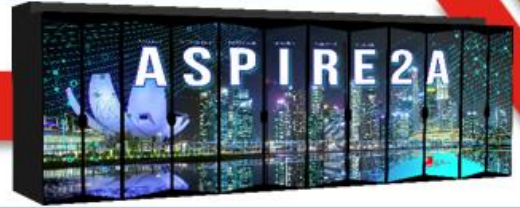


# NEWSBYTES

November 2024



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## CORPORATE NEWS

## HPC in Action: NSCC Singapore's Highlights from SC24 Atlanta



Singapore delegates at SC24 Atlanta.

Singapore delegates were in action at the prestigious annual conference to promote the nation's high performance (HPC) advancements through various initiatives and partnerships.

### EcoTuner Tool Demonstration

One of the main highlights at NSCC Singapore's exhibition booth was the demonstration corner for EcoTuner, a unique tool designed to optimise GPU power efficiency automatically.



NSCC Singapore's capability team members - Mr Wang Yi and Mr Chung Shin Yee, showcasing EcoTuner's performance at the SC24 exhibition floor.

The demonstration showcased the EcoTuner's ability to balance performance and energy consumption, enabling GPUs to deliver peak performance with enhanced energy efficiency.

This innovative tool garnered attention and sparked discussions amongst researchers, industry professionals, and international delegates at our booth.

### 15th Alliance of Supercomputing Centres (ASC) Meeting

The 15th ASC meeting convened on 19 November 2024 and brought together HPC leaders from Australia, Finland, Ireland, Japan, Saudi Arabia, Singapore, South Korea, Sweden, Taiwan, and Thailand.



Dr Terence Hung, Chief Executive of NSCC Singapore, presenting the centre's latest updates at the 15th ASC Meeting.

During the meeting, representatives from the respective HPC centres shared about the recent progress in the national supercomputing systems, upcoming system upgrade plans, talent development strategies and potential areas of international collaboration. This meeting underscored the ASC's role in fostering international cooperation, facilitating knowledge exchange, and addressing shared challenges in the evolving HPC landscape.



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## Networking Dinner hosted by NSCC Singapore

NSCC Singapore hosted an exclusive networking dinner, inviting leaders from diverse HPC centres and international partners to engage in productive interactions with representatives of the Singapore HPC community.



International partners connecting and engaging in discussions at the networking session.

HPC is a key enabler of crucial research and technological progress in Singapore, and through these global connections, the Singapore HPC community was able to broaden its perspectives, enabling the potential to drive impactful HPC advancements on a global scale.

## Bilateral Meetings: Forging Global Partnerships



Bilateral meetings with various international HPC Centre Partners at SC24 Atlanta.



NSCC Singapore held bilateral meetings with leading HPC centres to discuss concrete collaboration plans for the coming years, focusing on system benchmark sharing, hybrid computing research, and talent exchange opportunities. By gaining insights from international HPC partners, the team is now better equipped to address similar challenges in HPC systems and applications, strengthening its ability to serve and support the HPC community in Singapore.

Supporting Nanyang Technological University (NTU) and National University of Singapore (NUS) student teams at the Student Cluster Competition (SCC)



Student teams from NTU and NUS, supported by NSCC Singapore, participated in the SCC at SC24.

NSCC Singapore congratulates the NTU Supernova Team for their remarkable achievement at SC24 SCC. The team secured the Best High-Performance Linpack (HPL) Score. This year's SCC presented students with hands-on HPC challenges, featuring benchmarks such as High-Performance Linpack (HPL), MLPerf Inference, and a Mystery Benchmark, along with real-world applications like Nanoscale Molecular Dynamics (NAMD) and ICOSahedral Nonhydrostatic Modelling (ICON).

NSCC Singapore is proud to support both the NTU and NUS student teams, enabling them to compete on global stages like SCC and gain valuable exposure to cutting-edge innovations in academia and industry.

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## Celebrating Prof Alex Siow's Impact on Skills Development and Cybersecurity Leadership



Professor Alex Siow receiving the SkillsFuture Fellowship Award from the President of Singapore, Tharman Shanmugaratnam and the Hall of Fame Award from the Senior Minister of State, Ministry of Digital Development and Information & Ministry of National Development, Tan Kiat How.

Congratulations to Professor Alex Siow, Senior Advisor for Digital Strategy at NSCC Singapore and Professor at NUS School of Computing, on receiving two prestigious honours: the 2024 SkillsFuture Fellowship and induction into the Hall of Fame at The Cybersecurity Awards 2024!

Presented by the President of Singapore, the SkillsFuture Fellowship recognises individuals with deep expertise, lifelong learning, and contributions to talent development. The Cybersecurity Awards, organised by the Association of Information Security Professionals (AiSP), honours impactful contributions to the cybersecurity landscape.

