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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, Iria, 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:** Andrzejj Goscinski, Deakin University and Dennis Gannon, Indiana University

**2018 Program Chairs:** Hong Zhi, 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 sensors in various scenarios and solution contexts.

**2018 General Chairs:** Jeffrey Toi, Asia University and Ernesto Damiani, Universita’ degli Studi di Milano

**2018 Program Chairs:** Xiaoging “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
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
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<th>Time</th>
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<td><strong>MON JULY 2</strong></td>
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<td>FILLMORE A</td>
<td>WISC, BIG DATA WORKSHOP 1, EDGE WIP 1, TUTORIAL 1, TUTORIAL 2, CLOUD SERVERLESS 1</td>
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<td>8:00 - 9:30</td>
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<td>CLOUD WIP 5, ICWS REG 4, CLOUD REG 6, BIG DATA REG 2, EDGE WKSP 1, ICIOT REG 2, SCC REG 1, CLOUD REG 7</td>
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<td>10:00 - 11:00</td>
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<td>CONGRESS KEYNOTE 2: C. MOHAN, BLOCKCHAINS UNTANGLED: PUBLIC, PRIVATE, SMART CONTRACTS, APPLICATIONS, ISSUES, LOCATION: BALLROOM</td>
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<td>11:10 - 12:30</td>
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<td>PLENARY PANEL 2: RECENT ADVANCE AND FUTURE DIRECTIONS OF BLOCKCHAIN TECHNOLOGIES AND SERVICES APPLICATIONS - LOCATION: BALLROOM</td>
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<td><strong>THURS JULY 5</strong></td>
<td>8:00 - 9:30</td>
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<td>10:00 - 11:00</td>
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<td>CONGRESS KEYNOTE 3: XIAOFEI XU, DATA-CENTRIC SMART BIG SERVICE: NEW CHALLENGES AND NEW DEVELOPMENT - LOCATION: BALLROOM</td>
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<td>11:10 - 12:25</td>
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<td>PLENARY PANEL 3: INNOVATIVE SERVICES AND INTEGRATED SOLUTIONS - LOCATION: BALLROOM</td>
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<td>2:00 - 3:30</td>
<td>POSTERS (1-6PM)</td>
<td>ICWS REG 6, CLOUD REG 10, BIG DATA REG 5, INDUSTRY 2, ICIOT REG 4, SCC REG 4, CLOUD WKSP 9</td>
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### IEEE WORLD CONGRESS ON SERVICES 2018 - Program at a Glance

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<td>CONGRESS KEYNOTE 4: SCHAHRAM DUSTDAR, SERVICE ENGINEERING THE FABRIC OF IOT, PEOPLE, AND SYSTEMS - LOCATION: BALLROOM</td>
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<td>AWARDS SESSION - LOCATION: BALLROOM</td>
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#### 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,

with community support from the China Computing Federation and IBM Research.

Thank you to all of our sponsors and supporters!

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**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
The ongoing digital transformation has made fast rollout of innovative services and devices a key competitive advantage 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, 3:30 - 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 eventually 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.

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?
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 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.

**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

**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), 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 Brooks 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.
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
Fanjing 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 ITSM with demonstration and case sharing.

Fanjing 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 - 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
Bhavana 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.

Bhavana 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
Fanjing 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 ITSM with demonstration and case sharing.

Fanjing 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, 8:00 - 12:00
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, we will explore what led us to big-data messaging and the architectural differences between enterprise messaging and big-data messaging systems. We will discuss some of the hard problems around exactly once processing, pub-sub, data mirroring and the different solutions. We will also explain how the evolution of big-data messaging also put 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 resources 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 3G 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 modern 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 Meminas 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 Kapisakis, University of Cyprus
Female in Services Computing Career
Moderator: Sana Belguchi, The University of Auckland
Experience Sharing and Mentoring
Moderator: Franziska Schott, 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
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

(WIPS) An Architecture for Cost Optimization in the Processing of Big Geospatial Data in Public Cloud Providers  
Joao Bachiega, Marco Reis, Mariestela Holanda and Aletiea Araujo  

