Welcome to

MATLAB with Python

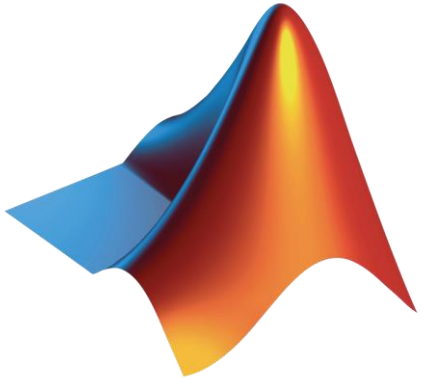
The event will begin shortly, before we begin remember:

Mute your mics

(should be off by default)

If you don’t have MATLAB, scan the code to get started

MATLAB with Python



Simon Thor MATLAB Student Ambassador

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Agenda

- About MATLAB and Python
- Python in MATLAB
- MATLAB in Python
- Other use cases
- Resources to learn more

- **Ask questions whenever you want!**

- Presentation and other resources available here:

https://github.com/simonthor/kth-matlab-ambassador

MATLAB vs Python

- Similar languages
- Similar use cases
- Which one is better?
  - Depends!
- **Why not use both?**

Feature	MATLAB	Python
Dynamic	Yes (JIT)	Yes (parsed)
High-level	Yes	Yes
Readability	Readable	Readable
Use cases	Science, engineering, machine learning	Science, web, machine learning
Linear algebra	Builtin support	Numpy
Visualization	Builin support	Matplotlib
Symbolic math	Builtin support	Sympy
Number of users	4 million+	8 million+[1]
License	Commercial	Open source

[1] https://www.zdnet.com/article/programming-languages-python-developers-now-outnumber-java-ones/

Calling Python from MATLAB

- Required setup:
  - Run **`pyenv`** if using virtual environments
  - Otherwise, no setup required
- Super easy to call Python code from MATLAB
  - Clean syntax
  - Smooth type conversion
- Use powerful Python libraries
- Demo

More information:
https://www.mathworks.com/help/matlab/call-python-libraries.html

Try out the demo with me!
https://drive.matlab.com/sharing/d55f0d7a-4cd5-4b96-a4c0-723368546f39
Or download the demo here:
https://github.com/simonthor/kth-matlab-ambassador/blob/master/Seminars/MATLAB%20with%20Python/pythonFromMatlab_demo.mlx

Calling MATLAB from Python

- Required setup:
  - Run setup.py
  - Supported Python versions: 2.7, 3.6-3.8
  - Also works with virtual environments
- MATLAB array type
  - Easy transition to numpy arrays
- Demo

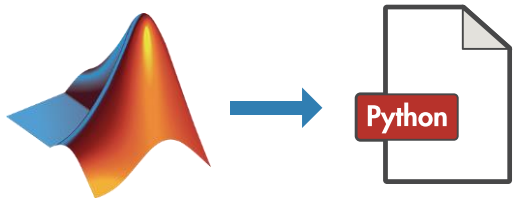
```
>> cd [matlabroot]/extern/engines/python/
>> python setup.py install
```

More information:
https://www.mathworks.com/help/matlab/matlab-engine-for-python.html

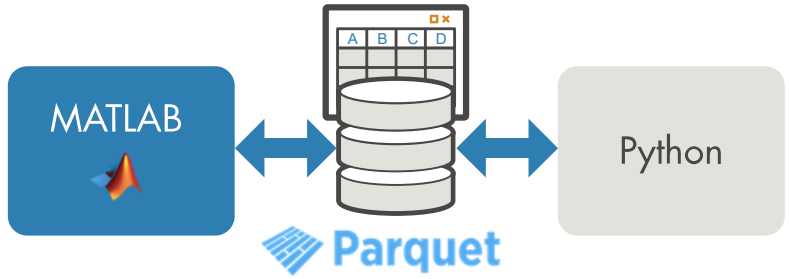
Download demo here:
https://github.com/simonthor/kth-matlab-ambassador/blob/master/Seminars/MATLAB%20with%20Python/matlabFromPython_demo.ipynb

