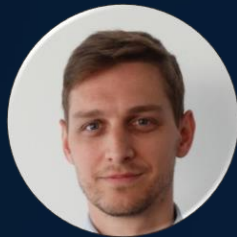


MATLAB EXPO 2021

Using MATLAB with Python

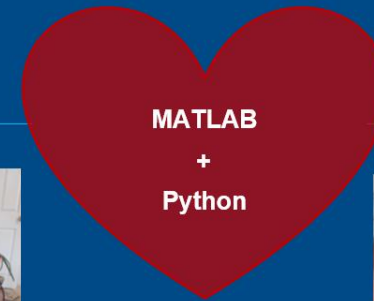
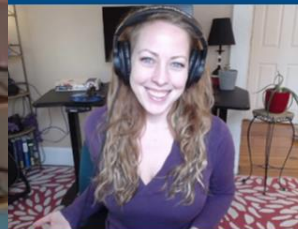
Heather Gorr, PhD & Yann Debray



Top Questions Using MATLAB with Python



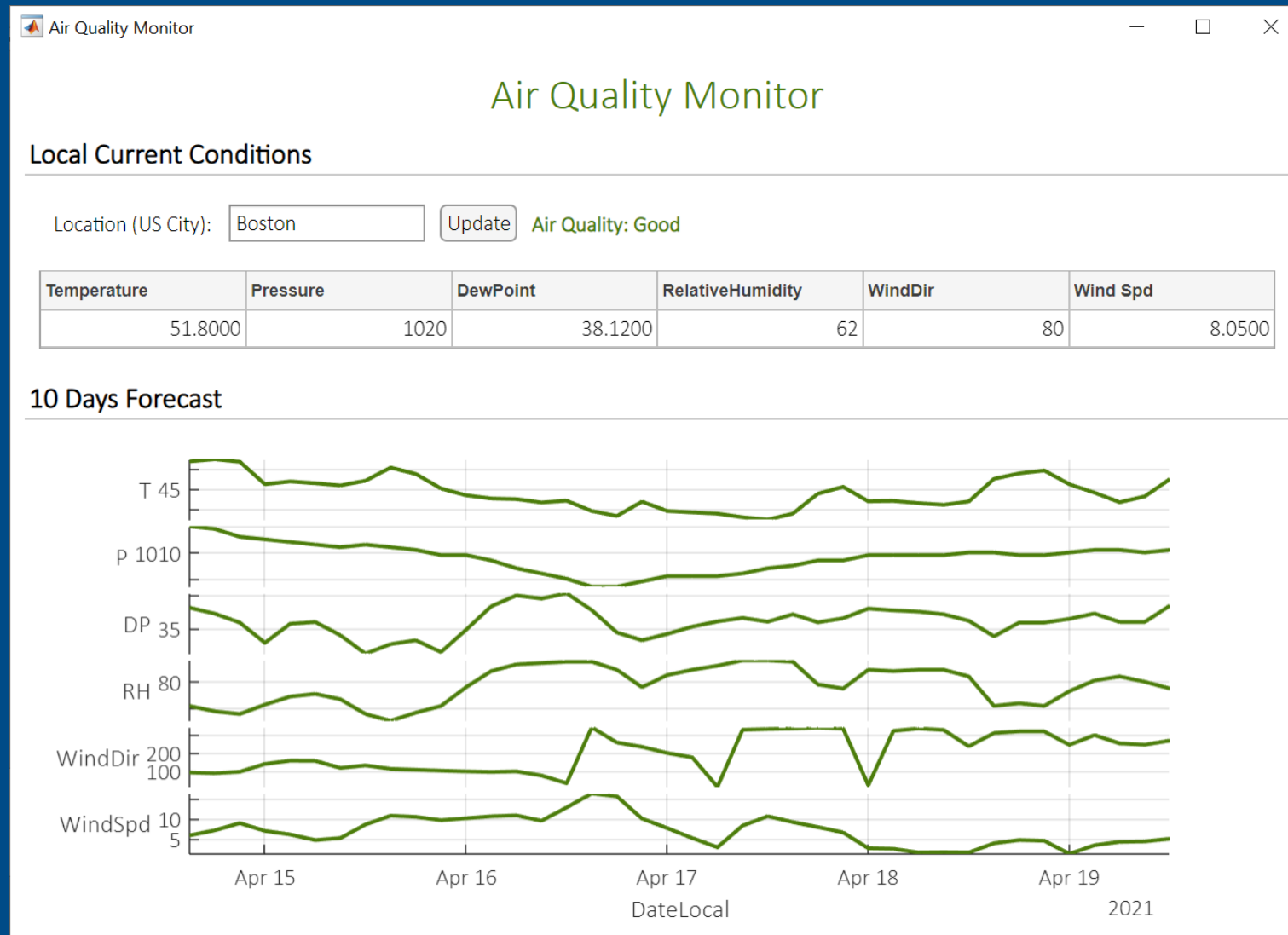
Heather Gorr, PhD



Yann Debray



Example: Build Air Quality App using MATLAB and Python



hgorr / matlab-with-python

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Follow along with the code 😊

[master](#) 1 branch 0 tags[Go to file](#)[Code](#)

uv Moved more files :)		
1_CallPythonFromMATLAB	Reorganized, added MATLAB Proj	
2_CallMATLABFromPython	Moved more files :)	
3_CallMATLABCompiledLibraryFromP...	Reorganized, updated filenames, i	
4_CallMATLABProductionServerFrom...	Moved more files :)	
5_MATLABWebApp	Reorganized, updated filenames, i	
resources/project	Reorganized, added MATLAB Project, helper files	11 days ago
.gitattributes	Reorganized, added MATLAB Project, helper files	11 days ago
.gitignore	Reorganized, added MATLAB Project, helper files	11 days ago

Clone ⓘ

HTTPS GitHub CLI

<https://github.com/hgorr/matlab-with-pytho>

Use Git or checkout with SVN using the web URL.

Open with GitHub Desktop

Download ZIP

About

Examples using MATLAB and Python together

[Readme](#)

Releases

No releases published

Packages

No packages published

Notice

API key was created successfully

[New Products](#)[Services](#)[API keys](#)[Billing plans](#)[Payments](#)[Block logs](#)[My orders](#)[My profile](#)

You can generate as many API keys as needed for your subscription. We accumulate the total load from all of them.

Key

Name

[Redacted]

Default



515d6a97988df8f797bafc41700337d6

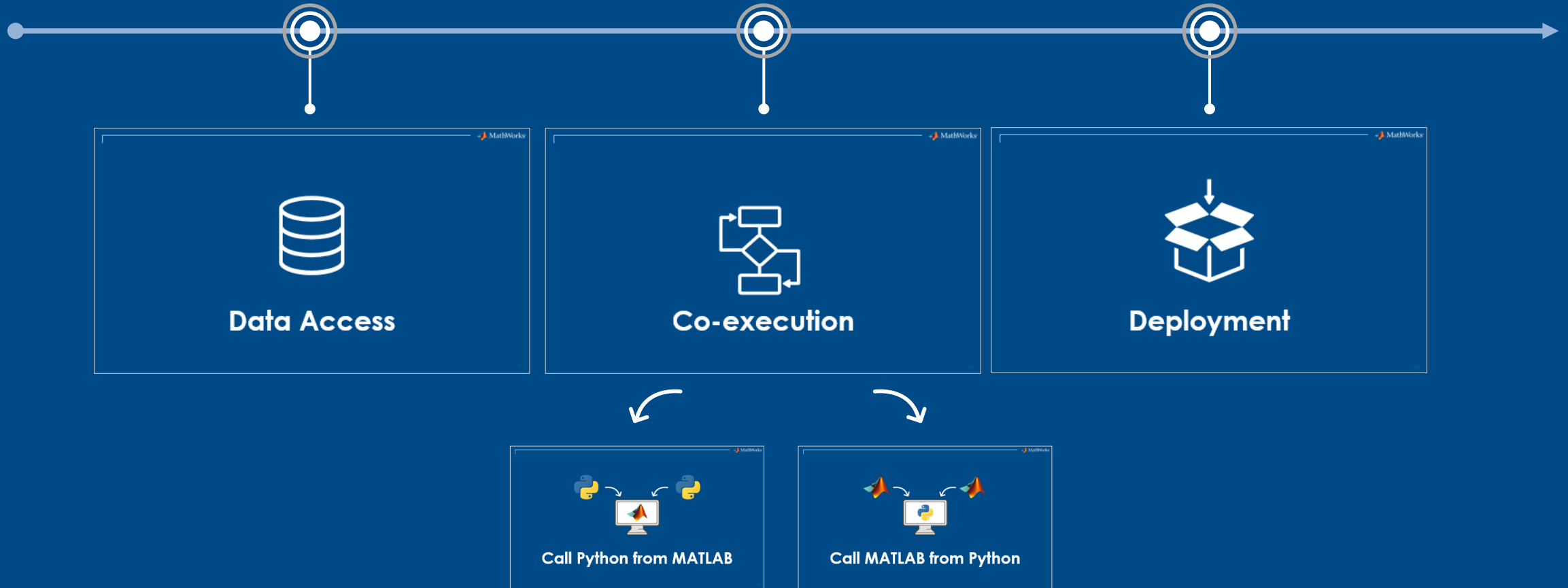
expo



Create key

Generate

Strategies





Data Access

Access Data from a Web Service

<https://openweathermap.org/>

Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

OpenWeather global services

Weather forecasts, nowcasts and history in fast and elegant way

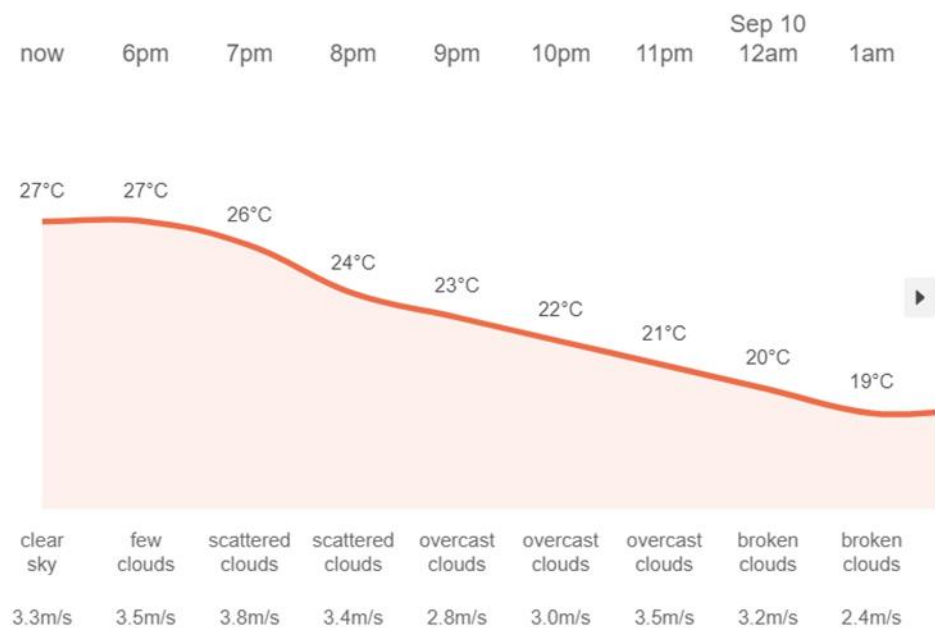
2 Billion Forecasts Per Day
2,500 new subscribers a day

2,600,000 customers
20+ weather APIs



Hourly forecast

Temperature Precipitation



8-day forecast

Wed, Sep 09	27 / 19°C	clear sky
Thu, Sep 10	25 / 18°C	broken clouds
Fri, Sep 11	28 / 17°C	scattered clouds
Sat, Sep 12	25 / 16°C	clear sky
Sun, Sep 13	26 / 15°C	broken clouds
Mon, Sep 14	32 / 17°C	scattered clouds
Tue, Sep 15	27 / 20°C	moderate rain
Wed, Sep 16	21 / 17°C	light rain

What type of data?

Numerical, Textual, Geolocalized, Timeseries, ...

