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HPC-AI Advisory Council Announces Results for the 6th APAC HPC-AI Competition

Six-month long competition tackled the pressing global climate problem and large language model inference

Denver, SC23 – November 15, 2023 –The HPC-AI Advisory Council, National Supercomputing Centre (NSCC) Singapore and National Computational Infrastructure (NCI) Australia, today announced the results of the jointly organized, sixth iteration of the regional APAC HPC-AI student competition. Winners included the following:

- The National Tsing Hua University ZY team repeated as champion
- The Nanyang Technological University Neutron team and The Southern University of Science and Technology teams tied for second place
- The National Tsing Hua University SJ team, The Nanyang Technological University Nebula team and The National Cheng Kung University team came in third place
- The Monash University team, The Thammasat University Lampang team, The Kasetsart University team, The Universiti Putra Malaysia team and The Lanzhou University team won the merit place
- The Nanyang Technological University Neutron team won the award for best HPC performance
- The National Cheng Kung University team won the award for best AI performance

This year's competition included the following HPC and AI tasks:

- Model for Prediction Across Scales (MPAS): MPAS is a collaborative project for developing atmosphere, ocean and other earth-system simulation components for

use in climate, regional climate and weather studies. The global climate anomalies had become the focus of research. The target of this HPC competition is to improve the performance of MPAS to provide the better service for human.

- BigScience Large Open-science Open-access Multilingual Language Model (BLOOM): BLOOM is the first multilingual Large Language Model (LLM). With its 176 billion parameters, BLOOM is able to generate text in 46 natural languages and 13 programming languages. Using the AI cluster to provide the distributed inference service has become the trend for BLOOM and similar large models.

During the competition, all teams received state-of-art HPC and AI supercomputer resources and support from NSCC Singapore and NCI Australia to practice their creative ideas. HPC-AI Advisory Council invited industry leaders for each task to help train on the fundamental technologies.

The teams contributed amazing performance improvements for both HPC and AI tasks through creative ideas and innovative code execution. Teams utilized advanced profiling tools to analyze the computing and communication operations to understand where bottlenecks occurred in the applications, as well optimized the performance.

"HPC and AI stand as the indispensable forces propelling scientific and human progress forward, and advanced communication programming plays a pivotal role in empowering large-scale HPC and AI clusters," said Gilad Shainer, Chairman of the HPC-AI Advisory Council. "Thanks to the computing platforms and resources generously provided by NSCC Singapore and NCI Australia, we established a robust foundation for a successful competition, providing students a unique opportunity to expand their knowledge and expertise, collaborate with peers, and help jumpstart their careers."

"The teams this year showcased the power of innovation and collaboration in addressing global challenges. The competition tasks not only pushed the boundaries of HPC and AI but also underscored their pivotal role in shaping our future," said Associate Professor

Tan Tin Wee, Chief Executive of NSCC Singapore. "Congratulations to this year's winners and to all participating teams. We look forward to seeing how their transformative solutions will address existing challenges and create greater opportunities in the future."

"Through our dedication to advancing computational research and fostering regional collaboration, NCI Australia continues to be a cornerstone of support for the growth and success of the APAC HPC-AI competition, driving innovation and excellence in the field of high-performance computing and artificial intelligence," said Prof Sean Smith, Director of NCI Australia. "By fostering innovation and collaboration, NCI Australia plays a vital role in empowering the next generation of HPC-AI experts in the APAC region, driving advancements that have the potential to transform healthcare and research worldwide."

The 6th APAC HPC-AI Competition Award ceremony will be held during the SupercomputingAsia 2024 conference, Sydney, Australia from 20 February – 23 February.

For more information on the APAC HPC-AI 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 450 members committed to promoting HPC and AI through education and outreach. Find out more, become a member @ hpcadvisorycouncil.com

About National Supercomputing Centre Singapore
Established in 2015, the National Supercomputing Centre (NSCC) Singapore manages Singapore's first national Petascale facility providing high performance computing (HPC) resources. As a National Research Infrastructure, NSCC supports private and public sector research including commercial companies, government agencies as well as higher education and research institutes. Through the support of its stakeholders

including 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); the National Environment Agency (NEA) and Technology Centre for Offshore and Marine, Singapore (TCOMS); and funded by the National Research Foundation (NRF), NSCC catalyses national research and development initiatives, attracts industrial research collaborations and enhances Singapore's research capabilities. For more information, please visit: nscc.sg

About National Computational Infrastructure (NCI) Australia
The National Computational Infrastructure (NCI) is Australia's leading high-performance data, storage and computing organization, 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.