During his tenure as President of the Singapore Computer Society (1997–2001), Prof Siow introduced the Certification in IT Project Management and established the SCS Resource Centre. As a Senior Advisor and mentor, he continues to shape future IT leaders and advise global business and technology stakeholders.

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# HPC and Quantum: A Glimpse into the Future at SWITCH 2024

At SWITCH 2024, NSCC Singapore and the National Quantum Computing Hub (NQCH) showcased Singapore's advancements in supercomputing and quantum research.



NQCH booth at SWITCH 2024.

As a key partner in the National Quantum Computing Hub (NQCH)—a collaboration with the Centre for Quantum Technologies (CQT) at NUS and the Institute of High Performance Computing (IHPC) at A\*STAR—, NSCC Singapore plays a vital role in highlighting how supercomputing accelerates breakthroughs in quantum research. By leveraging advanced HPC infrastructure, the collaboration aims to build a thriving ecosystem that fosters quantum innovation in Singapore.

At SWITCH 2024, NQCH showcased how quantum technologies are shaping Singapore's future across diverse fields, including quantum chemistry, computational biology, finance, and combinatorial optimisation. Visitors learned how HPC supports complex simulations, drives algorithm development, and scales quantum technologies to real-world applications.

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# NSCC Singapore Hosts French Chamber of Commerce and Tsinghua University Delegates for Data Centre Showcase

*NSCC Singapore hosted visitors at Singapore's tropical data centre, highlighting its supercomputing capabilities and sustainable innovations.*



Visitors from the French Chamber of Commerce and Tsinghua University touring the NUS NSCC Data Centre located at the NUS i4.0 building.

In November, NSCC Singapore hosted visitors from the French Chamber of Commerce in Singapore and Tsinghua University at NUS i4.0 building for a tour of Singapore's supercomputers. Participants gained insights into NSCC Singapore's role as the national HPC infrastructure provider and the innovative approach to sustainable data centre operations in a tropical climate.

The tour included a briefing on NSCC Singapore's vision, followed by a walkthrough of Singapore's first tropical data centre, showcasing the ASPIRE2A and ASPIRE2A+ supercomputers and innovative cooling solutions such as direct-to-chip hot water cooling, thermosiphon rear door systems, and ambient air cooling.

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## 7<sup>th</sup> APAC HPC-AI Competition: Driving Creativity and Pushing the Boundaries in Supercomputing





In collaboration with the NSCC Singapore and National Computational Infrastructure (NCI) Australia, the HPC-AI Advisory Council recently concluded the 7<sup>th</sup> APAC HPC-AI Student Competition. The regional event challenged student teams to tackle real-world problems in HPC and Artificial Intelligence (AI), including tasks like HOOMD-blue, a particle simulation toolkit, and Llama 2, Meta AI's large language model with up to 70 billion parameters.

Teams were provided with state-of-the-art supercomputing resources and technical guidance from industry leaders, enabling them to achieve remarkable performance improvements through creative problem-solving. This year also saw the competition's first all-women team, a milestone reflecting the growing diversity in HPC and AI.

The competition continues to equip students with invaluable hands-on experience in cutting-edge supercomputing systems, preparing them to tackle real-world challenges in computation science and AI. These initiatives are critical in fostering innovation and nurturing the necessary talent to drive advancements in the field. Congratulations to all the teams for their outstanding contributions and accomplishments in the 2024 competition!

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## Enhancing Simulation Efficiency on GPUs - NSCC Singapore's November Workshop

*NSCC Singapore organised a workshop for experienced scientists and researchers in optimising molecular simulations using GPU and HPC resources.*



Attendees at the GROMACS workshop.



NSCC Singapore recently hosted a GROMACS workshop for scientists and researchers seeking to optimise their molecular simulations on GPUs. The session, attended by 16 participants from various universities and research institutes, focused on enhancing users' proficiency in utilising GPU and HPC resources efficiently. Participants explored GROMACS options, environment setups, software versions, and containerisation while comparing CPU and GPU performance on A100 and H100 GPUs. Scalability based on atom counts was another key discussion area, providing valuable insights for attendees.

A newly introduced Slack channel facilitated real-time communication during the workshop and served as a platform for ongoing engagement. Many participants found it particularly useful for collaboration and follow-up discussions. Feedback highlighted the value of learning about environmental variables, even for experienced users, and survey responses showed strong interest in more workshops of this nature, emphasising the importance of building expertise in optimising computational resources.

NSCC Singapore regularly holds training and engagement workshops for users and the HPC community in Singapore. Be sure to check our [Events](#) page for updates on upcoming user workshops!