Data Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python



current
weather



hourly
forecast



daily
forecast



climatic
forecast



historical
weather

Called by:

geographical coordinates, zip codes, city name, city ID, number of cities (only in current and forecasted APIs)

<https://openweathermap.org/>

Deployment

Store & transfer tabular data between languages

Use Apache Parquet files for memory efficient data access

- [Working with Parquet files in MATLAB](#)
- [MATLAB library for Apache Arrow on GitHub](#)

Data Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python



```
parquetwrite("temperatureFitting.parquet",T)
```

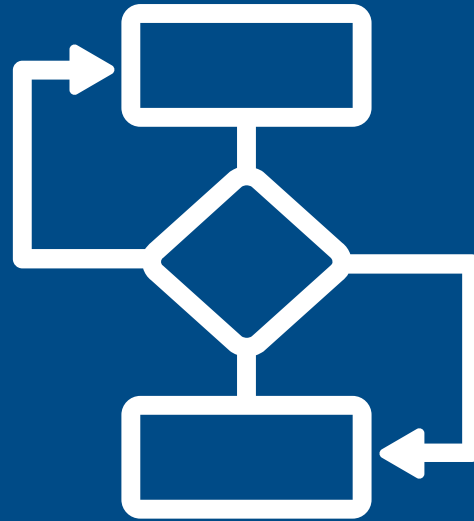
T = 40x3 table

	Time	Temperatures	SineFit
1	2020-07-16...	19.0200	23.8001
2	2020-07-16...	20.3300	24.6581
3	2020-07-16...	20.1300	23.0750
4	2020-07-16...	18.9300	19.9678
5	2020-07-17...	17.1500	17.1366
6	2020-07-17...	16.0200	16.2214
7	2020-07-17...	16.7900	17.7525
8	2020-07-17...	24.1200	22.2182
9	2020-07-17...	24.1200	22.2182
10	2020-07-17...	24.1200	22.2182

```
# Use parquet file as alternative to exchange tables with MATLAB
df = pd.read_parquet("temperatureFitting.parquet")
df.head()
```

	Time	Temperatures	SineFit
0	2020-07-16 12:00:00	19.02	23.800150
1	2020-07-16 15:00:00	20.33	24.658138
2	2020-07-16 18:00:00	20.13	23.074984
3	2020-07-16 21:00:00	18.93	19.967804
4	2020-07-17 00:00:00	17.15	17.136577

Deployment

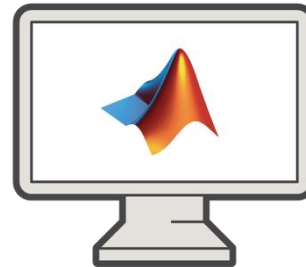


Co-execution

Given: Existing Python Code accessing & preparing weather data



Weather Data



Data
Access

Co-Execution

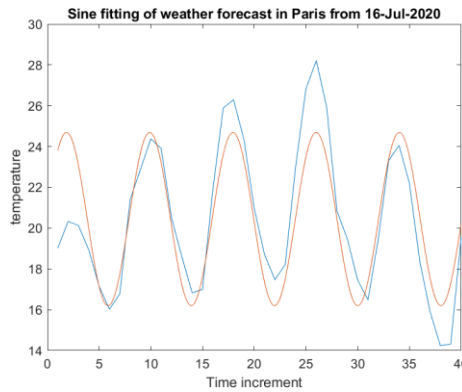
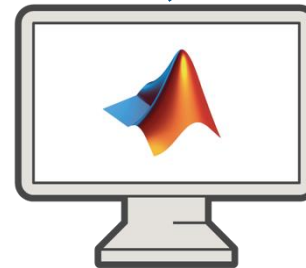
- Call Python from MATLAB
- Call MATLAB from Python

Deployment

Call Python from MATLAB



Weather Data



Data Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

Call MATLAB from Python

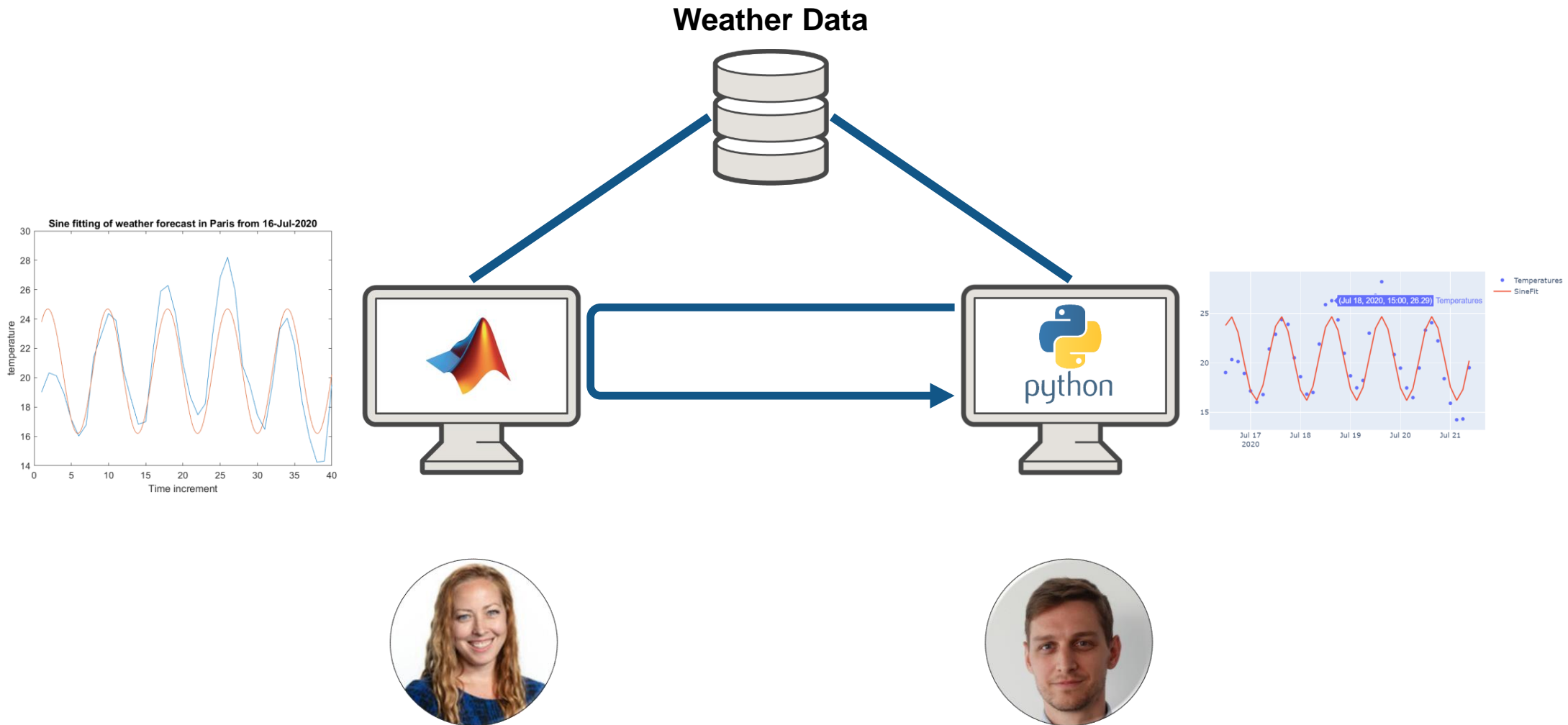


Data Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment



Deploy: MATLAB Analytics into Python

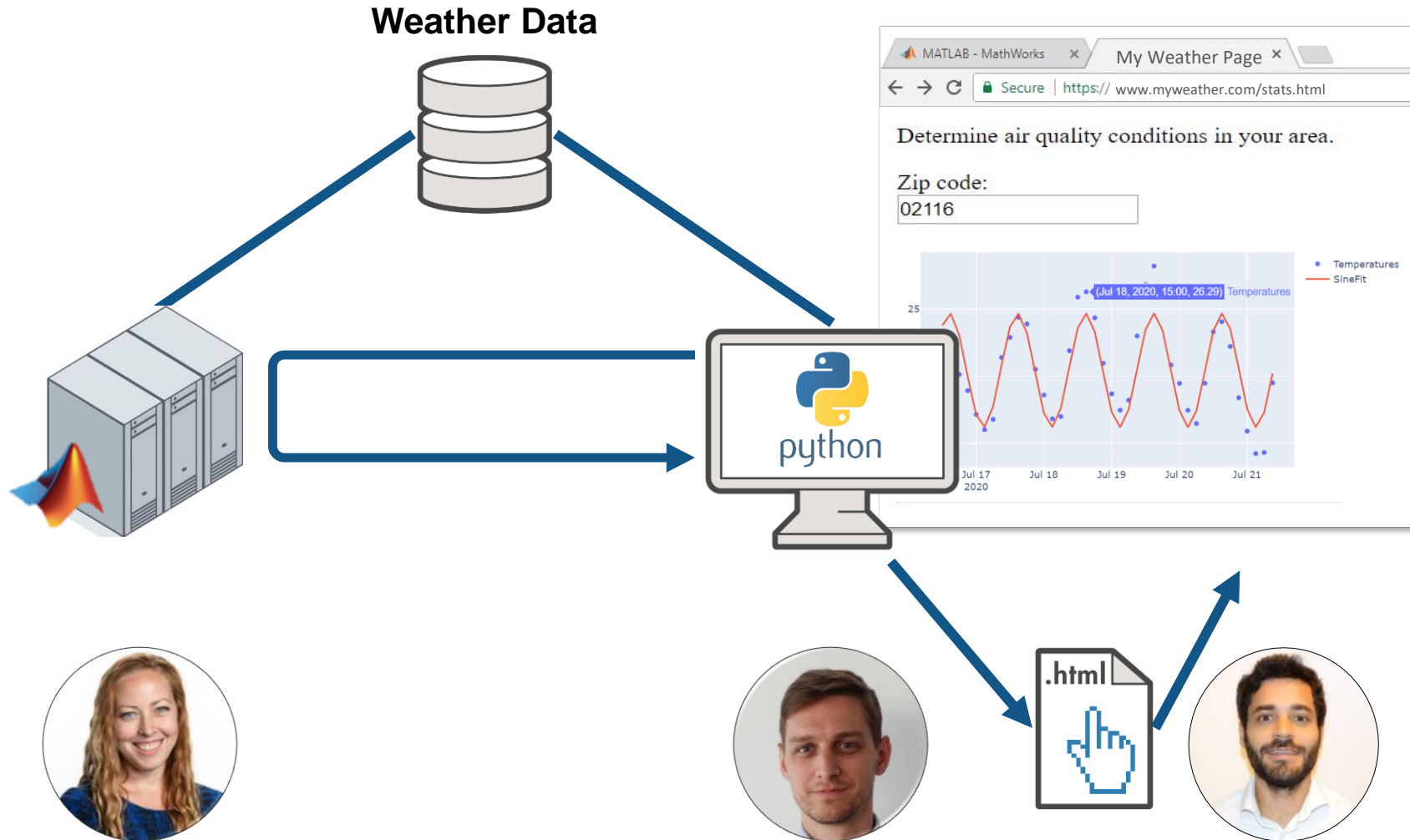
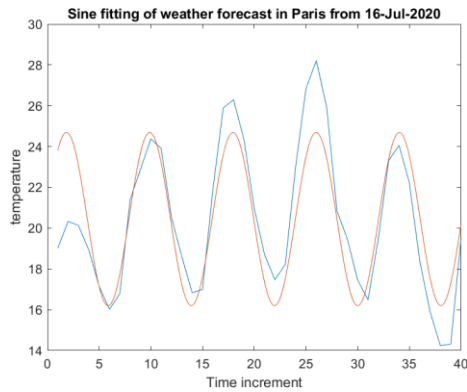


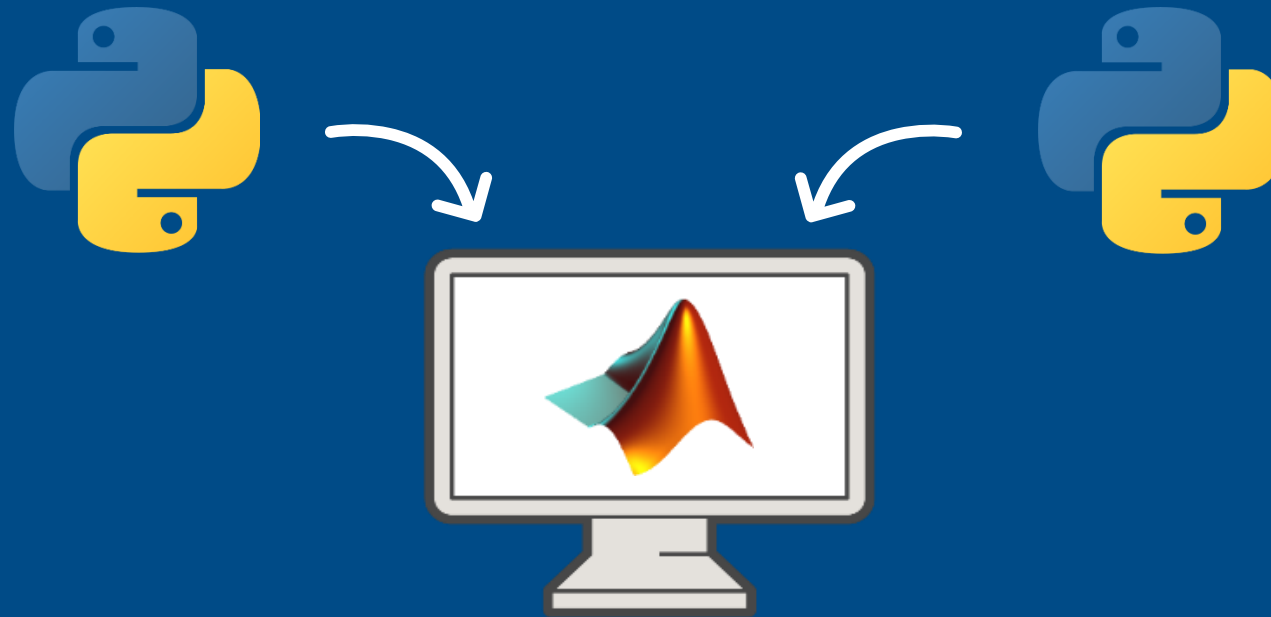
Data Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment



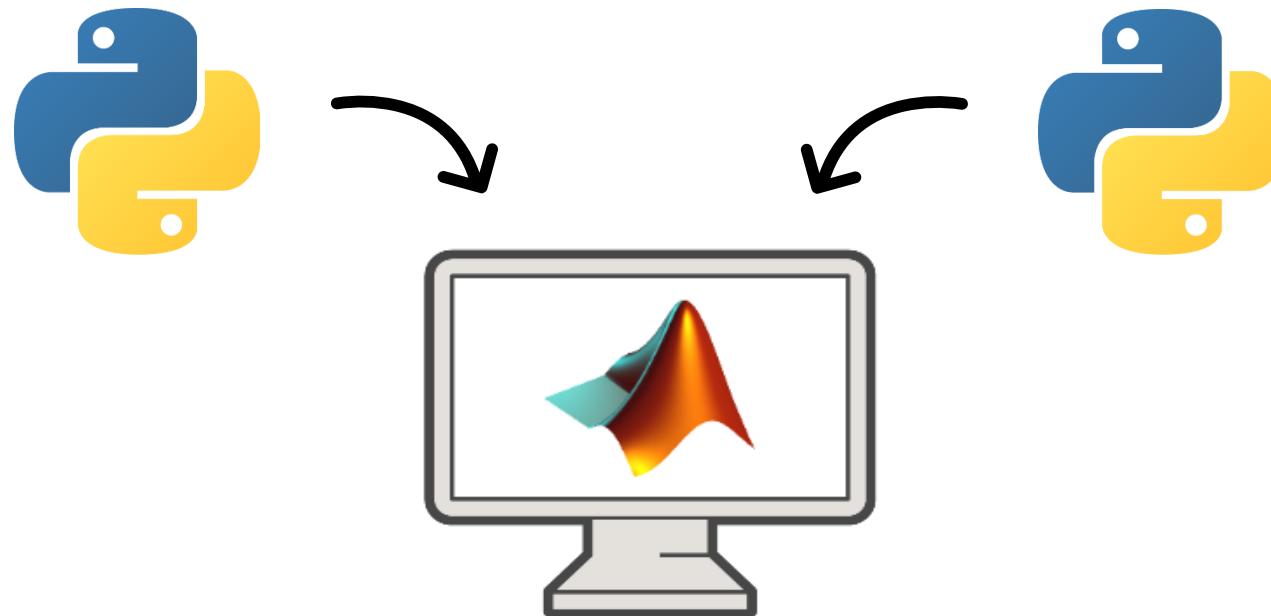


Call Python from MATLAB

Why Call Python from MATLAB?

