Sokolsky, Insup Lee, Baekgyu Kim, Chung-Wei Lin and Shinichi Shiraishi

(REG) *Analyzing Moving Target Defense for Resilient Campus Private Cloud*
Minh Nguyen, Priyanka Samanta and Saptarshi Debroy

Tuesday July 3

8:30 – 10:00 **CLOUD 2018 Workshop Papers Session 2**
 Cloud Infrastructure
 Location: Fillmore A
 Session Chair: Michael Gerndt, Technische Universitaet Muenchen

(WKSP) *Evaluation of Container Orchestration Systems for Deploying and Managing NoSQL Database Clusters (also presented in poster session)*
Eddy Truyen, Matt Bruzek, Dimitri Van Landuyt, Bert Lagaisse, Wouter Joosen

(WKSP) *Real Time Metering of Cloud Resource Reading Accurate Data Source Using Optimal Message Serialization and Format*
Tariq Daradkeh, Anjali Agarwal, Nishith Goel, Marzia Zaman

(WKSP) *Empowering Dynamic Task-based Applications with Agile Virtual Infrastructure Programmability*
Huan Zhou, Yang Hu, Jinshu Su, Cees De Laat, Zhiming Zhao

(WKSP) *A Novel Automated Cloud Storage Tiering System through Hot-Cold Data Classification*
Ying-Feng Hsu, Ryo Irie, Shuuichirou Murata and Morito Matsuoka

8:30 – 10:00 **CLOUD 2018 Regular Papers Session 4**
 Green and Energy Management of Cloud Computing
 Location: Fillmore B/C
 Session Chair: Deepak Gangadharan, University of Pennsylvania

(REG) *Flexible VM Provisioning for Time-Sensitive Applications with Multiple Execution Options*
Rehana Begam, Hamidreza Moradi, Wei Wang and Dakai Zhu

(REG) *Analysis of Dynamically Switching Energy-aware Scheduling Policies for Varying Workloads*
Pradyumna Kaushik, Akash Kothawale, Renan Delvalle, Abhishek Jain and Madhusudhan Govindaraju

(REG) *Temporal Tasks Scheduling for Delay-constrained Applications in Geo-distributed Green Cloud Data Centers*
Jing Bi, Haitao Yuan, Jia Zhang and Mengchu Zhou

8:30 – 10:00 **CLOUD 2018 Regular Papers Session 5**
 Cloud Security
 Location: Sequoia
 Session Chair: Kannan Govindarajan, Indiana University

(REG) *An Efficient Secure Distributed Cloud Storage for Append-only Data*
Binanda Sengupta, Nishant Nikam, Sushmita Ruj, Srinivasan Narayanamurthy and Siddhartha Nandi

(REG) *Secure k-NN as a Service Over Encrypted Data in Multi-User Setting*
Gagandeep Singh, Akshar Kaul and Sameep Mehta

(REG) *Malware Detection in Cloud Infrastructures Using Convolutional Neural Networks*
Mahmoud Abdelsalam, Ram Krishnan, Yufei Huang and Ravi Sandhu

1:30 – 3:00	CLOUD 2018 Best Student Papers Location: Fillmore B/C Session Chair: Hong Zhu, Oxford Brookes University
(REG) <i>DSES: A Blockchain-powered Decentralized Service Eco-System</i> Zhenfeng Gao, Yushun Fan, Cheng Wu, Jia Zhang and Chang Chen	
(REG) <i>Toward Cost-effective Memory Scaling in Clouds: Symbiosis of Virtual and Physical Memory</i> Xinying Wang, Cong Xu, Ke Wang, Feng Yan and Dongfang Zhao	
(REG) <i>CloudInsight: Utilizing a Council of Experts to Predict Future Cloud Application Workloads</i> In Kee Kim, Wei Wang, Yanjun Qi and Marty Humphrey	
1:30 – 3:00	CLOUD 2018 Workshop Papers Session 3 Cloud and Big Data Analytics Location: Fillmore A Session Chair: Chen Wang, IBM Research
(WKSP) <i>Embedding Index Maintenance in Store Routines to Accelerate Secondary Index Building in Hbase</i> Chun Cao, Weiyi Wang, Ying Zhang, Jian Lu	
(WKSP) <i>Automatic Tuning of SQL-On-Hadoop Engines on Cloud Platforms</i> Prasad Deshpande, Amogh Magroor, Rajat Venkatesh	
(WKSP) <i>Allocation of Publisher/Subscriber Data Links on a Set of Virtual Machines</i> Thomas Lambert, Rizos Sakellariou	
(WKSP) <i>Business Modeling and Design in the Internet-of-things Context</i> Hongyu Pei Breivold and Larisa Rizvanovic	
4:40 – 6:10	CLOUD 2018 Best Papers Location: Fillmore B/C Session Chair: Bharat Bhargava, Purdue University
(REG) <i>DROPLET: Distributed Operator Placement for IoT Applications Spanning Edge and Cloud Resources</i> Tarek Elgamal, Atul Sandur, Phuong Nguyen, Klara Nahrstedt and Gul Agha	
(REG) <i>Performance Evaluation of Low Latency Communication Alternatives in a Containerized Cloud Environment</i> Dániel Géhberger, Dávid Balla, Markosz Maliosz and Csaba Simon	
(REG) <i>FIOS: Feature Based I/O Stream Identification for Improving Endurance of Multi-Stream SSDs</i> Janki Bhimani, Ningfang Mi, Zhengyu Yang, Jingpei Yang, Rajinikanth Pandurangan, Changho Choi and Vijay Balakrishnan	
4:40 – 6:10	CLOUD 2018 Workshop Papers Session 4 Clouds for Science and Engineering Location: Fillmore A Session Chair: Shantenu Jha, Rutgers University
(WKSP) <i>Remote Monitoring and Online Testing of Machine Tools for Fault Diagnosis and Maintenance using MTComm in a Cyber-Physical Manufacturing Cloud</i> S M Nahian Al Sunny, Xiaoqing Frank Liu and Md Rakib Shahriar	

(WKSP) <i>Building a Vertical Cloud Architecture for Education</i> Travis Brummett and Jeffrey Galloway	
(WKSP) <i>A2Cloud: An Analytical Model for Application-to-Cloud Matching to Empower Scientific Computing</i> Cody Balos, David De La Vega, Zachariah Abuelhaj, Chadi Kari, David Mueller and Vivek Pallipuram	
(WKSP) <i>A Data Placement Strategy for Scientific Workflow in Hybrid Cloud</i> Zhanghui Liu, Tao Xiang, Bing Lin, Xinshu Ye, Haijiang Wang, Ying Zhang, Xing Chen	
Wednesday July 4	
8:00 – 9:30	CLOUD 2018 Workshop Papers Session 5 Cloud Engineering Location: Fillmore A Session Chair: Josef Spillner, Zurich University of Applied Sciences
(WKSP) <i>Cloud Resellers on Bazaar-based Cloud Markets</i> Benedikt Pittl, Werner Mach and Erich Schikuta	
(WKSP) <i>Breaking Down the Barriers for Moving an Enterprise To Cloud</i> Lorraine Herger, Mercy Bodarky and Carlos Fonseca	
(WIP) <i>At Most M- A Flexible Redundancy Model for Cloud Robotics</i> Swagata Biswas, Swarnava Dey and Arijit Mukherjee	
(WIP) <i>‘Blockhub’: Blockchain-based Software Development System for Untrusted Environments</i> Denis Ulybyshev, Miguel Villarreal-Vasquez, Bharat Bhargava, Ganapathy Mani, Steve Seaberg, Paul Conoval, Donald Steiner and Jason Kobes	
(WIP) <i>Evaluation of a Cloud-based System for Delivering Adaptive Micro Open Education Resource to Fresh Learners (also presented in the poster session)</i> Geng Sun, Tingru Cui, Fang Dong, Dongming Xu, Jun Shen, Shiping Chen and Jiayin Lin	
8:00 – 9:30	CLOUD 2018 Regular Papers Session 6 Cloud Infrastructure Location: Sequoia Session Chair: Zhiming Zhao, University of Amsterdam
(REG) <i>I/O Characteristics Discovery in Cloud Storage Systems</i> Jiang Zhou, Dong Dai, Yu Mao, Xin Chen, Yu Zhuang, and Yong Chen	
(REG) <i>A Comparative Study of Containers and Virtual Machines in Big Data Environment</i> Qi Zhang, Ling Liu, Qiwei Dou, Liren Wu, Wei Zhou and Calton Pu	
(REG) <i>Hybrid HPC Cloud Strategies from the Student Cluster Competition</i> Stephen Harrell and Andrew Howard	
8:00 – 9:30	CLOUD 2018 Regular Papers Session 7 Software Engineering Practice for Cloud Location: Belvedere Session Chair: Supun Kamburugamuve, Indiana University
(REG) <i>A Toolset for Detecting Containerized Application’s Dependencies in CaaS Clouds</i> Pinchao Liu, Liting Hu, Hailu Xu, Zhiyuan Shi, Jason Liu, Qingyang Wang, Jai Dayal and Yuzhe Tang	
(REG) <i>PMDC: Programmable Mobile Device Clouds for Convenient and Efficient Service Provisioning</i> Zheng Song and Eli Tilevich	

(REG) *Semantic-Aware Online Workload Characterization and Consolidation*
Arnamoy Bhattacharyya, Seyedali Jokar Jandaghi and Cristiana Amza

2:00 – 3:30 **CLOUD 2018 Workshop Papers Session 6**
Cloud Security and Privacy
Location: Belvedere
Session Chair: Bo Yang, IBM Research

(WKSP) *Privacy-preserving Multi-user Encrypted Access Control Scheme for Cloud-assisted IoT Applications*
Nesrine Kaaniche and Maryline Laurent

(WKSP) *Lambda Containers: A Comprehensive Anti-Tamper Framework for Games by Simulating Client Behavior in a Cloud*
Shuichi Kurabayashi

