

*Proceedings*

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**2017 IEEE 17<sup>th</sup> International Conference  
on Scalable Computing and Communications  
(ScalCom 2017)**

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## **2017 IEEE 17<sup>th</sup> International Conference on Scalable Computing and Communications (ScalCom 2017)**

**August 4 to August 8, 2017  
East Bay of Silicon Valley, California, USA  
DoubleTree Hotel, Fremont, USA**



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**2017 IEEE 17th**  
**International Conference**  
**on Scalable Computing and Communications**  
**ScalCom 2017**  
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## Message from IEEE ScalCom 2017 General Chairs

Welcome to the 17th IEEE International Conference on Scalable Computing and Communications (ScalCom 2017) sponsored by IEEE, IEEE Computational Intelligence Society and technically co-sponsored by the IEEE Computer Society and the IEEE Technical Committee of Scalable Computing (TCSC). This year, the conference is locally organized by the San José State University, USA. It is our great pleasure to hold ScalCom 2017 in DoubleTree Hotel by Hilton Newark – Fremont, August 4-8, 2017.

On behalf of the Organizing Committee of Scalcom 2017, we would like to express to all participants our cordial welcome. Scalability is one of the key evaluation criteria for the processing capacity of computing systems. High scalability represents a property that can guarantee high throughput, low delay and high performance in the process of the system extension. Additionally, with the need to process the rapid increase in the amount of information, new architectures like computing accelerator, e.g., GPU and MIC, as well as new softwares, algorithms and tools to improve scalability are required. With the advent of sensor networks and Internet of Things (IoT), scalability is also an important property of communication networks. Finally, we note that the domains of parallel and distributed computing have recently converged. This is a totally new context for the different works in the domain. Scalability is a hot topic in Computer Science and Telecommunication that covers many disciplines. The international conference ScalCom 2017 provides a high-profile, leading-edge forum for researchers, engineers and practitioners to present state-of-art advances and innovations in theoretical foundations, systems, algorithms, infrastructure, tools, testbeds, and applications for scalable computing and communications. The goal of ScalCom 2017 is also to identify emerging research topics and define new trends such as computing accelerators like GPU and MIC, heterogeneous systems and scalable communications in relationship with High performance Computing (HPC) or sensors networks and Internet of Things.

ScalCom is the 2017 event in a series of highly successful International Conferences previously held as Scalcom 2016 Toulouse France, ScalCom 2015 Beijing China, ScalCom 2014 Bali Indonesia, ScalCom 2013 Chengdu China, ScalCom 2012 Changzhou China, ScalCom 2011Paphos Cyprus, ScalCom 2010 Bradford UK, ScalCom 2009 Dalian China etc.

The 17th IEEE International Conference on Scalable Computing and Communications is associated this year with six IEEE international Conferences and their workshops: the 14th IEEE International Conference on Ubiquitous Intelligence and Computing (UIC 2017), the 14th IEEE International Conference on Advanced and Trusted Computing (ATC 2017), the IEEE International Conference on Cloud and Big Data Computing (CBDCom 2017), the IEEE International Conference on

Internet of People (IoP 2017), the IEEE Smart World Congress (SmartWorld 2017) and the IEEE Conference on Smart Cities Innovation (SCI 2017).

Scalcom 2017 has been supported by many people and organizations. First, we wish to thank Professor Laurence T. Yang, St Francis Xavier University Canada, Chair of the Steering Committee of ScalCom, for giving us the opportunity to chair this conference and for his many advices and guidance. We also thank Professor Jianhua Ma, Hosei University Japan, Head of the Technical Committee on SmartWorld and Chair of the Steering Committee of the SmartWorld Congress, for his help and guidance in organizing the conference. We thank the PC Chairs, Professor Massimo Torquati and Professor Frédéric Loulergue, the Track Chairs, the PC committee members and the Publicity Chairs, Gabriele Mencagli and Mohamed Elwakil, who have attracted, reviewed, and selected high-quality papers. The successful conference program preparation and the quality of proceedings publication have been due to the efforts of the PC committee members, conference organization chairs, including the Finance Chair, Reqing Zhong, the Registration Chair, Hyeran Jeon and the Proceeding Chair, Shenqiang Lu. In addition, we thank the Web Chairs Sazzad Hussain and Zihao Jiang, St. Francis Xavier University Canada, the Chair of the Local Organizing Committee Jerry (Zeyu) Gao, San José State University, USA, the Local Arrangement Chair, Mr. Sam Zhang, SJSU student conference support team (Tianyu Cao and Swathi Nuggehalli Sudarshan), and other co-workers have made all the arrangements for ensuring quality logistics.

Finally, we would like to express our thanks to Kenita Hidalgo at IEEE Conference Planning Department, Momoko Vanna and Stacy Negron-Sheckells at IEEE Finance Service Department for their great support. We hope that this conference will be intellectually helpful for your current and future research and professional activities. We wish you a productive and truly enjoyable environment for developing novel ideas and visions in this area.

**ScalCom 2017 General chairs:**



Marco Aldinucci  
University of Turin, Italy



Didier Elbaz  
LAAS-CNRS, France



Pavan Balaji  
Argonne National Laboratory, USA

## Message from IEEE ScalCom 2017 Program Chairs

Nowadays parallel architectures are ubiquitous and the arena of computing and communicating devices is quickly reaching an unprecedented scale. The trend is to keep increasing both the number of cores in a single device as well as the number of communicating devices. In this massively parallel and heterogeneous context, the need for scalable computing is everywhere and scalability is rapidly becoming a central aspect of computing.

The 17<sup>th</sup> IEEE International Conference on Scalable Computing and Communications (ScalCom) provides a leading forum for researchers willing to present and discuss their original work on scalable parallel and distributed computing. ScalCom offers a unique opportunity to exchange ideas at the highest technical level related to communication networks, performance analysis, and distributed applications with particular emphasis on scalability as well as to identify emerging research topics and define future advances in the area.

ScalCom 2017 is the next edition of the successful series, previously held in Toulouse, France (2016) as Beijing, China (2015); Bali, Indonesia (2014), Chengdu, China (2013); Paphos, Cyprus (2011); Bradford, UK (2010); Dalian, China (2009). This year the main topics, which covers the current areas of interest in scalability, are: i) Cloud & fog computing; ii) Extreme scale, multi-core, GPU, accelerators and novel architectures for Scalability-Rethinking; iii) Modelling and Simulation of Large Complex Systems; iv) mobile, wireless and pervasive computing; and v) Tools for Big Data. In these areas, we have selected five research papers; four as regular papers and one as short paper.

We wish to thank all who contributed to the success of the event: the authors, the members of the Programme Committee, the additional reviewers, the Track Chairs, the Smart Word Conference organizer. In particular we thank the Track Chairs: Marco Danelutto and Horacio Gonzalez-Velez (track i)); Joel Falcou, Albert-jan Yzelman (track ii)); Guy Tremblay and Virginia Niculescu (track iii)); Pascal Berthou and Oliver Brun (track iv)); Claudia Misale and Alexandru Constan (track v)).

We thank also General Chairs Didier El Baz, Marco Aldinucci and Pavan Balaji for their efficient administration and support; the team at Conference Publishing Services for producing these proceedings.

Massimo and Frédéric



Massimo Torquati  
University of Pisa, Italy



Frédéric Louergue  
NAU, USA



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ScalCom 2017

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ScalCom 2017

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