

# Starting the lab in Azure

Please read to the end before starting

# Joining the lab and starting the machines

Mail - David Abramian - Outlook x +

outlook.office.com/mail/inbox/id/AAQkADU1MjFmYzkyLTliMDUtNDRIzi1iYWQyLTFkNDliNmJIZWE1MQAQAIHNWosXhspCmm0tdZwjFtl...

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Favorites Sent Items Drafts Inbox 2 Add favorite Folders Deleted Items 60 WM paper Junk Email 53 Archive Notes

Register for Lab - TBMi26 2021

Microsoft Azure Tue 2021-01-19 5:13 PM To: David Abramian

Microsoft Azure

**David Abramian invited you to the lab: TBMi26 2021**

Register now to access the virtual machines in the lab.

[Register for the lab >](#)

f t y in

[Privacy Statement](#)

Microsoft Corporation, One Microsoft Way, Redmond, WA 98052

Microsoft

Reply Forward

Press to access your virtual machine.

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labs.azure.com/virtualmachines

Azure Lab Services

### My virtual machines

TBMI26 2021

0.4 / 4 hour(s) used

☐ Stopped

Start the virtual machine.


Feedback

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## My virtual machines

TBMI26 2021 

0.4 / 4 hour(s) used

☐ Starting...

It may take a few minutes.

Feedback


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### My virtual machines

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0.4 / 4 hour(s) used

☒ Running

Once it's running, press to get your login command.


Feedback

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### My virtual machines

**TBMi26 2021**  
  

0.4 / 4 hour(s) used

Running

#### Reset password

Enter a new password to be used when logging in.  
Resetting the password may take several minutes.

**Username**  
tbmi26

**Password**

Reset password

Cancel

The first time you will be prompted to set your password. This will take a few minutes.

Feedback


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## My virtual machines

TBmi26 2021



0.4 / 4 hour(s) used


☒ Running



### Connect to your virtual machine

To connect to your Linux virtual machine using SSH, use the following command:

```
ssh -p 63459 tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com
```

 Copy

Done

This is your login command.  
Copy it entirely.

Feedback



# Logging in with Linux/Mac

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+ New v Upload v Edit in grid view Share Copy link Sync ... All Documents v Filter Info Link

Course documents > Assignments > Lab\_2 > files

Name v	Modified v	Modified By v	Version v	Description v
azure_launch_jupyter.bat	16 minutes ago	David Abramian	1.0	
azure_launch_jupyter.sh	16 minutes ago	David Abramian	1.0	
lab_gpu.yml	17 minutes ago	David Abramian	1.0	
lab_macos.yml	17 minutes ago	David Abramian	1.0	
lab_nogpu.yml	17 minutes ago	David Abramian	1.0	

Go to Lisam and download this file. Note where it is saved.

davab27@ad-mac0558: ~

Open a terminal.


```
davab27@ad-mac0558: ~ bash Downloads/azure_launch_jupyter.sh ssh -p 63459 tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com
```

Input the following command:

- **bash**
- the path to the launch script
- the entire Azure login command

```
davab27 — ssh • bash Downloads/azure_launch_jupyter.sh ssh -p 63459 tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.c...
davab27@ad-mac0558: ~ bash Downloads/azure_launch_jupyter.sh ssh -p 63459 tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com
The authenticity of host '[ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com]:63459 ([51.124.10.211]:63459)' can't be established.
ECDSA key fingerprint is SHA256:JIALBD7yf+MhNNEZGZ1A9+798AgafrKpBBc7ozHr400.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
```

You will get a warning about  
accessing an unknown host. Say **yes**.

```
davab27 — ssh • bash Downloads/azure_launch_jupyter.sh ssh -p 63459 tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.c...  
davab27@ad-mac0558: ~ bash Downloads/azure_launch_jupyter.sh ssh -p 63459 tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com  
The authenticity of host '[ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com]:63459 ([51.124.10.211]:63459)' can't be established.  
ECDSA key fingerprint is SHA256:JIALBD7yf+MhNNEZGZ1A9+798AgafrKpBBc7ozHr400.  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added '[ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com]:63459,[51.124.10.211]:63459' (ECDSA) to the list of known hosts.  
tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com's password: 
```

