

# GPU-ACCELERATED COMPUTATIONAL METHODS USING PYTHON AND CUDA

The students will learn how to write a simple CFD or FEM code or a Poisson solver. The code should run entirely or partly on the GPU. PhD students are welcome. Course code: TRA105. Study period 2.

- Nvidia has developed a programming interface for GPUs called [CUDA](#)
- [CUDA In Action - Research & Apps](#)
- Many companies, such as [Volvo Group](#), [Volvo Cars](#) use Nvidia Graphic Cards which are [programmed in CUDA](#).
- Chalmers hosts a national [GPU cluster](#)
- Teachers

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- **Application**

Send it to lada@chalmers.se latest at 30 September. Please include a letter explaining your contribution to the project group. This may be used when prioritizing if we get too many applicants.

## Course content

- Introduction lectures on CUDA programming including two mini-workshops.
- Project.
  - the student groups write a simple CFD/FEM code or Poisson solver in CUDA. Ideally, each group includes students with knowledge in CFD, FEM or Poisson equation and CUDA.
  - profiling (GPU time, uploading/downloading data to/from the GPU etc)
  - Written and oral presentation of the project