(WKSP) *A Cross-Virtual Machine Network Channel Attack via Mirroring and TAP Impersonation*
Atif Saeed, Peter Garraghan, Barnaby Craggs, Dirk van der Linden, Awais Rashid and Syed Asad Hussain

2:00 – 3:30 **CLOUD 2018 Workshop Papers Session 7**
Cloud Blockchain and Management
Location: Fillmore A
Session Chair: Mohammad Hamdaqa, Reykjavik University

(WKSP) *Inter-Bank Payment System on Enterprise Blockchain Platform*
Xin Wang, Xiaomin Xu, Lance Feagan, Sheng Huang, Limei Jiao and Wei Zhao

(WKSP) *Cost Optimization Algorithms for Hot and Cool Tiers Cloud Storage Services*
Yaser Mansouri and Abdelkarim Erradi

(WKSP) *BDUA: Blockchain-based Data Usage Auditing*
Nesrine Kaaniche and Maryline Laurent

2:00 – 3:30 **CLOUD 2018 Regular Papers Session 8**
Data Cloud Infrastructure
Location: Sequoia
Session Chair: Jing Bi, Beijing University of Technology

(REG) *CAPI-Flash Accelerated Persistent Read Cache for Apache Cassandra*
Bedri Sendir, Madhu Govindaraju, Rei Odaira and H. Peter Hofstee

(REG) *Data Plane Offloading on a High-speed Parallel Processing Architecture*
Danilo Cerovic, Valentin Del Piccolo, Ahmed Amamou, Kamel Haddadou and Guy Pujolle

(REG) *BloomStream: Data Temperature Identification for Flash Based Memory Storage Using Bloom Filters*
Janki Bhimani, Ningfang Mi and Bo Sheng

Thursday July 5

8:00 – 9:30 **CLOUD 2018 Workshop Papers Session 8**
Cloud Performance and Reliability (1)
Time: Location: Belvedere
Session Chair: Eddy Truyen, KU Leuven

(WKSP) *Distributed Matrix Multiplication Performance Estimator for Machine Learning Jobs in Cloud Computing*
Myungjun Son and Kyungyong Lee

(WKSP) *An Adaptive Workload Prediction Strategy for Non-Gaussian Cloud Service Using ARMA Model With Higher Order Statistics*
Zohra Amekraz and Moulay Youssef Hadi

(WKSP) *Efficient Key-value Stores with Ranged Log-structured Merge Trees*
Nae Young Song, Hyuck Han and Heon Young Yeom

(WKSP) *Analytics of Performance and Data Quality for Mobile Edge Cloud Applications*
Hong-Linh Truong and Matthias Karan

8:00 – 9:30 **CLOUD 2018 Regular Papers Session 9**
Data Analytics in Cloud
Location: Sequoia
Session Chair: Saptarshi Debroy, City University of New York

(REG) *Towards Selecting Best Combination of SQL-on-Hadoop Systems and JVMs*
Tatsuhiro Chiba, Takeshi Yoshimura, Michihiro Horie and Hiroshi Horii

(REG) *Tracing Function Dependencies Across Clouds*
Wei-Tsung Lin, Chandra Krintz and Rich Wolski

(REG) *StackInsights: Cognitive Learning for Hybrid Cloud Readiness*
Mu Qiao, Luis Bathen, Simon-Pierre Genot, Sunhwan Lee and Ramani Routray

2:00 – 3:30 **CLOUD 2018 Workshop Papers Session 9**
Cloud Performance and Reliability (2)
Location: Belvedere
Session Chair: Tommaso Cucinotta, Scuola Superiore Sant’Anna

(WKSP) *An Analytic Model of Traffic Surges for Multi-Server Queues in Cloud Environments*
Venkat Tadakamalla and Daniel Menasce

(WKSP) *Reviewing Cloud Monitoring: Towards Cloud Resource Profiling*
Christopher B. Hauser and Stefan Wesner

(WKSP) *Comparing Cloud Content Delivery Networks for Adaptive Video Streaming*
Chen Wang, Andal Jayaseelan and Hyong Kim

(WKSP) *DRESS: Dynamic RESource-reservation Scheme for Congested Data-intensive Computing Platforms*
Ying Mao, Victoria Green, Jiayin Wang, Haoyi Xiong and Zhishan Guo

2:00 – 3:30 **CLOUD 2018 Regular Papers Session 10**
Cloud Management and Operations
Location: Sequoia
Session Chair: Fanjing Meng, IBM Research

(REG) *Dynamic Timestamp Allocation for Reducing Transaction Aborts*
Vaibhav Arora, Ravi Kumar Suresh Babu, Sujaya Maiyya, Divyakant Agrawal, Amr El Abbadi, Xun Xue, Yanan Zhi and Jianfeng Zhu

(REG) *Intermediate Data Caching Optimization for Multi-Stage and Parallel Big Data Frameworks*
Zhengyu Yang, Danlin Jia, Stratis Ioannidis, Ningfang Mi and Bo Sheng

(REG) *S-memV: Split Migration of Large-memory Virtual Machines in IaaS Clouds*
Masato Suetake, Takahiro Kashiwagi, Hazuki Kizu and Kenichi Kourai

4:00 – 5:30 **CLOUD 2018 Workshop Papers Session 10**
Cloud Management and Operations (1)
Location: Belvedere
Session Chair: Ming Zhao, Arizona State University

(WKSP) *A Near-Optimal Control Policy in Cloud Systems with Renewable Sources and Time-dependent Energy Price*
Jiashang Liu, Joohyun Lee, Ness B. Shroff, Prasun Sinha and Sinong Wang

(WKSP) *Improving Energy Efficiency in NFV Clouds with Machine Learning (also presented in poster session)*
Ligia M. M. Zorello, Migyael G. T Vieira, Rodrigo A. G. Tejos, Marco A. T. Rojas, Catalin Meirosu and Tereza C. M. B. Carvalho

(WKSP) *Towards Economic and Compliant Deployment of Licenses in a Cloud Architecture*
Arthur Chevalier, Eddy Caron, Noëlle Baillon and Anne-Lucie Vion

(WKSP) *It’s Time to Migrate! A Game-Theoretic Framework for Protecting a Multi-tenant Cloud against Collocation Attacks*
Ahmed H. Anwar, George Atia and Mina Guirguis

4:00 – 5:30 **CLOUD 2018 Regular Papers Session 11**
Blockchain
Location: Sequoia
Session Chair: Sana Belguith, The University of Auckland

(REG) *On Building Efficient Temporal Indexes on Hyperledger Fabric*
Himanshu Gupta, Sandeep Hans, Sameep Mehta and Praveen Jayachandran

(REG) *CloudPoS: A Proof-of-Stake Consensus Design for Blockchain Integrated Cloud*
Deepak Kumar Tosh, Sachin Shetty, Peter Foytik, Charles Kamhoua and Laurent Njilla

(REG) *Service Management of Blockchain Networks*
Jun Duan, Alexei Karve, Vugranam Sreedhar and Sai Zeng

Friday July 6
8:00 – 9:30 **CLOUD 2018 Work in Progress Papers Session 4**
Cloud and Big Data Analytics
Location: Belvedere
Session Chair: Bedri Sendir, IBM Research

(WIP) *Towards Building a Scalable Data Analytics System on Clouds: An Early Experience on AliCloud*
Congfeng Jiang, Wei Huang, Zujie Ren, Youhuizi Li and Jian Wan

(WIP) *PerfInsight: A Robust Clustering-based Abnormal Behavior Detection System for Large-Scale Cloud*
Xiao Zhang, Meng Fanjing and Jingmin Xu

(WIP) *Towards Quantum Computing Algorithms for Datacenter Workload Predictions*
Kashifuddin Qazi and Igor Aizenberg

(WIP) *Monitoring Data Integrity in Big Data Analytics Services*
Konstantinos Mantzoukas, Christos Kloukinas and George Spanoudakis

(WIP) *Formal Analysis of Load Balancing in Microservices with Scenario Calculus*
Hong Zhu, Hongbo Wang and Ian Bayley

(WIP) *Detecting Anomalous Behavior of Black-Box Services Modeled with Distance-Based Online Clustering*
Anton Gulenko, Florian Schmidt, Alexander Acker, Marcel Wallschlaeger, Feng Liu and Odej Kao

8:00 – 9:30 **CLOUD 2018 Regular Papers Session 12**
Cloud Workflow and Serverless Computing
Location: Sequoia
Session Chair: Jun Shen, University of Wollongong

(REG) *RIOT: A Stochastic-based Method for Workflow Scheduling in the Cloud*
Jianfeng Chen and Tim Menzies

(REG) *Beyond Generic Lifecycles: Reusable Modeling of Custom-Fit Management Workflows for Cloud Applications*
Merlijn Sebrechts, Cory Johns, Gregory Van Seghbroeck, Tim Wauters, Bruno Volckaert and Filip De Turck

(REG) *Exploring Serverless Computing for Neural Network Training*
Lang Feng, Prabhakar Kudva, Dilma Da Silva and Jiang Hu

2:00 – 3:30 **CLOUD 2018 Work in Progress Papers Session 5**
Cloud Security and Privacy
Location: Belvedere
Session Chair: Junbeom Hur, Korea University

(WIP) *Virtual Network Functions as Real-Time Containers in Private Clouds*
Tommaso Cucinotta, Luca Abeni, Mauro Marinoni, Alessio Balsini and Carlo Vitucci

(WIP) *Toward Trustworthy Delegation: Verifiable Outsourced Decryption with Tamper-Resistance in Public Cloud Storage*
Changhee Hahn, Hyunsoo Kwon and Junbeom Hur

(WIP) *PU-ABE: Lightweight Attribute-Based Encryption Supporting Access Policy Update for Cloud Assisted IoT*
Sana Belguith, Nesrine Kaaniche and Giovanni Russello

(WIP) *A Privacy-Preserving k-Means Clustering Algorithm using Secure Comparison Protocol and Density-based Center Point Selection*
Hyeong-Jin Kim and Jae-Woo Chang

