

National Supercomputing Centre (NSCC) Singapore e-newsletter

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A Memorandum of Understanding (MoU) was signed by the various SYNAPSE partners at the inauguration of the project on 15 January 2020.



Ambitious project to map the human brain by 2024

Synchrotron for Neuroscience – an Asia Pacific Strategic Enterprise (SYNAPSE) is an international project that is aiming to create a comprehensive ultra-high resolution 3D map of the human brain with the help of supercomputing resources.



The launch of the SYNAPSE project included the inauguration ceremony and a dedicated workshop on HPC for Human Brain Imaging which was held at NSCC.

Teams of more than 1,000 researchers from Singapore, Australia, China, Japan, South Korea and Taiwan will be working together to develop a new mapping technique that relies on powerful x-ray technology provided by six synchrotron facilities that form the SYNAPSE consortium. The potentially first-of-its-kind ultra-high resolution map of the human brain's neural network could be used to develop more effective treatments for brain diseases like dementia and other neurodegenerative conditions. A network of high performance computing centres across the region, including NSCC, will be mobilised to help rapidly process, store and used to analyse the huge amount of data that is expected to be generated.

"What we are setting out to do is a world-first enterprise. The images captured with unprecedented speed, clarity and granularity by The potentially first-of-its-kind ultra-high resolution map of the human brain's neural network could be

used to develop more effective treatments for brain diseases like dementia and other neurodegenerative conditions.



Read more about SYNAPSE in the media release, <u>'World's first ultra-high resolution 3D comprehensive</u> <u>mapping of human brain kicks off'.</u>

Learn more about the project in the video, 'Human Brain Mapping Project by SYNAPSE'. SYNAPSE will form an extensive human brain map. They will show how neurons are connected and how they interact to result in cognition and intelligence. Our findings could potentially contribute to effective treatment for increasingly important neurodegenerative pathologies such as Alzheimer's disease and other forms of dementia," explained Associate Professor Low Chian Ming from NUS who leads the team from Singapore and is a cofounding member of SYNAPSE.

In Singapore, SYNAPSE will leverage the petascale supercomputing facilities at NSCC and will link to other SYNAPSE partners via the established highspeed 100G international network connections of the Singapore Advanced Research and Education Network (SingAREN). The Singapore team will also conduct its imaging work at the Singapore Synchrotron Light Source (SSLS) facility located in NUS.



We wish to thank all of you who had registered, our valued sponsors, our partners and friends for the support that you had shown SCA20.

Fret not! Preparations are already in the works for SupercomputingAsia 2021 (SCA21). Stay tuned!

SCA20 CONFERENCE IN SINGAPORE

Despite being on course to becoming the biggest SCA conference to date, the SupercomputingAsia 2020 (SCA20) was called off due to the unpredictable COVID-19 situation affecting Asia.

The annual SCA conference for 2020 was set to be the biggest, and most supported, conference to date with a record number of Exhibitors, exciting new tracks and sessions, a line-up of excellent speakers and growing attendance. However, in light of the evolving coronavirus 2019 (COVID-19) situation affecting Asian and the rest of the world, the organisers had decided to call off the event.

AWARD ANNOUNCEMENTS

The awardees of the SupercomputingAsia 2020 (SCA20) Awards and the Data Mover Challenge 2020 (DMC20) are finally announced. Congratulations to all our winners!

SCA20 Awards

The annual SCA awards are an opportunity for the HPC community to recognise individuals who have contributed significantly, in one way or another, or who have been instrumental in the development of the HPC ecosystem in Singapore and in Asia. This year, awards were presented to three deserving individuals for their respective contributions in building up HPC in the region. The SCA20 award winners are included below. Learn more about our winners at https://www.sc-asia.org/sca-awards/





DMC20 Awards

The Data Mover Challenge (DMC) brings together experts from industry and academia, to push the envelope in high speed, big data transfer capabilities across vast distances. The DMC20 competition attracted seven international teams from both the public and private sectors. Focused on optimising point-to-point data transfers between sites – a crucial step forward in advancing research collaboration and sharing – the challenge tested the expertise and skills of each of the teams to produce the best solutions for data transfer.

After extensive deliberations and reviews, the panel of international judges decided that there would not be a single overall winner for DMC20. They have instead decided to present not one but four awards to the teams that had shown unique and innovative solutions in various areas.



Congratulations to all the winning teams!*

Some of the participants, partners and judges of DMC20 met at the National Supercomputing Centre (NSCC) Singapore booth at SC19, Denver, USA for a Participants' Briefing Session to prepare for the challenge. *Credit: NSCC Singapore*



Team	Award Name	Citation
National Institute of Informatics (NII)	Most Innovative & Novelty Award	Team NII's solution of MMCFTP to transfer datasets and accelerate automatic archiving and de-archiving of small files received the Most Innovative & Novelty Award
iCAIR / Starlight	Best Speed & Science Integration Award	Team iCAIR / Starlight's DTN-as-a-Service solution produced high performance data access with NVMe over Fabric with strong integration with Jupyter notebooks received the Best Speed and Science Integration Award
Gauss Centre for Supercomputing (GCS) e.V.	Most Systemic Approach Award	GCS enhanced the DTN service using an under the hood feature to optimize data transfer performance using UFTP integrating with various application received the Most Systemic Approach Award
Japan Aerospace Exploration Agency (JAXA) / National Institute of Information and Communications Technology (NICT)	Experimental Excellence Award	JAXA / NICT's well engineered HCP tool based on their original high performance flexible protocol with GUI integration produced a wide set of tests in challenging environments received the Experimental Excellence Award

Building smarter cities with high performance computing

The latest January 2020 issue of the Supercomputing Asia magazine features articles on simulations and edge computing for smart cities, the importance of maintaining the human factor in AI, and news from around the HPC world.

Find out more about supercomputing in Asia, and beyond, in the Supercomputing Asia magazine January 2020. Click here for the article on <u>CitySim</u>...



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The Last Byte...

Shared articles and news from the HPC world.



Real-time visualisation dashboard helps track the spread of the Wuhan Coronavirus

A new dashboard that tracks the progression of the Wuhan Coronavirus worldwide was recently created by Johns Hopkins' Center for Systems Science and Engineering using data from sources like the Chinese Center for Disease Control and Prevention and the Chinese website, DXY. This is supplemented by data collected from the US Centers for Disease Control (CDC) and Prevention, the World Health Organisation (WHO), and the European Centre for Disease Prevention and Control.

The results populate a worldwide view of coronavirus cases in real time... Read more at <u>ZDNet</u>.



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