Already working in MATLAB, and:

- Want to reuse existing Python code
- Need functionality available in Python
- Want to collaborate with Python users



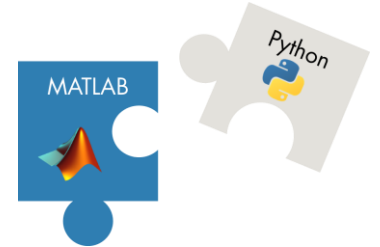
Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

Calling Python libraries from MATLAB



Use the weather.py module to get the air quality for Paris. This is a user-defined Python module which includes functions to read and parse the current and forecasted weather data by location.

```
jsonData = py.weather.get_current_weather("Paris", "France", apikey.Key)
```

jsonData =
Python dict with no properties.

```
{'coord': {'lon': 2.35, 'lat': 48.85}, 'weather': [{'id': 803, 'main': 'Cloudy'}
```

Parse the json data returned from the weather API.

The Python dictionary can be represented as a MATLAB struct.

```
weatherData = py.weather.parse_json(jsondata);  
struct(weatherData)
```

```
ans = struct with fields:  
    temp: 18.7100  
    feels_like: 17.3000  
    temp_min: 17.7800  
    temp_max: [1x1 py.int]
```

Use a function (prepData.m) to prepare data for machine learning (create a table with the expected variable names, preprocessing steps, etc).

```
currentData = prepData(weatherData)
```

currentData = 1x12 table

	DateLocal	city	StateName	T	P	DP	RH	WindDir	WindSpd		
1	01-Jul-2020 11:...	"Paris"	Ile de France	21.6200	20.2600	349.2200	1010	5.1000	73		

```
def get_current_weather(city, country, apikey):  
    # get current conditions in specified location  
    # get_current_weather('boston', 'us', key)  
    import urllib.request  
    import json  
    # read current conditions  
    try:  
        url = "https://api.openweathermap.org/data/2.5/weather?q="+city+", "+country+"&appid="+apikey  
        response = urllib.request.urlopen(url)  
        html = response.read()  
        json_data = json.loads(html)  
  
    except urllib.error.URLError:  
        # if weather API doesnt work, read the file  
        json_data = read_backup(city)  
  
    return json_data
```

Data
Access

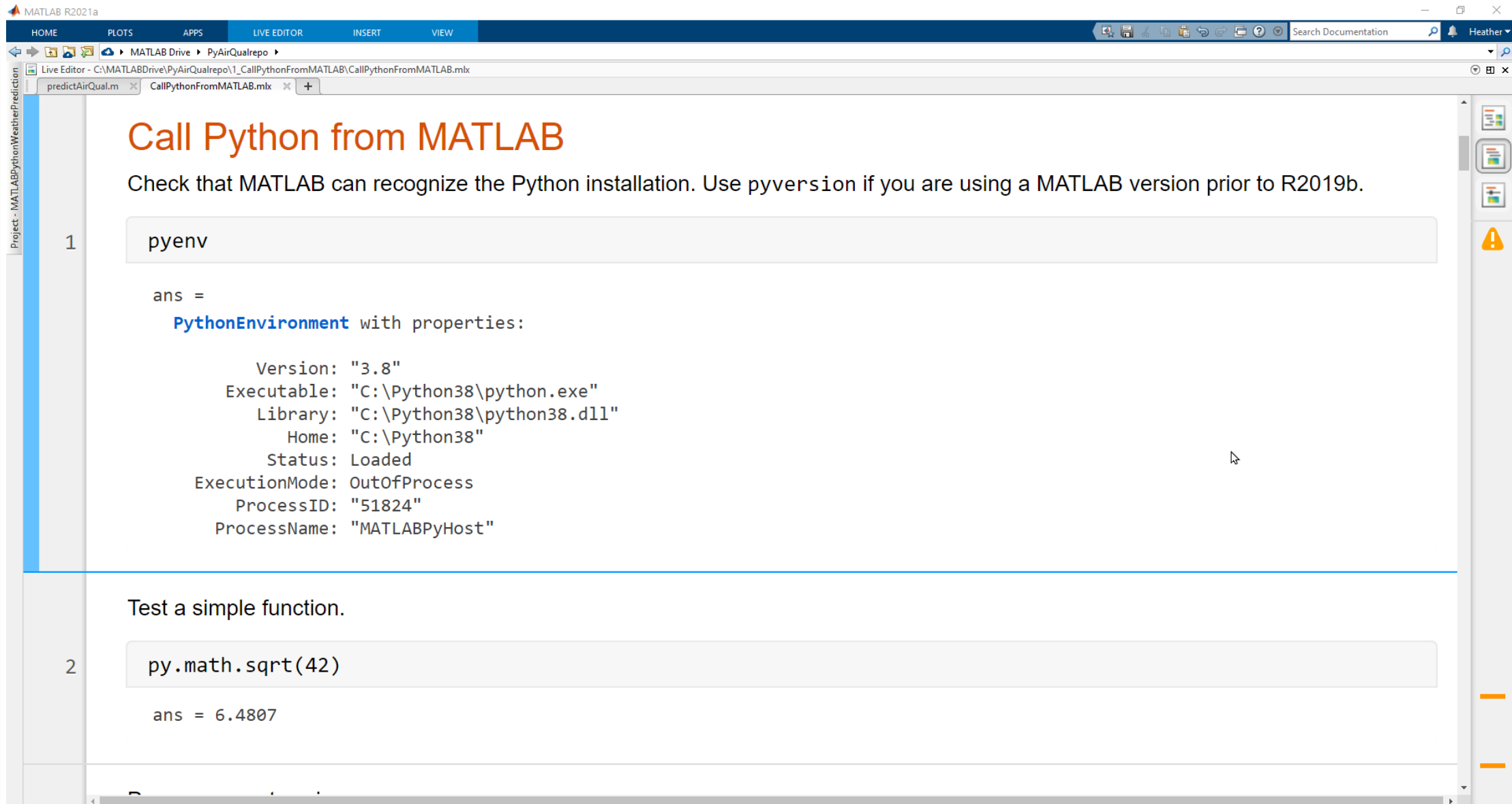
Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

First steps to connect to Python

[callPythonFromMATLAB.mlx](#)



The image shows a screenshot of the MATLAB R2021a Live Editor interface. The window title is 'MATLAB R2021a'. The top menu bar includes 'HOME', 'PLOTS', 'APPS', 'LIVE EDITOR', 'INSERT', and 'VIEW'. The address bar shows the file path: 'MATLAB Drive > PyAirQualrepo > CallPythonFromMATLAB.mlx'. The main editor area displays the following content:

Call Python from MATLAB

Check that MATLAB can recognize the Python installation. Use `pyversion` if you are using a MATLAB version prior to R2019b.

```
1 pyenv
```

ans =

PythonEnvironment with properties:

```
    Version: "3.8"
 Executable: "C:\Python38\python.exe"
   Library: "C:\Python38\python38.dll"
      Home: "C:\Python38"
   Status: Loaded
ExecutionMode: OutOfProcess
  ProcessID: "51824"
 ProcessName: "MATLABPyHost"
```

Test a simple function.

```
2 py.math.sqrt(42)
```

ans = 6.4807

Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

Call the weather service with Python and import data into MATLAB

MATLAB R2020b

HOME PLOTS APPS LIVE EDITOR INSERT VIEW

Search Documentation Yann

MATLAB Drive > weather > matlab-and-python >

Live Editor - C:\Users\ydebray\MATLAB Drive\weather\CallPythonFromMATLAB.mlx *

CallPythonFromMATLAB.mlx * x +

Handle timeseries with the weather forecast

Now let's get back to France, and look at the weather forecast for this weekend in Paris!

```

13  jsonData = py.weather.get_forecast("Paris",apikey.Key);
14  forecastData = py.weather.parse_forecast(jsonData);
15  forecast = struct(forecastData)

forecast = struct with fields:
    current_time: [1x40 py.list]
           temp: [1x1 py.array.array]
           deg: [1x1 py.array.array]
           speed: [1x1 py.array.array]
           humidity: [1x1 py.array.array]
           pressure: [1x1 py.array.array]

```

```

16  forecast.temp

ans =
Python array:

    9.3800    12.3700    13.6100    11.3200    9.6100    8.5200    7.8200    7.3400    9.9600    12.0100    12.7500    11.8800    11.4100    11.0600    10.8300    10.3500    11.8000

Use details function to view the properties of the Python object.

Use single function to convert to a MATLAB array.

```

```

17  tempForecast = double(forecast.temp)

tempForecast = 1x40
    9.3800    12.3700    13.6100    11.3200    9.6100    8.5200    7.8200    7.3400    9.9600    12.0100    12.7500    11.8800    11.4100    11.0600    10.8300    10.3500 ...

```

UTF-8 script

Data Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

Live Tasks

TABLES AND TIMETABLES



Join Tables



Retime
Timetable



Stack Table
Variables



Synchronize
Timetables



Unstack Table
Variables

Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

MATLAB R2020b

HOME PLOTS APPS LIVE EDITOR INSERT VIEW

Search Documentation Yann

MATLAB Drive > weather >

Live Editor - C:\Users\ydebray\MATLAB Drive\weather\matlab-and-python\CallPythonFromMATLAB.mlx

CallPythonFromMATLAB.mlx x Weather.mlx x +

Retime Timetable

`newTimetable` = Retime `foreTemp` using interpolation

Select data

Input timetable: `foreTemp`

Specify new times

Selection method: Time step, 1, Hours

Select method for adjusting data

General rule: Interpolate data, Linear

Exceptions: Add

Display results

Input timetable Output timetable

```

28 % Retime timetable
29 newTimetable = retime(foreTemp, 'regular', 'linear', 'TimeStep', hours(1))

```

`newTimetable` = 118x1 timetable

	time	Temperature
1	15-Oct-202...	10.590000152587...
2	15-Oct-202...	11.073333422342...
3	15-Oct-202...	11.556666692097...

UTF-8 script Ln 26 Col 50

DATA PREPROCESSING

Live Tasks



Clean Missing
Data



Clean Outlier
Data



Find Change
Points



Find Local
Extrema



Remove
Trends



Smooth Data

Remove Trends

`detrendedData` = Remove linear trend from `tempForecast`

Select data

Input data `tempForecast` X-axis `default`

Specify trend parameters

Degree `Linear`

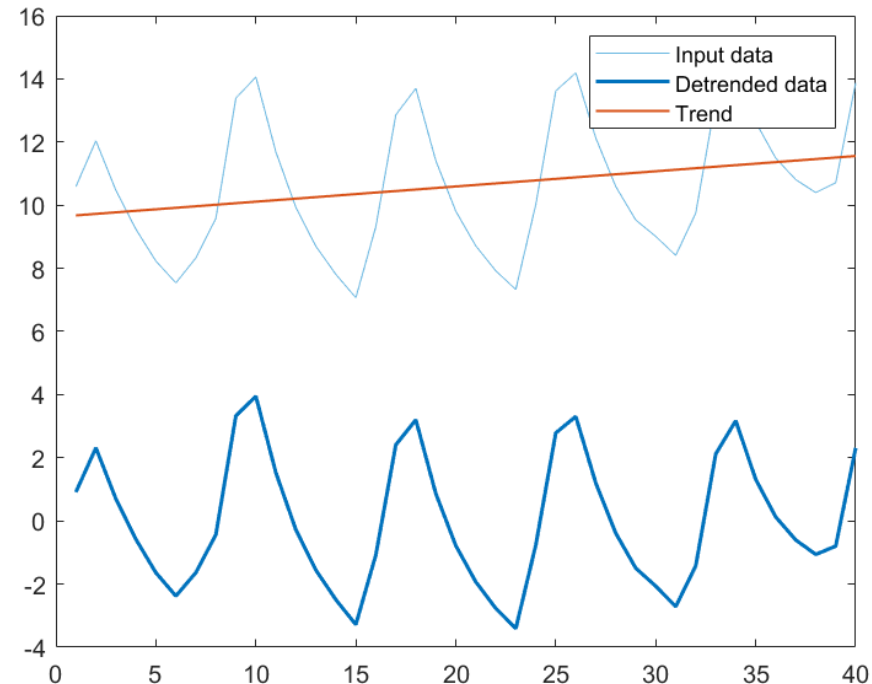
Breakpoints `None`

Display results

Detrended data Input data Trend

```
% Remove trend from data
detrendedData = detrend(tempForecast);

% Display results
clf
plot(tempForecast,'Color',[109 185 226])
hold on
plot(detrendedData,'Color',[0 114 189],
'DisplayName','Detrended data')
plot(tempForecast-detrendedData,'Color',
'DisplayName','Trend')
```



Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

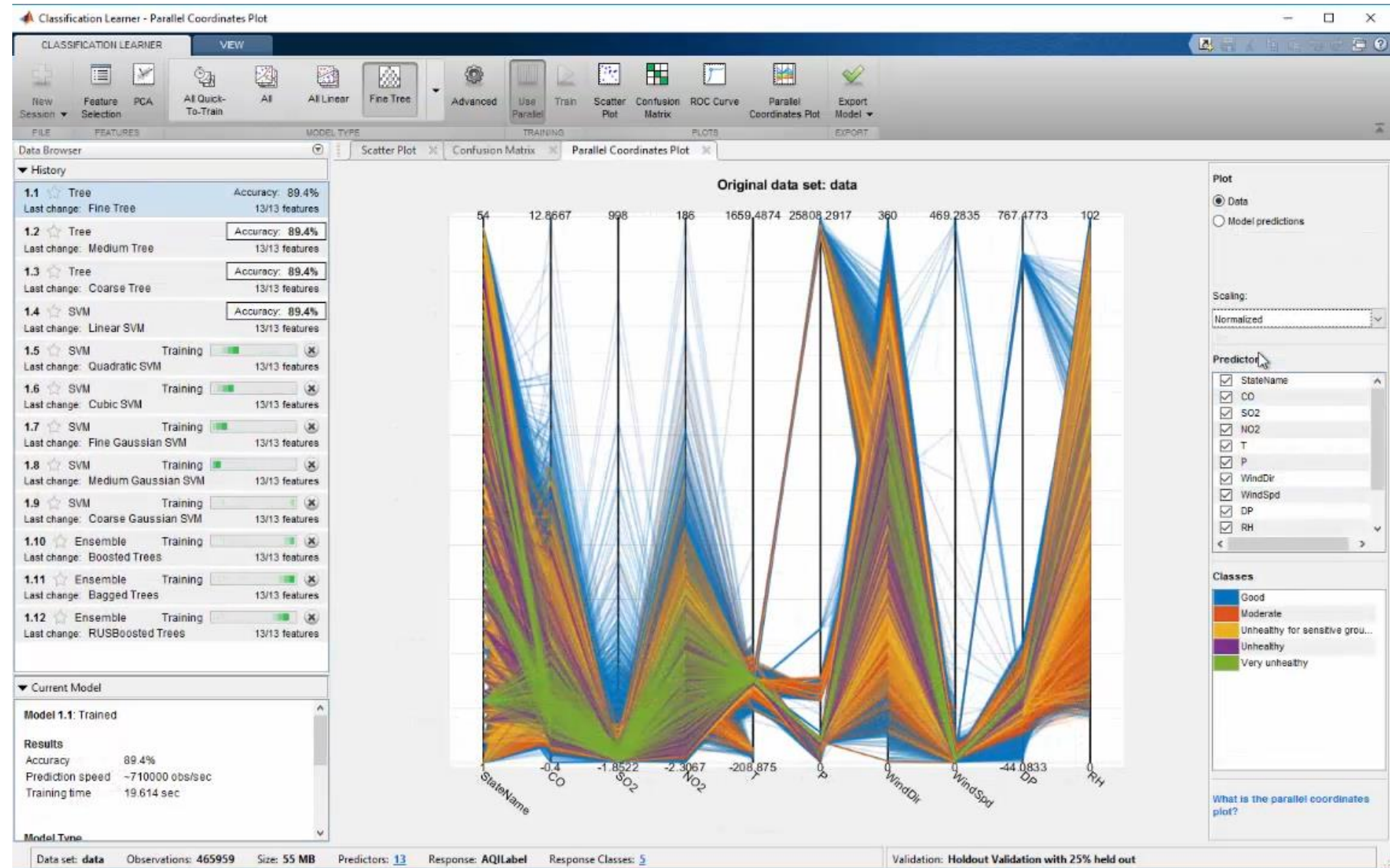
Train air quality prediction model in MATLAB

Data Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment



Use air quality prediction model on Python data

Data Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

The image shows the MATLAB R2020b Live Editor interface. The top menu bar includes HOME, PLOTS, APPS, LIVE EDITOR, INSERT, and VIEW. The toolbar contains icons for file operations (New, Open, Save, Find Files, Compare, Print, Go To, Find), text formatting (Normal, Bold, Italic, Underline, Monospace), code execution (Run, Step, Stop), and other tools (Task, Control, Refactor, Section Break, Run and Advance, Run to End). The current folder is 'C:_work\MATLABwithPython\weatherPrediction\1_CallPythonFromMATLAB'. The workspace shows files: __pycache__, accessKey.txt, airQualModel.mat, airQualModelOld.mat, CallPythonFromMATLAB.mlx, cities.mat, predictAirQual.m (selected), prepData.m, and weather.py. The Live Editor shows the script 'CallPythonFromMATLAB.mlx' with the following content:

```

21  Use the model to predict the air quality for the new weather data.
    'airQualModel.mat' is a pre-trained Bagged Classification Tree/ "Random Forest"
    classification network. The model was saved as a *.mat file for use in predicting air
    quality in this demonstration.
22  load airQualModel
23
24  Use a function (prepData.m) to convert and prepare data for machine learning
    (create a table with the expected variable names, preprocessing steps, etc).
25
26
27  apikey      = readtable("accessKey.txt","TextType","string");
28  List = "Houston";
    jsonData    = py.weather.get_current_weather(List,"US",apikey.Key);
    weatherData = py.weather.parse_current_json(jsonData);
29
30  currentData = prepData(weatherData);
31  airQual     = predict(model,currentData)
  
```

The Command Window at the bottom shows the script's execution progress. The status bar indicates UTF-8 encoding, script type, and current position at Line 28, Column 41.

Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

Recap: Calling Python from MATLAB

Data are automatically converted where possible

Otherwise convert explicitly

Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

MATLAB to Python Data Type Mapping

R2021a

When calling a Python[®] function, MATLAB[®] converts MATLAB data into types that best represent the data to the Python language.

Pass Scalar Values to Python

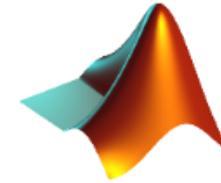
MATLAB Input Argument Type — Scalar Values Only	Resulting Python py. Type	Examples
double single	float	Use Python Numeric Variables in MATLAB
Complex single Complex double	complex	<pre>z = complex(1,2); py.cmath.polar(z)</pre> <pre>ans = Python tuple with no properties. (2.23606797749979, 1.1071487177940904)</pre>
int8 uint8 int16 uint16 int32	int	
uint32 int64 uint64	int long (version 2.7 only)	
NaN	float("nan")	
Inf	float("inf")	
string scalar	str	Use Python str Variables in MATLAB

https://mathworks.com/help/matlab/matlab_external/passing-data-to-python.html

Note the syntax differences when calling Python from MATLAB



Python



MATLAB

```
>>> import math  
>>> math.sqrt(42)
```



```
>> py.math.sqrt(42)
```

```
>>> print('hello', 'world', sep=', ')
```



```
>> py.print('hello', 'world', ...  
           pyargs('sep', ', '))
```

Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

Model Interoperability

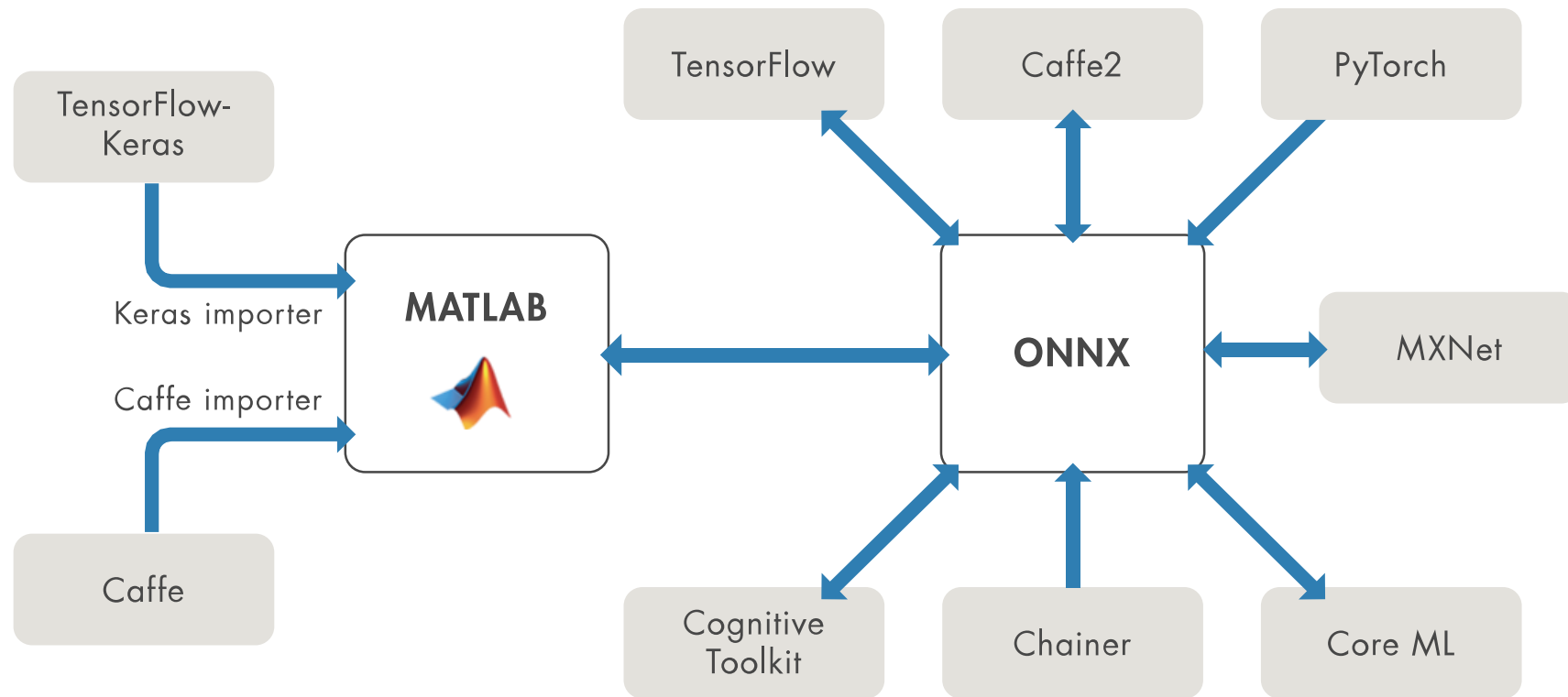


Data Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

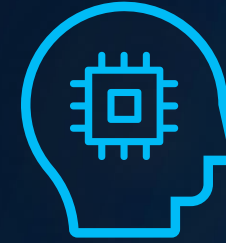
Deployment



<https://www.mathworks.com/solutions/deep-learning/models.html>

Learn more about Data Science with MATLAB

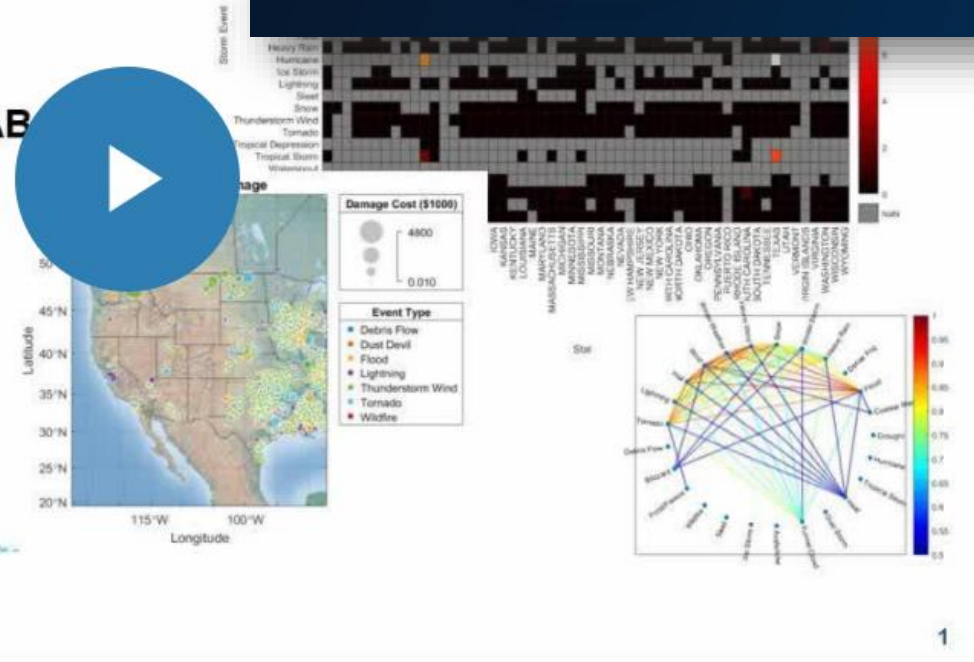
**Find out more:
AI in Engineering**



Data Science With MATLAB

Heather Gorr, PhD
Senior Product Manager, MATLAB
MathWorks

Instagram: @heather.codes
Twitter: @HeatherGorr

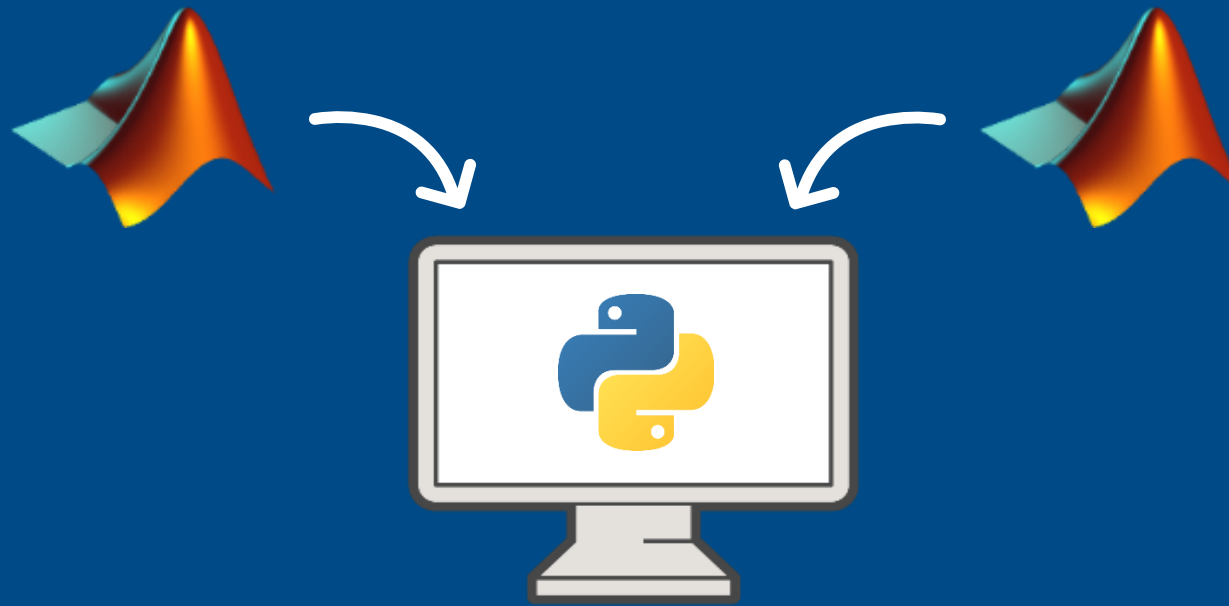


Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

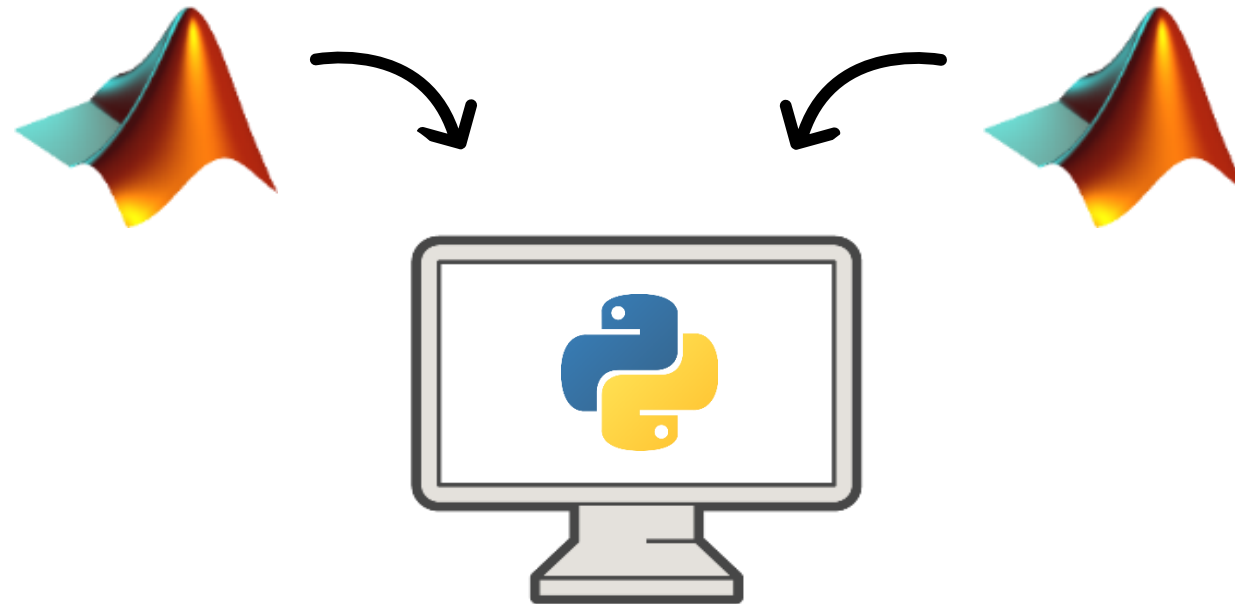


Call MATLAB from Python

Why call MATLAB from Python?

Already working in Python, and:

- Want to reuse existing MATLAB code
- Need functionality available in MATLAB
- Want to collaborate with MATLAB users



Data
Access

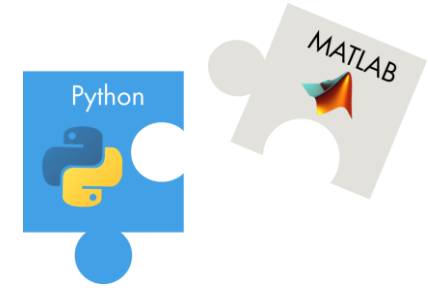
Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

Call MATLAB from Python

To perform advanced analytics



- Calling MATLAB from Python
 - via MATLAB Engine API

```
Administrator: Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\WINDOWS\system32> cd 'C:\Program Files\MATLAB\R2021a\extern\engines\python'
PS C:\Program Files\MATLAB\R2021a\extern\engines\python> python setup.py install
```

```
>>> import matlab.engine
>>> eng = matlab.engine.start_matlab()
>>>
```

Data
Access

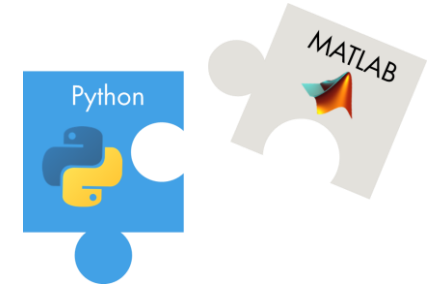
Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

Call MATLAB from Python

To perform advanced analytics



- Calling MATLAB from Python
 - via MATLAB Engine API

```
>>> import matlab.engine
>>> eng = matlab.engine.start_matlab()
>>> eng.sqrt(42.0)
6.48074069840786
>>>

>>> z = eng.gcd(42.0,8.0,nargout=1)
>>> print(z)
2.0

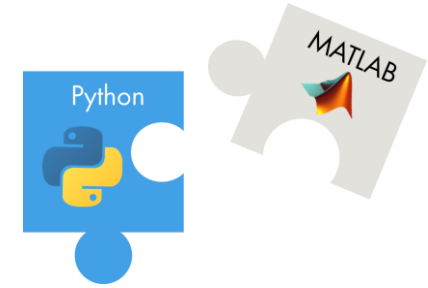
>>> z = eng.gcd(42.0,8.0,nargout=3)
>>> print(z)
(2.0, 1.0, -5.0)
```

Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment



Call MATLAB from Python

To perform advanced analytics

- Calling MATLAB from Python
 - via MATLAB Engine API

```
[1] ▶ M↓
import matlab.engine
eng = matlab.engine.start_matlab()
```

Test a simple function

```
[2] ▶ M↓
x = eng.sqrt(float(43))
print(x)
```

6.557438524302

Call MATLAB function which returns multiple outputs.

```
[3] ▶ M↓
y = eng.gcd(42.0,8.0,nargout=1)
print(y)
```

2.0

```
[4] ▶ M↓
#this returns the Bézout coefficients to solve the Diophantine equation ... not a mistake!
z = eng.gcd(42.0, 8.0, nargout=3)
print(z)
```

(2.0, 1.0, -5.0)

More in Deployment:

- via MATLAB Runtime (MATLAB Compiler SDK)
- via MATLAB Production Server

Data
Access

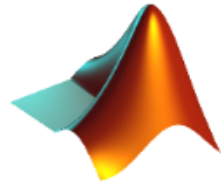
Co-Execution

- Call Python
from MATLAB
- Call MATLAB
from Python

Deployment

Recap: Calling MATLAB from Python

Note the syntax differences when calling MATLAB from Python



MATLAB

```
>> [s, idx] = sort(x)
```

```
>> foo(x)
```

```
>> C = A + B
```



Python

```
>>> s = eng.sort(x, nargout=2)
```

```
>>> eng.foo(x, nargout=0)
```

```
>>> C = eng.plus(A, B)
```



Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

Data are automatically converted where possible

Pass Data to MATLAB from Python

R2021a

Python Type to MATLAB Scalar Type Mapping

When you pass Python® data as input arguments to MATLAB® functions, the MATLAB Engine for Python converts the data into equivalent MATLAB data types.

Python Input Argument Type — Scalar Values Only	Resulting MATLAB Data Type
float	double
complex	Complex double
int	int64
long (Python 2.7 only)	int64
float(nan)	NaN
float(inf)	Inf
bool	logical
str	char
unicode (Python 2.7 only)	char
dict	Structure if all keys are strings not supported otherwise

Python Container to MATLAB Array Type Mapping

Python Input Argument Type — Container	Resulting MATLAB Data Type
matlab numeric array object (see MATLAB Arrays as Python Variables)	Numeric array
bytearray	uint8 array
bytes (Python 3.x) bytes (Python 2.7)	uint8 array char array
list	Cell array
set	Cell array
tuple	Cell array

https://mathworks.com/help/matlab/matlab_external/pass-data-to-matlab-from-python.html

Data
Access

Co-Execution

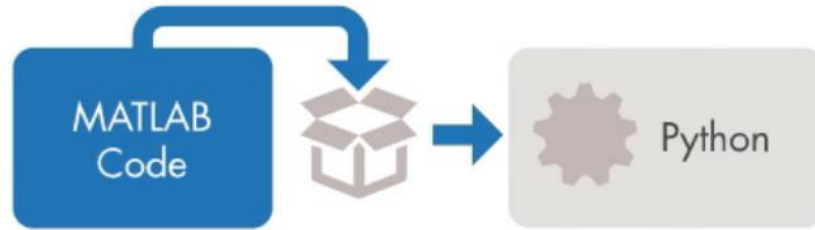
- Call Python from MATLAB
- Call MATLAB from Python

Deployment



Deployment

Generate Python library from MATLAB functions

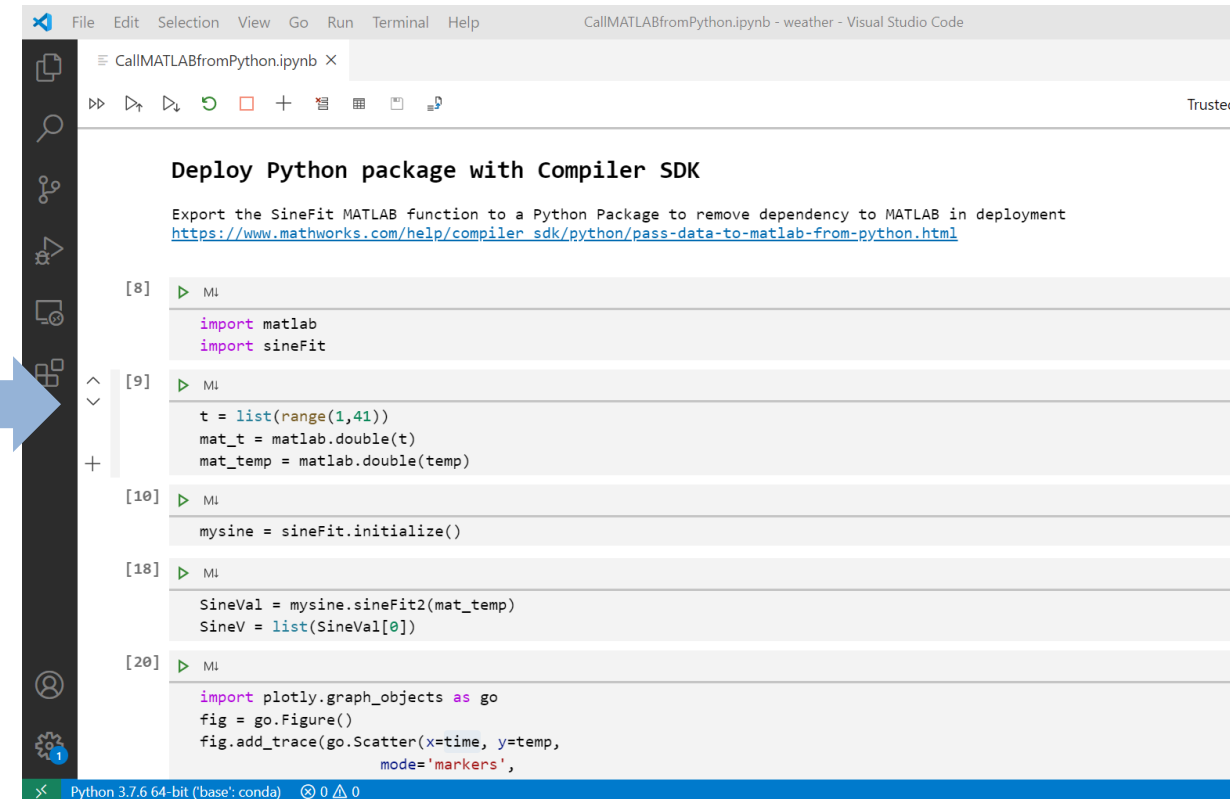
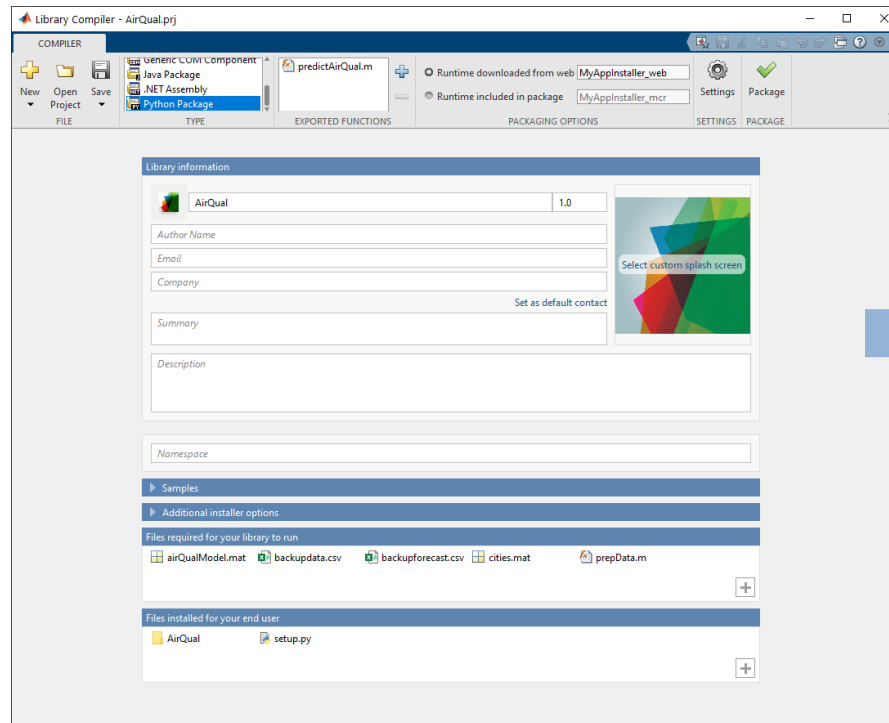