(WIP) *Attribute Based Encryption for Secure Access to Cloud Based EHR Systems*
Maithilee Joshi, Karuna Joshi and Tim Finin

2:00 – 3:30 **CLOUD 2018 Workshop Papers Session 11**
Cloud Management and Operations (2)
Location: Warfield
Session Chair: Roberto Di Pietro, Hamad Bin Khalifa University

(WKSP) *FEMCRA: Fine-grained Elasticity Measurement for Cloud Resources Allocation*
Jing Liu, Jing Qiao and Junfeng Zhao

(WKSP) *Performance of Virtual Machines using Diskfull and Diskless Compute Nodes*
Jeffrey Galloway, Gabriel Loewen, Jeffrey Robinson and Susan Vrbsky

(WKSP) *COOL: A Cloud-Optimized Structure for MPI Collective Operations*
Mohammed Alfatafta, Zuhair Alsader and Samer Al-Kiswany

(WKSP) *Performance Analysis of Large-scale Distributed Stream Processing Systems on the Cloud*
Tri Truong, Aaron Harwood, Richard O. Sinnott and Shiping Chen

2:00 – 3:30 **CLOUD 2018 Regular Papers Session 13**
Cloud Performance (2)
Location: Sequoia
Session Chair: BaekGyu Kim, Toyota InfoTechnology Center

(REG) *Time Inference Attacks on Software Defined Networks: Challenges and Countermeasures*
Sajad Khorsandroo and Ali Saman Tosun

(REG) *FlowVirt: Flow Rule Virtualization for Dynamic Scalability of Programmable Network Virtualization*
Gyeongsik Yang, Bong-Yeol Yu, Wontae Jeong and Chuck Yoo

(REG) *Semi-Markov Process Based Reliability and Availability Prediction for Volunteer Cloud Systems*
Tessema Mengistu and Dunren Che

3:45 – 5:15 **CLOUD 2018 Work in Progress Papers Session 6**
Cloud Performance and Reliability
Location: Belvedere
Session Chair: Sashko Ristov, University of Innsbruck

(WIP) *PRESENCE: Performance Metrics Models for Cloud SaaS Web Services (also presented in poster session)*
Abdallah Ali Zainelabden Abdallah Ibrahim, Muhammad Umer Wasim, Sebastien Varrette and Pascal Bouvry

(WIP) *Towards Improving Data Center Utilisation by Reducing Fragmentation*
Shravan S K, J Lakshmi and Neeraj Bisht

(WIP) *Managed Containers: A Framework for Resilient Containerized Mission Critical Systems*
Xavier Merino, Carlos Otero, Matthew Ridley and David Elliott

(WIP) *The Performance Evaluation of Virtual Machine Placement Algorithm Based on WebCloudSim*
Songtai Dai, Ao Zhou and Shangguang Wang

(WIP) *IaaS Reactive Autoscaling Performance Challenges*
Vladimir Podolskiy, Anshul Jindal and Michael Gerndt

(WIP) *A Cloud-Agnostic Container Orchestrator for Improving Interoperability*
David Elliott, Carlos Otero, Matthew Ridley and Xavier Merino

(WIP) *OpenStack Network Acceleration Scheme for Datacenter Intelligent Applications*
Linh Phan, Kaikai Liu

3:45 – 5:15 **CLOUD 2018 Workshop Papers Session 12**
Cloud Management and Operations (3)
Location: Warfield
Session Chair: Ben Blamey, Uppsala University

(WKSP) *Adaptive Online Runtime Prediction to Improve HPC Application Latency in Cloud*
Mina Naghshnejad and Mukesh Singhal

(WKSP) *ACCORD: Automated Change Coordination Across Independently Administered Cloud Services*
Tariq Mahmood, Bharath Balasubramanian, Mithuna S. Thottethodi, Sanjay Rao and Kaustubh Joshi

(WKSP) *Migrating VM Workloads to Containers: Issues and Challenges*
Surya Kant Garg, Lakshmi J and Jain Johny

(WKSP) *Fair Protocols for Verifiable Computations using Bitcoin and Ethereum*
Mallikarjun Reddy Dorsala, Sastry V N and Sudhakar Chapram

3:45 – 5:15 **CLOUD 2018 Regular Papers Session 14**
Systems Software and Hardware
Location: Sequoia
Session Chair: Felipe Ferraz, CESAR / CESAR School

(REG) *Specifying Semantic Interoperability between Heterogeneous Cloud Resources with the fclouds Formal Language*
Stéphanie Challita, Faiez Zalila and Philippe Merle

(REG) *SAM: A Semantic-aware Middleware for Mobile Cloud Computing*
Harun Baraki, Corvin Schwarzbach, Stefan Jakob, Alexander Jahl and Kurt Geihs

(REG) *Twister:Net - Communication Library for Big Data Processing in HPC and Cloud Environments*
Supun Kamburugamuve, Pulasthi Wickramasinghe, Kannan Govindarajan, Ahmet Uyar, Gurhan Gunduz, Vibhatha Abeykoon and Geoffrey C. Fox

Saturday July 7

8:00 – 9:30 **CLOUD 2018 Work in Progress Papers Session 7**
Cloud Applications and Blockchain
Location: Conference Theater
Session Chair: Vivek K. Pallipuram, University of the Pacific

(WIP) *A Novice Group Sharing Method for Public Cloud*
Celia Li and Cungang Yang

(WIP) *Deploying Microservice Based Applications with Kubernetes: Experiments and Lessons Learned*
Leila Abdollahi Vayghan, Mohamed Aymen Saied, Maria Toeroe and Ferhat Khendek

(WIP) *Cloud Workflow Resource Shortage Prediction and Fulfillment Using Multiple Adaptation Strategies*
Hadeel T. El Kassabi, Mohamed Adel Serhani, Rachida Dssouli, Nabeel Al-Qirim and Ikbal Taleb

(WIP) *Logchain: Blockchain-assisted Log Storage*
William Pourmajidi and Andriy Miranskyy

(WIP) *Blockchain-Based E-Voting System (also presented in poster session)*
Mohammad Hamdaqa, Friðrik Hjálmarsson, Gunnlaugur Hreiðarsson and Gísli Hjálmtýsson

(WIP) *ChainFS: Blockchain-secured Cloud Storage*
Qiwu Zou, Yuzhe Tang, Ju Chen, Kai Li, Charles Kamhoua, Laurent Njilla

8:00 – 9:30 **CLOUD 2018 Regular Papers Session 15**
Cloud Privacy
Location: Fillmore B/C
Session Chair: Nesrine Kaaniche, Telecom SudParis

(REG) <i>Privacy-preserving and Updatable Block-level Data Deduplication in Cloud Storage Services</i> Hyungjune Shin, Dongyoung Koo, Youngjoo Shin and Junbeom Hur	
(REG) <i>A Privacy-Preserving Voting Protocol on Blockchain</i> Wenbin Zhang, Yuan Yuan, Yanyan Hu, Shaohua Huang, Shengjiao Cao, Anuj Chopra and Sheng Huang	
(REG) <i>Micky: A Cheaper Alternative for Selecting Cloud Instances</i> Chin-Jung Hsu, Vivek Nair, Tim Menzies and Vincent W. Freeh	
9:45 – 11:15	CLOUD 2018 Workshop Papers Session 13 Cloud and the Edge Location: Conference Theater Session Chair: Hong-Linh Truong, TU
(WKSP) <i>Cloud Computing on Cooperative Cars (C4): An Architecture to Support Navigation-as-a-Service</i> Keyvan Ansari	
(WKSP) <i>A Proposal of Autonomic Edge Cloud Platform with CCN-based Service Routing Protocol</i> Tien Dung Nguyen, Yunkon Kim, Do-Hyeon Kim and Eui-Nam Huh	
(WKSP) <i>OWLBIT: Orchestrating Wireless Transmissions for Launching Big Data Platforms in an Internet of Things Environment</i> Nam Nguyen, Teng Wang, Tengpeng Li, Xiaoqian Zhang, Bo Sheng, Ningfang Mi and Bin Zhao	
9:45 – 11:15	CLOUD 2018 Regular Papers Session 16 Cloud Configuration and Capacity Management Location: Fillmore B/C Session Chair: Tatsuhiro Chiba, IBM Research
(REG) <i>Towards Automatic Tuning of Apache Spark Configuration</i> Nhan Nguyen, Mohammad Khan and Kewen Wang	
(REG) <i>Best First Fit (BFF): An Approach to Partially Reconfigurable Hybrid Circuit and Packet Switching</i> Liang Liu, Long Gong, Sen Yang, Jun Xu and Lance Fortnow	
(REG) <i>Exploring the Fairness and Resource Distribution in an Apache Mesos Environment</i> Pankaj Saha, Angel Beltre and Madhusudhan Govindaraju	