(WIK) Fast and Incremental Development Life Cycle for Data Analytics as a Service  
Claudio Agostino Ardagna, Valerio Bellandi, Paolo Ceravolo, Ernesto Damiani, Beniamino Di Martino, Salvatore D’Angelo and Antonio Esposito  

(WIKS) ART: Programming-Language Independent MapReduce on Shared-Memory Systems  
Erik Selin and Herna Viktor  

(WIK) Estimation of Types of States in Partial Observable Network Systems  
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) Autoencoder Evaluation and Hyper-parameter Tuning in an Unsupervised Setting  
Ellie Ordway-West and Pallabi Parveen  

(WIP) Learning a Joint Low-rank and Gaussian Model in Matrix Completion with Spectral Regularization and Expectation Maximization Algorithm  
Gang Wu and Ratnesh Kumar  

(WIP) DynMDL: A Parallel Trajectory Segmentation Algorithm  
Eleazar Leal and Le Gruenwald  

(WIP) Insights on Apache Spark Usage by Mining Stack Overflow Questions  
Leonardo Jimenez Rodriguez, Xiaoran Wang and Jilong Kuang  

(WIP) Biparti Majority Learning with Tensors  
Chia-Lun Lee, Shun-Wei 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) An OWL Ontology for Supporting Semantic Services in Big Data Platforms  
Domenico Redavid, Roberto Corizzo and Donato Malerba  

(WIP) Graph-based Data Relevance Estimation for Large Storage Systems  
Vinodh Venkatesan, Taras Lehinevych, Giovanni Cherubini, Andrii Glybovets and Mark Lantz  

(WIP) BigDataStack: A Holistic Data-driven Stack for Big Data Applications and Operations  

(WIP) Stream Analytics and Adaptive Windows for Operational Mode Identification of Time-Varying Industrial Systems  
Athar Khodabakhsh, Ismail Ari, Mustafa Bakir and Serhat Murat Alagoz  

(WIP) Latency Measurement of Fine-Grained Operations in Benchmarking Distributed Stream Processing Frameworks  
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) Large Scale Predictive Analytics for Hard Disk Remaining Useful Life Estimation  
Preethi Anantharaman, Mu Qiao and Divyesh Jadav  

(WIP) Adaptive Trip Recommendation System: Balancing Travelers Among POIs with MapReduce  
Sara Migliorini, Danilo Carra and Alberto Belussi  

(WIP) A Personalized Travel Recommendation System Using Social Media Analysis  
Joseph Coelho, Paromita Nitu and Praveen Madiraju  

(WIP) Time Series Sanitization with Metric-based Differential Privacy  
Liyue Fan and Luca Bonomi  

(WIP) Towards Optimal Snapshot Materialization to Support Large Query Workload for Append-only Temporal Databases  
Mohammadmohsin Beirami, Ken Pu and Ying Zhu  

(WIP) Categorical Models for BigData  
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 Soqieora, Federal University of Santa Catarina  

(REG) Compile-Time Code Generation for Embedded Data-Intensive Query Languages  
Leonidas Fegaras and Md Hasamuzzaman Noor  

(REG) λ-blocks: Data Processing with Topologies of Blocks  
Matthieu Caninelli and Noël De Palma  

(REG) Incorporating Word Embedding into Cross-lingual Topic Modeling  
Chia-Hsuan Chang, San-Yih Hwang and Tou-Hsiang Xu
Wednesday, July 4

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 Egegen 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
Ikhla Tahleb, Mohamed Adel Serhani and Rachida Dossouli

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
Ishitaq Ahmed, Shiyong Lu, Changxin Bai and Fahima Amin Bhuyan

(REG) Nowcasting Events from Twitter Social Media with Semi-Supervised Learning
Jun Soong Yoo and David Kim

(REG) Big Web Colors: Analyzing the World Top Sites
Massimo Marchiori
Monday July 2

8:30am – 10:00  CLOUD 2018 Serverless Workshop Session 1
Location: Belvedere
Welcome and intro to Serverless computing
Keynote: Serverless: Where Have We Come? Where Are We Going?
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) Evaluation of Production Serverless Computing Environments
Hyungro Lee, Kumar Satyam, Geoffrey Fox

