National Supercomputing Centre (NSCC) Singapore e-newsletter

NEWSBYTES

October 2022

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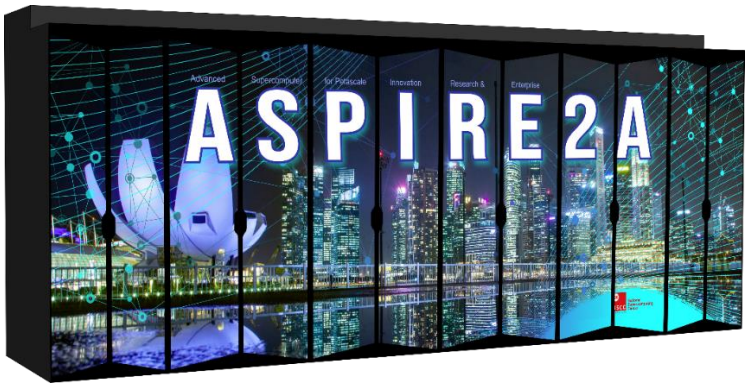
CORPORATE NEWS

IT'S HERE! Be one of the first to access Singapore's next generation supercomputer, the ASPIRE 2A!

NSCC has launched the Call for Early Use of ASPIRE 2A to open the ASPIRE 2A to all interested applicants for the early use of the system in preparation for the official system launch.



The development of Singapore's next generation national supercomputer system plus upgrades to the national storage and research network infrastructure is well underway. The ASPIRE 2A is expected to provide up to 10 Petaflops (10 PFLOPS) of computing capacity and is eight times more powerful than the current ASPIRE 1 supercomputer. The new supercomputer is the first in a series of systems that will form the backbone of the nation's future supercomputing resources which will support research in areas like climate change, biomedical science and smart nation activities, etc.

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!

This call aims to open the ASPIRE 2A to all interested applicants for the early use of the system in preparation for the official system launch. This will allow users to be better prepared to use the system more effectively. NSCC will be accepting applications while getting the system ready. Once the system is ready, NSCC will inform all successful applicants on the onboarding process.

This call is open to all researchers from NSCC's stakeholder organisations (A*STAR, NTU, NUS, SUTD, TCOMS, NEA, ETH, PRECISE) and partners. Priority will be given to users with existing projects. Note that projects from the Jan'22 Cycle (ending 31 Dec 2022) who wish to continue their project should apply for this call. For users with existing projects, the project data will be migrated from ASPIRE 1 to ASPIRE 2A. Once the software is successfully running on ASPIRE 2A, users will have the opportunity to have their existing project allocation will be transferred from ASPIRE 1 to ASPIRE 2A, along with the benefits that the ASPIRE 2A environment brings.

Resource allocation period	Q4-2022 until 30 June 2023 (subject to changes) Successful applicants will be informed **as soon as the system is ready for use** **Note that details of the application results will be notified to all applicants via email.*
Application period	1 October 2022 to 31 May 2023 (subject to changes) **Note that the applications will be accepted and reviewed on an ad-hoc basis. Do expect a lead time of about 1-3 weeks.*

Head over to https://help.nscc.sg/call-for-early-use-of-aspire-2a/ for more information about the call and apply now!

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NSCC's annual Call for Projects to Fugaku is back

Tap into one of the world's fastest supercomputers to supercharge your research.

An agreement signed between Japan's Research Organization for Information Science and Technology (RIST) and National Supercomputing Centre (NSCC) Singapore last year opened the path for Singapore researchers to regularly access and request for supercomputing resources on Japan's Fugaku system, one of the world's most powerful supercomputers.

The next **Call for Projects to Fugaku** will be launched on 1 November 2022 and applications are open from 1 - 30 November 2022. Upon approval, the first projects can expect to start using the Fugaku system from April 2023. The maximum amount of Fugaku resources available to Singapore researchers annually will be capped at 1M Node Hours (NH), or about 5 research projects, with a maximum duration of one year for each project to use the approved resources. More information about the Call for Projects to Fugaku will be published on www.help.nscc.sg/project-calls and www.nscc.sg on 1 November.

Interested to apply for available resources on Fugaku? Singapore researchers are invited to a **joint NSCC-RIKEN-RIST briefing session on 8 November 2022** where speakers from NSCC, RIST and RIKEN Center for Computational Science (R-CCS) will be on-hand to introduce the system and how you can optimise your work on the mighty Fugaku.

Programme

1:00 - 1:15pm	Outline of Fugaku Project Call by Mr. Danny Lim, Deputy Director, NSCC
1:15 - 1:30pm	Introduction to Fugaku by Dr. Fumiyoshi Shoji, Division Director, Operations & Computer Technologies Division, R-CCS, RIKEN
1:30 - 1:45pm	Introduction to application software developed in Japanese national projects and program for promoting research on Fugaku by Dr. Yoshinori Kusama, General Manager, Department of HPC Support, Kobe Center, RIST
1:45pm - 1:55pm	Q&A

8 NOVEMBER 2022, TUESDAY

1:00PM – 2:00PM (Singapore Time / UTC+8)

VIA ZOOM

REGISTER HERE

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Conference on Next Generation Arithmetic (CoNGA) 2023 Call for Papers

Abstract and paper submissions are now open!

