



mpi max planck institut
informatik

High Level Computer Vision

Using the GPU machines

Machines and Allocations

- You have been allocated 2 machines with GPU's
 - jersey and cyprus
- Each have 4 Tesla K80 GPU's (12GB) + 256 GB RAM
- 1 GPU per team (2 spare)

Gpu	Team name
Jersey gpu 0	team1
Jersey gpu 1	team2
Jersey gpu 2	team3
cyprus gpu 0	team4
cyprus gpu 1	team5
cyprus gpu 2	team6
Jersey gpu 3 and cyprus gpu 3	Use based on availability

- **Very Important to follow usage instructions** (slides 4 and 5)
 - **Abuse will lead to termination of accounts immediately**

Basics

- All access through `contact.mpi-inf.mpg.de`
 - `ssh -Y username@contact.mpi-inf.mpg.de`
 - `ssh -Y cyprus` or `ssh -Y jersey`
- Home directories
 - `/home/<user-name>/` is to be used for storing code and documents
 - It has 50 GB space shared among you. Don't use more than 2GB per person!
 - Full home drive means, no-one can use the machines anymore
- Datasets are available in:
 - `/BS/hlcv-ss17/archive00/datasets` -- This is read only for you
 - **Don't copy!!**. Use soft links
 - `ln -s /BS/hlcv-ss17/archive00/datasets/coco /home/username/dataset`
 - Email us if you want any other data sets and we will add it to the above directory

GPU Usage

- Check gpu usage `nvidia-smi`

```
~ nvidia-smi
Tue Jun 13 18:54:11 2017
+-----+-----+
| NVIDIA-SMI 367.57                | Driver Version: 367.57 |
+-----+-----+
| GPU  Name      Persistence-M| Bus-Id        Disp.A | Volatile Uncorr. ECC |
| Fan  Temp      Perf         Pwr:Usage/Cap|     Memory-Usage | GPU-Util  Compute M. |
+-----+-----+
| 0   Tesla K80   Off          | 0000:05:00.0  Off  |    100%      Default  0 |
| N/A   55C      P0         124W / 149W| 8000MiB / 11439MiB |          |
+-----+-----+
| 1   Tesla K80   Off          | 0000:06:00.0  Off  |    34%      Default  0 |
| N/A   40C      P0         77W / 149W| 5969MiB / 11439MiB |          |
+-----+-----+
| 2   Tesla K80   Off          | 0000:84:00.0  Off  |    100%      Default  0 |
| N/A   63C      P0         128W / 149W| 6239MiB / 11439MiB |          |
+-----+-----+
| 3   Tesla K80   Off          | 0000:85:00.0  Off  |    100%      Default  0 |
| N/A   46C      P0         141W / 149W| 10537MiB / 11439MiB |          |
+-----+-----+

Processes:
+-----+-----+
| GPU  PID  Type  Process name                               | GPU Memory Usage |
+-----+-----+
| 0    55665  C    python                                    | 7684MiB          |
| 0    55671  C    python                                    | 75MiB            |
| 0    106117  C    /usr/lib/matlab-8.6/bin/glnxa64/MATLAB    | 75MiB            |
| 0    136088  C    python                                    | 75MiB            |
| 0    136249  C    python                                    | 75MiB            |
+-----+-----+
```

- Specifying which gpu
 - `CUDA_VISIBLE_DEVICES=1` your-program
 - Number from 0-3. **Use your allocated GPU only!**
 - Test your configuration (after setting paths in slide 7).

```
CUDA_VISIBLE_DEVICES=0 echo 'import torch;x = torch.Tensor(5, 3); print x.cuda()' | python
```

Disk Usage

- File system is shared among everyone.
- Too many writes too quickly can hang the file-system for everyone.
- Don't save/write too often to disk
 - Check your loops.
- Use local directory for intermediate results
 - `/var/tmp/<team-name>/` to save models/logs temporarily. Persists even after reboot
 - Copy only final models to your home directory.
 - Try to limit disk usage and cleanup files you don't need anymore.

tmux

Allows you to run a process on a GPU machine without keeping an open connection

- **tmux list-sessions** - lists all current sessions
- **tmux new -s session_name** - create new session with a specified name
- **ctrl + b** then **d** - detach from a session (Now you can safely close the connection)
- **tmux attach -t session_name** - attach to an already existing session

More commands [here](#).

Software

- Anaconda installation is available at
 - /BS/hlcv-ss17/work/anaconda2/bin
 - Additional standard libraries can be installed per request (email me)
- Pytorch is also installed, add this to your ~/.bashrc

```
#Paths for hlcv course
export PATH="/BS/hlcv-ss17/work/anaconda2/bin:$PATH"
export CUDNN_PATH=/BS/hlcv-ss17/work/cudnn.5.1-cuda.8.0/lib64/
export LD_LIBRARY_PATH=/BS/hlcv-ss17/work/cudnn.5.1-cuda.8.0/lib64/
```

- Tensorflow is also installed, but in separate anaconda environment
 - source activate tensorflow
- Caffe and Matlab are also available
- git and latex are also available.