

Lecture Notes on Data Engineering and Communications Technologies

Volume 41

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The aim of the book series is to present cutting edge engineering approaches to data technologies and communications. It will publish latest advances on the engineering task of building and deploying distributed, scalable and reliable data infrastructures and communication systems.

The series will have a prominent applied focus on data technologies and communications with aim to promote the bridging from fundamental research on data science and networking to data engineering and communications that lead to industry products, business knowledge and standardisation.

**** Indexing: The books of this series are submitted to ISI Proceedings, MetaPress, Springerlink and DBLP ****

More information about this series at <http://www.springer.com/series/15362>

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Omar Khadeer Hussain ·
Shang-Pin Ma · Xiang Fei
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Advances in E-Business Engineering for Ubiquitous Computing

Proceedings of the 16th International
Conference on e-Business Engineering
(ICEBE 2019)

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ISSN 2367-4512 ISSN 2367-4520 (electronic)
Lecture Notes on Data Engineering and Communications Technologies
ISBN 978-3-030-34985-1 ISBN 978-3-030-34986-8 (eBook)
<https://doi.org/10.1007/978-3-030-34986-8>

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This Springer imprint is published by the registered company Springer Nature Switzerland AG
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Message from the ICEBE 2019 General Chairs

On behalf of the conference committee for ICEBE, it is our pleasure to welcome you to the 16th IEEE International Conference on e-Business Engineering (ICEBE 2019) and to Fudan University, China.

ICEBE is a prestigious conference which is initiated from 2003 by the IEEE Technical Committee on e-commerce. It is a high-quality international forum for researchers and practitioners from different areas of computer science and information systems to exchange their latest findings and experiences, as well as to help shape the future of IT-transformed consumers, enterprises, governments and markets. We look forward to many productive discussions during the conference and many memorable moments for the conference participants.

ICEBE 2019 is jointly organized by the Technical Committee on Business Informatics and Systems (TCBIS), which is formerly known as Technical Committee on Electronic Commerce (TCEC), China National Engineering Laboratory for E-Commerce Technologies, Tsinghua University, Fudan University, SAP Labs China and Coventry University. Strong support and valuable guidance from many organizations have made this year's conference possible. We are grateful for their generous support. The success of the conference also depended on all the chairs and members of the ICEBE 2019 committees. We would like to give our special thanks for their hard work and precious time to make this a success.

We all look forward to many excellent technical and social interactions during this year's conference. We encourage all of you to fully participate in the technical and social events. We wish you an enjoyable and impressive meeting in Shanghai and thank you for attending!

Jen-Yao Chung
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Hongming Cai
Kuo-Ming Chao
General Chairs

Ci-Wei Lan
Jingzhi Guo
Feng Tian
General Vice-chairs

Message from the ICEBE 2019 Program Chairs

Welcome to Shanghai, the hosting city of ICEBE 2019. Shanghai is not only China's financial capital but also a global financial center with the world's busiest container port. ICEBE 2019 features a wide spectrum of topics touching on many of the most important challenges faced by practitioners as well as researchers in e-business engineering. As the program chairs of the conference, we hope that you will enjoy the technical program that we have put together for you and will find your participation in this conference most fruitful and rewarding.

ICEBE 2019 has a total of nine tracks, including the new industry track addressing the application of emerging applications in the digital enterprise. Due to fast developing e-business applications, the number and the quality of the submissions keep raising. We received 86 submissions this year. To ensure quality and fairness, each paper was reviewed by two to five reviewers whose recommendations formed the basis of the decisions. The final decisions were then made after a careful process of scrutinizing and weighing the reviewers' comments and recommendations by the track chairs and program chairs. Twelve papers were accepted as long papers, which represent an acceptance rate of 13.9%. Additional 35 papers were accepted as regular papers.. The accepted papers represent 31 countries and regions around the world, with the top spots occupied by China, Taiwan, UK and Australia. Congratulations to all authors!

We are indebted to all the track chairs for their support, dedication and hard work throughout the entire process of paper submission, review and selection:

- Adriana Giret, Universidad Politecnica de Valencia, Spain
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- Boyi Xu, Shanghai Jiao Tong University, China
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- Khaled Salah, Khalifa University, UAE
- Lei Xu, SAP, China
- Zhiyuan Fang, Sun Yat-sen University, China

We cannot express our gratitude to the members of the Program Committee and other external reviewers. Without their timely and quality reviews, we would not have been able to arrive at our final program, which is so important for the success of ICEBE 2019. We are also deeply indebted to Ci-Wei Lan who has played a strong part in the conference organization. Finally, we would like to thank all the authors who have submitted their latest work to the conference. We would not have been able to put together a strong and interesting program without their support and contribution.

We are looking forward to a thought-provoking and informative conference. We appreciate your active engagement.