You will be prompted for your password (the one from slide 7). Note that **nothing will be printed** as you type!

```
davab27 — ssh • bash Downloads/azure_launch_jupyter.sh ssh -p 63459 tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.c...
davab27@ad-mac0558: ~ bash Downloads/azure_launch_jupyter.sh ssh -p 63459 tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com
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ECDSA key fingerprint is SHA256:JIALBD7yf+MhNNEZGZ1A9+798AgafrKpBBc7ozHr400.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '[ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com]:63459,[51.124.10.211]:63459' (ECDSA) to the list of known hosts.
tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com's password:
[I 17:20:20.441 LabApp] JupyterLab extension loaded from /anaconda/envs/lab_test/lib/python3.8/site-packages/jupyterlab
[I 17:20:20.441 LabApp] JupyterLab application directory is /anaconda/envs/lab_test/share/jupyter/lab
[I 17:20:20.443 LabApp] Serving notebooks from local directory: /home/tbmi26/lab
[I 17:20:20.443 LabApp] Jupyter Notebook 6.1.5 is running at:
[I 17:20:20.443 LabApp] http://localhost:8888/
[I 17:20:20.443 LabApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
```

Once you log in, Jupyter will be launched automatically. This can take a little time.

# Logging in with Windows 10



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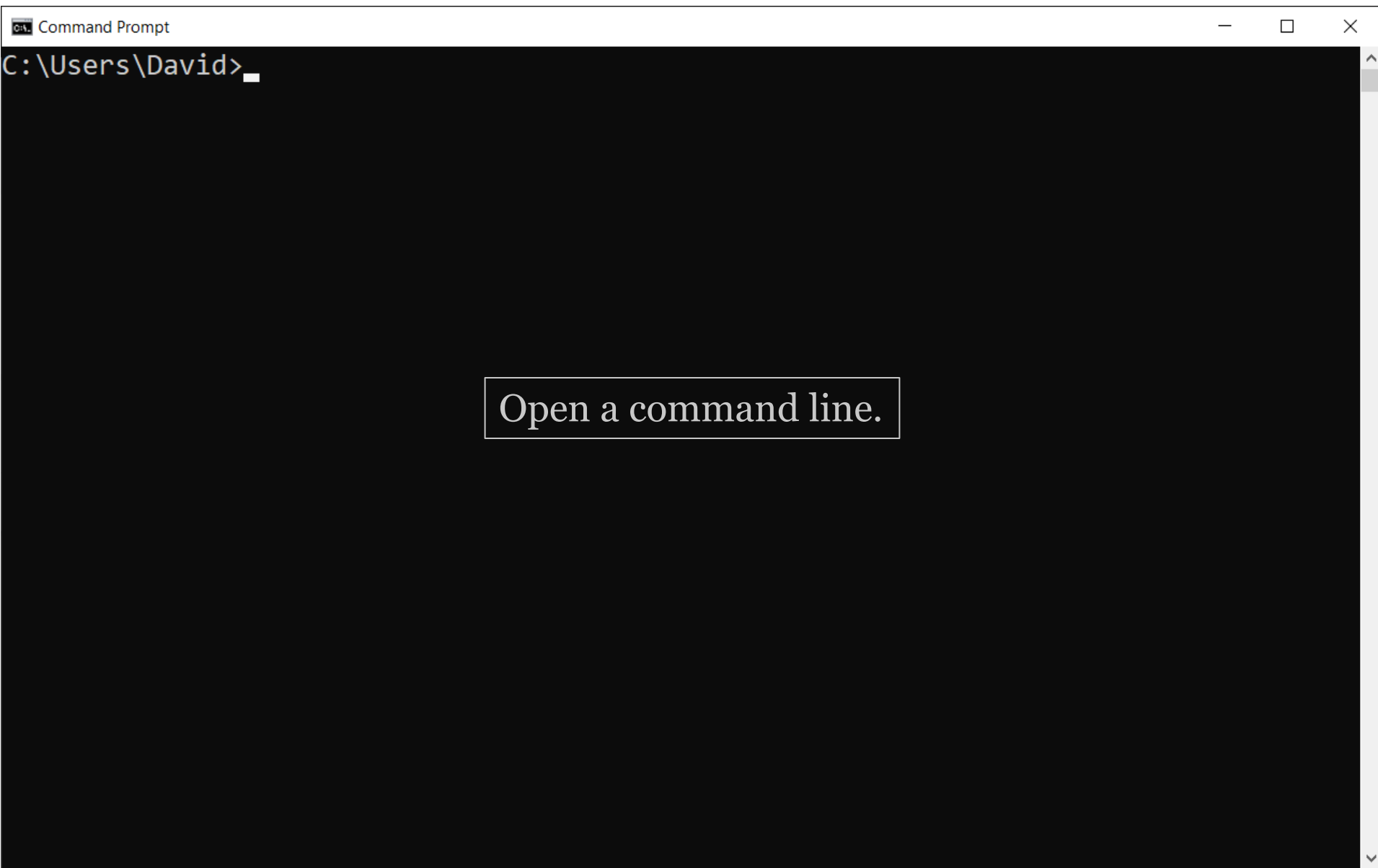
Edit

+ New v Upload v Edit in grid view Share Copy link Sync ... All Documents v

Course documents > Assignments > Lab\_2 > files

Name v	Modified v	Modified By v	Version v	Description v
azure_launch_jupyter.bat	16 minutes ago	David Abramian	1.0	
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lab_macos.yml	17 minutes ago	David Abramian	1.0	
lab_nogpu.yml	17 minutes ago	David Abramian	1.0	

Go to Lisam and download this file. Note where it is saved.



