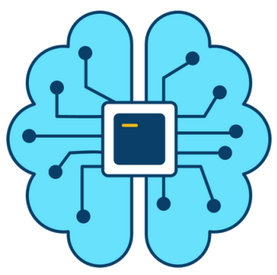
Hackathon HPC

Industrial codes optimization

Online / November 28th-December 5th, 2022

Objectives

Bringing together Master 2- level HPC students in a virtual competition around the computational codes provided by EDF (Saturn and Telemac codes) and CGG (seismic core).



This competition will rely on AWS instances based on Arm technologies. The target architectures (AWS Graviton 2 and 3 processors) offer certain approaches (software ecosystem, design) that motivate a specific effort compared to traditional Intel or AMD type architectures.

This hackathon is structured around computational codes, software environments and hardware solutions that have already been tested by industry. The compilation recipes and optimization phases have been validated before the event. The students will therefore be in a framework close to a guided practical session with the opportunity to increase their understanding of industrial issues around high-performance simulation.

Details

Porting: Validating the application on Arm architectures (Graviton2/Graviton3) by focusing on the test case provided by the industrial partner. The validation will be done by comparing the result files and/or by comparing the results on different platforms (x86/Arm).

Profiling: Using classical application profiling tools to identify performance locks... this will include identifying the hotspots of these applications (compiler report, dynamic code analysis...)

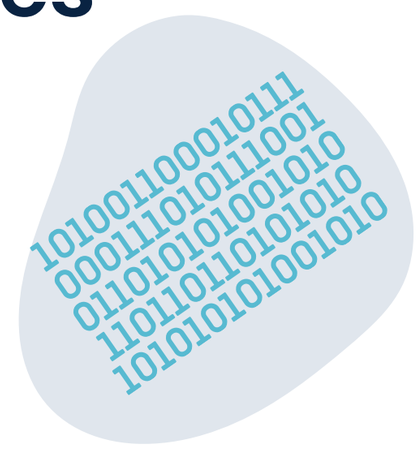
Advanced optimization: Modifying the codes in order to improve the performances. For small applications (e.g. CGG code, this may involve adding OpenMP directives or modifying the organization of loops ...). In case of complex code, participants can focus on the impact of the different compilation chains and work on extracting some kernels (mini-apps).

Proposed Codes

CGG Seismic core

EDF **Code_Saturne**

EDF **Code Telemac**



REGISTER HERE TO THE HACKATHON!

Next steps

Launching webinar: October 7th, 2022 from 4pm to 5.30pm. Register here to the webinar

Self-learning/training : **October-November 2022**

Hackathon : November 28th to December 5th, 2022

The competition will result in a ranking, and the "winning" team will be awarded a prize based on ARM processors with an apple design...

Teratec en partenariat avec arm aws CGG EDF UCIT