Omar Hussain
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Message from the IoS 2019 Workshop Co-chairs

Welcome to the Second International Workshop on Internet of Services and Applications (IoS 2019) in Shanghai, China.

IoS is being held second time in conjunction with ICEBE 2019. The IoS workshop mission is to provide an international forum for the IoS researchers and practitioners around the world to present their research results and exchange their ideas and experience.

It is a pleasure to be part of an endeavor that brings in the emerging use of IoS and challenges associated with it, while outlining the way forward. I hope that IoS 2019 Workshop will be a success in bringing together IoS researchers, foster thought-provoking discussion and set future research directions. The workshop will place emphasis on more thorough discussions and project future trends in IoS applications and their associated technologies.

Finally, I would like to thank program committee member for their excellent teamwork.

Nazaraf Shah
Chi-Hua Chen
IoS 2019 Workshop Co-chairs

IoS 2019 Workshop Co-chairs and Program Committee

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Keynote Abstracts

SAP: An Engine for Intelligent Enterprise Transformation Under Experience Economy



Bill Xu

Director of Strategic Planning and Operation of SAP Labs China

Head of SAP Labs China Internal Innovation & Incubation

Head of SAP Labs China Digital School

Master of Software Engineering, Shanghai Jiao Tong University

Professional Project Manager and Certified PMP

Division Director of Division Q ToastMasters International (2015–2016)

Abstract. Now, we are approaching the fourth industrial revolution that enterprises face the challenges of using big data and intelligent technologies (AI, analytics, IoT, blockchain) to help businesses run more smartly and efficiently. Meanwhile, experience is a new battleground and is becoming a key factor for enterprises to win and retain their customers. SAP, which is a leader in traditional ERP markets, is also leading this intelligent enterprise transformation in the experience economy. This speech will talk about how SAP transforms itself in the new industrial era and deliver the intelligent enterprises (with some examples on Industry 4.0, digital supply chain, analytic cloud). It will also explain SAP's new strategy in intelligent enterprises and how SAP combines operational data together with experience data to help enterprises win in an experience economy.

Biography

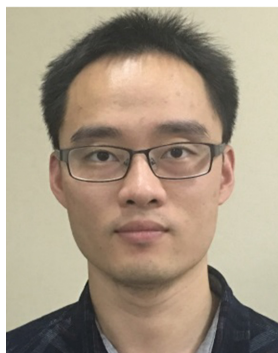
Bill Xu joined SAP BusinessObjects in 2007, is Director of Strategic Planning and Operation of SAP Labs China, Head of SAP Labs China Internal Innovation & Incubation, and Head of SAP Labs China Digital School.

Prior to this position, Bill Xu, as Global Program Manager, has been responsible for global business intelligence product development and delivery. He has rich experiences in leading international teams across countries like China, Canada, France, India with multi-culture background.

Bill Xu has taken different roles in Toastmaster International such as the Area I2 Director from 2014 to 2015 and the Division I Director from 2015 to 2016.

He graduated as a bachelor of computer science at Yancheng Institute of Technology, finished his master study at Shanghai Jiao Tong University in software engineering and continues his study at Fudan University on MiniEMA program.

Event Sequence Learning and Its Applications



Junchi Yan

Independent Research Professor (PhD Advisor) in the Department of Computer Science and Engineering, Shanghai Jiao Tong University

Adjunct Professor in the School of Data Science, Fudan University

Abstract. In this talk, I will first introduce the challenge for continuous time domain event sequence learning and prediction, especially in the comparison of traditional time series modeling. Specifically, I will present our recent works in parametric temporal point process-based approaches as well as the more recent neural network-based point process models. Some applications in preventative maintenance, health care and social media analysis are also briefly discussed. The talk ends up with an outlook for the potential extension of current works.

Biography

Dr. Junchi Yan is currently Independent Research Professor (PhD Advisor) in the Department of Computer Science and Engineering, Shanghai Jiao Tong University. He is also affiliated with the Artificial Intelligence Institute of SJTU and Adjunct Professor in the School of Data Science, Fudan University. Before that, he was Research Staff Member in IBM Research, China, where he started his career since April 2011. He obtained his Ph.D. in the Department of Electronic Engineering from Shanghai Jiao Tong University, China. His work on graph matching received the ACM China Doctoral Dissertation Nomination Award and China Computer Federation Doctoral Dissertation Award. His research interests are machine

learning, data mining and computer vision. He serves as Associate Editor for IEEE Access, (Managing) Guest Editor for IEEE Transactions on Neural Network and Learning Systems, Pattern Recognition Letters, Pattern Recognition, and Vice Secretary of China CSIG-BVD Technical Committee, and on the executive board of ACM China Multimedia Chapter. He has published 50+ peer-reviewed papers in top venues in AI and has filed 20+ US patents. He won the Distinguished Young Scientist of Scientific Chinese for the year 2018.

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