NEWSBYTES

December 2022

ASPIRE 1

REACHING OUR USERS

In this Issue…

CORPORATE NEWS

Setting the benchmark

NTU student team bests top teams from around the world to clinch Competition Overall Runner Up and the Best Poster award in the Student Cluster Competition at SC22.

Top Row (left to right): Duong Ngoc Yen (CS, Year 3), Zhong Shaojie (DSAI, Year 3), Tan Jia Qing (CS, Year 4)
Bottom Row (left to right): Wang Ruisi (CS, Year 3), Loke Yuan Ren (Advisor), Wang Di (EEE, Year 4), Aurelio Jethro Prahara (DSAI, Year 4)

Interested to have your research published in NSCC's NewsBytes?

We are looking for *guest writers / contributors* to be part of our e-newsletters, which are sent out to a subscriber base of more than **7,500** monthly.

If you are interested in contributing content to our NewsBytes, drop us an email at **e-news@nscc.sg** and we'll be in touch with you!

The Student Cluster Competition (SCC) at the Supercomputing Conference is an annual competition that offers undergraduates and high school students from around the world an immersive experience in HPC. Student teams are tasked to design and build small clusters and, over the course of 48 hours, complete real-world

scientific workloads in the presence of dedicated judges and the Supercomputing Conference at large. Among the tasks is the Reproducibility Challenge, in which teams attempt to reproduce results from a paper from the previous year's conference technical program.

After nearly a three-year lockdown, NTU student team Supernova, comprising of students from various undergraduate programmes from the School of Computer Science and Engineering and the School of Electrical and Electronic Engineering, returned to the SCC in-person. The team bested 12 other teams from across the United States, Europe, and Asia to take home Overall 2nd Place as well as the Best Poster Award. The team was guided by A/Prof Francis Lee Bu-Sung (NTU), Dr Loke Yuan Ren (NTU), Mr Liu Siyuan (NTU), Mr Yang Shenghao, Dr James Chen Jen-Chang (AWS), Dr Jernej Zidar (NSCC) and Mr Terry Yin Jianxiong (NVIDIA).

"The consistency of the students' performance over the years is attributed to their hard work, lots of sacrifices over many weekends and the support of the entire high performance computing ecosystem such as the NTU HPC Club, alumni team members, NSCC staff and our other sponsors. I am very proud of all they have accomplished", said Dr Loke Yuan Ren, advisor to the team.

Check out team Supernova's SC22 poster here. To learn more about the SCC series, visit the Student Cluster Competition website.

Empowering the next generation of high-performance computing leaders

70 students from the ASEAN Member States completed the EU-ASEAN High-Performance Computing (HPC) School 2022 in Bangkok, Thailand

Created out of the collaboration between the European Union (EU) and the Association of Southeast Asian Nations (ASEAN), the EU-ASEAN HPC School is a week-long intensive course on HPC and its applications to applied scientific research. Endorsed by the ASEAN HPC Task Force, the school is funded by the EU and is organised through the Enhanced Regional EU-ASEAN Dialogue Instrument (E-READI), a demand-driven programme that supports ASEAN regional integration by strengthening EU-ASEAN networks and exchanging knowledge and experience in policy areas of joint interests.

Hosted this year by Kasetsart University in Bangkok, Thailand, the 2nd HPC School invited renowned experts and luminaries from the EU, ASEAN, Japan and beyond, including 2021 Turing Laureate Prof. Jack Dongarra.

The school offered courses on HPC design and programming as well as hands-on experience on world-class supercomputers such as Japan's Fugaku, Europe's LUMI and Meluxina, and National Supercomputing Centre (NSCC) Singapore's ASPIRE 1. Students also had the opportunity to visit Thailand's NSTDA Supercomputer Center, or ThaiSC.

"This event shows how vibrant and impactful the partnership between the EU and ASEAN is. The learnings from this rigorous yet exciting week will not only shape your career but also improve the lives of the many people who will benefit from your expertise," Igor Driesmans, EU Ambassador to ASEAN, told the students.

"HPC is increasingly used to solve complex problems. It has been incredible to witness all participants – students, speakers, luminaries, and guests – connect and engage in person, learning and discussing key facets of this field. It doesn't matter where they come from and what they do. They speak the same language: the language of science," said Fabrizio Gagliardi, HPC school director.

