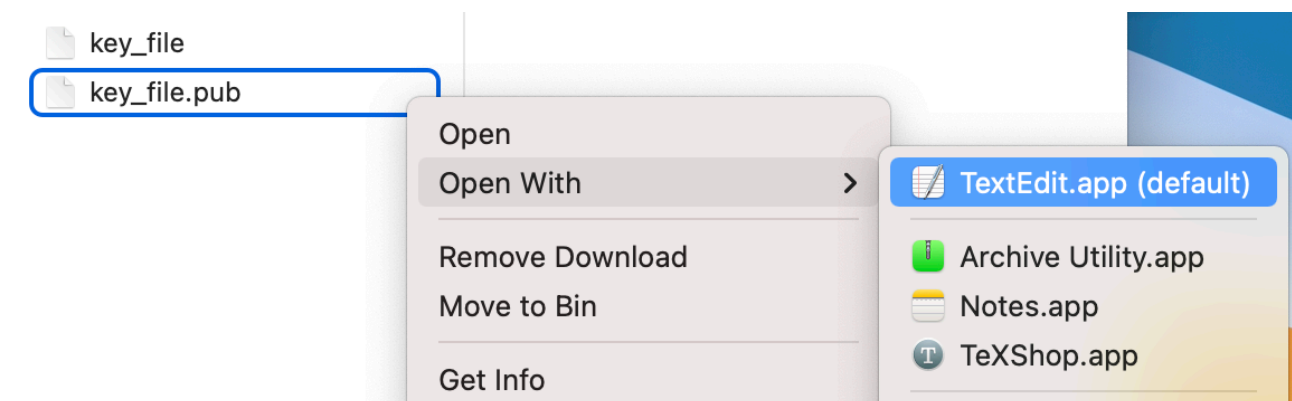


The following is a guide to use the GPU at Ucloud:

1) You will need to create a ssh key (to create a secure connection to the GPUs at Aalborg)
On a mac/linux you can do this like so: (You can always use a linux at Ucloud)

```
d37738:tmp au561649$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/Users/au561649/.ssh/id_rsa): key_file
[Enter passphrase (empty for no passphrase):
[Enter same passphrase again:
Your identification has been saved in key_file.
Your public key has been saved in key_file.pub.
The key fingerprint is:
SHA256:ZKS6fNSACK4fJIOdIFGZfNZnmPCfjB2EXyRME1boI0 au561649@d37738.eduroam.net.a
u.dk
The key's randomart image is:
+---[RSA 3072]-----+
|=.+. .***+. |
|++...++B+o |
|*o .OoE+o |
|.B .o.*=. |
|. = ....S |
|. o o. |
|. o . |
|. . |
+---[SHA256]-----+
d37738:tmp au561649$
```

After this you can simply copy the content of the .pub file:



NOTE: When you copy this only include:

```
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGCiCXIDe0gofoRlSe4z4ucd5dw2IVfmGd0UW/
DMu+Vyi0Cxut9WDv0jwqYF88WyDvepA4GaLG0T5Yf5EQNeaIB0CZKyz7LFKRuVqNxNw6e6ujmuzZIUq9Sqq1a3JRmotQ2sGKud+cIFkFH65058182K
uYTM80FAwXPaTP589Wuf4vMRdV5PqXI/U08eSdo2+I0y2baXGa0Xs2bZ08CExm770RmeWBUxG1LQ1mqQ3yJgz40PTMvcmKbmSkRQAZXM2Ye/i39/
tNv4GEUe0vhK0YTPGzzC+DjyHEIUyZe5mRDhsnDmqMR1s0s0sBLcm0TAeZ1KJQn85tGKN6eJjBnkbAI1Dd0+Z00dNUhg1yUn1Utmj9tQ1AJj0/
yHldb173w/TZy/NoDou/UX7709Zq+CYIxHi8F2IJ32I+s6jq6X+y8qAdRKftjzokgYRQAo6/Qd6bsXFWBvjIigJSgvfmFm3Y4/
xt5ZhCjwWrT7LGF2rrSg76FsERRcfHL7sMvEIAHx3s=
```


and not:

```
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAQGCiCXIDe0gofoRlSe4z4ucd5dw2IVfmGd0UW/
DMu+Vyi0Cxut9WDv0jwqYF88WyDvepA4GaLG0T5Yf5EQNeaIB0CZKyz7LFKRuVqNxNw6e6ujmuzZIUq9Sqq1a3JRmotQ2sGKud+cIFkFH65058182K
uYTM80FAwXPaTP589Wuf4vMRdV5PqXI/U08eSdo2+I0y2baXGa0Xs2bZ08CExm770RmeWBUxG1LQ1mqQ3yJgz40PTMvcmKbmSkRQAZXM2Ye/i39/
tNv4GEUe0vhK0YTPGzzC+DjyHEIUyZe5mRDhsnDmqMR1s0s0sBLcm0TAeZ1KJQn85tGKN6eJjBnkbAI1Dd0+Z00dNUhg1yUn1Utmj9tQ1AJj0/
```

```
yHldb173w/TZy/NoDou/UX7709Zq+CYIxHi8F2IJ32I+s6jQ6X+y8qAdRKftjzokgYRQAo6/Qd6bsXFWBvjIigJSgvfmFm3Y4/xt5ZhCjwWrT7LGF2rrSg76FsERRcfHL7sMvEIAHx3s= au561649@d37738.local
```

(notice the last part with my user ID)

Insert into Ucloud:

 **Ubuntu (CUDA + Jupyter) (Virtual Machine) ★**
20.04 ▾

Description

Virtual machine image based on Cuda + Jupyter Ubuntu 20.04

I recommend this instance, but another one might suit your needs more.