Data Access

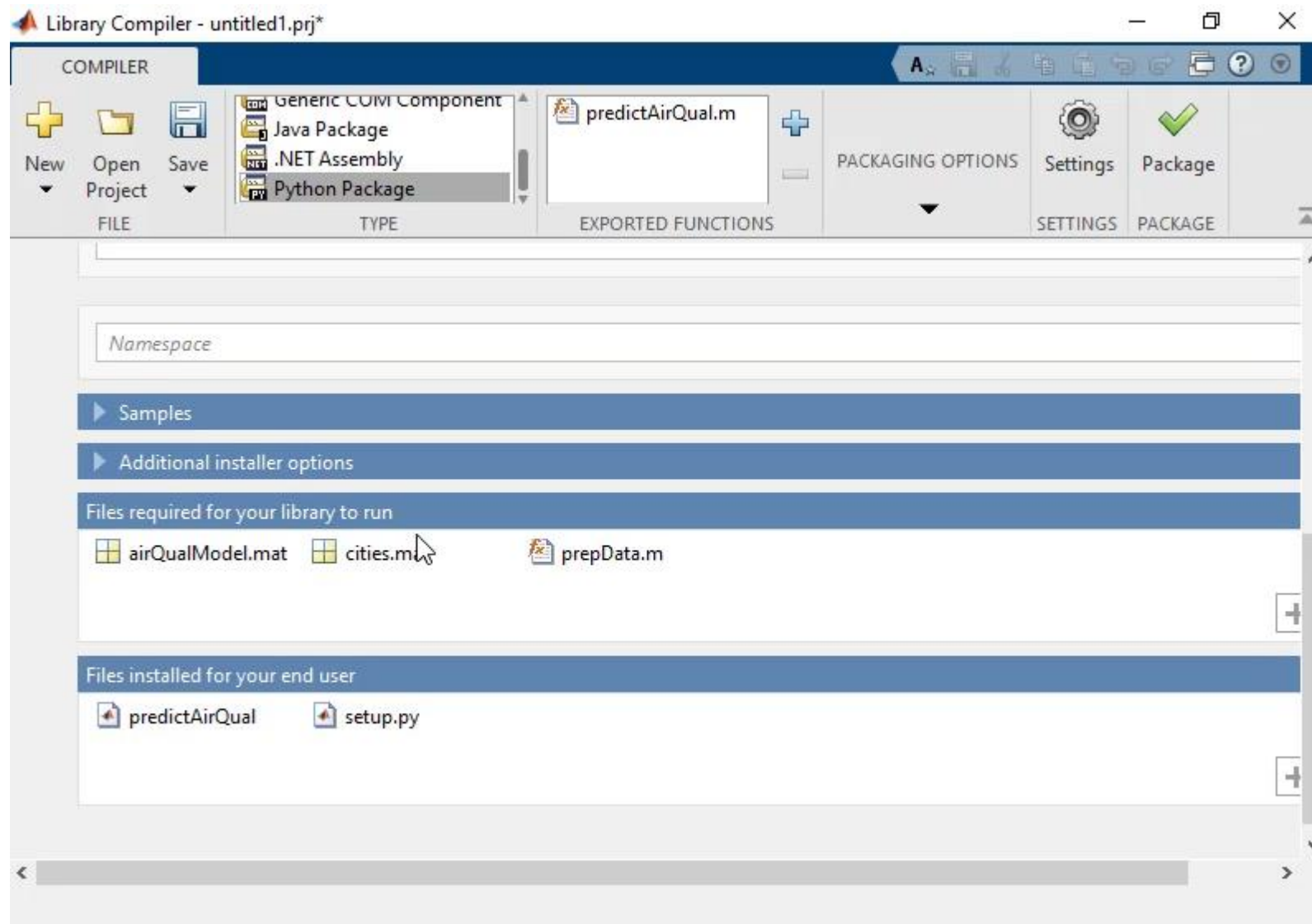
Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment



Generate Python library from MATLAB functions



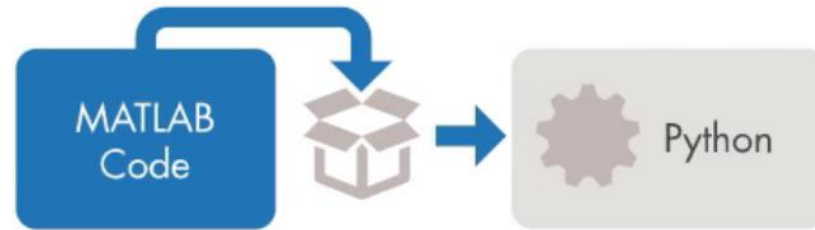
Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

Generate Python library from MATLAB functions

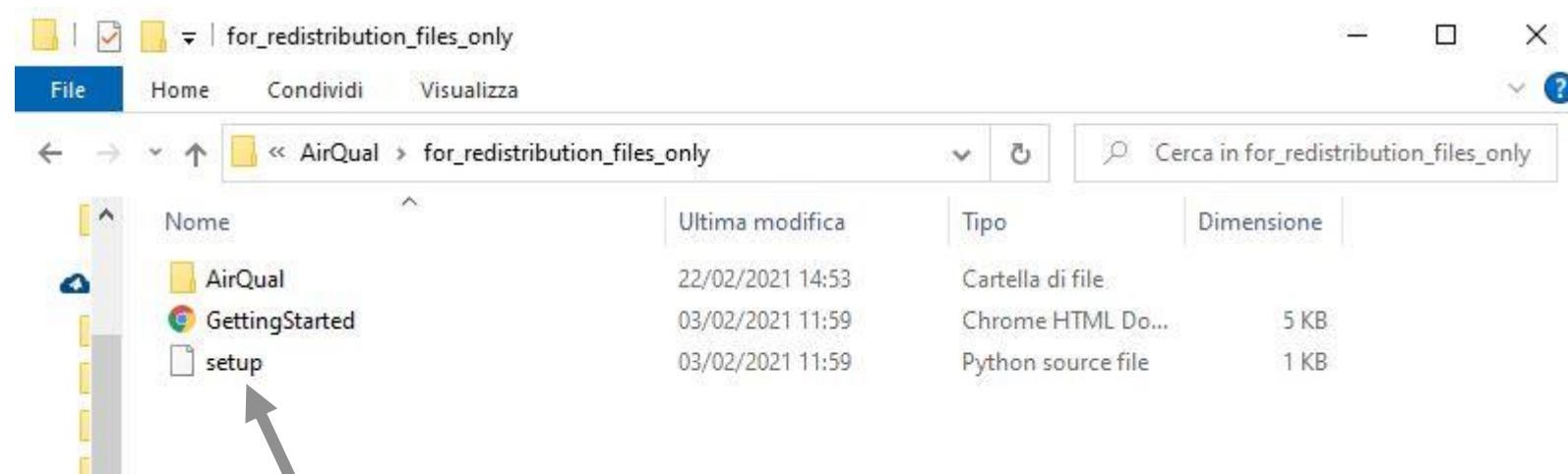


Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment



Install library

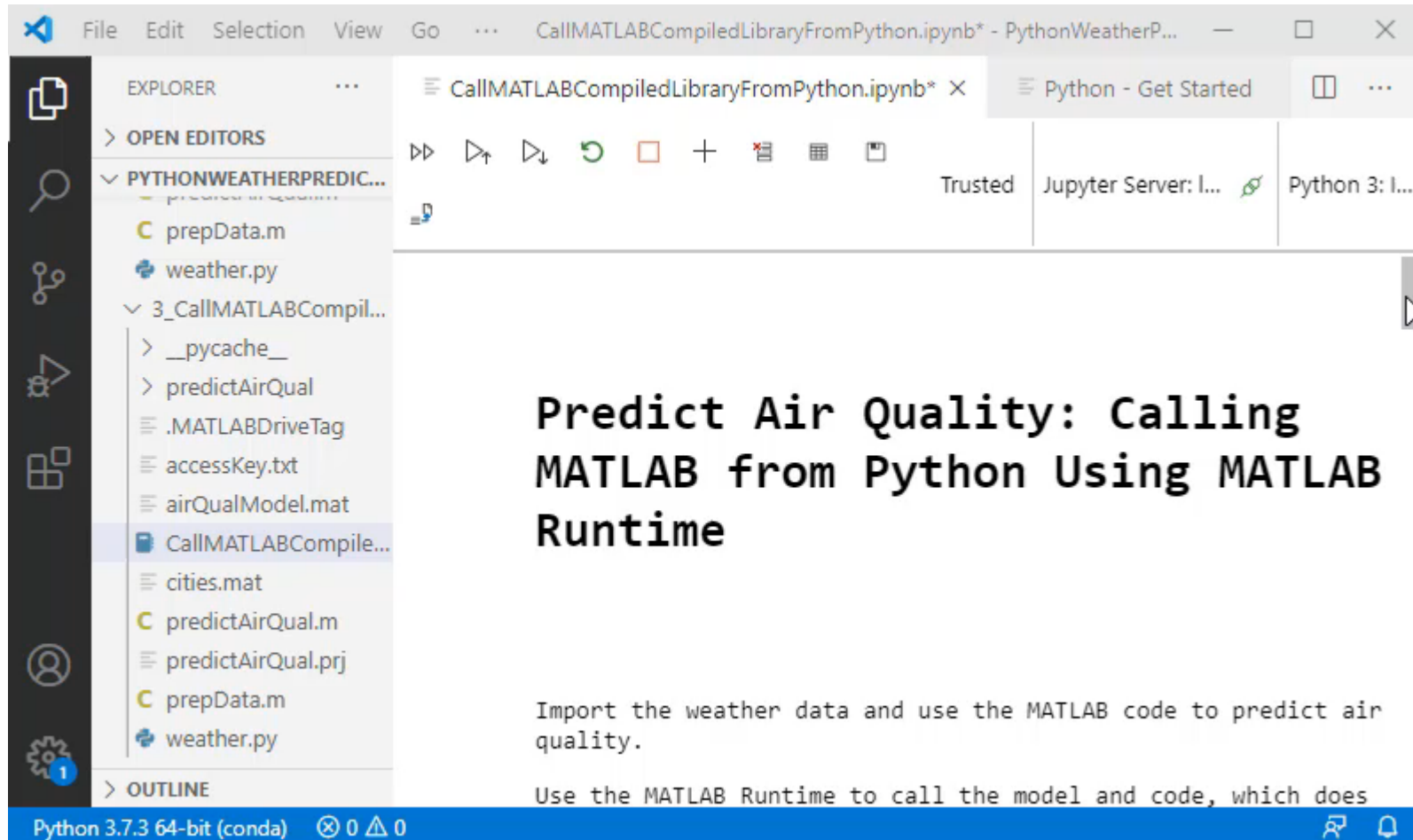
Execute Python library from MATLAB functions

Data Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment



The screenshot displays the MATLAB R2020a interface with a Jupyter Notebook open. The notebook title is 'CallMATLABCompiledLibraryFromPython.ipynb'. The Explorer pane on the left shows the file structure of the project, including files like 'prepData.m', 'weather.py', and 'CallMATLABCompile...'. The main editor area contains the following text:

Predict Air Quality: Calling MATLAB from Python Using MATLAB Runtime

Import the weather data and use the MATLAB code to predict air quality.

Use the MATLAB Runtime to call the model and code, which does

The status bar at the bottom indicates 'Python 3.7.3 64-bit (conda)' and shows 0 errors and 0 warnings.

MATLAB Production Server

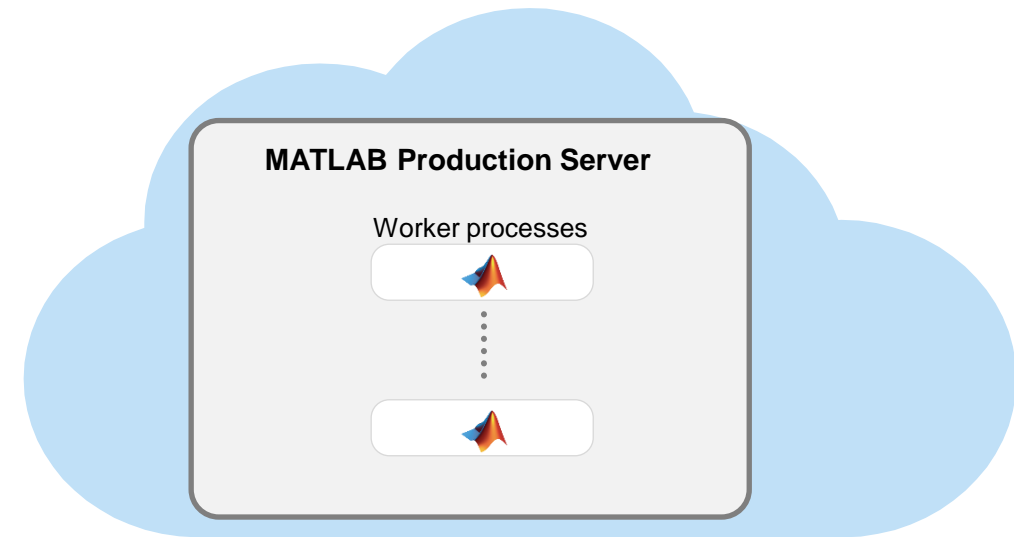
Access functions as web services

Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment



Calling our function:

```
{"nargout":1,"rhs":["input"]}
```

Getting the result:

```
{"lhs":[{"mwdata":["output"],"mwsizе":[1,6],"mwtype":"char"}]}
```

Execute Python library from MATLAB functions

Data Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

Air Quality Calculator

Archivio | C:/Users/gcarniel/MATLAB%20Drive/Python/PythonWeatherPrediction-master/4_Call...