(WKSP) Serverless Data Analytics with Flint
Yongbin Kim, Jimmy Lin

(WKSP) Challenges for Scheduling Scientific Workflows on Cloud Functions
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) Revolver: Vertex-centric Graph Partitioning Using Reinforcement Learning
Mohammad Hasanzadeh Mofrad, Rami Melhem and Mohammad Hammoud

(WIP) Supporting Mixed Workloads in OpenStack-based Clouds
Fabio Morais, Giovanni Farias, Marcus Carvalho, Francisco Brasileiro, João Mafra, Alessandro Fook, Raquel Lopes and Daniel Turull

(WIP) EMARS: Efficient Management and Allocation of Resources in Serverless
Aakanksha Saha, Sonika Jindal and Aakanksha Saha

(WIP) Optimal Cloud Resource Selection Method Considering Hard and Soft Constraints and Multiple Conflicting Objectives
Courtney Powell, Katsunori Miura and Masaharu Munemoto

(WIP) Distributed Hybrid Cloud Management Platform Based on Rule Engine
Peng Xu, Jingwei Su and Zhonghao Zhang

10:30am – 12:00  CLOUD 2018 Regular Papers Session 1
Cloud Management
Location: Fillmore B/C
Session Chair: Tu 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) FPGAVir: A Novel Virtualization Framework for FPGAs in the Cloud
Joel Mandebi Mbongue, Festus Hategkimenya, 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
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, Jinsha Su, Cees De Laat, Zhiming Zhao

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

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

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

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

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

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

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

Software Greenability: A Case Study of Cloud-based Business Applications Provisioning
Hayri Acar, Hind Benfenati, Jean-Patrick Gelas, Catarina Ferreira Da Silva, Gulfein I. Alptekin, Nabilah Benharkat and Parisa Ghodous

HarmonicIO: Scalable Data Stream Processing for Scientific Datasets
Preechakorn Torruangwathana, Hakan Wieslander, Ben Blamey, Andreas Hellander and Salman Zabair Toor

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

HarmonicIO: Scalable Data Stream Processing for Scientific Datasets
Preechakorn Torruangwathana, Hakan Wieslander, Ben Blamey, Andreas Hellander and Salman Zabair Toor

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

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

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

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

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

Performance Interference-Aware Vertical Elasticity for Cloud-hosted Latency-Sensitive Applications
Shashank Shekhar, Hamzah Abdelaliz, Anirban Bhattacharjee, Aniruddha Gokhale and Xenofon Koutsoukos

Estimating Cloud Application Performance Based on Micro-Benchmark Profiling
Joel Scheuner and Philipp Leitner

Performance and Behavior Characterization of Amazon EC2 Spot Instances
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Performance Interference-Aware Vertical Elasticity for Cloud-hosted Latency-Sensitive Applications
Shashank Shekhar, Hamzah Abdelaliz, Anirban Bhattacharjee, Aniruddha Gokhale and Xenofon Koutsoukos

Estimating Cloud Application Performance Based on Micro-Benchmark Profiling
Joel Scheuner and Philipp Leitner
1:30 – 3:00  CLOUD 2018 Best Student Papers  
Location: Fillmore B/C  
Session Chair: Hong Zhu, Oxford Brookes University

(REG) DSES: A Blockchain-powered Decentralized Service Eco-System  
Zhenteng Gao, Yushun Fan, Cheng Wu, Jia Zhang and Chang Chen

(REG) Toward Cost-effective Memory Scaling in Clouds: Symbiosis of Virtual and Physical Memory  
Xinying Wang, Cong Xu, Ke Wang, Feng Yan and Dongfang Zhao

(REG) CloudInsight: Utilizing a Council of Experts to Predict Future Cloud Application Workloads  
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) Embedding Index Maintenance in Store Routines to Accelerate Secondary Index Building in Hbase  
Chun Cao, Wei Yi Wang, Ying Zhang, Jian Lu

(WKSP) Automatic Tuning of SQL-On-Hadoop Engines on Cloud Platforms  
Prasad Deshpande, Amogh Magroor, Rajat Venkatesh

(WKSP) Allocation of Publisher/Subscriber Data Links on a Set of Virtual Machines  
Thomas Lambert, Rizos Sakellariou

