

# Performance-portable GPU acceleration of a CFD solver

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Computational fluid dynamics (CFD) plays a crucial role in advancing many fields of science and engineering, including aerospace, automobile, and energy sectors. Implementing CFD algorithms in high-performance computing environments is essential to address the complicated geometry and the rich physics associated. Modern supercomputer architectures rely heavily on GPUs to achieve very high FLOPS, as seen from <https://top500.org>. We have parallelised our in-house CFD solver, written in C++, using CUDA and openACC. However, currently, the execution is limited only to GPUs from a specific vendor. This project aims to develop a performance-portable implementation of our solver that can be run on any GPU. The intern will review the many available frameworks and implement our code based on the suitable framework.

Expected profile: Students pursuing Bachelors/Masters in computer science or related fields. The candidate is expected to have a working knowledge of C++.