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## **SupercomputingAsia 2025 (SCA25) Call for Papers: Extended Deadline for Submissions till 10 December 2024 (AoE)**



SCA25 is an annual international conference encompassing an umbrella of notable supercomputing events with the key objective of promoting a vibrant and relevant HPC ecosystem in Asia. Co-organised by HPC centres from Australia, Japan, Thailand and Singapore, the SCA25 will be held from 10 to 13 March 2025 as an in-person conference in Singapore.

The SCA25 Technical Conference will be held in conjunction with the event as a key conference track. Led by our Technical Programme Chair, Dr. Dhabaleswar K. Panda, Professor and Distinguished Scholar of Computer

Science and Engineering at Ohio State University (OSU), USA, the Technical Conference aims to provide a platform for researchers and experts from academia and industry to present their latest research findings in the field of HPC.

We encourage submissions on a broad range of topics, including but not limited to:

- Applications and Algorithms
- Programming Models and System Software
- Data, Storage and Visualisation
- Architectures and Networks

For detailed information on submission procedures and conference tracks, please visit the official [SCA25 Call for Papers website](#).

The registration for the SCA25 conference in Singapore will start soon. Register your interest to learn more and to be kept updated on developments here – [SupercomputingAsia 2025](#).

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## **Kickstart your HPC journey with a Certificate of Competency (CoC) from NSCC Singapore and Institute of Technical Education (ITE) College West**



Jointly run by NSCC Singapore and ITE College West, this SkillsFuture-approved CoC course is designed to provide participants with foundational knowledge in HPC.

Through co-training by ITE lecturers and NSCC Singapore specialists, participants will learn to access HPC remotely via a virtual platform. This hands-on experience will enable them to work on thousands of computing nodes, executing complex program tasks at high speed—essential for accelerating the development of deep learning AI applications.

Key learning outcomes of this course include:

- Basic building blocks of a supercomputer
- Understanding the PBS Scheduler
- Environment setup and file transfer
- Resource allocation and Job Submission
- Real-world use cases and accessing HPC resources
- Practical AI project using HPC

NSCC Singapore will provide training accounts with computing resources for hands-on practice. Upon successful completion, participants will receive a CoC in Introduction to HPC, along with a Certificate of Participation from NSCC Singapore.

The next course intake begins on 12 December 2024. Course fees can be paid using SkillsFuture credits.

For further details, please visit the [CoC website](#).

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*Shared articles and news from the HPC world.*

## HPCwire 35 Legends

*HPCwire celebrated the inaugural HPCwire 35 Legends Class, honouring 35 individuals for their transformative contributions to HPC over the past 35 years.*

On Tuesday, November 19th, 2024, HPCwire hosted a special luncheon to honour the inaugural HPCwire 35 Legends Class of 2024, an annual list recognizing 35 individuals who have profoundly shaped the HPC community.

The luncheon celebrated the remarkable achievements of researchers, inventors, and executives who have driven advancements in technology, science, and innovation over the past 35 years.



Credit: HPCwire

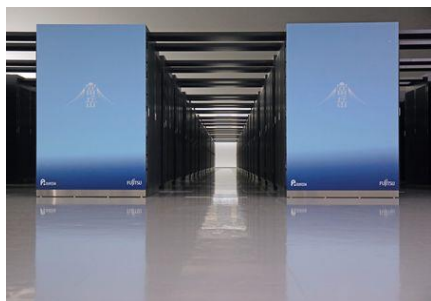
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## Japan's Fugaku Remains Top in 2 Supercomputer Rankings

Japan's Fugaku supercomputer secures the top spot in global industrial computing and big data rankings for the 10th consecutive time.



Credit: Nippon.com

Japanese research institute Riken said that the Fugaku supercomputer, developed jointly with Fujitsu Ltd., topped two global rankings for the 10<sup>th</sup> consecutive time. Since its global ranking debut in June 2020, Fugaku has consistently held the top spot in the High Performance Conjugate Gradients ranking, which measures industrial computing power, and the Graph500 ranking for big data analysis.

[Read more](#)

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## US' El Capitan Is Now the World's Fastest Supercomputer

The supercomputer, housed at Lawrence Livermore National Laboratory, delivers a performance of 1.742 exaFLOPs.

Following years of development, the US' El Capitan supercomputer now ranks as the world's fastest, dethroning the previous champion, Frontier, another US exascale computer.

In a recent verified test, El Capitan achieved 1.742 exaFLOPs of performance or 1.742 quintillion calculations per second, according to Lawrence Livermore National Laboratory in California, where the supercomputer is based.



Credit: PCMag

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