(WKSP) Business Modeling and Design in the Internet-of-things Context  
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) DROPLET: Distributed Operator Placement for IoT Applications Spanning Edge and Cloud Resources  
Tarek Elgamal, Atul Sandur, Phuong Nguyen, Klara Nahrstedt and Gul Agha

(REG) Performance Evaluation of Low Latency Communication Alternatives in a Containerized Cloud Environment  
Daniel Géhberger, David Balla, Markosz Maliosz and Csaba Simon

(REG) FIOS: Feature Based I/O Stream Identification for Improving Endurance of Multi-Stream SSDs  
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) Remote Monitoring and Online Testing of Machine Tools for Fault Diagnosis and Maintenance using MTComm in a Cyber-Physical Manufacturing Cloud  
S M Nahian Al Sunny, Xiaoqing Frank Liu and Md Rakib Shahriar

(WKSP) Building a Vertical Cloud Architecture for Education  
Travis Brummett and Jeffrey Galloway

(WKSP) A2Cloud: An Analytical Model for Application-to-Cloud Matching to Empower Scientific Computing  
Cody Balos, David De La Vega, Zachariah Abuelhaj, Chadi Kari, David Mueller and Vivek Pallipuram

(WKSP) A Data Placement Strategy for Scientific Workflow in Hybrid Cloud  
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) Cloud Resellers on Bazaar-based Cloud Markets  
Benedikt Pfitl, Werner Mach and Erich Schikuta

(WKSP) Breaking Down the Barriers for Moving an Enterprise To Cloud  
Lorraine Herger, Mercy Bodarky and Carlos Fonseca

(WIP) At Most M: A Flexible Redundancy Model for Cloud Robotics  
Swagata Biswas, Miguel Villarreal-Vasquez, Bharat Bhargava, Ganapathy Mani, Steve Seaberg, Paul Conoval, Donald Steiner and Jason Kobes

(WIP) Evaluation of a Cloud-based System for Delivering Adaptive Micro Open Education Resource to Fresh Learners  
Geng Sun, Tingru Cui, Fang Dong, Dongming Xu, Jun Shen, Shipping 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/O Characteristics Discovery in Cloud Storage Systems  
Jiang Zhou, Dong Dai, Yu Mao, Xin Chen, Yu Zhuang, and Yong Chen

(REG) A Comparative Study of Containers and Virtual Machines in Big Data Environment  
Qi Zhang, Ling Liu, Qiwei Dou, Liren Wu, Wei Zhou and Calton Pu

(REG) Hybrid HPC Cloud Strategies from the Student Cluster Competition  
Stephen Harrell and Andrew Howard

4:40 – 6:10  CLOUD 2018 Best Papers  
Location: Fillmore B/C  
Session Chair: Zhiming Zhao, University of Amsterdam

(REG) I/O Characteristics Discovery in Cloud Storage Systems  
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(REG) A Comparative Study of Containers and Virtual Machines in Big Data Environment  
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(REG) Hybrid HPC Cloud Strategies from the Student Cluster Competition  
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) A Toolset for Detecting Containerized Application's Dependencies in Clouds  
Pinchao Liu, Liting Hu, Hailu Xu, Zhiyuan Shi, Jason Liu, Qingyang Wang, Jai Dayal and Yuzhe Tang

(REG) PMDC: Programmable Mobile Device Clouds for Convenient and Efficient Service Provisioning  
Zheng Song and Eli Tilevich
(WKSP) Distributed Matrix Multiplication Performance Estimator for Machine Learning Jobs in Cloud Computing
Myungjun Son and Kyungyong Lee

Zohra Amekraz and Moulay Youssef Hadi

(WKSP) Efficient Key-value Stores with Ranged Log-structured Merge Trees
Nac 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

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

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

(WSG) 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

(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

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

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

Jiajiah Liu, Joo Hyun 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 Guirgis

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, Vignram 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: Bedrï 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 Quzi 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 Wallischhager, 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

Jiajiah Liu, Joo Hyun 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
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(WKSP) It's Time to Migrate! A Game-Theoretic Framework for Protecting a Multi-tenant Cloud against Collocation Attacks
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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

