

AI for Realistic and Reproducible Science and Engineering ISC 2024 – Workshop Without Proceedings

Synopsis

AI is one of the key technologies of our time that has been influential on a range of discoveries, such as, Alpha Fold and ChatGPT, to mention a few. This has also expanded into the science and engineering domains as well.

This workshop is intended to seek highlight the profound ramifications of AI within the domains of science and engineering, with examples drawn from large-scale experimental facilities, such as photon and neutron sources, industries, and research laboratories. The talks will highlight a number of use cases, where AI has been transformational or instrumental, covering the aspects of simulations, data analysis, AI at the edge, and problem-inspired core research on AI. The workshop will also serve as an educational event for early career researchers trying to use AI as part of their research and will focus on sharing the recent advances on this space, and identifying a set of challenges that are worthy of solving in the near term.

Scope of the Workshop

The workshop will cover the broader topic of AI for Science and Engineering, with emphasis on the following areas:

- AI for large-scale experimental facilities, covering data analysis and smart facilities.
- AI and HPC convergence for large-scale simulations.
- Recent developments in AI, in particular that of LLMs, and its impact on science.

The workshop will provide a coverage of these areas, with relevant talks. The contents of the talk will be streamlined to provide a balanced coverage of skills of the audience, namely, 30% at the beginner level, 40% at the intermediate level and 30% of expert level. Such an approach not only provides an option for understanding the utility of AI in science and engineering, gathering an abstract overview, while seeking specific demonstrations.

Program committee members

- Dr Jeyan Thiyaalingam (Science and Technology Facilities Council (STFC), UK)
- Dr Satheesh Maheswaran (AWS, UK)
- Prof Kirstine Dale (Met Office, UK)
- Dr Tom Gibbs (NVIDIA, US)

Workshop Schedule (16th May, 2024, from 1400 CET0)

Session	Speaker and title	Title
14:00-14:30	Professor Tony Hey STFC	<i>AI for Science and Engineering – A Global View</i>
14:30-15:00	Professor Rick Stevens/Dr. Charlie Catlet Argonne National Labs	<i>AuroraGPT for Science</i>
15:00-1530	Dr Steve Farrell Lawrence Berkeley National Labs	<i>AI for Science at NERSC on the Perlmutter Supercomputer and Beyond</i>
15:30-16:00	Coffee Break	
16:00-16:30	Dr Ben Fitzpatrick Met Office UK	<i>Harnessing the Power of ML Approaches for Weather Forecasting</i>
16:30-17:00	Dr Murali Emani Argonne National Labs	<i>Towards a Holistic Performance Evaluation of Large Language Models Across Diverse AI Accelerators</i>
17:00-17:30	Dr Satheesh Maheswaran Amazon Web Services	<i>Democratising Access to Infrastructure to Enable Science and Engineering at Scale</i>
17:30-17:45	Dr Tom Gibbs NVIDIA	<i>Closing Remarks</i>

