

# ADVCOMP 2019

## Forward

The Thirteenth International Conference on Advanced Engineering Computing and Applications in Sciences (ADVCOMP 2019), held between September 22-26, 2019 in Porto, Portugal, continued a series of events meant to bring together researchers from the academia and practitioners from the industry in order to address fundamentals of advanced scientific computing and specific mechanisms and algorithms for particular sciences.

With the advent of high performance computing environments, virtualization, distributed and parallel computing, as well as the increasing memory, storage and computational power, processing particularly complex scientific applications and voluminous data is more affordable. With the current computing software, hardware and distributed platforms effective use of advanced computing techniques is more achievable.

The conference provided a forum where researchers were able to present recent research results and new research problems and directions related to them. The conference sought contributions presenting novel research in all aspects of new scientific methods for computing and hybrid methods for computing optimization, as well as advanced algorithms and computational procedures, software and hardware solutions dealing with specific domains of science.

The conference had the following tracks:

- Computing applications in science
- Computing mechanisms and methods
- Multidisciplinary Mobile and Web Applications in Modern Life

We take here the opportunity to warmly thank all the members of the ADVCOMP 2019 technical program committee, as well as all the reviewers. The creation of such a high quality conference program would not have been possible without their involvement. We also kindly thank all the authors that dedicated much of their time and effort to contribute to ADVCOMP 2019. We truly believe that, thanks to all these efforts, the final conference program consisted of top quality contributions.

We also gratefully thank the members of the ADVCOMP 2019 organizing committee for their help in handling the logistics and for their work that made this professional meeting a success.

We hope that ADVCOMP 2019 was a successful international forum for the exchange of ideas and results between academia and industry and to promote further progress in the field of engineering computing and applications in sciences. We also hope that Porto provided a pleasant environment during the conference and everyone saved some time to enjoy the historic charm of the city.

## **ADVCOMP 2019 Chairs**

### **ADVCOMP Steering Committee**

Juha Röning, University of Oulu, Finland  
Paul Humphreys, Ulster University, UK  
Wasif Afzal, Mälardalen University, Sweden  
Hans-Joachim Bungartz, TUM, Germany  
Andreas , Technische Universität Clausthal, Germany  
Ivan Rodero, Rutgers University - Piscataway, USA  
Dean Vucinic, Vrije Universiteit Brussel (VUB), Belgium | FERIT, Croatia,  
Wenbing Zhao, Cleveland State University, USA  
Rudolf Berrendorf, Bonn-Rhein-Sieg University, Germany

### **ADVCOMP Industry/Research Advisory Committee**

Yuri Alexeev, Argonne National Laboratory, USA  
Marcin Hojny, AGH University of Science and Technology, Kraków, Poland  
Alice Koniges, Lawrence Berkeley Laboratory/NERSC, USA  
Marcin Paprzycki, Systems Research Institute, Polish Academy of Sciences, Poland  
Folker Meyer, Argonne National Laboratory Computation Institute and Medical School |  
University of Chicago, USA  
Jian Lin, Huawei Technologies Co. Ltd, Hangzhou, China  
Simon Tsang, Vencore Labs Inc., USA  
Robert Clay, Sandia National Labs, USA  
Alfred Geiger, T-Systems Solutions for Research GmbH, Germany  
Hugo Daniel Meyer, University of Amsterdam, Netherlands