Jiajiah Liu, Joo Hyun Lee, Ness B. Shroff, Prasun Sinha and Sinong Wang

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Ahmed H. Anwar, George Atia and Mina Guirgis
ACCORD: Automated Change Coordination Across Independently Administered Cloud Services
Tariq Mahmood, Bharath Balasubramanian, Mithuna S. Thottethodi, Sanjay Rao and Kaustubh Joshi

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

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

Systems Software and Hardware
Location: Sequoia
Session Chair: Felipe Ferraz, CESAR / CESAR School

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

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

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

Cloud Applications and Blockchain
Location: Conference Theater
Session Chair: Vivek K. Pallipuram, University of the Pacific

A Novice Group Sharing Method for Public Cloud
Celia Li and Cungang Yang

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

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

Logchain: Blockchain-assisted Log Storage
William Pourmajidi and Andriy Miranskyy

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

Cloud Performance and Reliability
Location: Belvedere
Session Chair: Sasho Ristov, University of Innsbruck

Time Inference Attacks on Software Defined Networks: Challenges and Countermeasures
Sajad Khorsandroo and Ali Saman Touss

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

Semi-Markov Process Based Reliability and Availability Prediction for Volunteer Cloud Systems
Tessema Mengistu and Darren Che

Cloud Performance and Reliability
Location: Sequoia
Session Chair: BackGyu Kim, Toyota InfoTechnology Center

Cloud Performance (2)
Location: Sequoia
Session Chair: BaekGyu Kim, Toyota InfoTechnology Center

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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

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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) Towards Edge Computing Over Named Data Networking
Abderrahmen Mbibaa, Reza Tourani, Satyajayant Misra, Jeff Burke, Lixia Zhang

(WIP) SaRaa: A Stochastic Model to Estimate Reliability of Edge Resources in Volunteer Cloud
Yousef Alsenani, Garth V. Crosby, Tomas Velasco

(WIP) Real-Time Human Detection as an Edge Service Enabled by a Lightweight CNN
Seyed Yahya Nikouei, Yu Chen, Sejun Song, Ronghua Xu, Baek-Young Choi, Timothy R. Faughnan

Large Scale Stream Analytics Using a Resource-Constrained Edge
Roshan Bharath Das, Gabriele Di Bernardo, Henri Bal

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

Towards Automatic Tuning of Apache Spark Configuration
Nhan Nguyen, Mohammad Khan and Kewen Wang

Best First Fit (BFF): An Approach to Partially Reconfigurable Hybrid Circuit and Packet Switching
Liang Liu, Long Gong, Sen Yang, Jun Xu and Lance Fortnow

Exploring the Fairness and Resource Distribution in an Apache Mesos Environment
Pankaj Saha, Angel Beltre and Madhusudhan Govindaraju

Docking Container Deployment in Fog Computing Infrastructures
Arif Ahmed, Guillaume Pierre

Fog at the Edge: Experiences Building an Edge Computing Platform
Nam Ky Giang, Michael Blackstock, Rodger Lea, Victor C.M. Leung

Semi-Autonomous Industrial Robotic Inspection: Remote Methane Detection in Oilfield
Roberto Silva Filho, Bo Yu, Ching-Ling Huang, Raju Venkataramana, Ashraf El-Messidi, Dustin Sharber, John Westerhede, Nast 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

Data Distillation at the Network’s Edge: Exposing Programmable Logic with InLocus
Lucas Brasilino, Alexander Shroyer, Naveen Marri, Saurabh Agrawal, Catherine Plachowski, Ezra Kissel, Martin Swany
IEEE International Conference on Cognitive Computing
(ICC 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

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-Rubeie

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 Årzén, 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) ECSI+m++: 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: Yanmee Zhang, Central University of Finance and Economics

(WKSP) Edge-centric Efficient Regression Analysis
Christos Anagnostopoulos, Natacha 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, Amit Singhee, Marnik Vermeulen

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_SPUD: Multi-objective Stochastic Planning Using Decision Diagrams for Partially Observable Markov Decision Processes
Hend Ali 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 Mukly, Supradeep Koganti, Sneha Shahi, Kaikai Liu
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 Heterogeneous 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 Povoa