Other use cases of MATLAB with Python

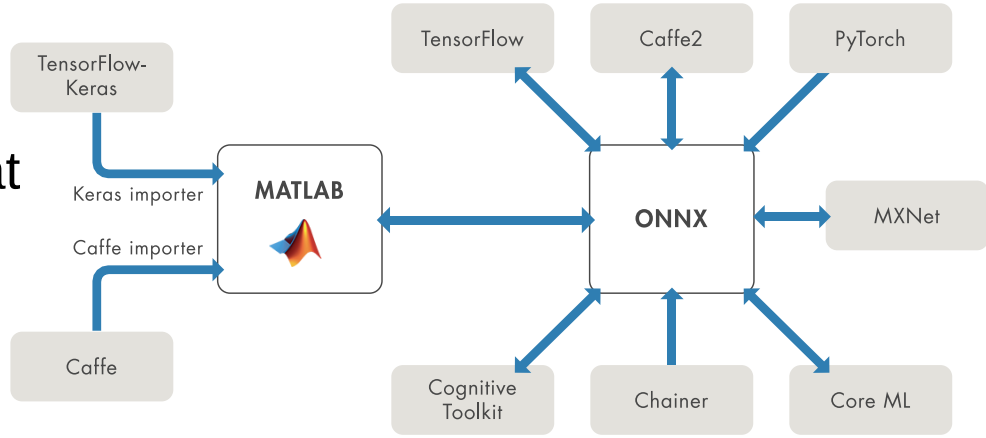
- MATLAB Complier SDK
  - Generate Python packages from MATLAB code



- Tabular data
  - Export and import parquet files
  - load in Python with pandas

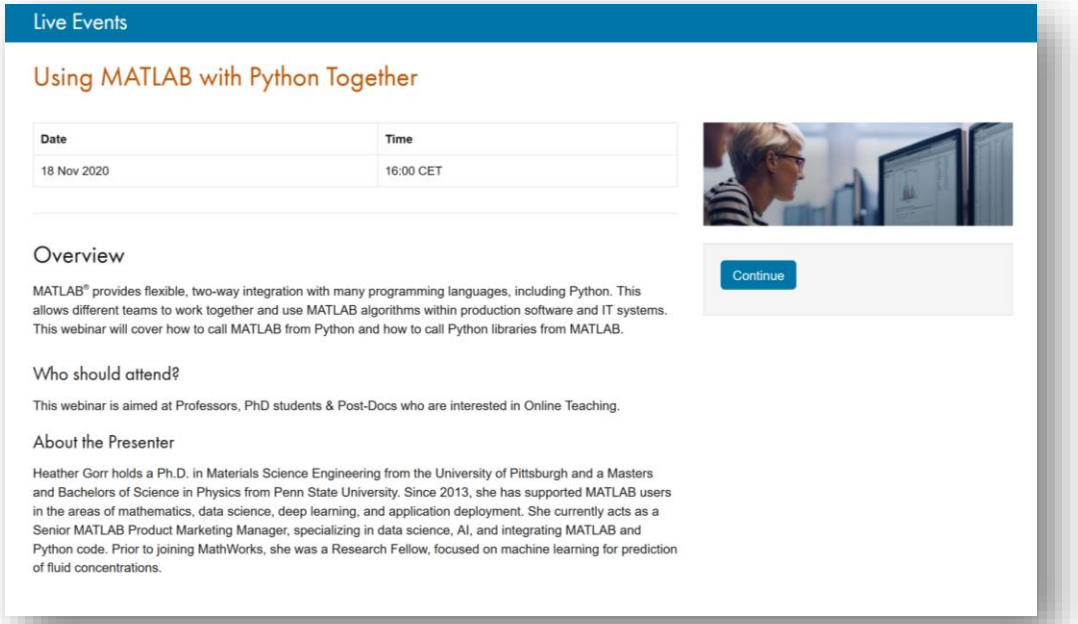


- Neural networks
  - Export to Open Neural Network Exchange format
  - Import Keras model: `importKerasNetwork`
  - Import Caffe model: `importCaffeNetwork`



