

HPC-AI Advisory Council Announces 5th Annual APAC HPC-AI Competition that tackles the pressing global problems of human health and sustainability

Jointly Organized with the National Supercomputing Centre (NSCC) Singapore and National Computational Infrastructure (NCI) Australia the Annual Competition Harnesses the AI and HPC Skillsets of Student Teams from around the Asia Pacific (APAC) Region

Sunnyvale, CA / Singapore – May 18, 2022 – HPC-AI Advisory Council, National Supercomputing Centre (NSCC) Singapore and National Computational Infrastructure (NCI) Australia, launched the fifth iteration of the regional APAC HPC-AI student competition. Spanning six intensive months, the annual competition hosts graduate, advanced degree and undergraduate students from across the APAC region to develop their skillsets and challenge their understanding of high performance computing (HPC) and AI technologies as well as showcase their mastery of the two disciplines in a spirited international competition.

The 2022 APAC HPC-AI Competition will see 100s students representing 22 teams from 12 countries and regions in APAC vying for the coveted crown of this year's best team.

This year's competition includes tasks and challenges focusing on three of the hottest research topics and mission critical issues that leverage the power of HPC and AI technologies to further understanding and find solutions for the improvement of human health and sustainability of our planet's resources and environment. These topics include developing future green energy mechanisms using HPC technology; Analyzing and training satellite data with AI technology for better climate modeling and weather forecasting, and; Using deep learning technology to perform DNA Sequence Fast Decoding for enhanced disease prevention and medical care.

The specific tasks of the 2022 competition include:

- **The HPC Task – Quantum ESPRESSO.** Hydrogen (H₂) is considered as a promising and sustainable solution for future energy storage and dispatch. Quantum ESPRESSO can be used to simulate hydrogen separation through thermochemical water splitting.
- **The AI Task – Dask.** Data science, such as Extract, Transform, Load (ETL), and Machine Learning and Graph Analytics, leverage high-level programming languages to accelerate Dask performance in distributed CPU and GPU system. Teams will be specialized in OpenUCX-based Dask-CUDA to provide increased performance and scalability in a GPU cluster.
- **The Innovation Task – Deep Learning Based DNA Sequence Fast Decoding.** Transcription factors (TF) play a key role in the gene expression regulation network. Teams will use Deep Learning-based AI models to decode the Transcription factor binding site in high resolution to better understand transcription factors' regulatory mechanisms.

HPC-AI Advisory Council, NSCC Singapore and NCI Australia will provide support in the form of HPC and AI fundamental education and competition task training for all participants. Additionally, NSCC Singapore and NCI Australia will provide the CPU and GPU clusters from their HPC centers for all teams to practice their code.

“The APAC HPC-AI competition has become a tremendous annual event, bringing hundreds of students from all over the APAC region together to build upon their HPC and AI fundamentals and work on important tasks that are critical to the world,” said Gilad Shainer, Chairman of the HPC-AI Advisory Council. “We wish the students great success in their coming accomplishments and thank NSCC Singapore and NCI Australia for their supercomputing resource support, education and training.”

“The human health and environment related tasks of the 2022 competition are especially relevant to the APAC region that hosts some sixty percent of the world’s population. The annual HPC-AI Competition is a crucial training ground that nurtures the next generation of HPC and AI professionals, and prepares them to meet such challenges head on,” said Associate Professor Tan Tin Wee, Chief Executive of NSCC Singapore. “Our collaboration with the HPC-AI Advisory Council and our close partners from NCI Australia will help accelerate the advancement of HPC and AI skillsets of the region’s student communities.”

“The HPC-AI Competition exposes students to real-world disciplines and encourages new ways of thinking and tackling problems,” said Dr. Jingbo Wang, Manager of Training and Research Engagement at NCI Australia. “We look forward to an exciting, educational competition, and sincerely thank the HPC-Advisory Council for their tremendous collaboration in helping cultivate the region’s talent pool of HPC and AI experts.”

The winning teams will be announced in November 2022 followed by an official award ceremony to celebrate all the competitors at the annual SupercomputingAsia 2023 conference, which will be held in Singapore from the 28 February – 2 March 2023.

For more information on the competition please visit www.hpcadvisorycouncil.com.

About HPC-AI Advisory Council

Founded in 2008, The HPC-AI Advisory Council (HPCAIAC) is a for community benefit organization with over 400 members committed to promoting HPC and AI through education and outreach. Find out more, become a member @ hpcadvisorycouncil.com

About National Supercomputing Centre Singapore

The National Supercomputing Centre (NSCC) Singapore was established in 2015 to manage Singapore’s national petascale facilities and high-performance computing (HPC) resources. As a National Research Infrastructure funded by the National Research Foundation (NRF), the HPC resources that we provide helps support the research needs of the public and private sectors, including research institutes, institutes of higher learning, government agencies and companies. With the support of our stakeholders, for example, the Agency for Science Technology and Research (A*STAR), Nanyang Technological University (NTU), National University of Singapore (NUS), Singapore University of Technology and Design (SUTD), National Environment Agency (NEA) and Technology Centre for Offshore and Marine, Singapore (TCOMS), NSCC catalyses national research and development initiatives, attracts industrial research collaborations and enhances Singapore’s research capabilities. For more information, please visit www.nsc.sg.

About National Computational Infrastructure (NCI) Australia

The National Computational Infrastructure (NCI) is Australia's leading high-performance data, storage and computing organisation, providing expert services to benefit all domains of science, government and industry. NCI brings the Australian Government and the Australian research sector together through a broad collaboration involving the largest national science agencies, universities, industry and the Australian Research Council. NCI empowers government agencies, universities, and industry across multiple domains of research. Our integrated hardware, services and expertise drive high-impact research and groundbreaking outcomes for Australia.