(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 Middleware 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) FIP-IoT: A Forensic Investigation Framework for IoT Using a Public Digital Ledger
Mahmud Hossain, Yasser Karim, Ragib Hasan
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-Alsaleem, Bharat Bhargava, Savvas Savvides, Ganapathy Mani, Lotfi Ben Othmane

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

**Tuesday July 3**

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<td>ICWS 2018 Regular Papers Session 1</td>
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<td>Applications</td>
<td>Location: Belvedere</td>
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<tr>
<td>Session Chair</td>
<td>Shijun Liu, Shandong University</td>
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<tr>
<td>(REG)</td>
<td>DKEM: A Distributed Knowledge Based Evolution Model for Service Ecosystem</td>
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<td></td>
<td>Xianghui Wang, Zhiyong Feng, Shizhan Chen, Keman Huang</td>
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<tr>
<td>(REG)</td>
<td>Unroad: An Efficient Algorithm for Large-scale Dynamic Ridesharing Service</td>
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<td>Jingting Xu, Chenyu Hou, Bin Cao, Jing Fan, Tianyang Dong, Shwei Cheng</td>
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<tr>
<td>(REG)</td>
<td>CCRS: Web Service for Chinese Character Recognition</td>
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<td></td>
<td>Hang Zhuang, Changlong Li, Xuehai Zhou</td>
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<td>1:30 – 3:00</td>
<td>ICWS 2018 Regular Papers Session 2</td>
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<tr>
<td>Quality of Service</td>
<td>Location: Belvedere</td>
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<tr>
<td>Session Chair</td>
<td>Bo Yang, IBM Research</td>
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<tr>
<td>(REG)</td>
<td>A Hybrid Memetic Approach for Fully Automated Multi-objective Web Service Composition</td>
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<td></td>
<td>Alexandre Sawczuk Da Silva, Hui Ma, Yi Mei, Mengjie Zhang</td>
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<tr>
<td>(REG)</td>
<td>Personalized LSTM Based Matrix Factorization for Online QoS Prediction</td>
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<td></td>
<td>Ruibin Xiong, Jian Wang, Zhongqiao Li, Bing Li, Patrick Hung</td>
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<tr>
<td>(REG)</td>
<td>PRNN: Piecewise Recurrent Neural Networks for Predicting the Tendency of Services Invocation</td>
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<td>Haozhe Lin, Yushan Fan, Jia Zhang</td>
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<td>1:30 – 3:00</td>
<td>ICWS 2018 Workshop Papers Session 1</td>
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<tr>
<td>Applications, Data Service and Service Architecture</td>
<td>Location: Sequoia</td>
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<tr>
<td>Session Chair</td>
<td>Florian Schmidt, TU Berlin</td>
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<tr>
<td>(WKSP)</td>
<td>Enhanced Web Application and Browsing Performance Through Service-worker Infusion Framework</td>
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<td>Applications</td>
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<td></td>
<td>Neha Pande, Aayushi Somani, Siba Prasad Samal, Vasu Kakikala</td>
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<tr>
<td>(WKSP)</td>
<td>Configurable Event Correlation for Process Discovery from Object-Centric Event Data</td>
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<td>Data Service</td>
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<td>Guangming Li, Renata Medeiros de Carvalho, Wil M.P. van der Aalst</td>
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<tr>
<td>(WKSP)</td>
<td>Functionality-oriented Microservice Extraction Based on Execution Trace Clustering</td>
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<td>Service Architecture</td>
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<td>Wuxia Jin, Ting Liu, Qinghua Zheng, Di Cui, Yuanfang Cai</td>
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<tr>
<td>(WKSP)</td>
<td>Subscription or Pay-as-you-Go: Optimally Purchasing IaaS Instances in Public Clouds</td>
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<td>Service Architecture</td>
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<tr>
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<td>Shengsong Yang, Li Pan, Qingyang Wang, Shijun Liu</td>
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**4:40 – 6:10**

