



International Conference on Computational Science 2021

# Artificial Intelligence and High-Performance Computing for Advanced Simulations

16-18 June, Kraków, Poland

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# Scope

This workshop aims to integrate knowledge in computer science, computational science, and mathematics.

We invite papers oriented toward the applications of artificial intelligence (AI) and high-performance computing (HPC) in simulations, either in continuous simulations (e.g., finite element simulations of stationary problems using AI adaptive algorithms, HPC isogeometric analysis simulations of time-dependent problems, or application of deep learning for stabilization of space-time finite element simulations), as well as in discrete event simulations of complex-systems consisting of interacting individuals (e.g., HPC multi-agent simulations of the disease spread, or AI matching cellular automata parameters for the simulations of tumor growth).

We invite papers oriented toward the applications of AI and HPC in advanced simulations of phenomena often governed by either of the following:

- Partial Differential Equations (PDEs): linear, non-linear, stationary, and time-dependent.
- Complex systems consisting of very large collections of interacting individual elements. These systems may include molecules in a material, cells in the human body, interacting species in an ecosystem, and individuals transmitting an infectious disease within a group.

Likewise, we also encourage papers focused on applications and analysis of such advanced simulation methods, including the development of advanced inversion methods. The topics of this workshop include, but are not limited, to the following:

- artificial intelligence including soft computing for simulation and inversion of PDEs or and complex systems,
- efficient adaptive algorithms for large problems,
- low computational cost adaptive solvers,
- artificial intelligence in Isogeometric Analysis and Petrov-Galerkin methods,
- model reduction techniques for large problems,
- memetic algorithm,
- multi-agent systems,
- supermodeling techniques,
- advanced parallelization techniques,
- high-performance computing,
- computational and mathematical analysis of advanced simulation methods,
- advanced methods applied to inverse problems, and
- applications of advanced simulation methods.

## Call for papers

You are invited to submit a full paper (possible in draft version) of 14 pages for oral presentation. Please submit the electronic version of your paper using the following web page:

<https://easychair.org/conferences/?conf=iccs2021>

Please remember to select the **Artificial Intelligence and High-Performance Computing for Advanced Simulations**. Papers accepted for Workshops will be published in the ICCS 2021 Proceedings printed by Springer in the Lecture Notes in Computer Science (LNCS) series.

## Important dates

Full papers submission

**December 18, 2020**

Notification of acceptance of papers

**January 29, 2021**

Camera ready papers

**March 5, 2021**

Early registration opens

January 29, 2021

Early registration closes

March 5, 2021