Install opencl for Intel

Run the following in this order:

- Generic ubuntu packages for OpenCL:
  - sudo apt install ocl-icd-libopencl1
  - sudo apt install opencl-headers
  - sudo apt install clinfo
- Package that allows to compile OpenCL code:
  - sudo apt install ocl-icd-opencl-dev
- For Intel GT core (e.g: us):
  - sudo apt install beignet

NOTE: for opencl with NVIDIA, it is enough to install the driver.

OpenCL 2.0 with NVIDIA cards

How to run opencl 2.0 kernels with an NVIDIA graphics card:

- Checking clinfo (or anything else) will show that your NVIDIA device only supports opencl 2.0.
- But, you can still compile a kernel with opencl 2.0: when calling `cl::Program::build(...)` or `clBuildProgram(...)`, pass an additional `const char*` argument (which contains the build flags): `‘‘-cl-std=CL2.0’’`.
- Note, that nvidia has limited opencl 2.0 support... the following is a thread from 2017 (link):
  “New features in OpenCL 2.0 are available in the driver for evaluation purposes only. The following are the features as well as a description of known issues in the driver:
  - Device side enqueue
    - The current implementation is limited to 64-bit platforms only.
    - OpenCL 2.0 allows kernels to be enqueued with global_work_size larger than the compute capability of the NVIDIA GPU. The current implementation supports only combinations of global_work_size and local_work_size that are within the compute capability of the NVIDIA GPU. The maximum supported CUDA grid and block size of NVIDIA GPUs is available at this link. For a given grid dimension, the global_work_size can be determined by CUDA grid size x CUDA block size.
    - For executing kernels (whether from the host or the device), OpenCL 2.0 supports non-uniform ND-ranges where global_work_size does not need to be divisible by the local_work_size. **This capability is not yet supported in the NVIDIA driver**, and therefore not supported for device side kernel enqueues.
  - Shared virtual memory: The current implementation of shared virtual memory is limited to 64-bit platforms only.”