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<th>Time</th>
<th>ICWS 2018 Regular Papers Session 3</th>
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<td>Security and Privacy</td>
<td>Location: Belvedere</td>
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<tr>
<td>Session Chair</td>
<td>Yanmei Zhang, Central University of Finance and Economics</td>
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<tr>
<td>(REG)</td>
<td>Linked USDL Privacy: Describing Privacy Policies for Service</td>
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<td>Georgia Kapitsaki, Josef Ioannou, Jorge Cardoso, Carlos Pedrinaci</td>
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<tr>
<td>(REG)</td>
<td>Confidential Business Process Execution on Blockchain</td>
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<td>Barbara Carminati, Christian Rondanini, Elena Ferrari</td>
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<td>(REG)</td>
<td>X-Diag: Automated Debugging Cross-browser Issues in Web Applications</td>
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<td>Shaopeng Xu, Guoquan Wu, Wei Chen, Jun Wei</td>
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**Wednesday July 4**

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<td>Service</td>
<td>Location: Fillmore B/C</td>
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<tr>
<td>Session Chair</td>
<td>Shijun Liu, Shandong University</td>
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<tr>
<td>(REG)</td>
<td>Energy Efficient WSN Service Composition for Concurrent Applications</td>
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<td>Jiabei Xu, Zhanbing Zhou, Deng Zhao, Walid Gaaloul, Yucong Duan</td>
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<tr>
<td>(REG)</td>
<td>McCo-TSM: Multi-entity Complex Process-oriented Service Modeling Method</td>
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<td>Ying Li, Meng Xi, Yuya Yin, Zhihui Luo, Jianwei Yin</td>
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<tr>
<td>(REG)</td>
<td>A Recommendation Algorithm Based on Dynamic User Preference and Service Quality</td>
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<td>Yanmei Zhang, Ya Qian, Yan Wang</td>
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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 Soulé

(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

Jianpeng Hu

(REG) A Service Annotation Quality Improvement based on Efficient Human Intervention
Xuhaoo Sun, Shizhang Chen, Zhiyong Feng, Weimin Ge, Keman Huang

(REG) Factorization Machine-based Service Recommendation on Heterogeneous Information Networks
Fengfang Xie, Liang Chen, Yongjian Ye, Zibin Zheng, Xiaola Lin

ICWS 2018 Work in Progress Papers Session 2
Applications and Big Data and Cloud Services
Location: Fillmore B/C
Session Chair: Guoqiang Hu, IBM China Research Lab

(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 Rafat, 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

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) Schema Slicing Methods to Reduce Development Costs of WSDL-based Web Services
Haitao Zhang, Ning Yang, Zhengjun Xu, Bingchang Tang, Huadong Ma

(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
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
Hyeokyong Park, Junho Song, Kyungzik 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

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

ICWS 2018 Work in Progress Papers Session 4
IoT Services, Recommender Services and Service Composition
Location: Orpheum
Session Chair: Stefan 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 Madhusha Rupasingha, Incheon Paik
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 Kaamiche, Mohamed Mohamed, Giovanni Russello

(WIP) On Using Blockchain to Enhance the Trustworthiness of Business Processes
Haon 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, Ishthiaq 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 Baruwal Chhetri, Swinburne University of Technology

(REG) A Prior Knowledge Based Approach to Improving Accuracy of Web Services Clustering
Min Shi, Jianxun Liu, Buiqing 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 Crepi 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 Universitat 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 Gajanan, Pablo Loyola, Yasuharu Katsuno, Asim Munawar, Scott Trent and Fumiko Satoh

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

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

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
Nisathra 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
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) A Fluctuation-aware Approach for Predictive Web Service Composition
Xiaoming Sun, Y.N. Xia and Qiang He

(REG) To Bid or Not to Bid in Streamlined EC2 Spot Markets
Mohan Baruwal Chhetri, Markus Lumpe, Bao Vo and Ryszard Kowalczyk

(REG) A Two-phase Method of QoS Prediction for Situated Service Recommendation
Jaipeng 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 Gajanan, IBM

(WIP) A Model for Representing Mobile Distributed Sensing-Based Services
Ahmed Abdelnozain and Nadeem Jamali

(WIP) Towards End-to-end QoS and Cost-aware Resource Scaling in Cloud-based IoT Data Processing Pipelines
Sunil Singh Sarnant, Mohan Baruwal Chhetri, Bao Vo, Ryszard Kowalczyk and Surya Nepal