IEEE International Conference on Edge Computing (EDGE 2018) Technical Program	
Monday July 2	
8:30 – 10:00	EDGE 2018 Work in Progress Papers Session 1 Current Trends in Edge Computing Location: Conference Theater Session Chair: Shangguang Wang, Beijing University of Posts & Telecommunications
(WIP) <i>Towards Edge Computing Over Named Data Networking</i> Abderrahmen Mtibaa, Reza Tourani, Satyajayant Misra, Jeff Burke, Lixia Zhang	
(WIP) <i>SaRa: A Stochastic Model to Estimate Reliability of Edge Resources in Volunteer Cloud</i> Yousef Alsenani, Garth V. Crosby, Tomas Velasco	
(WIP) <i>Real-Time Human Detection as an Edge Service Enabled by a Lightweight CNN</i> Seyed Yahya Nikouei, Yu Chen, Sejun Song, Ronghua Xu, Baek-Young Choi, Timothy R. Faughnan	
(WIP) <i>Edge Powered Industrial Control-Concept for Combining Cloud and Automation Technologies</i> Christoph Pallasch, Stephan Wein, Nicolai Hoffmann, Markus Obdenbusch, Tilman Buchner, Josef Walzl, Christian Brecher	
(WIP) <i>Large Scale Stream Analytics Using a Resource-Constrained Edge</i> Roshan Bharath Das, Gabriele Di Bernardo, Henri Bal	
(WIP) <i>Real-Time Traffic Pattern Collection and Analysis Model for Intelligent Traffic Intersection</i> Unnikrishnan Kizhakkemadam Sreekumar, Revathy Devaraj, Qi Li, Kaikai Liu	
Tuesday July 3	
8:30 – 10:00	EDGE 2018 Regular Papers Session 1 Platforms and Infrastructure for Edge Computing Location: Conference Theater Session Chair: Hong Zhu, Oxford Brookes University
(REG) <i>Docker Container Deployment in Fog Computing Infrastructures</i> Arif Ahmed, Guillaume Pierre	
(REG) <i>Fog at the Edge: Experiences Building an Edge Computing Platform</i> Nam Ky Giang, Michael Blackstock, Rodger Lea, Victor C.M. Leung	
(REG) <i>Semi-Autonomous Industrial Robotic Inspection: Remote Methane Detection in Oilfield</i> Roberto Silva Filho, Bo Yu, Ching-Ling Huang, Raju Venkataramana, Ashraf El-Messidi, Dustin Sharber, John Westerheide, Nasr Alkadi	
1:30 – 3:00	EDGE 2018 Regular Papers Session 2 Data Processing at Edge Location: Conference Theater Session Chair: Shangguang Wang, Beijing University of Posts & Telecommunications
(REG) <i>Data Distillation at the Network's Edge: Exposing Programmable Logic with InLocus</i> Lucas Brasilino, Alexander Shroyer, Naveen Marri, Saurabh Agrawal, Catherine Pilachowski, Ezra Kissel, Martin Swany	

(REG) *Optimizing Windowed Aggregation Over Geo-Distributed Data Systems*
Hooman Peiro Sajjad, Ying Liu, Vladimir Vlassov

(REG) *Are Existing Knowledge Transfer Techniques Effective for Deep Learning with Edge Devices?*
Ragini Sharma, Saman Biookaghazadeh, Baoxin Li, Ming Zhao

4:40 – 6:10 **EDGE 2018 Regular Papers Session 3**
Resource Allocation and Energy Awareness
Location: Conference Theater
Session Chair: Dennis Gannon, Indiana University

(REG) *Towards Mission-Critical Control at the Edge and Over 5G*
Per Skarin, William Tärneberg, Karl-Erik Årzen, Maria Kihl

(REG) *An Energy-Aware IoT Femtocloud System*
Hend Gedawy, Karim Habak, Khaled Harras, Mounir Hamdi

(REG) *An Energy-Aware Edge Server Placement Algorithm in Mobile Edge Computing*
Yuanzhe Li, Shangguang Wang

Wednesday July 4

8:00 – 9:30 **EDGE 2018 Workshop Papers Session 1**
Edge Cooperation
Location: Conference Theater
Session Chairs: Fanjing Meng, IBM Research

(WKSP) *Cooperative Computation Offloading for UAVs: A Joint Radio and Computing Resource Allocation Approach*
Shichao Zhu, Lin Gui, Jiacheng Chen, Qi Zhang, Ning Zhang

(WKSP) *ECSim++: An INET-based Simulation Tool for Modeling and Control in Edge Cloud Computing*
Tien Dung Nguyen, Eui-Nam Huh

(WKSP) *Cross-Domain based Data Sharing Scheme in Cooperative Edge Computing*
Kai Fan, Qiang Pan, Junxiong Wang, Tingting Liu, Hui Li, Yintang Yang

2:00 – 3:30 **EDGE 2018 Workshop Papers Session 2**
Emerging Edge Techniques & Applications
Location: Conference Theater
Session Chair: Yanmei Zhang, Central University of Finance and Economics

(WKSP) *Edge-centric Efficient Regression Analysis*
Christos Anagnostopoulos, Natascha Harth

(WKSP) *EDGESTORE: A Single Namespace and Resource-aware Federation File System for Edge Servers*
Awais Khan, Muhammad Attique, Youngjae Kim, Sungyong Park, Byungchul Tak

(WKSP) *Enterprise Scale Privacy Aware Occupancy Sensing*
Surya Shravan Kumar Sajja, Ashok Pon Kumar Sree Prakash, Rohun Tripathi, Satyam Dwivedi, Amith Singhee, Marnik Vermeulen

**IEEE International Conference on Cognitive Computing
(ICCC 2018)
Technical Program**

Tuesday July 3

8:30 - 10:00 **ICCC 2018 Regular Papers Session 1**
Cognitive Computing using Deep Learning
Location: Warfield
Session Chair: M. Brian Blake, Drexel University

(REG) *Empowering First Responders through Automated Multimodal Content Moderation*
Divam Gupta, Indira Sen, Niharikaa Sachdeva, Ponnurangam Kumaraguru, Arun Balaji Buduru

(REG) *A Neural Network-powered Cognitive Method of Identifying Semantic Entities in Earth Science Papers*
Xiaoyi Duan, Jia Zhang, Rahul Ramachandran, Patrick Gatlin, Manil Maskey, Jeffrey J. Miller, Kaylin Bugbee, Tsengdar J. Lee

(REG) *An Edge Based Smart Parking Solution Using Camera Networks and Deep Learning*
Harshitha Bura, Nathan Lin, Naveen Kumar, Sangram Malekar, Sushma Nagaraj, Kaikai Liu

1:30 - 3:00 **ICCC 2018 Regular Papers Session 2**
Cognitive Computing Applications
Location: Warfield
Session Chair: Kenneth K. Fletcher, University of Massachusetts Boston

(REG) *Incremental Learning Through Graceful Degradations in Autonomous Systems*
Ganapathy Mani, Bharat Bhargava, Basavesh Shivakumar, Jason Kobes

(REG) *Upgraded SemIndex Prototype Supporting Intelligent Database Keyword Queries through Disambiguation, Query as You Type, and Parallel Search Algorithms*
Joe Tekli, Richard Chbeir, Agma Traina, Caetano Traina, Kokou Yetongnon, Carlos Raymundo Ibanez, Christian Kallas

(REG) *Analysis of Shapelet Transform Usage in Automatic Traffic Incident Detection*
Ahmed Al-Dhanhani, Rabeb Mizouni, Ernesto Damiani, Di Wang, Ahmad Al-Rubaie

4:40 – 6:10 **ICCC 2018 Work in Progress Papers Session 1**
Learning, Intelligence, and Their Applications
Location: Warfield
Session Chair: Jian Wang, Wuhan University

(WIP) *Automatic Hyperparameter Tuning in Deep Convolutional Neural Networks Using Asynchronous Reinforcement Learning*
Patrick Neary

(WIP) *MO_SPUDD: Multi-objective Stochastic Planning Using Decision Diagrams for Partially Observable Markov Decision Processes*
Hend Al Tair, Tarek Taha, Jorge Dias, Mahmoud Al-Qutayri

(WIP) *All-implicants Neural Networks for Efficient Boolean Function Representation*
Federico Buffoni, Gabriele Gianini, Ernesto Damiani, Michael Granitzer

(WIP) *Autonomous Scooter Navigation for People with Mobility Challenges*
Rajath Mulky, Supradeep Koganti, Sneha Shahi, Kaikai Liu

(WIP) *A Modular Approach to Programming Multi-modal Sensing Applications*
Ahmed Abdelmoamen

(WKSP) *On the Potential of Data Extraction by Detecting Unaware Facial Recognition with Brain-computer Interfaces*
Christopher Bellman, Migule Vargas Martin, Shane MacDonald

Thursday July 5

8:00 – 9:30 **ICCC 2018 Regular Papers Session 3**
Data Analytics and Cognition
Location: Conference Theater
Session Chair: Incheon Paik, University of Aizu

(REG) *An Innovative Framework for Supporting Cognitive-based Big Data Analytics for Frequent Pattern Mining*
Deyu Deng, Carson Leung, Bryan H. Wodi, Jialiang Yu, Hao Zhang, Alfredo Cuzzocrea

(REG) *Quantitative Modeling of Polarization in Online Intelligent Argumentation and Deliberation for Capturing Collective Intelligence*
Joseph Sirrianni, Xiaoqing Frank Liu, Douglas Adams

(WKSP) *Sentiment Analysis of Twitter Samples that Differentiates Impact of User Participation Levels*
Kimberley Hemmings-Jarrett, Julian Jarrett, M. Brian Blake

4:00 – 5:30 **ICCC 2018 Work in Progress Papers Session 2**
Data Mining for Cognition
Location: Conference Theater
Session Chair: Ernesto Damiani, Universita degli Studi di Milano

(WIP) *MUSE Prototype for Music Sentiment Expression*
Ralph Abboud, Joe Tekli

(WIP) *PIN Prototype for Intelligent Nutrition Assessment and Meal Planning*
George Alloum, Elie Semaan, Joe Tekli

(WIP) *A Novel Classifier for a Kansei Recommender System*
Pei-Chun Lin, Nureize Arbaiy

(WIP) *Long-term Monitoring of NIRS and EEG Signals for Assessment of Daily Changes in Emotional Valence*
Labiblais Rahman, Katsunori Oyama

(WIP) *Classification of Taxonomic Relations by Word Embedding and Wedge Product*
Kazuki Omine, Incheon Paik

(WIP) *Interest Recognition from Online Instant Messaging Sessions Using Text Segmentation and Document Embedding Techniques*
Hana Lee, Young Yoon

IEEE International Congress on Internet of Things (ICIOT 2018)
Technical Program

Tuesday July 3

8:30 - 10:00 **ICIOT 2018 Regular Papers Session 1**
IoT Applications
Location: Orpheum
Session Chair: Schahram Dustdar, Vienna University of Technology

(REG) *Design and Implementation of a COAP-based Broker for Heterogenous M2M Applications*
Simone Bolettieri, Raffaele Bruno

(REG) *Touch-based Magnetic Communication Through Your Hand*
Arvind Allawadi, Kaikai Liu