For more information and updates on applications for the HPC School 2023, visit https://www.hpcschool.net.

SingAREN receives SCinet Spirit of Innovation Award

The award recognises SingAREN's commitment in providing critical bandwidth and technical capabilities for the research and education community, enabling critical scientific collaboration and discovery.

SCinet has awarded the SCinet Spirit of Innovation Award to seventeen organizations who were instrumental in supporting demonstrations of large-scale international science at SC22 during a private ceremony on Monday, November 14. Those recognized are: AARNet, APONET, ARENA-PAC, CENIC, Ciena, Cisco, HARNET, Internet2, KISTI, NICT, NII, Pacific Northwest Gigapop, REANNZ, SingAREN, TransPAC, University of Hawaii, and Verizon.

The seventeen organisations recognised with the SCinet Spirit of Innovation Award were instrumental in supporting some of the more outstanding demonstrations involving international engagement.

"The winners of the 2022 SCinet Spirit of Innovation Award have embraced the spirit of collaboration and cooperation that showcases the best there is to offer in demonstrating, implementing, and operating leading-edge solutions to challenging problems," said Matt Zekauskas, SCinet chair. "This collaboration is truly special to SCinet, and we are all encouraged by and appreciative of their efforts to showcase partnership and innovation."

A/Prof Francis Lee, Founding President of SingAREN receiving the award
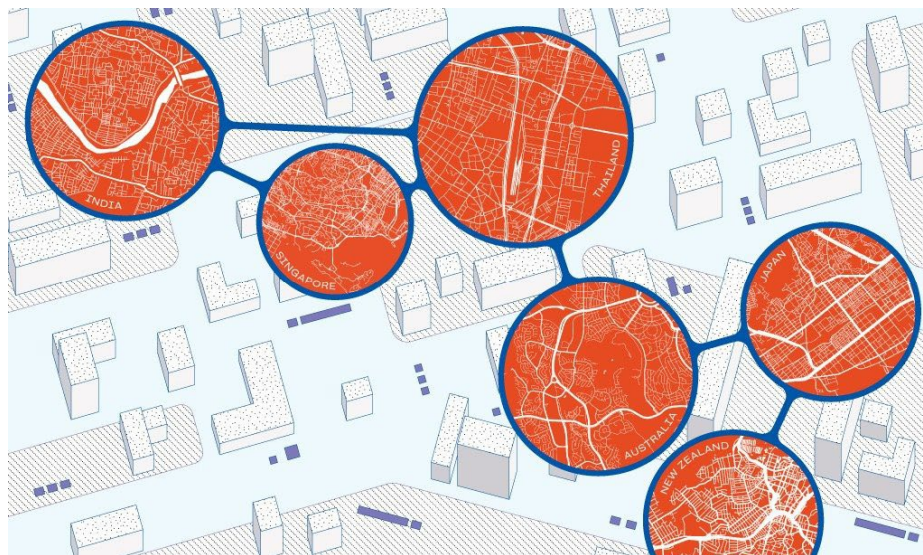
Asia's HPC Scorecard

Emerging from the global pandemic, the vitality and dynamism of Asia Pacific's supercomputing sector is almost palpable. From climate modeling to precision medicine, the frontiers of human knowledge are constantly being challenged—and this pursuit is not looking like it's losing momentum any time soon.

In the spring of 2020, amidst a crippling pandemic, Japan's Fugaku supercomputer, eponymously named after Mount Fuji, roared to life—thanks to the unwavering resilience of the teams at RIKEN, the country's largest research institution, and Fujitsu. Named after the highest peak in Japan, Fugaku symbolizes the nation's aspirations for a supercomputer with towering capabilities. Indeed, shortly after its debut, the data-crunching beast scaled its way to the summit of the TOP500 list, making Asia home to the world's fastest supercomputer at the time.

"Fugaku as a supercomputer has never been about ranking," said Professor Satoshi Matsuoka, director of the RIKEN Center for Computational Science, during an interview with Supercomputing Asia in 2021. "Rather, our goal was to achieve application results and swiftly respond to important and difficult societal goals and problems."

