

New collaborations to develop HPC-enabled bioinformatics capabilities and promote its use in Singapore

The international Asia-Pacific Bioinformatics Network (APBioNET) and the local Association for Medical and Bio-Informatics, Singapore (AMBIS) signed collaborations with the National Supercomputing Centre (NSCC) Singapore to explore joint activities aimed at developing and promoting the use of high-performance computing in the field of bioinformatics.

Singapore –Two collaborations were signed today between APBioNET and NSCC as well as between AMBIS and NSCC to strengthen cooperation to develop and upskill the field of bioinformatics in Singapore. The proposed activities include developing high-performance computing (HPC) capability and talent development for bioinformatics, education and outreach as well as strategies to promote the use of bioinformatics and HPC in Singapore’s biomedical sector.

Bioinformatics is a field that marries biology and computer science and involves the development of methods and software in biological research, especially in complex studies that use large amounts of data. The application of bioinformatics is critical in a number of sectors including genomics research, drug discovery, preventive medicine, and precision and personalised medicine, among many others.

The collaboration between NSCC and APBioNET explores the development of HPC-enabled tools and capabilities that can be used by Singapore’s bioinformatics ecosystem to upskill and enhance work in this field. Some of the exploratory discussions include potential workflows for data analysis and drug design, adaptation of High-Performance Data Analytics (HPDA) for biological data, High Throughput Computing (HTC) platforms for big data, health and disease-related research, and potentially setting up a virtual computational laboratory for digital transformation.

The collaboration between NSCC and AMBIS will seek to translate the development of these new capabilities to the local context, conduct education and outreach, and to support local HPC-enabled bioinformatics by leveraging AMBIS’ network of bioinformaticians and ecosystem.

“As Singapore accelerates its efforts in digitalisation across all sectors, we are excited to collaborate with both APBioNET and AMBIS to explore activities that will help raise the skillset and capabilities of our bioinformatics professionals, and support key sectors like the biomedicine, genomics and healthcare,” said Associate Professor Tan Tin Wee, NSCC’s Chief Executive. NSCC is a national research infrastructure that has the mandate to develop supercomputing capabilities and provide HPC resources to all of Singapore’s research community including those from research institutes, institutes of higher learning, government agencies and companies.

“APBioNET is very happy to start a landmark chapter with NSCC to develop applications, data lake solutions and high-throughput computational pipelines for Biological Big Data and Biomedical -omics data for healthcare,” said Professor Shoba Ranganathan, Chairperson of the Board of Honorary Directors for Asia Pacific Bioinformatics Network Ltd. Founded in 1998, APBioNET is dedicated to advancing the field of bioinformatics in the Asia Pacific region, with a focus on developing bioinformatics network infrastructure, curating data and information, conducting training programmes, and promoting collaborations and outreach.

“AMBIS is pleased to work with NSCC for projects and community engagements that can use NSCC's supercomputing capabilities to develop digital twins as computer parallels towards solving complex multi-modal biological and medical problems”, said Dr Maurice Ling, current Secretary for AMBIS, which is a Singapore organisation that was set up to promote the development of bioinformatics locally through collaborations and outreach.

The two MOUs were signed on 19 April 2022 and will have a duration of three years each.

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About the National Supercomputing Centre (NSCC) Singapore

The National Supercomputing Centre (NSCC) Singapore was established in 2015 to manage Singapore's national petascale facilities and high-performance computing (HPC) resources. As a National Research Infrastructure funded by the National Research Foundation (NRF), the HPC resources that we provide helps support the research needs of the public and private sectors, including research institutes, institutes of higher learning, government agencies and companies. With the support of our stakeholders, for example, 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), National Environment Agency (NEA) and Technology Centre for Offshore and Marine, Singapore (TCOMS), NSCC catalyses national research and development initiatives, attracts industrial research collaborations and enhances Singapore's research capabilities. For more information, please visit <https://www.nscg.sg/>.