(REG) *Towards a Layered and Secure Internet-of-Things Testbed via Hybrid Mes*
Tyler Jones, Aniket Dali, Manoj Ramesh Rao, Neha Biradar, Jean Madassery, Kaikai Liu

1:30 – 3:00 **ICIOT 2018 Work in Progress Papers Session 1**
Smart Environment
Location: Orpheum
Session Chair: Rong Chang, IBM Research

(WIP) *Practical Energy Detection for Internet of Things Devices*
Wen-Long Chin

(WIP) *IoT-centric Edge Computing for Context-aware Smart Environments*
Franco Cicirelli, Antonio Guerrieri, Alessandro Mercuri, Giandomenico Spezzano, Andrea Vinci

(WIP) *GeoFPE: Format Preserving Encryption of Geospatial Data for the Internet of Things*
Alexander Lenk, Philipp Marcus, Isabel Povo

(WIP) *On the Development of a Customizable Crowd Sensing System for Public Spaces Using IoT Cloud Services*
Ryutaro Kobayashi, Pauline Kawamoto

(WIP) *A Mobile Complex Event Processing System for Remote Patient Monitoring*
Amarjit Dhillon, Shikharesh Majumdar, Marc St-Hilaire, Ali El-Haraki

(WIP) *A Cloud Middleweare Enabling Natural Speech Analysis for IoT Policy Enforcement in Smart Home Environments*
Razib Iqbal, Junhyeong Lee, Jared Hall

Wednesday July 4

8:00 – 9:30 **ICIOT 2018 Regular Papers Session 2**
Service-oriented Architecture of IoT
Location: Orpheum
Session Chair: Lior Limonad, IBM Research

(REG) *Developing Maintainable Application-centric IoT Ecosystems*
Michiel Willocx, Ilse Bohe, Jan Vossaert, Vincent Naessens

(REG) *FIF-IoT: A Forensic Investigation Framework for IoT Using a Public Digital Ledger*
Mahmud Hossain, Yasser Karim, Ragib Hasan

(REG) *Wireless Sensor Networks for Fugitive Methane Emissions Monitoring in Oil and Gas Industry*
Levente Klein

2:00 – 3:30 **ICIOT 2018 Workshop Papers Session 1**
IoT Framework
Location: Orpheum
Session Chair: Samir Tata, LG Electronics

(WKSP) *Shields: A Model for Hazard-oriented Analysis and Implementation of IoT Applications*
Lior Limonad, Fabiana Fournier, Dean Haber and Nir Mashkif

(WKSP) *A Tool for Defining Charging Models for M2M Communications*
Fuchun Joseph Lin, Kun Lun Tsai, Shih-Ying Song, Yueh-Ting La, Wan-Hsun Hu

(WKSP) *Runtime Knowledge Graph Based Approach to Smart Home Application Development*
Minchen Zhu, Xinshu Ye, Tao Xiang, Yun Ma, Xing Chen

(WKSP) *Towards Cognitive IoT: Autonomous Prediction Model Selection for Solar Powered Nodes*
Anders E. Braten, Frank Alexander Kraemer

(WIP) *Authenticated Key Management Protocols for Internet of Things*
Celia Li, Cungang Yang

(WIP) *IoT Context Descriptor: Situation Detection and Action Invocation Model for Real-time High-volume Transactions*
Mari Abe, Gaku Yamamoto, Sanehiro Furuichi

Thursday July 5
8:00 – 9:30 **ICIOT 2018 Regular Papers Session 3**
IoT Security
Location: Orpheum
Session Chair: Levente Klein, IBM Research

(REG) *A Machine Learning-based Security Vulnerability Study on XOR PUFs for Resource-Constraint Internet of Things*
Ahmad O. Aseeri, Yu Zhuang, Mohammed Saeed Alkatheiri

(REG) *Detecting Poisoning Attacks on Machine Learning in IoT Environments*
Nathalie Baracaldo, Bryant Chen, Heiko Ludwig, Amir Safavi, Rui Zhang

(REG) *Intelligent Multi-Agent Collaboration Model for Smart Home IoT Security*
Laura Rafferty, Farkhund Iqbal, Saiqa Aleem, Patrick C.K. Hung

2:00 – 3:30 **ICIOT 2018 Regular Papers Session 4**
IoT Monitoring and Management
Location: Orpheum
Session Chair: Mari Abe, IBM

(REG) *Employing the SI Network Model to Evaluate Network Propagation in Bluetooth MANETs*
Ian Riley, Rose Gamble

(REG) *Analysis and Classification of Service Interactions for the Scalability of the Internet of Things*
Damian Arellanes, Kung-Kiu Lau

(REG) *Zero-trust Hierarchical Management in IoT*
Mayra Samaniego, Ralph Deters

Friday July 6
8:00 – 9:30 **ICIOT 2018 Workshop Papers Session 2**
IoT Model
Location: Orpheum
Session Chair: Kaikai Liu, San Jose State University

(WKSP) *An Approach Based on Model-driven Development for IoT Applications*
Claudia M. Sosa-Reyna, Edgar Tello-Leal, David Lara-Alabazares

(WKSP) *Towards an Inherently Secure Run-time Environment for Medical Devices*
Cyril Bresch, Stephanie Chollet, David Hely

(WKSP) *Privacy Improvement Architecture for Wearable IoT*
Richard Lomotey, Ralph Deters

(WKSP) *Secure Data Communication in Autonomous V2X Systems*
Denis Ulybyshev, Aala Oqab-Alsalem, Bharat Bhargava, Savvas Savvides, Ganapathy Mani, Lotfi Ben Othmane

IEEE International Conference on Web Services
(ICWS 2018)
Technical Program

Tuesday July 3

8:30 – 10:00 ICWS 2018 Regular Papers Session 1
Applications
Location: Belvedere
Session Chair: Shijun Liu, Shandong University

(REG) DKEM: A Distributed Knowledge Based Evolution Model for Service Ecosystem
Xianghui Wang, Zhiyong Feng, Shizhan Chen, Keman Huang

(REG) Uroad: An Efficient Algorithm for Large-scale Dynamic Ridesharing Service
Jinting Xu, Chenyu Hou, Bin Cao, Jing Fan, Tianyang Dong, Shiwei Cheng

(REG) CCRS: Web Service for Chinese Character Recognition
Hang Zhuang, Changlong Li, Xuehai Zhou

1:30 – 3:00 ICWS 2018 Regular Papers Session 2
Quality of Service
Location: Belvedere
Session Chair: Bo Yang, IBM Research

(REG) A Hybrid Memetic Approach for Fully Automated Multi-objective Web Service Composition
Alexandre Sawczuk Da Silva, Hui Ma, Yi Mei, Mengjie Zhang

(REG) Personalized LSTM Based Matrix Factorization for Online QoS Prediction
Ruibin Xiong, Jian Wang, Zhongqiao Li, Bing Li, Patrick Hung

(REG) PRNN: Piecewise Recurrent Neural Networks for Predicting the Tendency of Services Invocation
Haozhe Lin, Yushun Fan, Jia Zhang

1:30 – 3:00 ICWS 2018 Workshop Papers Session 1
Applications, Data Service and Service Architecture
Location: Sequoia
Session Chair: Florian Schmidt, TU Berlin

(WKSP) Enhanced Web Application and Browsing Performance Through Service-worker Infusion Framework
Applications
Neha Pande, Aayushi Somani, Siba Prasad Samal, Vasu Kakkirala

(WKSP) Configurable Event Correlation for Process Discovery from Object-Centric Event Data
Data Service
Guangming Li, Renata Medeiros de Carvalho, Wil M.P. van der Aalst

(WKSP) Functionality-oriented Microservice Extraction Based on Execution Trace Clustering
Service Architecture
Wuxia Jin, Ting Liu, Qinghua Zheng, Di Cui, Yuanfang Cai

(WKSP) Subscription or Pay-as-you-Go: Optimally Purchasing IaaS Instances in Public Clouds
Service Architecture
Shengsong Yang, Li Pan, Qingyang Wang, Shijun Liu

4:40 – 6:10 ICWS 2018 Regular Papers Session 3
Security and Privacy
Location: Belvedere
Session Chair: Yanmei Zhang, Central University of Finance and Economics

(REG) Linked USDL Privacy: Describing Privacy Policies for Service
Georgia Kapitsaki, Josef Ioannou, Jorge Cardoso, Carlos Pedrinaci

(REG) Confidential Business Process Execution on Blockchain
Barbara Carminati, Christian Rondanini, Elena Ferrari

(REG) X-Diag: Automated Debugging Cross-browser Issues in Web Applications
Shaopeng Xu, Guoquan Wu, Wei Chen, Jun Wei

4:40 – 6:10 ICWS 2018 Workshop Papers Session 2
Web Services Composition, Applications, Data Services
Location: Sequoia
Session Chair: Zhongjie Wang, Harbin Institute of Technology

(WKSP) Performance Analysis of Service Clouds Serving Composite Service Application Jobs
Web Services Composition
Xiulin Li, Li Pan, Shijun Liu

(WKSP) NL2API: A Framework for Bootstrapping Service Using Natural Language Queries
Applications
Chen Lin, Anup Kalia, Jin Xiao, Maja Vukovic, Nikos Anerousis

(WKSP) A Sequential Recommendation for Mobile Apps: What Will User Click Next App?
Data Services
Chaoyi Pu, Zhiang Wu, Hui Chen, Kai Xu, Cao Jie

(WKSP) PFS: A Personalized Flight Recommendation Service via Cross-Domain Triadic Factorization
Applications
Jian Cao

(WKSP) Hitting Three Birds with One System: A Voice-based CAPTCHA for the Modern User
Data Services
Muhammad Shah, Khaled Harras

Wednesday July 4

8:00 – 9:30 ICWS 2018 Regular Papers Session 4
Service Composition
Location: Fillmore B/C
Session Chair: Shijun Liu, Shandong University

(REG) Energy Efficient WSN Service Composition for Concurrent Applications
Jiabei Xu, Zhangbing Zhou, Deng Zhao, Walid Gaaloul, Yucong Duan