Though Fugaku has recently lost its position as the world's fastest supercomputer to Frontier of the United States' Oak Ridge National Laboratory, it's noteworthy that Fugaku has held its crown for two consecutive years—an impressive feat that will no doubt leave behind a legacy. Above all, Fugaku offered a beacon of hope in Japan's battle against the novel coronavirus. Made accessible almost a year ahead of schedule, the supercomputer turbocharged a swath of computationally intensive research to suppress the wrath of COVID-19. From deducing the recommended partition height to preventing virus spread, and from modeling the dispersion of droplets to assessing the effectiveness of face masks and more, Fugaku was instrumental in informing policy responses to keep the nation's infection rate at bay during the early stages of the pandemic.

As the world moves towards an endemic phase, Fugaku remains active in a panoply of scientific and industrial ventures. Marrying powerful compute with intelligent algorithms, researchers have revealed the origin story for carbon-12—an essential building block for life—in the turbulent cosmos, as well as slashing the runtimes of high-precision aircraft simulations from hours to mere minutes, among many other accomplishments.

While Japan is keen to build on Fugaku's achievements by grooming a successor, several countries in Asia such as Thailand, India, New Zealand and Australia are also the epicenter of exciting developments in high performance computing (HPC). Whether modeling molecular structures in quantum chemistry, assembling de novo genomes, evaluating the climate, or probing the depths of the universe, HPC is accelerating businesses and research workflows across research fields and industries.

Head over to www.nscc.sg/supercomputing-asia-magazine/ to read the full article published in the July 2022 issue of NSCC's Supercomputing Asia Magazine.

This article was first published in the print version of Supercomputing Asia, July 2022.
Credit: Mitchell Lim, Writer, Asian Scientist Magazine

Shared articles and news from the HPC world.

Microsoft sets up its first Asian data centre academy with ITE
To provide students with hands-on training to develop DC industry skills.

Microsoft has launched its first Data Centre Academy (DCA) in Asia in partnership with Singapore's Institute of Technical Education (ITE). The DCA is a five-year commitment on the part of Microsoft to empower around 300 ITE students to acquire applied data centre skills. Microsoft said the DCA was an extension of its commitment to empowering ITE students to "thrive in a growing ICT sector". Read more at iTNews Asia here.

Credit: ITE

Back to main content list

EuroHPC and Forschungszentrum Jülich Sign Hosting Agreement for Exascale Supercomputer JUPITER
JUPITER will be the first European exascale supercomputer.

A hosting agreement has been signed between the European High Performance Computing Joint Undertaking (EuroHPC JU) and the Jülich Supercomputing Centre (JSC) where JUPITER, the first European exascale supercomputer will be located. This means that it is set to be the first system in Europe to surpass the threshold of one billion calculations per second. This next-generation European supercomputer represents a significant technological milestone for Europe and will have a major impact on European scientific excellence. Read more at HPC Wire here.


Credit: EuroHPC JU

Back to main content list

Solving the Space Junk Crisis with HPC
Ocean pollution threatens the lives of the people and animals who rely on the ocean for food and as a habitat, creating what some have called an existential crisis. But did you know there is a similar crisis developing in space?

Beginning with the launch of the Sputnik satellite in 1957, humanity has placed thousands of objects into space. Many of these anthropogenic objects remain in orbit to this day, and a great deal of these are no longer useful. There are an estimated 30,000 objects orbiting the Earth ranging in size from a cell phone to a space station, and those are just the items large enough to be tracked. These disused objects are obstructing the "orbital highways" surrounding Earth and are often poorly monitored as they threaten to collide with important satellites and items still in use. Read more at HPC Wire here.
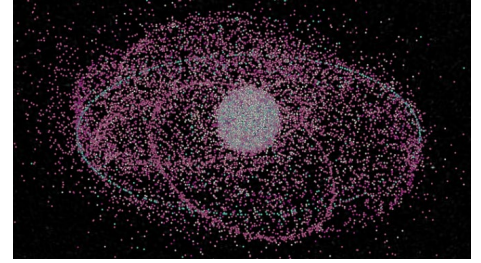
Back to main content list

Powering Innovation
Supercomputing in Asia
National Supercomputing Centre (NSCC) Singapore
1 Fusionopolis Way, Connexis South, #17-01 Singapore 138632