CoNGA is the leading conference on emerging technologies for computer arithmetic. The demands of both AI and HPC have led the community to realise that something better than traditional floating-point arithmetic is needed to reach the speed, accuracy, and energy-efficiency that are needed for today's most challenging workloads. In particular, posit arithmetic is achieving rapid adoption as a non-proprietary format, but CoNGA welcomes papers about any arithmetic format that breaks from the past and shows merit and promise.

CoNGA will be held in conjunction with Supercomputing Asia 2023 (SCA23), an annual international conference that encompasses 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 SCA23 will be held from ***27 February to 2 March 2023*** in Singapore. In conjunction with SCA23, the HPC Asia 2023 conference will also be co-located with SCA23 in Singapore for the first time.

CoNGA invites original contributions on topics related to next generation arithmetic, specifically universal number (unum) and posit arithmetic, including, but not limited to:

- Posit & Valid Arithmetic
- Artificial Intelligence Data Formats
- Energy Efficient Arithmetic
- Right Sizing Precision

Authors are invited to submit manuscripts of original, unpublished research and recent development in next generation arithmetic (NGA). The submitted manuscripts can be up to 16 pages, written in English and formatted according to the Springer's LNCS format's templates without changing default margins, fonts, etc. Accepted manuscripts will be published as a part of Lecture Notes in Computer Science (LNCS) revised post-proceedings volume. CoNGA'22 volume can be found here.

Prof John L. Gustafson (Co-General Chair)
Visiting Scholar / Researcher, Arizona State University, United States

Dr Marek Michalewicz (Co-General Chair)
Sano – Centre for Computational Personalised Medicine - International Research Foundation, Kraków, Poland
Consultant, National Supercomputing Centre (NSCC) Singapore

Dr Cerlane Leong (Program Chair)
Swiss National Supercomputing Centre

Abstract Submissions Due: 7 November 2022

Paper Submissions Due: 30 November 2022

Notice of Acceptance: 31 December 2022

SUBMIT HERE

The conference proceedings will be published in Springer Nature's Lecture Notes in Computer Science (LNCS). More information about CoNGA 2023 Call for Papers available here. Please contact the CoNGA Conference Chairs at contact@posithub.org for programme related matters. For all other queries/clarifications, please email papers@sc-asia.org and indicate '<CoNGA23>' in the subject header of your email.

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Keeping Time On Asia's Race To Exascale

All over the world, leading supercomputing centers have begun to reach the lofty goal of exascale computing.

As a general rule of the trade, researchers are constantly working towards achieving bigger, better and faster tools. This is especially true when it comes to high performance computing (HPC)—a field that underpins a variety of modern research endeavors from climate studies to biomedical sciences.

For the last 14 years, the sector has been operating at petascale—beginning with IBM's Roadrunner in 2008, capable of a sustained performance of 1.026 quadrillion floating point operations per second, or 1.026 petaFLOPS. The next major milestone, operating at a quintillion FLOPS—known as exascale—has just been officially reached. Looking ahead, exascale computing is expected to drive research across the globe with speedy and efficient calculations.

Just this year, the TOP500 list of the world's fastest supercomputers revealed the Frontier system at Oak Ridge National Laboratory in the United States to be the first 'true' exascale machine—achieving a LINPACK performance of 1.102 exaFLOPS. However, it is important to note that there have been other machines to operate at exascale, like Japan's Fugaku, where the feat was achieved at alternative benchmarks rather than the most commonly applied LINPACK benchmark.

While the Frontier system is considered the first true exascale machine at the moment, it may not be the only one for long as Asia's supercomputing centers leap towards sustained exascale performance.

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 to find out how HPC centres in Asia are levelling up and making great strides towards exascale computing.

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

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THE LAST BYTE...

<SHARED CONTENT>

Shared articles and news from the HPC world.

Poland Inaugurates Athena Supercomputer

The AGH University of Science and Technology has inaugurated its Athena supercomputer.

Athena, installed last year, delivers nearly 8 peak petaflops of computing power. The system is intended to serve general research purposes and to help generate papers, patents and "solutions for the innovative economy." Athena is now the fastest supercomputer in Poland. Read more at HPC Wire here.

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The first exascale supercomputer has a hardware failure every day

It's still on schedule to start work in January

In May, Frontier joined the TOP500 as the first supercomputer to break the exascale barrier after it completed the HPL benchmark with a score of 1.102 ExaFlops/s. Since then, the Oak Ridge National Laboratory in Tennessee, which manages the supercomputer, has been readying it for scientific research scheduled to start in January. However, there have been reports that the launch of Frontier could be waylaid by excessive hardware failures. Read more at Tech Spot here.

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Shocking Experiment Indicates Our Brains Use Quantum Computation

The results of an experiment to explore the human brain and its workings, which was adapted from an idea developed to prove the existence of quantum gravity, indicate that our brains use quantum computation.

Credit: SciTech Daily

Scientists believe our brains could use quantum computation after taking a concept developed to prove the existence of quantum gravity and adapting it to explore the human brain and its workings. The discovery may shed light on consciousness, the workings of which remain scientifically difficult to understand and explain. Quantum brain processes could also explain why humans can still outperform supercomputers when it comes to unforeseen circumstances, decision-making, or learning something new. Read more at SciTech Daily here.

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