(REG) MeCo-TSM: Multi-entity Complex Process-oriented Service Modeling Method
Ying Li, Meng Xi, Yuyu Yin, Zhiling Luo, Jianwei Yin

(REG) A Recommendation Algorithm Based on Dynamic User Preference and Service Quality
Yanmei Zhang, Ya Qian, Yan Wang

2:00 – 3:30

ICWS 2018 Work in Progress Papers Session 1

Applications and Big Data and Cloud Services

Location: Fillmore B/C

Session Chair: Guoqiang Hu, IBM China Research Lab

(WIP) *A Truthful Mechanism for Scheduling and Pricing Pleasingly Parallel Jobs in A Service Cloud Applications*

Bingbing Zheng, Li Pan, Dong Yuan, Shijun Liu

(WIP) *CommuteShare: A Ridesharing Service for Daily Commuters Using Cross-domain Urban Big Data Applications*

Xiaoliang Fan, Chang Xu, Fang Tang, Jianzhong Qi, Xiao Liu, Longbiao Chen, Cheng Wang

(WIP) *A Probabilistic Model for Service Clustering – Jointly Using Service Invocation and Service Characteristics*

Big Data Services

Dongxiao He, Xue Yang, Zhiyong Feng, Shizhan Chen, Keman Huang, Zhenzhu Wang, Françoise Fogelman Soulié

(WIP) *Microservice Based Video Cloud Platform with Performance-aware Service Path Selection*

Cloud Services

Haitao Zhang, Ning Yang, Zhengjun Xu, Bingchang Tang, Huadong Ma

Thursday July 5

8:00 – 9:30

ICWS 2018 Regular Papers Session 5

Applications, Semantic Web Services and Web Services Composition

Location: Fillmore B/C

Session Chair: Bhavani Thuraisingham, University of Texas at Dallas

(REG) *Log2Sim: Automating What-if Modeling and Prediction for Bandwidth Management of Cloud Hosted Web Services*

Jianpeng Hu

(REG) *A Service Annotation Quality Improvement based on Efficient Human Intervention*

Xuehao Sun, Shizhang Chen, Zhiyong Feng, Weimin Ge, Keman Huang

(REG) *Factorization Machine-based Service Recommendation on Heterogeneous Information Networks*

Fenfang Xie, Liang Chen, Yongjian Ye, Zibin Zheng, Xiaola Lin

2:00 – 3:30

ICWS 2018 Regular Papers Session 6

Data Services, Modeling and Verification, Quality of Service

Location: Fillmore B/C

Session Chair: Hui Ma, Victoria University of Wellington

(REG) *GH Traffic: A Dataset for Reproducible Research in Service-oriented Computing*

Data Services

Thilini Bhagya, Jens Dietrich, Hans Guesgen, Steve Versteeg

(REG) *Formal Verification of Stateful Services with REST APIs Using Event-B*

Modeling and Verification

Irum Rauf, Inna Vistbakka, Elena Troubitsyna

(REG) *QCSS: A QoE-aware Control Plane for Adaptive Streaming Service over Mobile Edge Computing Infrastructures*

Quality of Service

Lingyan Zhang, Shangguang Wang, Rong N. Chang

4:00 – 5:30

ICWS 2018 Regular Papers Session 7

Cloud and Data Services

Location: Fillmore B/C

Session Chair: Fanjing Meng, IBM Research

(REG) *Cloud-based Framework for Scalable and Real-time Multi-robot SLAM*

Pengfei Zhang, Huaimin Wang, Bo Ding

(REG) *Seamless Integration of Cloud and Edge with a Service-based Approach*

Shouli Zhang, Chen Liu, Yanbo Han, Xiaohong Li

(REG) *Quality-based Data Integration for Enriching User Data Sources in Service Lakes*

Hiba Alili, Khalid Belhajjame, Rim Drira, Daniela Grigori, Henda Hajjami Ben Ghezala

Friday July 6

8:00 – 9:30

ICWS 2018 Regular Papers Session 8

Recommender Services and Security and Privacy

Location: Fillmore B/C

Session Chair: Nikolai Kazantsev, The University of Manchester

(REG) *FMSR: A Fairness-aware Mobile Service Recommendation Method*

Recommender Services

Qiliang Zhu, Ao Zhou, Qibo Sun, Shangguang Wang, Fangchun Yang

(REG) *Clothes Collocation Recommendations by Compatibility Learning*

Recommender Services

Haijun Zhang, Wang Huang, Linlin Liu, Xiaofei Xu

(REG) *IFTM – Unsupervised Anomaly Detection for Virtualized Network Function Services*

Security and Privacy

Florian Schmidt, Anton Gulenko, Marcel Wallschläger, Alexander Acker, Vincent Hennig, Fabian Hofman, Feng Liu, Odej Kao

2:00 – 3:30

ICWS 2018 Work in Progress Papers Session 2

Data and IoT Services

Location: Fillmore B/C

Session Chair: Haijun Zhang, Harbin Institute of Technology

(WIP) *Schema Slicing Methods to Reduce Development Costs of WSDL-based Web Services*

Robert van Engelen, Wei Zhang

(WIP) *When to Invoke a Prediction Service? A Reinforcement Learning-based Approach*

Yuchang Xu, Jian Cao, Tao Liu, Yudong Tan

(WIP) *HPC2-ARS: An Architecture for Real-time Analysis of Big Data Streams*

Yingchao Cheng, Zhifeng Hao, Ruichu Cai, Wen Wen

(WIP) *A Service-based Fog Execution Environment for the IoT-aware Business Process Applications*

Yongyang Cheng, Shuai Zhao, Bo Cheng, Junliang Chen

3:45 – 5:15

ICWS 2018 Work in Progress Papers Session 3

Applications and Data, Recommender and Cloud Services

Location: Fillmore B/C

Session Chair: Georgia Kapitsaki, University of Cypress

(WIP) *A Web Service to Generate Intelligent Previews of Web Links*

Applications

Amit Sarkar, Joy Bose

(WIP) *Web Services for Emergencies: Multi-transport, Multi-cloud, Multi-role*

Applications

James Derek Jacoby, Nico Preston, Madhav Malhotra, Yvonne Coady

(WIP) *I Like Your Tagged Photos, But Do We Know Each Other? Analyzing the role of Tags in Like Networks*

Data Services

Hyekyoung Park, Junho Song, Kyungsik Han, Sang-Wook Kim

(WIP) *An Efficient Distributed Computing Framework for Association-Rule-Based Recommendation*

Recommender Services

Changsheng Li, Weichao Liang, Zhiang Wu, Jie Cao

(WIP) *A User-Oriented Approach Toward Price Prediction for IaaS Service*

Cloud Services

Jie Zhang, Jian Xie, Min Yuan

Saturday July 7

8:00 – 9:30

ICWS 2018 Workshop Papers Session 3

Big Data Services, Cloud Services and Quality of Service

Location: Fillmore A

Session Chair: Bhavani Thuraisingham, University of Texas at Dallas

(WKSP) *A Web Service for Author Name Disambiguation in Scholarly Databases*

Big Data Services

Kunho Kim, Athar Sefid, Bruce A. Weinberg, C. Lee Giles

(WKSP) *Domino: Graph Processing Services on Energy-efficient Hardware Accelerator*

Data Services

Chongchong Xu, Chao Wang, Lei Gong, Lihui Jin, Xi Li, Xuehai Zhou

8:00 – 9:30

ICWS 2018 Work in Progress Papers Session 4

IoT Services, Recommender Services and Service Composition

Location: Orpheum

Session Chair: Stephan Reiff-Marganiec, University of Leicester

(WIP) *Discovering Spatio-temporal Relationships Among IoT Services*

IoT Services

Bing Huang, Athman Bouguettaya, Azadeh Gharineiat

(WIP) *Improving Service Recommendation by Alleviating the Sparsity with a Novel Ontology-based Clustering*

IoT Services

Rupasingha Arachchilage Hiruni Madhusa Rupasingha, Incheon Paik

(WIP) *Service Selection for Composition in Mobile Edge Computing Systems*

Service Composition

Hongyue Wu, Shuiguang Deng, Wei Li, Min Fu, Jianwei Yin, Albert Zomaya

(WIP) *Trust in Social-Sensor Cloud Service*

Cloud Services

Tooba Aamir, Athman Bouguettaya, Hai Dong

9:45 – 11:15

ICWS 2018 Work in Progress Papers Session 5

Security and Privacy, Semantic Web Services and Service Architecture

Location: Orpheum

Session Chair: Jingwei Yang, James Madison University

(WIP) *Extinguishing the Backfire Effect: Using Emotions in Online Social Collaborative Argumentation for Fact Checking*

Security and Privacy

Ricky Sethi, Raghuram Rangaraju

(WIP) *Adaptive Cache Replacement in Efficiently Querying Semantic Big Data*

Semantic Web Services

Usman Akhtar, Sungyoung Lee

(WIP) *On Integrating Knowledge Graph Embedding into SPARQL Query Processing*

Semantic Web Services

Hyunjoong Kang, Sanghyun Hong, Kookjin Lee, Noseong Park, Soonhyun Kwon

(WIP) *High Performance Visual Inspection Service Architecture – Squeezing the Most out of Commodity Servers*

Service Architecture

Guoqiang Hu, Peng Ji, Jun Zhu, Bowen Wei, Zhe Yan, Lei He

(WIP) *Pipekit: A Deployment Tool with Advanced Scheduling and Inter-service Communication for Multi-tier Applications*

Pablo Chico de Guzman, Felipe Gorostiaga, Cesar Sanchez

9:45 – 11:15

ICWS 2018 Workshop Papers Session 4

Security and Privacy, Recommender Systems, and Cloud Services

Location: Fillmore A

Session Chair: Jia Zhang, Carnegie Mellon University

(WKSP) *Semantic-based Information Sharing in Vehicular Networks*

Applications

Himlun Bista, I-Ling Yen, Farokh Bastani

(WIP) *Correlation-driven Service Event Routing for Predictive Industrial Maintenance*

