

## NITheCS MINI-SCHOOL:

# Parallel Computation with GPUs: An Introduction to Programming with CUDA

Martin Bucher (CNRS, France, and Stellenbosch University) and Japie Greeff (North-West University)

Wednesday 6, 13, 20, 27 March 2024 | 14h00 – 15h00 SAST

Attend online

--- A certificate of attendance will be awarded to registrants who attend all four lectures ---

### ABSTRACT

While Moore's law continues to remain valid, processor speed has reached a plateau for quite some time owing to the limitations of CMOS technology. High performance computing increasingly relies on massive parallelism in order to make computationally tractable bigger and bigger problems. Parallel computing has a long history, but until recently parallel machines have been the domain of a small number of well-funded supercomputing centres. Recently, however, inexpensive commodity GPUs containing thousands of processors have become available. NVIDIA has developed a general-purpose programming language for GPUs known as CUDA, allowing a large range of problems to be run on GPUs. This Mini-school will provide an introduction to parallel programming concepts emphasising hands-on CUDA programming experience.

### SPEAKERS



**Prof Martin Bucher** is Directeur de recherche au CNRS in Paris, France, based at the Université Paris Cité. He has held various honorary and fractional professorships at the University of KwaZulu-Natal and Stellenbosch University.

Bucher is a NITheCS Associate and an elected member of the Academy of Science of South Africa (ASSAf). He has made numerous contributions to theoretical particle physics and cosmology and to observational cosmology. He shared the 2018 Gruber Prize in Cosmology as part of the Planck Team.



**Prof Japie Greeff** is Deputy Director of the School of Computer Science and Information Systems at North-West University (NWU). He is also a Subprogram leader in Technology, Capability and Functioning at the Optentia Research Unit at NWU, and a NITheCS Associate.

He holds a PhD in Electronic Engineering with a focus in engineering education. His main areas of interest lie in artificial intelligence, serious game development, gamification and the creation of technology artefacts that impact people on a human level.



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