Air Quality Conditions

Determine air quality conditions in your area.

Location:

The air quality is **Good**.
The current temperature is **30.15 F**.

Copyright © 2018-2020 MathWorks, Inc.

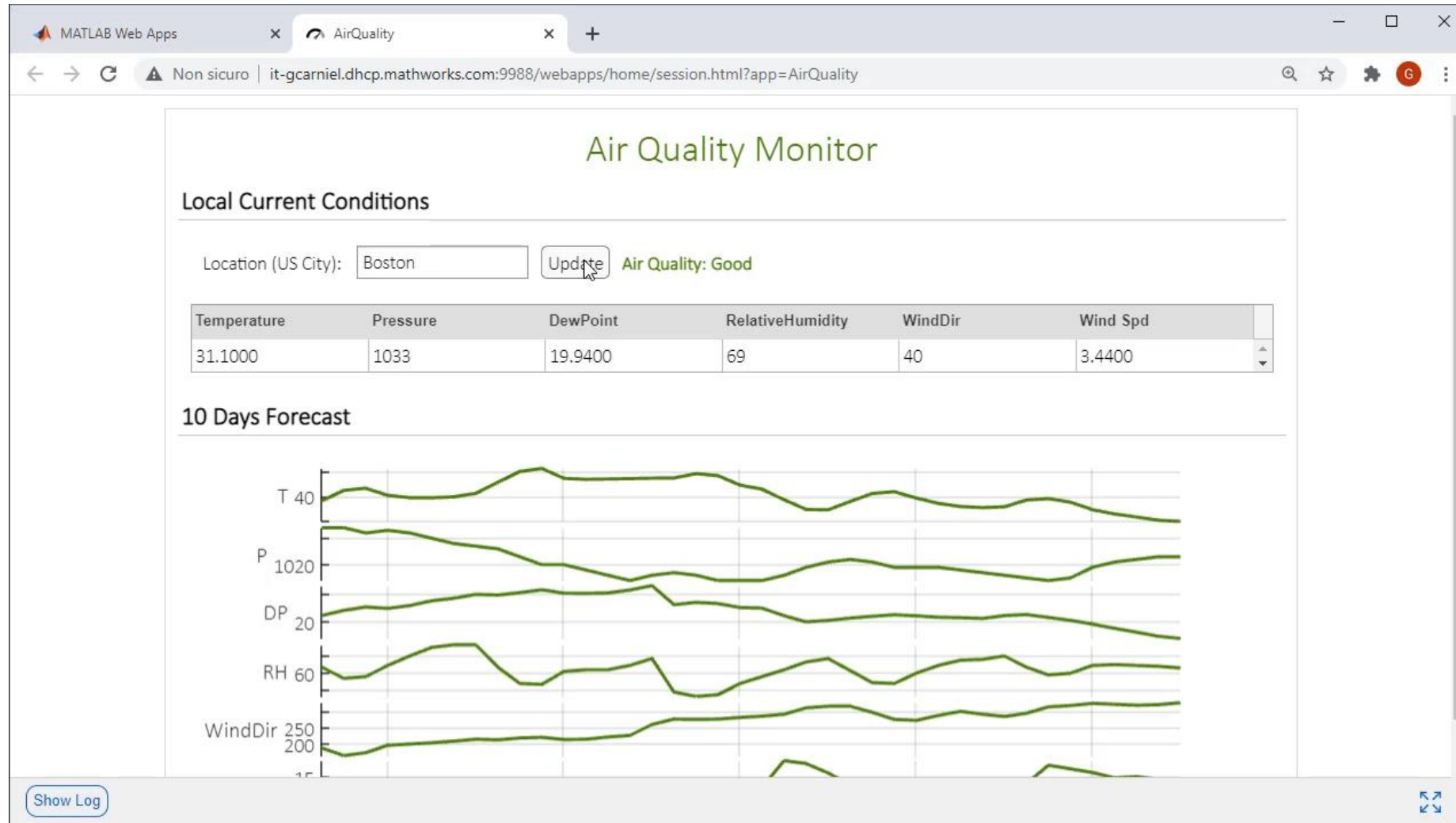
Share MATLAB App in the Web – Central Deployment

Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment



MATLAB App Designer

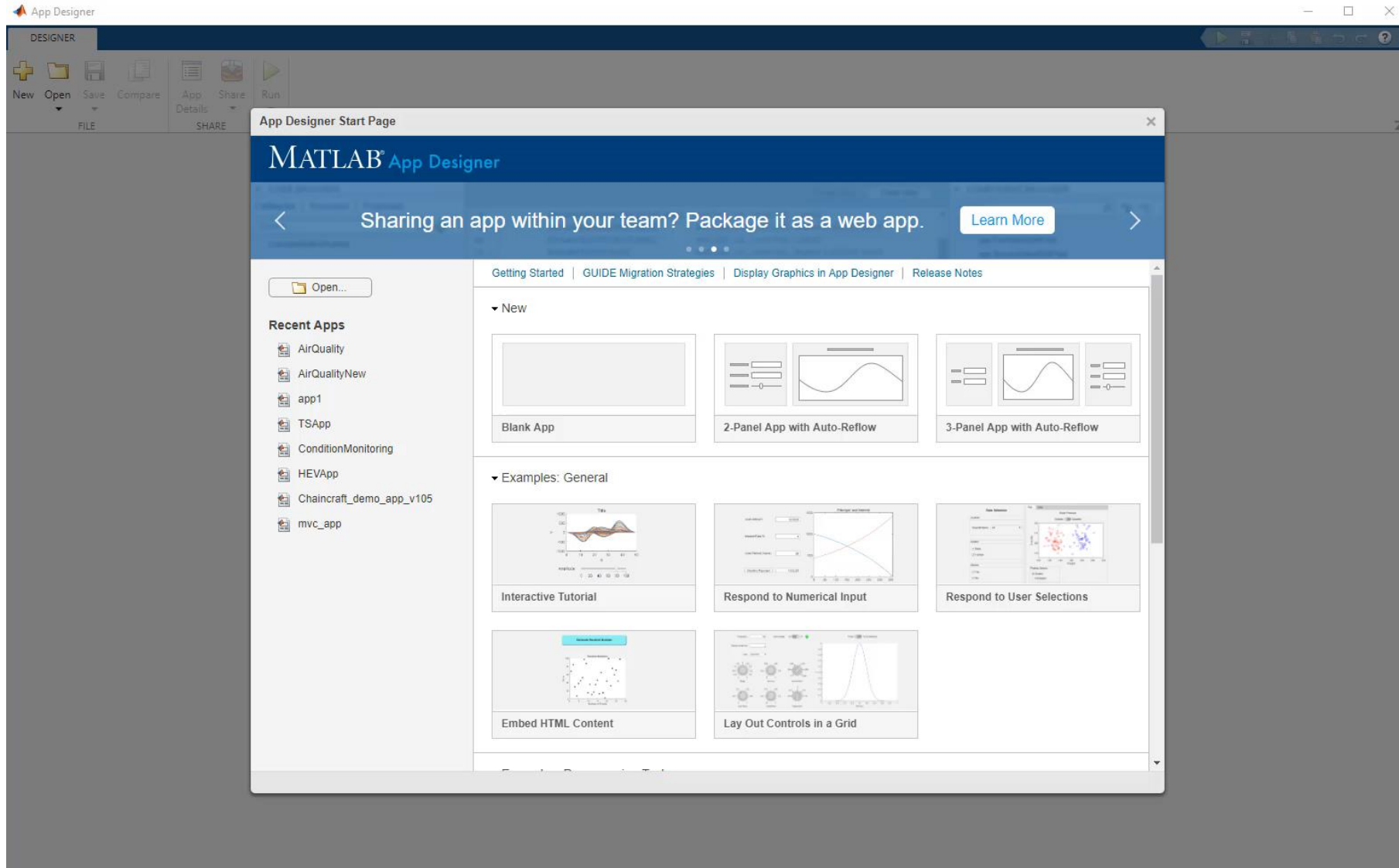
App development for Non-Programmers

Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment



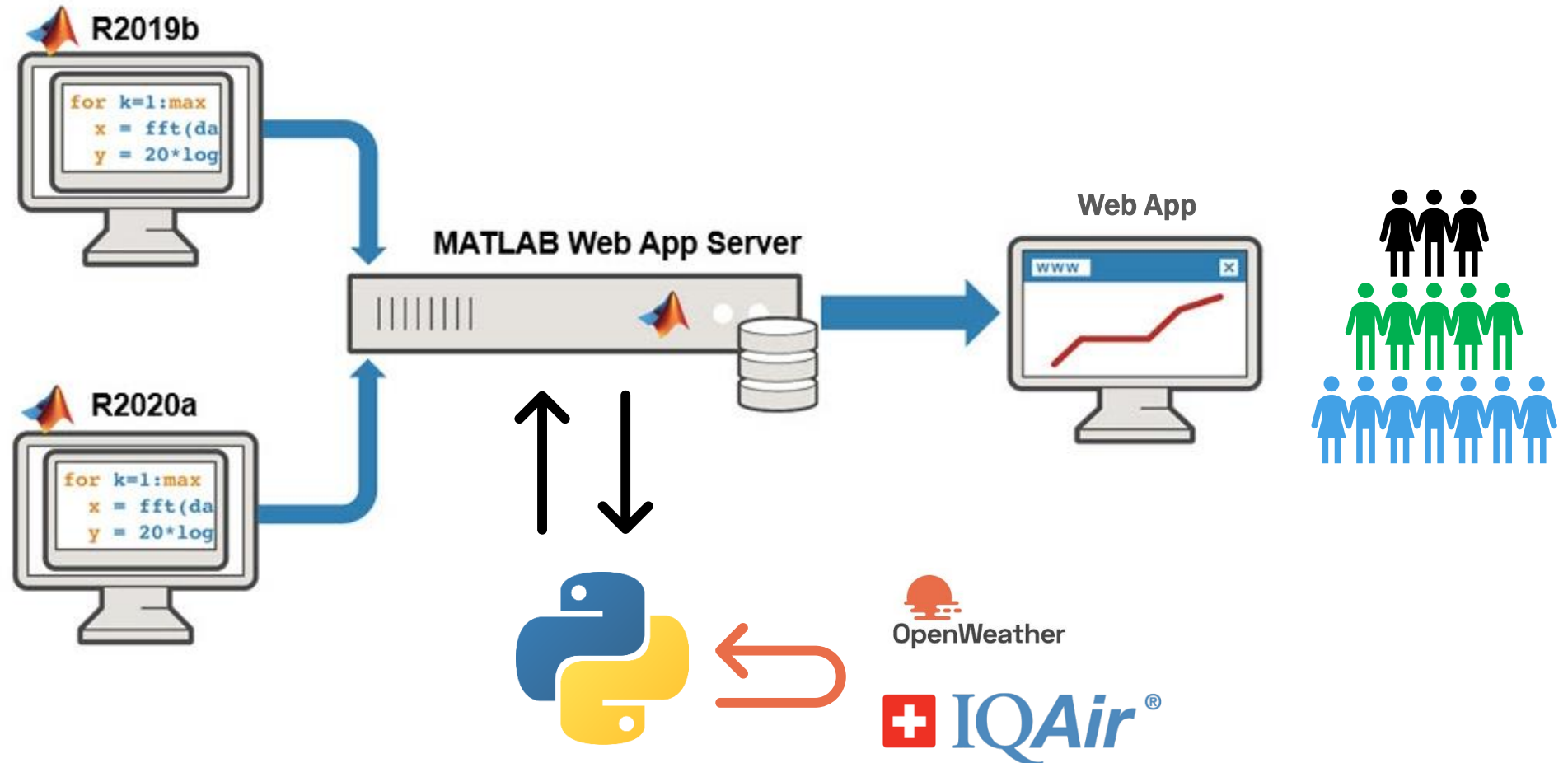
MATLAB Web App Server – Central Deployment