Meiling Zhu, Chen Liu, Yanbo Han

IEEE International Conference on Services Computing
(SCC 2018)
Technical Program

Tuesday July 3

1:30 – 3:00 SCC 2018 Work in Progress Papers Session 1
Security, Quality and Reliability in Service Management
Location: Cypress
Session Chair: Yanmei Zhang, Central University of Finance and Economics

(WIP) C-ABSC: Cooperative Attribute Based SignCryption Scheme for Internet of Things Applications
Sana Belguith, Nesrine Kaaniche, Mohamed Mohamed, Giovanni Russello

(WIP) On Using Blockchain to Enhance the Trustworthiness of Business Processes
Haan Mo Johng, Doohwan Kim, Tom Hill and Lawrence Chung

(WIP) Object-aware Identification of Microservices
Mohammad Javad Amiri

(WIP) Dynamic Job Replication for Balancing Fault Tolerance, Latency, and Economic Efficiency: Work in Progress
Vladimir Marbukh

(WIP) Quality Analysis for Scientific Workflow Provenance Access Control Policies
Fahima Bhuyan, Shiyong Lu, Robert Reynolds, Ishtiaq Ahmed and Jia Zhang

4:40 – 6:10 SCC 2018 Work in Progress Papers Session 2
Service-Oriented Applications
Location: Cypress
Session Chair: Yan Wang, Macquarie University

(WIP) A Highly Available Replicated Service Registry for Service Discovery in a Highly Dynamic Deployment Infrastructure
Awais Usman, Peilin Zhang and Oliver Theel

(WIP) Using Energy Storage to Modify the Shape of Internally Generated Demand to Fit a Prescribed Shape for Externally Presented Demand
Ray Strong, Shubhi Asthana, Eric Butler, Kevin Roche, Raphael Arar, Cheryl Kieliszewski, Pawan Chowdhary and Sandeep Gopisetty

(WIP) Fine-Grained Attribute Level Locking Scheme for Collaborative Scientific Workflow Development
Golam Mostaeen, Banani Roy, Chanchal K. Roy and Kevin Schneider

(WIP) Reducing Tail Latencies While Improving Resiliency to Timing Errors for Stream Processing Workloads
Geoffrey Phi Tran, John Paul Walters and Stephen Crago

Wednesday July 4

8:00 – 9:30 SCC 2018 Regular Papers Session 1
Artificial Intelligence in Service Management
Location: Warfield
Session Chair: Mohan Baruwat Chhetri, Swinburne University of Technology

(REG) A Prior Knowledge Based Approach to Improving Accuracy of Web Services Clustering
Min Shi, Jianxun Liu, Buqing Cao, Yiping Wen and Xiangping Zhang

(REG) Rule-Based Model for Smart Building Supervision and Management
Nouredine Tamani, Shohreh Ahvar, Gabriel Santos, Bernard Istasse, Isabel Praça, Paul-Emmanuel Brun, Yacine Ghamri-Doudane, Noël Crespi and Adrien Bécue

(REG) Framework for Building Self-Adaptive Component Applications based on Reinforcement Learning
Nabila Belhaj, Djamel Belaïd and Hamid Mukhtar

2:00 – 3:30 SCC 2018 Regular Papers Session 2
Management of Microservices
Location: Warfield
Session Chair: Michale Gerndt, Technische Universitaet Muenchen

(REG) A Client MicroServices Automatic Collaboration Framework Based on Fine-Grained APP
Ru Wang, Shizhan Chen, Zhiyong Feng and Keman Huang

(REG) A Holistic Evaluation of Docker Containers for Interfering Microservices
Devki Nandan Jha, Saurabh Garg, Prem Prakash Jayaraman, Rajkumar Buyya, Zheng Li and Rajiv Ranjan

(REG) Towards Executable Specifications for Microservices
José Quenum and Samir Aknine

Thursday July 5

8:00 – 9:30 SCC 2018 Regular Papers Session 3
Prediction and Recommendation in Service Management I
Location: Warfield
Session Chair: Fan Jin Meng, IBM

(REG) Modeling Sentiment Polarity in Support Ticket Data for Predicting Cloud Service Subscription Renewal
Kugamoorthy Gajananan, Pablo Loyola, Yasuharu Katsuno, Asim Munawar, Scott Trent and Fumiko Satoh

(REG) A System for Predicting Health of an e-Contract
Nishtha Madaan, Shashank Mujumdar, Santosh Srivastava, Ankush Gupta, Srikanth Tamilselvam, Arun Kumar and Qinlong Luo

(REG) Architecture for Predicting Live Video Transcoding Performance on Docker Containers
Pekka Pääkkönen, Antti Heikkinen and Tommi Aihkisalo

2:00 – 3:30 SCC 2018 Regular Papers Session 4
Service Oriented Applications I
Location: Warfield
Session Chair: Markus Lumpe, Swinburne University of Technology

(REG) Cost Efficient Scheduling for Delay-sensitive Tasks in Edge Computing System
Yongchao Zhang, Xin Chen, Ying Chen, Zhuo Li and Jiwei Huang

(REG) A Change Tracking Framework for Financial Documents
Nishtha Madaan, Gautam Singh, Srikanta Bedathur and Arun Kumar

(REG) Bazaar-Blockchain: A Blockchain for Bazaar-based Cloud Markets
Benedikt Pittl, Werner Mach and Erich Schikuta

4:00 – 5:30	SCC 2018 Regular Papers Session 5 Service Oriented Applications II Location: Warfield Session Chair: Hong-Linh Truong, TU Wien
	(REG) <i>Efficient Verification of Service-based Applications for Flexible Modeling</i> Min Yuan and Zhiqiu Huang
	(REG) <i>A Framework for Online Process Concept Drift Detection from Event Streams</i> Na Liu, Jiwei Huang and Lizhen Cui
	(REG) <i>In Pursuit of Architectural Agility: Experimenting with Microservices</i> Tullio Vardanega and Alberto Simioni

Friday July 6

8:00 – 9:30	SCC 2018 Regular Papers Session 6 Prediction and Recommendation in Service Management II Location: Warfield Session Chair: Stephan Reiff-Marganiec, University of Leicester
	(REG) <i>A Fluctuation-aware Approach for Predictive Web Service Composition</i> Xiaoning Sun, Y.N. Xia and Qiang He
	(REG) <i>To Bid or Not to Bid in Streamlined EC2 Spot Markets</i> Mohan Baruwal Chhetri, Markus Lumpe, Bao Vo and Ryszard Kowalczyk
	(REG) <i>A Two-phase Method of QoS Prediction for Situated Service Recommendation</i> Jiapeng Dai, Donghui Lin and Toru Ishida
3:45 – 5:15	SCC 2018 Work in Progress Papers Session 3 Service Management I Location: Conference Theater Session Chair: Kugamoorthy Gajananan, IBM
	(WIP) <i>A Model for Representing Mobile Distributed Sensing-Based Services</i> Ahmed Abdelmoamen and Nadeem Jamali
	(WIP) <i>Towards End-to-end QoS and Cost-aware Resource Scaling in Cloud-based IoT Data Processing Pipelines</i> Sunil Singh Samant, Mohan Baruwal Chhetri, Bao Vo, Ryszard Kowalczyk and Surya Nepal
	(WIP) <i>Dynamic Resource Provisioning for Scientific Workflow Executions in Clouds</i> Ricardo Oda, Daniel Cordeiro and Kelly Rosa Braghetto
	(WIP) <i>Solutioning of Highly-Valued IT Service Contracts</i> Shubhi Asthana, Aly Megahed, Ahmed Nazeem, Valeria Becker, Taiga Nakamura and Sandeep Gopisetty
	(WIP) <i>Big Data Assurance Evaluation: An SLA-based Approach</i> Claudio Agostino Ardagna, Ernesto Damiani, Maria Krotsiani, Christos Kloukinas and George Spanoudakis

Saturday July 7

8:00 – 9:30 am	SCC 2018 Regular Papers Session 7 Business Process Management Location: Warfield Session Chair: Michael Goul, Arizona State University
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	(REG) <i>Extreme Topic Model for Market eAlert Service</i> Victor W. Chu, Raymond K. Wong, Chi-Hung Chi and Fang Chen
	(REG) <i>Enabling Intelligent Business Processes with Context Awareness</i> Xiaohui Zhao, Sira Yongchareon and Namwook Cho
	(REG) <i>Patterns for Process Edification in Process-aware Information Systems</i> Vrinda Yadav, Suman Roy and Rushikesh K. Joshi
8:00 – 9:30	SCC 2018 Regular Papers Session 8 Cloud Service Management Location: Belvedere Session Chair: Bo Yang, IBM China; Min Yuan, Nanjing Normal University
	(REG) <i>StreamDB: A Unified Data Management System for Service-based Cloud Application</i> Huankai Chen and Matteo Migliavacca
	(REG) <i>Public Cloud Adoption in Multinational Companies - A Survey</i> Nicola Sfondrini, Antonella Longo and Gianmario Motta
	(REG) <i>Service Discovery based Blue-Green Deployment Technique in Cloud Native Environments</i> Bo Yang, Anca Sailer, Siddharth Jain, Angel E. Tomala-Reyes, Manu Singh and Anirudh Ramnath
9:45 – 11:15	SCC 2018 Regular Papers Session 9 Security and Reliability in Services Management Location: Belvedere Session Chair: Jun Shen, Wollongong University
	(REG) <i>Digital Asset Management with Distributed Permission over Blockchain and Attribute-based Access Control</i> Yan Zhu, Yao Qin, Zhiyuan Zhou and Xiaoxu Song
	(REG) <i>Achieving a Fault Tolerant and Reliable Cloud Data Center Network</i> Humphrey Emesowum, Athanasios Paraskelidis and Mo Adda
	(REG) <i>Improving Parallelism in Data-Intensive Workflows with Distributed Databases</i> Elaine Naomi Watanabe and Kelly Rosa Braghetto
9:45 – 11:15	SCC 2018 Workshop Papers Session 1 Location: Warfield Session Chair: Matteo Migliavacca, University of Kent
	(WKSP) <i>Service Requirement Pattern Elicitation Approach with a Case Study in Pharmaceutical Retail Service Market</i> Zhiying Tu, Xiaofei Xu, Zhongjie Wang, Yongfei Liu, Hanchuan Xu
	(WKSP) <i>On-the-Fly Service Construction with Prototypes</i> Felix Mohr, Marcel Wever, Eyke Hüllermeier
	(WIP) <i>Tasks Selection Policies for Securing Sensitive Data on Workflow Scheduling in Clouds</i> Henrique Shishido, Julio Cezar Estrella, Claudio Fabiano Motta Toledo and Stephan Reiff-Marganiec
	(WIP) <i>CloudCAMP: A Platform for Automating the Deployment and Management of Cloud Services (also presented in poster session)</i> Anirban Bhattacharjee, Yogesh Barve, Aniruddha Gokhale and Takayuki Kuroda.
	(WIP) <i>Towards the Automated Composition of Machine Learning Services</i> Felix Mohr, Marcel Wever, Eyke Huellermeier and Amin Faez