Release Date	Type	License
10:19 01/09/2022	Virtual machine	Unknown

Load parameters from a previous run:

Date	03/11/22	27/10/22	27/10/22	26/10/22	26/10/22
Job ID	run_dan...	run_ml...	run_ml...	run_ml...	run_ml...

Note that not all instances can use the T4 gpus they need to have the '(Virtual Machine)' prefix.

[Import parameters](#)

Job name

gpu_instance

Machine type *

uc-t4-1-h
vCPU: 10 Memory: 40GB GPU: 1 Price: 10 Core hour(s)

Select the GPUs

Mandatory Parameters

Public Key (SSH) *

YOUR KEYS

Paste your key

Please enter your public key, needed for access, here...

Then you just have to wait for access (takes a while, please be patient).



UCloud is preparing your job

Starting *Ubuntu 20.04 (Virtual Machine) v20.04* for *GPU_instance*
(ID: F7489605)

We are currently preparing your job. This step might take a few minutes.

 **Cancel reservation**

2) After this, what we want to do it connect to the GPU. We will use this using a news run on Ucloud (so that everyone can follow along), but it is likely that you can simply connect from you own computer instead.

Note: that at the time (Nov. 2022) of writing connection for the Aarhus University network is currently blocked (we are working on resolving this issue).

We will connect to the GPU job using the ssh key. Therefore we first need to upload the ssh key you created at the beginning. For this we create a new instance (using your code interface of choice):

Files Natural Language Processing E21 / Members' Files / KennethChristianEnevoldsen#8950 **upload your ssh key** Files per page 25 ▼

Go into files Select a private folder (e.g. your own)

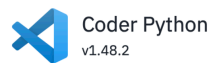
Select all

- Getting started.md 399 B 13:27:32 09/09/2021
- git_setup 18:22:45 21/09/2021
- Jobs 11:29:01 20/09/2021
- sudo apt update 1.79 KB 16:57:15 20/09/2021
- wq 1.79 KB 16:57:32 20/09/2021

Sort by: Filename

Upload Files

New Folder



Load parameters from a previous run:

setup_github-e705edc9 123-df2ae4a3 tester-4e0905cb test2-5c9bbc86 GitHub-db6e73l

Create a new run, machine size is not important.

Job name

another_run

Hours * 3 Minutes * 0

Machine type * No machine selected

App details

Import parameters

Remove from favorites

Submit

Configure custom links to your application

Add public link

If your job needs to be publicly accessible via a web-browser then click "Add public link" to select the correct link.

Select additional folders to use

Your files will be available at /work/.


select your folder

Add folder

Natural Language Processing E21/Members' Files/KennethChristianEnevoldsen#8950

Remove X

when that is up and running check your GPU job, you should see something like this:




██████████ is now running

Ubuntu (CUDA + Jupyter) (Virtual Machine) 20.04

Job info

██████████

Reservation: aau / uc-t4-4-h (x1)
Input: No files
Launched by: KennethChristianEnevoldsen#8950 in Danish Foundation Models

 Stop application

Messages

```
sudo apt update
sudo apt full-upgrade -y
sudo apt install nvidia-headless-460 nvidia
-utils-460 -y
sudo reboot

SSH Access: ssh ██████████
```

SSH access

Access the SSH server associated with this job using:

ssh ██████████

Especially note the message:

```
sudo apt update
sudo apt full-upgrade -y
sudo apt install nvidia-headless-460 nvidia-utils-460 -y
sudo reboot
```