(WIP) Dynamic Resource Provisioning for Scientific Workflow Executions in Clouds
Ricardo Oda, Daniel Cordeiro and Kelly Rosa Braghetto

(WIP) Solutioning of Highly-Valued IT Service Contracts
Shubhi Asthana, Aly Megahed, Ahmed Nazeem, Valerie Becker, Taiga Nakamura and Sandeep Gopisetty

(WIP) Big Data Assurance Evaluation: An SLA-based Approach
Claudio Agostino Ardagna, Ernesto Dumiani, Maria Kotsiansi, 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

(REG) Extreme Topic Model for Market eAlert Service
Victor W. Chu, Raymond K. Wong, Chi-Hung Chi and Fang Chen

(REG) Enabling Intelligent Business Processes with Context Awareness
Xiaohui Zhao, Sirir Yongcharoen and Namwook Cho

(REG) Patterns for Process Edification in Process-aware Information Systems
Vinoda Yadav, Sunam 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
Monday July 2
10:30 – 12:00  IEEE Services Concise Session 1
Location: Conference Theater
Session Chair: Yanchun Sun, Peking University

On Minimizing the Makespan Of A Set of Offline MapReduce Jobs
Majun He, Houwen Huang, Wenxia Guo, Bo He, Jin Wang, Wenhong Tian

Pattern Recognition on Usage of Operational Clothing in Canadian Armed Forces (also presented in poster session)
Manchun Fang

Measuring the Scalability of Cloud-based Software Services
Amro Al-Said Ahmad, Peter Andras

Toward an Automatic Approach for Multi-PaaS Environments Selection (also presented in the poster session)
Rami Sellami, Stephane Mouton

Sensing Population Mobility Through City Boundary in Greater Maputo via Mobile Phone Big Data Mining
Mohamed Batran, Yoshiohide Sekimoto, Hiroshi kanasugi, Takehiro Kashiyama, Ryousuke Shibasaki

A Time-dependent Principal Components-based Dimension Reduction Approach to Analyzing the Influence of Product Interventions on User Engagement with Mobile Applications
Lior Turgeman, Otis Smart

1:30 – 3:00  IEEE Services Concise Session 2
Location: Conference Theater
Session Chair: Manchun Fang, National Defense Headquarters

A Recommendation Service for Programming Study Based on Stack Overflow
Jialun Shao, Yanchun Sun

Ship Trajectory Outlier Detection Service System Based on Collaborative Computing
Tao Zhang, Shuai Zhao, Junliang Chen

KLAP for Real-World Protection of Location Privacy
Abdur Rahman Bin Shahid, Niki Pissinou, S.S. Lyengar, Jerry Miller, Teresita Lemus, Ziqian Ding

Similarity Matching for Workflows in Medical Domain Using Topic Modeling (also presented in the poster session)
Khalid Khawaji, Ibrahim Almubark, Abdullah Almalki, Bradley Taylor

K-Means Algorithm: Fraud Detection Based on Signaling Data
Xing Min, Rongheng Lin

Thursday July 5
4:00 – 5:30  IEEE Services Concise Session 4
Location: Orpheum
Session Chair: Lior Turgeman, IBM Haifa Research Labs

An I-CNN based Speech Classification Algorithm for Custom Service
Huang Xuefeng, Lin Rongheng

Detection of Distributed Denial of Service (DDoS) Attacks Using Artificial Intelligence on Cloud
Sabah Alzahrani and Liang Hong

A B2B Team Formation Microservice for Collaborative Manufacturing in Industry 4.0
Sonia Cisneros Cabrera, Pedro Sampiano, Nikolay Mehandjiev

An Open-source Azure Solution for Scalable Genomics Workflows
Fan Yang-Turner, Lawrence Gripper, Jeremy Swann, Trien Do, Dona Foster, Denis Volk, Anita Ramanan, Marcus Robinson, Tim Peto, Derrick Crook

Characterizing the Effectiveness of Query Optimizer in Spark
Zuzie Ren, Na Yun, Weisong Shi, Youhuizi Li, Jian Wan, Lihua Yu, Xinxin Fan

Constructing a Service Software with Microservices
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

A Knowledge Representation of Cloud Data controls for EU GDPR Compliance (also presented in the poster session)
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 Guo, 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
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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