IEEE World Congress on Services Concise Papers Technical Program	
Monday July 2	
10:30 – 12:00	IEEE Services Concise Session 1 Location: Conference Theater Session Chair: Yanchun Sun, Peking University
<i>On Minimizing the Makespan Of A Set of Offline MapReduce Jobs</i> Majun He, Houwen Huang, Wenxia Guo, Bo He, Jin Wang, Wenhong Tian	
<i>Pattern Recognition on Usage of Operational Clothing in Canadian Armed Forces (also presented in poster session)</i> Manchun Fang	
<i>Measuring the Scalability of Cloud-based Software Services</i> Amro Al-Said Ahmad, Peter Andras	
<i>Toward an Automatic Approach for Multi-PaaS Environments Selection (also presented in the poster session)</i> Rami Sellami, Stephane Mouton	
<i>Sensing Population Mobility Through City Boundary in Greater Maputo via Mobile Phone Big Data Mining</i> Mohamed Batran, Yoshihide Sekimoto, Hiroshi kanasugi, Takehiro Kashiyaama, Ryosuke Shibasaki	
<i>A Time-dependent Principal Components-based Dimension Reduction Approach to Analyzing the Influence of Product Interventions on User Engagement with Mobile Applications</i> Lior Turgeman, Otis Smart	
1:30 – 3:00	IEEE Services Concise Session 2 Location: Conference Theater Session Chair: Manchun Fang, National Defense Headquarters
<i>A Recommendation Service for Programming Study Based on Stack Overflow</i> Jialun Shao, Yanchun Sun	
<i>Ship Trajectory Outlier Detection Service System Based on Collaborative Computing</i> Tao Zhang, Shuai Zhao, Junliang Chen	
<i>KLAP for Real-World Protection of Location Privacy</i> Abdur Rahman Bin Shahid, Niki Pissinou, S.S. Lyengar, Jerry Miller, Teresita Lemus, Ziqian Ding	
<i>Similarity Matching for Workflows in Medical Domain Using Topic Modeling (also presented in the poster session)</i> Khalid Khawaji, Ibrahim Almubark, Abdullah Almalki, Bradley Taylor	
<i>K-Means Algorithm: Fraud Detection Based on Signaling Data</i> Xing Min, Rongheng Lin	

3:30 – 5:00	IEEE Services Concise Session 3 Location: Conference Theater Session Chair: Bradley Taylor, The Catholic University of America
<i>Fraud Phone Calls Analysis Based on Label Propagation Community Detection Algorithm</i> Lu Peng, Rongheng Lin	
<i>Design Science Research: A Suitable Approach to Scope and Research IT Service Catalogs</i> Franziska Schorr, Lars Hvam	
<i>Stigmergy-Based QoS Optimisation for Flexible Service Composition in Mobile Communities</i> Andrei Palade, Siobhan Clarke	
<i>The LRA Workbench for Composing Linked REST APIs</i> Diego Serrano, Eleni Stroulia	
<i>Continuous Compliance: Experiences, Challenges, and Opportunities</i> Robert Filepp, Constantin Adam, Maja Vukovic, Milton Hernandez, Nikos Anerousis, Guan Qun Zhang	
Thursday July 5	
4:00 – 5:30	IEEE Services Concise Session 4 Location: Orpheum Session Chair: Lior Turgeman, IBM Haifa Research Labs
<i>An I-CNN based Speech Classification Algorithm for Custom Service</i> Huang Xuefeng, Lin Rongheng	
<i>Detection of Distributed Denial of Service (DDoS) Attacks Using Artificial Intelligence on Cloud</i> Sabah Alzahrani and Liang Hong	
<i>A B2B Team Formation Microservice for Collaborative Manufacturing in Industry 4.0</i> Sonia Cisneros Cabrera, Pedro Sampiano, Nikolay Mehandjiev	
<i>An Open-source Azure Solution for Scalable Genomics Workflows</i> Fan Yang-Turner, Lawrence Gripper, Jeremy Swann, Trien Do, Dona Foster, Denis Volk, Anita Ramanan, Marcus Robinson, Tim Peto, Derrick Crook	
<i>Characterizing the Effectiveness of Query Optimizer in Spark</i> Zujie Ren, Na Yun, Weisong Shi, Youhuizi Li, Jian Wan, Lihua Yu, Xinxin Fan	
<i>Constructing a Service Software with Microservices</i> Feng-Jian Wang, Faisal Fahmi	
Friday July 6	
2:00 – 3:30	IEEE Services Concise Session 5 Location: Orpheum Session Chair: Emmanuel Oyekanlu, Drexel University
<i>A Knowledge Representation of Cloud Data controls for EU GDPR Compliance (also presented in the poster session)</i> Lavanya Elluri and Karuna Pande Joshi	

A Governance Metamodel for Industry 4.0 Service Collaborations
Nikolay Kazantsev, Pedro Sampaio, Grigory Pishchulov, Sonia Cisneros Cabrera, Zixu Liu, Nikolay Mehandjiev

Enabling User Driven Web Applications on Remote Computing Resource
Weijia Xu, Ruizhu Huang, Yige Wang

Service Migration for Deadline-Varying User-Generated Data in Mobile Edge-Clouds
Zhipeng Gao, Jie Meng, Qian Wang, Yang Yang

Decision Support Framework for Big Data Analytics (also presented in poster session)
Sakshi Agarwal, Manjira Sinha, Krishnaprasad Narayanan

Towards Mining of Player Intent for Targeted Gaming Services
Tridib Mukherjee, Sharanya Eswaran

3:45 – 5:15 **IEEE Services Concise Session 6**
 Location: Orpheum
 Session Chair: Jingwei Yang, James Madison University

Low Cost Distributed Key Management
Venkatesh Gopal, Shikha Fadnavis, Joel Coffman

Design Considerations for IoT-based PV Charge Controllers
Michael Bardwell, Jason Wong, Steven Zhang, Petr Musilek

Greenhouse Climate Control Based on Time Series Analysis
Cheng-Kai Chou, Chun-Chih Lo, Shih-Hao Huang, Mong-Fong Horng, Yau-Hwang Kuo

Real-Time Distributed Computing at Network Edges for Large Scale Industrial IoT Networks
Emmanuel Oyekanlu, Kevin Scoles

ADvISE: Anomaly Detection Tool for Blockchain Systems (also presented in the poster session)
Matteo Signorini, Matteo Pontecorvi, Wael Kanoun, Roberto Di Pietro

Predict-then-Prefetch Caching Strategy to Enhance QoS in 5G Networks
Meng Sun, Haopeng Chen and Buqing Shu



Preliminary CALL FOR PAPERS - 2019 IEEE World Congress on Services BigData/CLOUD/EDGE/ICCC/ICIOT/ICWS/SCC

July 8-13, 2019 Milan, Italy

<http://conferences.computer.org/services/2019/>

2019 IEEE World Congress on Services (SERVICES) will be held on July 8-13, 2019 in Milan, Italy. The Congress is solely sponsored by the IEEE Computer Society under the auspice of the Technical Committee on Services Computing (TCSVC). The scope of the Congress will cover all aspects of services computing and applications, current or emerging. It covers various systems and networking research pertaining to cloud, edge and Internet-of-Things (IoT), as well as technologies for intelligent computing, learning, big data and blockchain applications, while addressing critical issues such as high performance, security, privacy, dependability, trustworthiness, and cost-effectiveness. Authors are invited to prepare early and submit original papers to any of these conferences at www.easychair.org. All submitted manuscripts will be peer-reviewed by at least 3 reviewers. Accepted and presented papers will appear in the conference proceedings published by the IEEE Computer Society Press. The Congress will be organized with the following seven affiliated conferences/congresses:

IEEE International Congress on Big Data (BigData Congress)

Big data acquisitions, analyses, storage, and mining for various services and applications

IEEE International Conference on Cloud Computing (CLOUD)

Innovative cloud computing for both high quality infrastructure and mobile services

IEEE International Conference on Edge Computing (EDGE)

High quality services computing between cloud systems and IoT devices

IEEE International Conference on Web Services (ICWS)

Innovative web services for various effective applications

IEEE International Conference on Cognitive Computing (ICCC)

Cognitive computing, learning algorithms for intelligent services and applications

IEEE International Congress on Internet of Things (ICIOT)

Innovative IoT technology for digital world services

IEEE International Conference on Services Computing (SCC)

Intelligent services computing, lifecycles, infrastructure and mobile environments

Key Dates

Early Paper submission due: December 1, 2018

Review comments to authors of early-submission papers: January 15, 2019

Normal Paper submission due: January 30, 2019

Final notification to authors: March 15, 2019.

Camera-ready manuscripts due: April 1, 2019

Congress Date: July 8 – 13, 2019

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Carnegie Mellon University, USA

2019 Congress Program Chair-in-Chief

Elisa Bertino

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