

# Computational Science in the Interconnected World.

## Preface for ICCS 2019

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### 1. Introduction

Welcome to the 19th Annual International Conference on Computational Science (ICCS - <https://www.iccs-meeting.org/iccs2019/>), to be held on 12-14 June 2019 in Faro, Algarve, Portugal. Located at the southern end of Portugal, Algarve is a well-known touristic haven. Besides some of the best and most beautiful beaches in the entire world, with fine sand and crystal-clear water, Algarve also offers amazing natural landscapes, a rich folk heritage, and a healthy gastronomy that can be enjoyed throughout the whole year, attracting millions of foreign and national tourists. ICCS 2019 is jointly organized by the University of Algarve, the University of Amsterdam, NTU Singapore and the University of Tennessee.

The International Conference on Computational Science is an annual conference that brings together researchers and scientists from mathematics and computer science as basic computing disciplines, as well as researchers from various application areas who are pioneering computational methods in sciences such as physics, chemistry, life sciences, engineering, arts and humanitarian fields, to discuss problems and solutions in the area, to identify new issues, and to shape future directions for research.

Since its inception in 2001, ICCS has attracted increasingly higher quality and numbers of attendees and papers, and this year is not an exception, with over 350 expected participants. The proceedings series have become a major intellectual resource for computational science researchers, defining and advancing the state of the art in this field.

ICCS 2019 in Faro, Algarve, Portugal will be the nineteenth in this series of highly successful conferences. For the previous eighteen meetings see: <http://www.iccs-meeting.org/iccs2019/previous-iccs/>.

The theme for ICCS 2019 is "**Computational Science in the Interconnected World**", to highlight the role of Computational Science in an increasingly interconnected world. This conference will be a unique event focusing on recent developments in: scalable scientific algorithms; advanced software tools; computational grids; advanced numerical methods; and novel application areas. These innovative novel models, algorithms and tools drive new science through efficient application in areas such as physical systems, computational and systems biology, environmental systems, finance, and others.

ICCS is well known for its excellent line up of keynote speakers. The keynotes for 2019 are:

- **Tiziana Di Matteo**, King's College London, UK
- **Teresa Galvão**, University of Porto / INESC TEC, Portugal
- **Douglas Kothe**, Exascale Computing Project, USA
- **James Moore**, Imperial College London, UK
- **Robert Panoff**, The Shodor Education Foundation, USA
- **Xiaoxiang Zhu**, Technical University of Munich, Germany

This year we had 573 submissions (228 submissions to the main track and 345 to the workshops). In the main track, 65 full papers were accepted (28%). In the workshops, 168 full papers (49%). A high acceptance rate in the workshops is explained by the nature of these thematic sessions, where many experts in a particular field are personally invited by workshop organisers to participate in their sessions.

ICCS relies strongly on the vital contributions of our workshop organizers to attract high quality papers in many subject areas. We would like to thank all committee members for the main track and workshops for their contribution to ensure a high standard for the accepted papers. We would also like to thank *Springer*, *Elsevier*, and *Intellegibilis* for their support. Finally, we very much appreciate all the local organizing committee members for their hard work to prepare this conference.

We are proud to note that ICCS is an A-rank conference in the CORE classification.

We wish you a successful and enjoyable conference in Faro.

June 2019

The ICCS 2019 Organizers:

João M. F. Rodrigues  
Pedro J. S. Cardoso  
Jânio Monteiro  
Roberto Lam  
Valeria V. Krzhizhanovskaya  
Michael Lees  
Jack Dongarra  
Peter M.A. Sloat

## **2. Local Organizing Committee in Faro, Algarve, Portugal**

### **Co-chairs**

João M. F. Rodrigues, University of Algarve, Portugal  
Pedro J. S. Cardoso, University of Algarve, Portugal  
Jânio Monteiro, University of Algarve, Portugal  
Roberto Lam, University of Algarve, Portugal

### **Members**

Maria Gião, Intellegibilis, Portugal

### 3. Workshops and Organizers

**Advanced Modelling Techniques for Environmental Sciences – AMES**

Jens Weismüller, Dieter Kranzlmüller, Maximilian Hoeb, Jan Schmidt

**Advances in High-Performance Computational Earth Sciences: Applications and Frameworks – IHPCES**

Takashi Shimokawabe, Kohei Fujita, Dominik Bartuschat

**Agent-Based Simulations, Adaptive Algorithms and Solvers – ABS-AAS**

Maciej Paszynski, Quanling Deng, David Pardo, Robert Schaefer, Victor Calo

**Applications of Matrix Methods in Artificial Intelligence and Machine Learning – AMAIML**

Kourosh Modarresi

**Architecture, Languages, Compilation and Hardware Support for Emerging and Heterogeneous Systems – ALCHEMY**

Stéphane Louise, Lïc Cudennec, Camille Coti, Vianney Lapotre, José Flich Cardo, Henri-Pierre Charles

**Biomedical and Bioinformatics Challenges for Computer Science – BBC**

Mario Cannataro, Giuseppe Agapito, Mauro Castelli, Riccardo Dondi, Rodrigo Weber dos Santos, Italo Zoppis

**Classifier Learning from Difficult Data – CLD<sup>2</sup>**

Michał Woźniak, Bartosz Krawczyk, Paweł Ksieniewicz

**Computational Finance and Business Intelligence – CFBI**

Yong Shi, Yingjie Tian

**Computational Methods in Smart Agriculture – CMSA**

Andrew Lewis

**Computational Optimization, Modelling and Simulation – COMS**

Xin-She Yang, Sławomir Koziel, Leifur Leifsson

**Computational Science in IoT and Smart Systems – IoTSS**

Vaidy Sunderam

**Data-Driven Computational Sciences – DDCS**

Craig Douglas

**Machine Learning and Data Assimilation for Dynamical Systems – MLDADS**

Rossella Arcucci, Boumediene Hamzi, Yi-Ke Guo

**Marine Computing in the Interconnected World for the Benefit of the Society – MarineComp**

Flávio Martins, Ioana Popescu, João Janeiro, Ramiro Neves, Marcos Mateus

**Multiscale Modelling and Simulation – MMS**

Derek Groen, Lin Gan, Stefano Casarin, Alfons Hoekstra, Bartosz Bosak

**Simulations of Flow and Transport: Modeling, Algorithms and Computation – SOFTMAC**

Shuyu Sun, Jingfa Li, James Liu

**Smart Systems: Bringing Together Computer Vision, Sensor Networks and Machine Learning – SmartSys**

João M. F. Rodrigues, Pedro J. S. Cardoso, Jânio Monteiro, Roberto Lam

**Solving Problems with Uncertainties – SPU**

Vassil Alexandrov

**Teaching Computational Science – WTCS**

Angela Shiflet, Evguenia Alexandrova, Alfredo Tirado-Ramos

**Tools for Program Development and Analysis in Computational Science – TOOLS**

Andreas Knüpfer, Karl Furlinger

**4. Reviewers**

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Giuseppe Agapito	Jérémy Buisson	Daan Crommelin
Giovanni Agosta	Aleksander Byrski	Attila Csikasz-Nagy
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