Command Prompt

```
C:\Users\David>Downloads\azure_launch_jupyter.bat ssh -p 63459 tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com
```

Input the following command:

- the path to the launch script
- the entire Azure login command

```
Command Prompt - Downloads\azure_launch_jupyter.bat ssh -p 63459 tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com
C:\Users\David>Downloads\azure_launch_jupyter.bat ssh -p 63459 tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com
The authenticity of host '[ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com]:63459 ([51.124.10.211]:63459)' can't be established.
ECDSA key fingerprint is SHA256:JIALBD7yf+MhNNEZGZ1A9+798AgafKpBBc7ozHr400.
Are you sure you want to continue connecting (yes/no)? yes
```

You will get a warning about  
accessing an unknown host. Say **yes**.

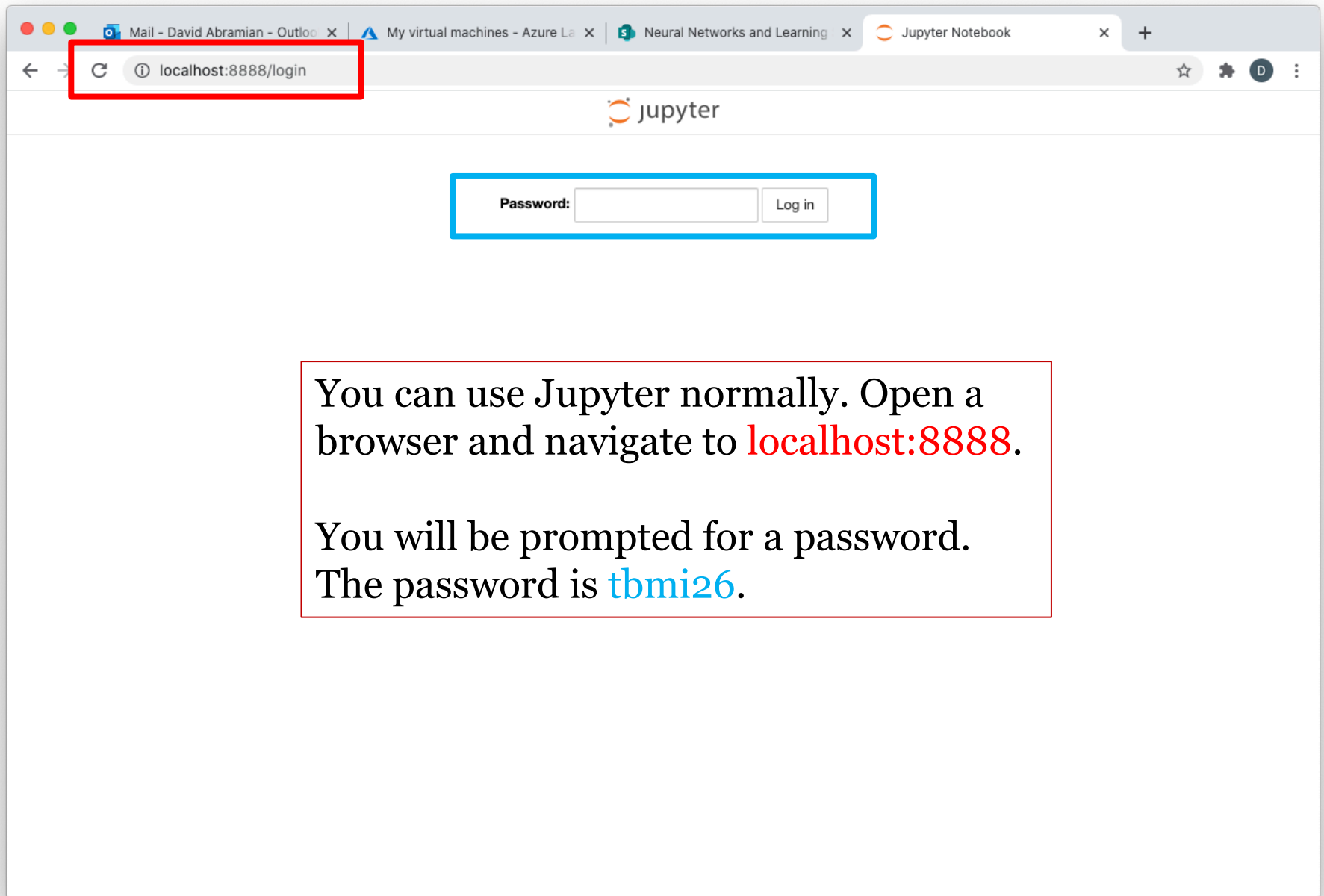
```
Command Prompt - Downloads\azure_launch_jupyter.bat ssh -p 63459 tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com
C:\Users\David>Downloads\azure_launch_jupyter.bat ssh -p 63459 tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com
The authenticity of host '[ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com]:63459 ([51.124.10.211]:63459)' can't be established.
ECDSA key fingerprint is SHA256:JIALBD7yf+MhNNEZGZ1A9+798AgafrKpBBc7ozHr400.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '[ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com]:63459,[51.124.10.211]:63459' (ECDSA) to the list of known hosts.
tbmi26@ml-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com's password: _
```