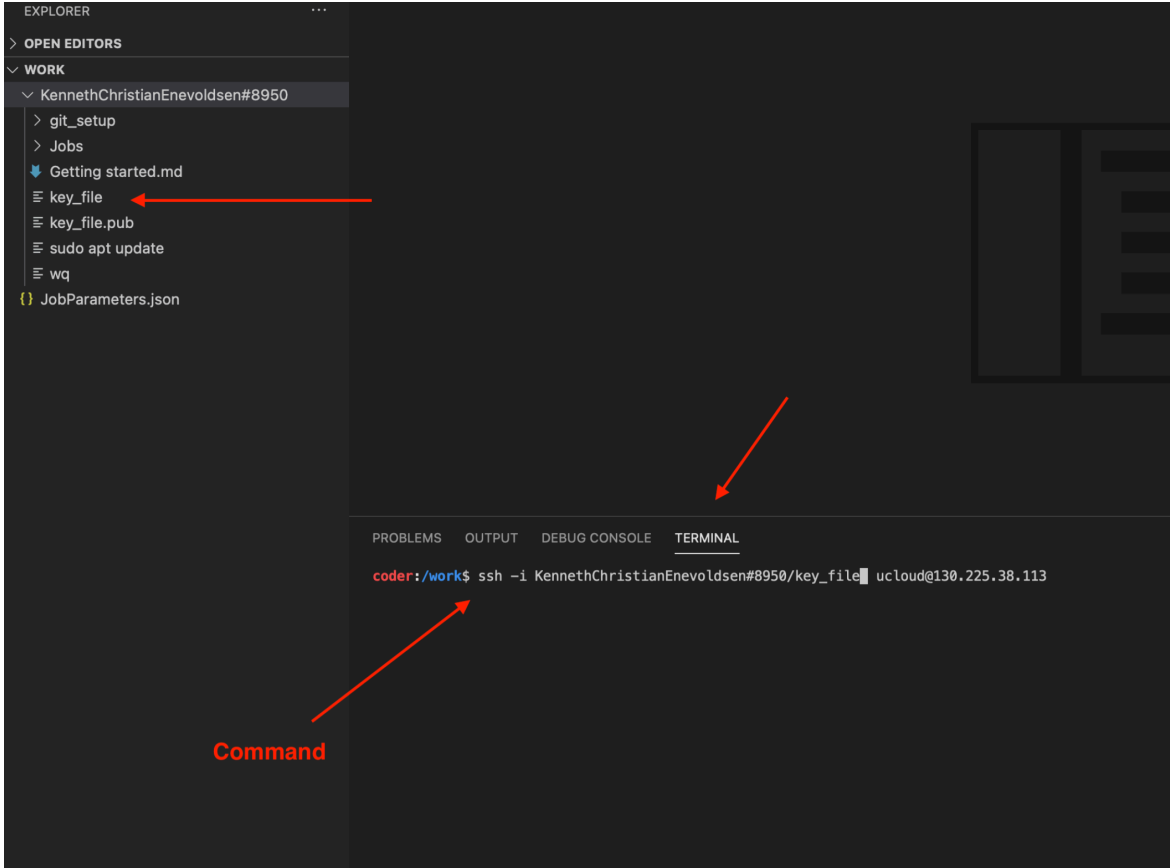
SSH Access: ssh ucloud@<**SERVER-ID**>

Now connect you can connect to the GPU using:

```
ssh -i ~/path_to_key/custom_key_name SYSUSER@x.x.x.x
```

(If there is a problem here check the FAQ)

e.g.:



The screenshot shows a VS Code interface. On the left, the Explorer panel shows a file tree for 'KennethChristianEnevoldsen#8950' with files like 'git_setup', 'Jobs', 'Getting started.md', 'key_file', 'key_file.pub', 'sudo apt update', 'wq', and 'JobParameters.json'. A red arrow points to 'key_file'. At the bottom, the Terminal panel shows the command: `coder:/work$ ssh -i KennethChristianEnevoldsen#8950/key_file ucloud@130.225.38.113`. A red arrow points to this command, and a red label 'Command' points to the terminal panel.

Then follow the instructions in in the message:

```
sudo apt update  
sudo apt full-upgrade -y  
sudo apt install nvidia-headless-460 nvidia-utils-460 -y  
sudo reboot
```

Then you should be able to work from there.

3) After you reboot you will be disconnected, simply connect using ssh command from above.

FAQ

1) Unprotected private key file

Some might get a problem like:

```
coder:/work$ ssh -i [redacted]#8577/key_file ucloud@
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
@                WARNING: UNPROTECTED PRIVATE KEY FILE!                @
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
Permissions 0640 for 'PernilleH\303\270jlundBrams#8577/key_file' are too
open.
It is required that your private key files are NOT accessible by others.
This private key will be ignored.
Load key "[redacted]#8577/key_file": bad permissions
ucloud@ [redacted] Permission denied (publickey).
```

There is some potential problems here:

- 1) you are using the key_file.pub instead of key_file
- 2) other people have access to your file. You can fix this using (changes access to file):

```
chmod 400 path/to/key_file
```

2) How to move files to and from the GPU?

You can move files from your CPU to your GPU using scp:

```
# move data to GPU from ucloud:
scp -r model_folder user@server.dk:gpu_model_folder
```

Or from the GPU to the instance you are connecting from:

```
# move data from GPU to Ucloud:
scp -r user@server.dk:data_folder location_folder_on_local
```

So the format is: scp FROM LOCATION

3) How do I navigate from the terminal?

A good place to start is using the three commands:

```
ls #print files in current folder
ls path/to/folder #print files in the desired folder
```

```
pwd # Print current Working Directory
```

```
cd path/to/folder #change current folder to the desired folder
```

4) Can't access my files:

They are likely not on the GPU, check FAQ 3) on how to check if the files are on the GPU and 2) on how to move them to the GPU.