# Using HPC
Exercise 1.1
Deep Learning in Computer Vision 02514

June 2023

In this exercise you will test your skills on working on a remote cluster (HPC). The goal of this exercise is to follow the steps of Lecture 1.1 and run a simple python script and a simple notebook that you will create on HPC. If you manage to follow all the steps of this exercise, it means that you are ready for all the other exercises and the assignments of this course.

https://lvwerra.github.io/dslectures/images/gpu_meme.jpg
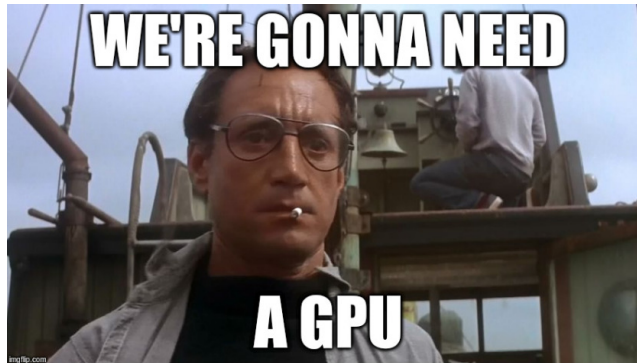
Objectives

1. **Access HPC and an interactive node**
   (HINT:ssh)

2. **Copy a file to HPC**
   (HINT:scp)

3. **Create your first virtual environment**
   (HINT:vent, pip)

4. **Create a jupyter notebook that can do a simple task (e.g. read and visualize the image that you have transferred)**
   (HINT: jupyter, PIL)

5. **At the same notebook, use the available GPU (e.g., transform the image to a tensor and load the tensor to the GPU)**
   (HINT: torch, cuda)

6. **Create a python script that loads your image, transforms it into a tensor, moves it into the GPU and finally saves the tensor**
   (https://pytorch.org/tutorials/recipes/recipes/save_load_across_devices.html)

Questions

- Are you sure you used a GPU properly? How did you check it?

- Did you use the graphical mode(thinlinc or the command line)?

- How much GPU memory your script needed to run?

- Did you save the tensor to GPU or to CPU?

- Do you understand the difference between different devices (GPU, CPU) and how their interaction works?

References

1. Lecture 02514, 01/06/2023, Dimitrios Papadopoulos: Introduction to HPC

2. https://www.hpc.dtu.dk/ https://www.unixtutorial.org/basic-unix-commands

3. https://docs.python.org/3/library/venv.html

4. https://jupyter.org/

5. https://pytorch.org/

6. tmux basic tutorial: https://www.hamvocke.com/blog/a-quick-and-easy-guide-to-tmux/