You will be prompted for your password (the one from slide 7). Note that **nothing will be printed** as you type!

```
OpenSSH SSH client
C:\Users\David>Downloads\azure_launch_jupyter.bat ssh -p 63459 tbmi26@m1-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com
The authenticity of host '[m1-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com]:63459 ([51.124.10.211]:63459)' can't be established.
ECDSA key fingerprint is SHA256:JIALBD7yf+MhNNEZGZ1A9+798AgafrKpBBc7ozHr400.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '[m1-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com]:63459,[51.124.10.211]:63459' (ECDSA) to the list of known hosts.
tbmi26@m1-lab-47c4597b-3725-457f-bf9c-0038ff934f32.westeurope.cloudapp.azure.com's password:
[I 17:41:38.501 LabApp] JupyterLab extension loaded from /anaconda/envs/lab_test/lib/python3.8/site-packages/jupyterlab
[I 17:41:38.502 LabApp] JupyterLab application directory is /anaconda/envs/lab_test/share/jupyter/lab
[I 17:41:38.504 LabApp] Serving notebooks from local directory: /home/tbmi26/lab
[I 17:41:38.504 LabApp] Jupyter Notebook 6.1.5 is running at:
[I 17:41:38.504 LabApp] http://localhost:8888/
[I 17:41:38.504 LabApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
```

Once you log in, Jupyter will be launched automatically. This can take a little time.

# Running the lab



You can use Jupyter normally. Open a browser and navigate to **localhost:8888**.

You will be prompted for a password. The password is **tbmi26**.



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localhost:8888/lab?

FileEditViewRunKernelTabsSettingsHelp

+

+

+

+

Name

Last Modified

CIFAR10-Lab...3 hours ago

Custom.py3 hours ago

MNIST-Dem...3 hours ago

MNIST-Demo.ipynbCIFAR10-Lab.ipynb

Markdown

Python 3

## 0. Quick introduction to jupyter notebooks

- Each cell in this notebook contains either code or text.
- You can run a cell by pressing Ctrl-Enter, or run and advance to the next cell with Shift-Enter.
- Code cells will print their output, including images, below the cell. Running it again deletes the previous output, so be careful if you want to save some results.
- You don't have to rerun all cells to test changes, just rerun the cell you have made changes to. Some exceptions might apply, for example if you overwrite variables from previous cells, but in general this will work.
- If all else fails, use the "Kernel" menu and select "Restart Kernel and Clear All Output". You can also use this menu to run all cells.

## 0.5 Some hardware setup

Keras uses all available GPUs in your computer. The following `os.environ` commands configures that only one of them should be used. If you are on a system with several GPUs and want to use more than one, you can change or comment out these commands.

By default, Keras will allocate all of the available memory in the device. The last two lines will have Keras allocate memory as needed.

```
[ ]: import os
import tensorflow as tf

# If there are multiple GPUs and we only want to use one/some, set the number in the visible device
os.environ["CUDA_DEVICE_ORDER"]="PCI_BUS_ID"
os.environ["CUDA_VISIBLE_DEVICES"]="0"

# This sets the GPU to allocate memory only as needed
physical_devices = tf.config.experimental.list_physical_devices('GPU')
if len(physical_devices) != 0:
    tf.config.experimental.set_memory_growth(physical_devices[0], True)
```

0 2 Python 3 | IdleMode: CommandLn 1, Col 1MNIST-Demo.ipynb

# When you are done

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### My virtual machines

TBMI26 2021

0.5 / 4 hour(s) used

☐ Stopping...

Remember to shut down the virtual machine! Your time is used as long as it is on.

Feedback