



# PARALLEL COMPUTING 2019 (*ParCo2019*)

10 - 13 September 2019  
Prague, Czech Republic

## CALL FOR PAPERS

*ParCo2019* is a continuation of the international conference on parallel computing and high performance computing (HPC) started in 1983. Since its inception, ParCo has stimulated the development and application of parallel computers world-wide.

*ParCo2019* will provides multiple opportunities to meet and interact with fellow researchers. The high scientific standard of the conference presentations and the refereed proceedings are a hall-mark of *ParCo*.

### AIMS AND SCOPE

*ParCo2019* will cover the state of the art in the development, applications, and future trends in parallel computing for both HPC and Data Intensive Computing (DIC). Its scope encompasses all platforms, from Internet of Things (IoT) and Robotics to HPC systems, Clouds, Quantum, and Neuro-Computing.

The conference addresses all aspects of parallel computing, including applications, hardware and software technologies, and languages and development environments.

### TOPIC AREAS

#### Section 1: Architectures

New concepts for parallel computing architectures for all levels of parallelism, including:

- Multicore and manycore systems
- Heterogeneous systems
- Accelerators, including GPUs and FPGAs
- High-performance systems, including peta- and exascale
- Architectures for handling large data sets and data intensive computing, including high speed storage systems
- Interconnection networks
- Clouds for HPC
- Performance evaluation
- Energy saving designs
- IoT and mobile devices
- Brain-inspired systems, including neurocomputing
- Quantum computers
- Specialised architectures for high-performance machine learning and deep learning.

## **Section 2: Software**

Software for parallel computing platforms, including

- Operating systems and middleware for all types of parallel architectures
- Software engineering methodologies, and methods and tools for developing and maintaining parallel software,
- Parallel programming languages, compilers, libraries, and environments
- Testing and debugging techniques and tools
- Best practices of parallel computing on multicore, manycore, and stream processors
- Design patterns for parallel computing.

## **Section 3: Algorithms**

Design, analysis, and implementation of parallel algorithms for all application areas, emphasising the parallel computing aspects and focusing on issues such as:

- Scalability and speedup
- Efficient utilization of the memory hierarchy
- Communication and synchronization
- Data management
- Energy awareness.

## **Section 4: Applications**

The application of parallel computing to solve all types of business, industrial, scientific, and engineering problems using high-performance computing technologies, in particular:

- Astronomy and space
- Health science and care
- Geo- and environmental sciences
- Computational chemistry
- Material science
- Bioinformatics
- Exploration and optimal use of resources
- Manufacturing
- Data intensive (big data) analytics and applications
- Economic and financial modelling
- Learning systems (deep learning) and AI
- Robotics
- Autonomous transport systems, including self driving vehicles
- Virtual and augmented reality (VR and AR).

## **PROGRAM**

The scientific program consists of invited and contributed papers as well as symposia covering special topics.

Papers are presented in parallel sessions with 20 minutes available per presentation, with an additional five minutes for discussion.

An industrial session and an exhibition are planned.

## CONTRIBUTIONS

### Papers:

The conference language is English. Extended abstracts of ca. two pages should be submitted in electronic form by **31 March 2019**. Proposals are to be submitted in .pdf format.

Abstracts should clearly describe the contents of the proposed paper. The relevance and originality of the contribution must be described and the most important references included. At most five relevant keywords must be supplied. Also indicate the preferred topic area (section 1, 2, 3 or 4) from the list given above.

Please check the conference website <http://www.parco.org> for details on how to submit proposals. This information will be published as soon as the conference management tool has been set up.

Full (draft) papers of accepted proposals are due by 31 July 2019.

### Symposia:

Proposals for organising a symposium are solicited. Such proposals should give:

- The proposed title of the symposium
- The name and affiliation(s) of the organiser(s)
- A short outline of the contents
- The planned number of papers (preferably in the range from 3 to 10).

The organisers of symposia publish their respective calls for contributions, determine submission dates and are responsible for the refereeing and acceptance of papers.

Proposals for organising a symposium should be submitted to the conference office by **31 March 2019**, but later proposals will be considered. For any questions about the organisation of a symposium please contact the conference office.

## DEADLINES

Extended abstracts of papers:	<b>31 March 2019</b>
Proposals for mini-symposia:	<b>31 March 2019</b>
Notification of acceptance for presentation at conference:	<b>15 May 2019</b>
Submission of full (draft) papers:	<b>31 July 2019</b>
Notification of acceptance of full papers for publication:	<b>30 September 2019</b>
Deadline for submission of full papers for proceedings:	<b>31 October 2019</b>

## PROCEEDINGS

The conference proceedings will be published after the conference.

An invitation to (an) author(s) to present a paper at the conference is based on an extended abstract or draft paper. Thus, the presentation of a paper at the conference does not imply an automatic acceptance of the presented paper for publication in the conference proceedings. All papers presented at the conference will be refereed at or after the conference. Only accepted papers will be published.

All papers presented as part of mini-symposia will be considered for publication in the proceedings. Decisions will be made in liaison with the organiser(s) of the respective mini-symposium.

## CONFERENCE ORGANISATION

**ParCo2019** is organised by the non-profit foundation *ParCo Conferences*, Eindhoven, Netherlands in cooperation with:

- The Department of Applied Mathematics, Faculty of Mathematics & Physics, Charles University, Prague, and
- The Faculty of Information Technologies of the Czech Technical University, Prague

## CONTACT

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