Other resources

- MATLAB with Python
- MATLAB homepage
- Python homepage
- Webinar - Using MATLAB with Python together (18/11)
- Cheat sheets and this presentation
- Have problems? Ask in the Facebook group :)



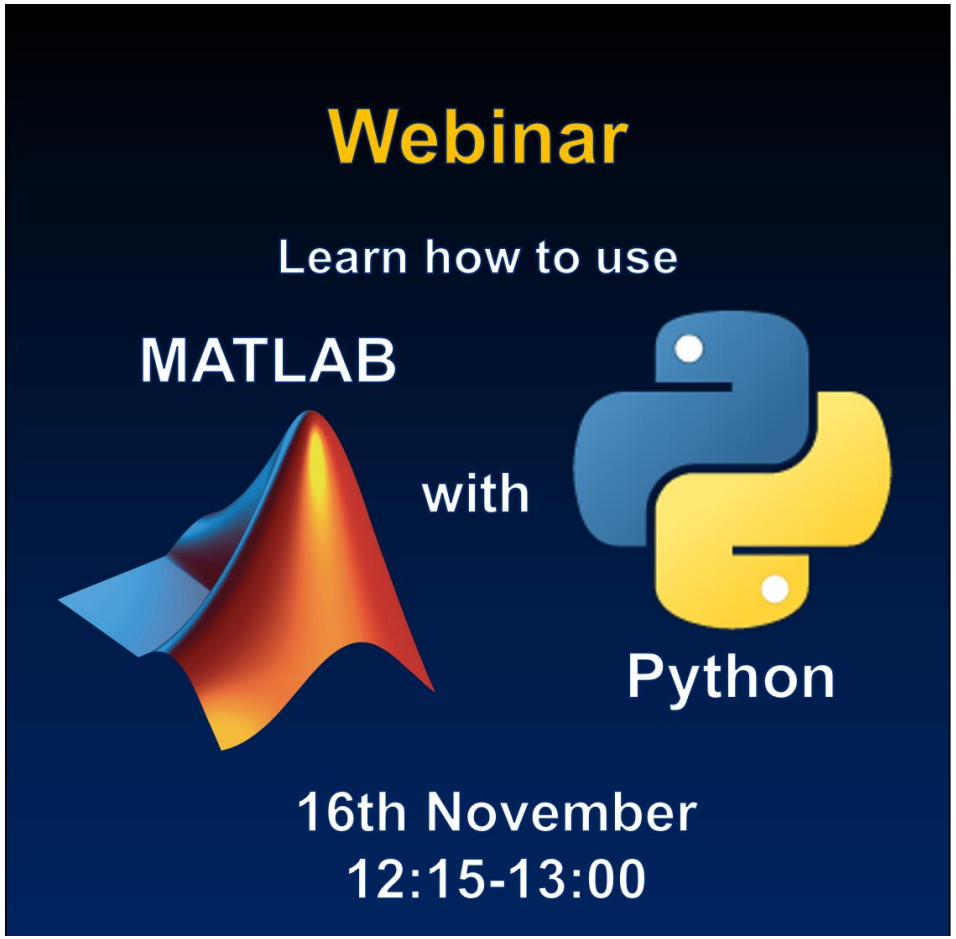
Facebook group

- Join the MATLAB@KTH Facebook group
- Stay up to date with all events being hosted
- Posts about MATLAB & Simulink resources

facebook.com/groups/MATLAB.KTH

- Instagram: @matlab_kth
- Post (outdated) memes
- Suggest better memes!

instagram.com/matlab_kth

Thank you for attending!

- Fill out this form to make the events better
- https://forms.gle/bJW2JduqdmnCqtmMA