High Performance Deep Learning

- 16 & 17 April 2024
- Trainers: Robert Jan Schlimbach, Bryan Cardenas Guevara, Monica Rotulo

EuroHPC
Joint Undertaking

SURF

EURO

SURF

About EuroCC & EuroHPC JU

EuroHPC JU:

- joint initiative between EU, EU member states, and private partners to develop a World Class Supercomputing Ecosystem in Europe
- https://eurohpc-ju.europa.eu/

EuroCC

- A key program in EuroHPC JU
- EuroCC acts as gateway for industry and academia to find providers with suitable HPC expertise
- EuroCC facilitates HPC-skill oriented trainings

About SURF

- Collaborative organization for ICT in Dutch education and research
- National Competence Center in EuroCC for The Netherlands
- Offers HPC services (and many others, data storage, cloud, networking, etc)

Course plan

Day 1:

- Introduction to Deep Learning
- Using the PyTorch framework
- Fully connected networks, Convolutional networks, Transformers (time permitting)

Day 2:

- Software installations on HPC systems
- Hardware (e.g. Tensor cores) and software features (e.g. low level libraries for deep learning) to accelerated deep learning
- Profiling PyTorch with TensorBoard

Course plan Day 1

Teacher: Bryan Cardenas Guevara

- 9:30 – 9:45 Welcome and course overview
- 9:45 – 10:30 Introduction to ML & DL basic principles
- 10:30 – 10:50 Introduction to PyTorch
- 10:50 – 11:05 Coffee break
- 11:05 – 12:00 Convolutional neural networks
- 12:00 – 13:00 Lunch Break
- 13:00 – 13:45 Hands-on: Convolutional neural networks
- 13:45 – 14:00 Recap hands-on, questions

Course plan Day 2

Teacher: Robert Jan Schlimbach

- 9:30 – 10:45 Software installations on HPC systems
- 10:45 – 11:00 Coffee break
- 11:00 – 12:00 Hardware and software features to accelerate deep learning
- 12:00 – 13:00 Lunch Break
- 13:00 – 13:45 Profiling to understand your neural network’s performance
- 13:45 – 14:00 Questions, wrap up

https://github.com/sara-nl/Tue_HPDL_2024

Introductions!

In 3 sentences, tell us

- Your name
- Your job
- Why you’re attending this course

Logins

Access to the Dutch National Supercomputer (Snellius) for this course

- Snellius Supercomputer (GPU-based Jupyter Notebook environment, GPU batch jobs)
  - Did you get a login ‘scurXXX’?
  - The e-mail contains a link to choose a password – please do so
  - Log in to https://portal.cua.surf.nl/ and accept the End User Agreement
  - Try to login at https://jupyter.snellius.surf.nl/jhssrf009
  - Select the ‘outside course hours’ profile, and click ‘spawn’

- If not, did not receive a login, or starting a notebook server does not work: contact us on the chat, so we can resolve it during the next session.