Data Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment



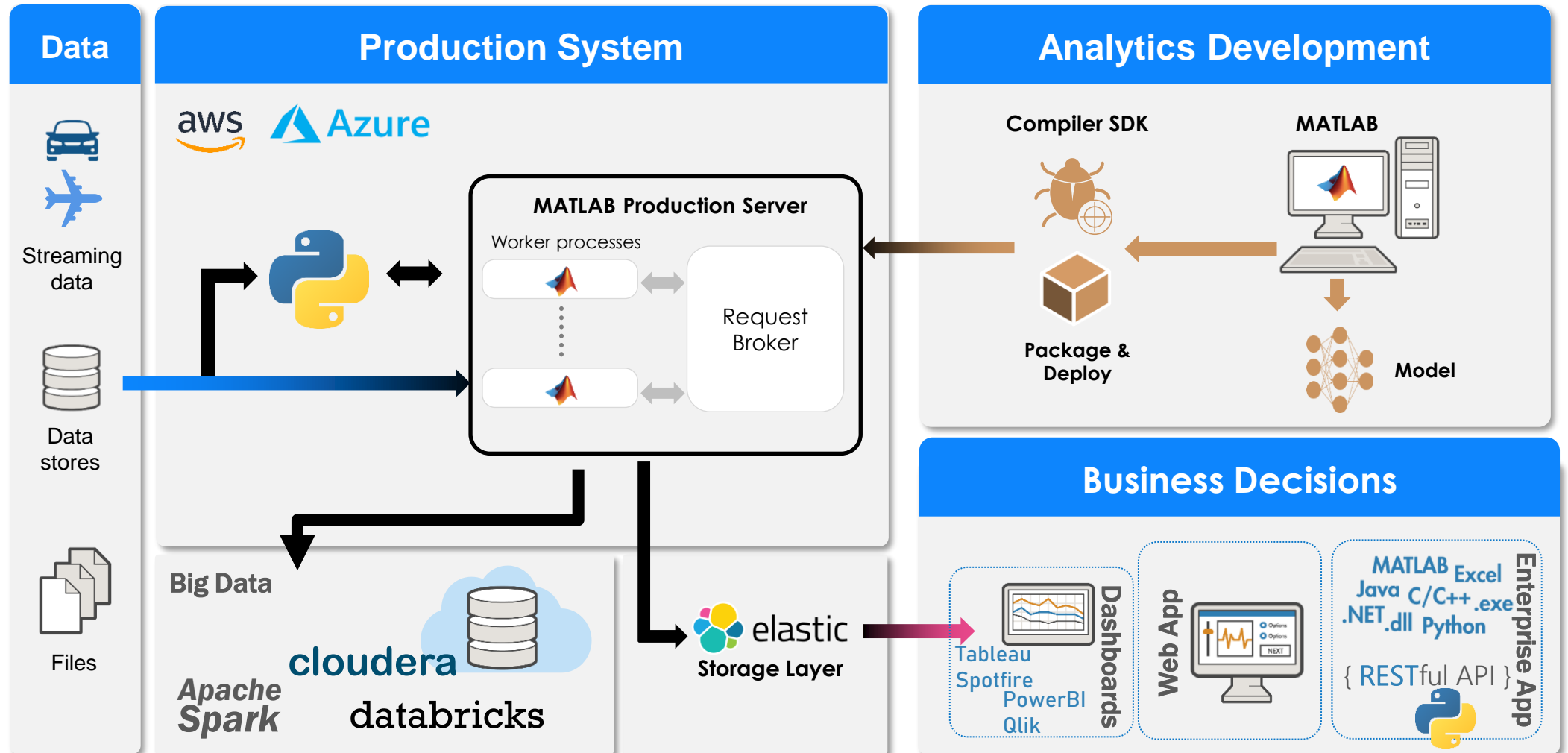
Integrate your Production System in an IT ecosystem

Data Access

Co-Execution

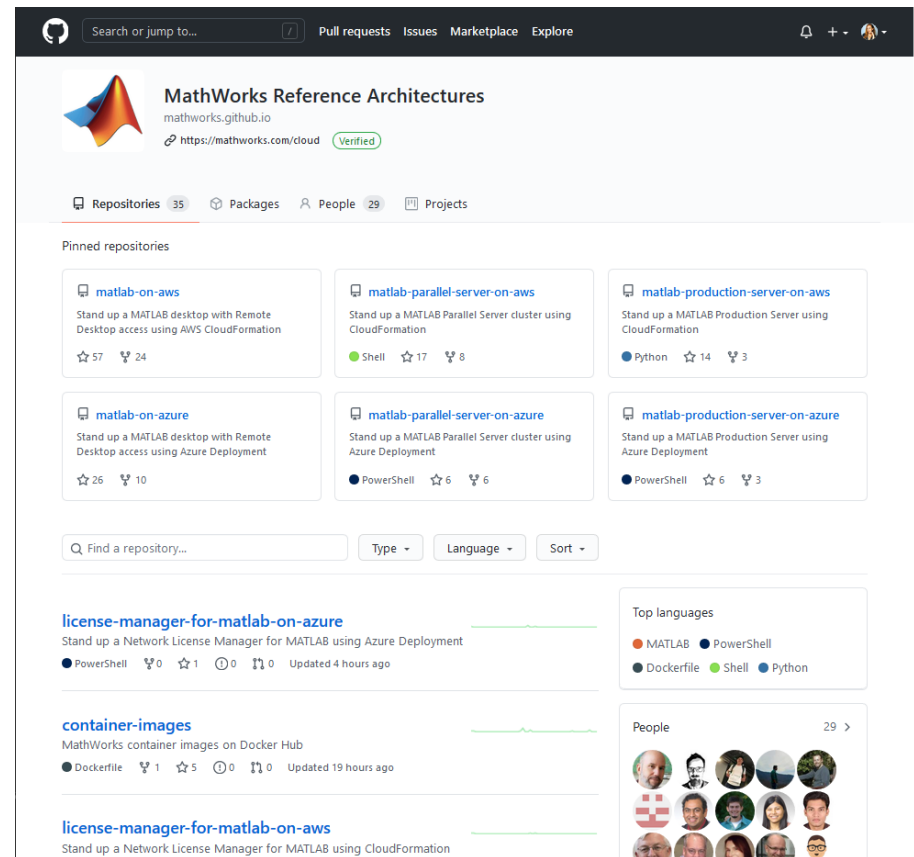
- Call Python from MATLAB
- Call MATLAB from Python

Deployment



Use MATLAB Reference Architectures for easy cloud setup, Dockerfiles, and interfaces to OSS

- <https://github.com/mathworks-ref-arch/matlab-dockerfile>



<https://github.com/mathworks-ref-arch>

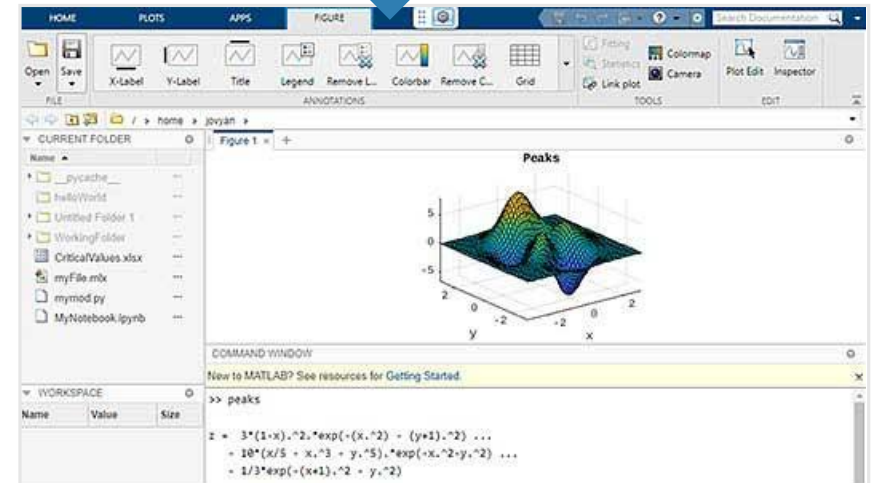
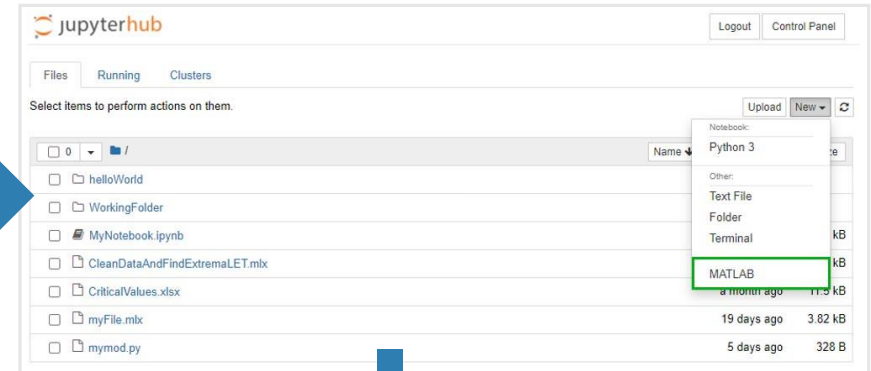
Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

MATLAB Integration for Jupyter



Data Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

Deployment

[MATLAB Integration for Jupyter \(mathworks.com\)](https://mathworks.com)

Data
Access

Co-Execution

- Call Python from MATLAB
- Call MATLAB from Python

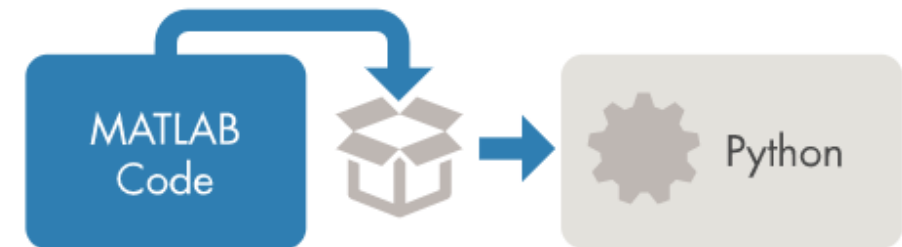
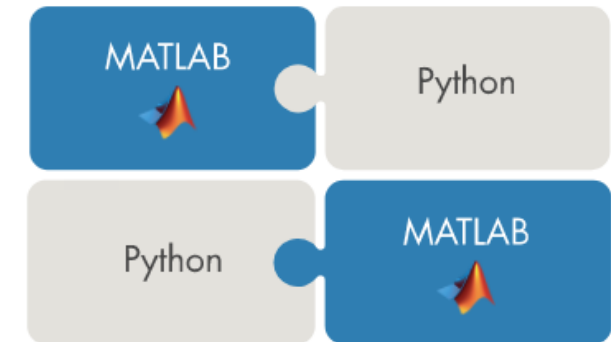
Deployment

Find out more:
Cloud and IOT

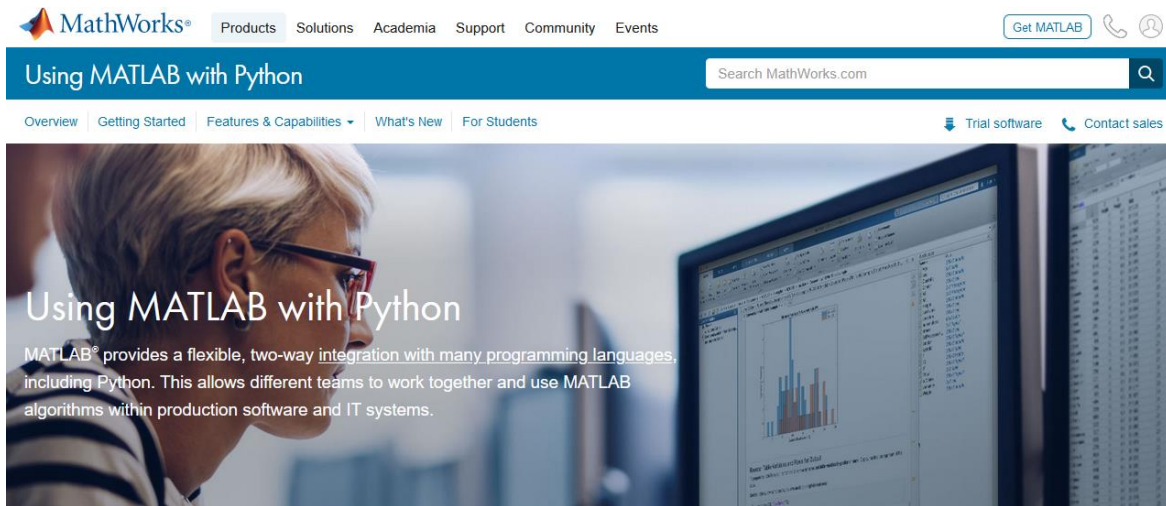


Summary: Using MATLAB with Python

- Access Data
 - Weather App example
- Interoperability
 - Calling libraries written in Python from MATLAB
 - Calling MATLAB from Python
- Deploy Apps & Algos
 - Web App
 - Production API



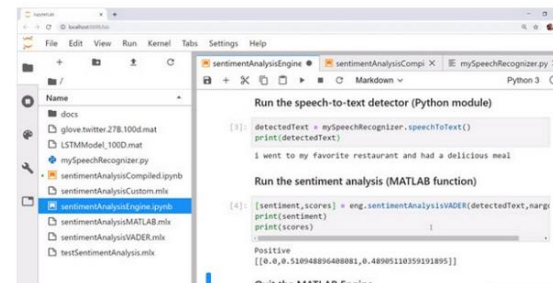
Resources



Calling MATLAB from Python

The MATLAB Engine API for Python allows you to call MATLAB as a computational engine from Python.

The API lets you execute MATLAB commands from within your Python environment without starting a desktop session of MATLAB. Learn more about the [MATLAB Engine API for Python](https://www.mathworks.com/products/matlab/matlab-and-python.html).



<https://www.mathworks.com/products/matlab/matlab-and-python.html>

- [Cheatsheet](#)
- [Example on GitHub](#)
- [Blog post](#)
- Videos
 - [Calling Python from MATLAB](#)
 - [Calling MATLAB from Python](#)
 - [Using MATLAB with Python + Q&A](#) (YouTube live stream recording)
- Documentation
 - [Calling Python from MATLAB](#)
 - Calling MATLAB from Python via:
 - [MATLAB Engine API](#)
 - [MATLAB Compiler SDK](#)
 - [MATLAB Production Server](#)
 - Data management:
 - [Data type conversions](#)
 - [Working with Parquet files](#)
 - [MATLAB library for Apache Arrow on GitHub](#)
 - [Deep Learning \(TensorFlow, PyTorch, etc\)](#)

MATLAB EXPO

2021

Thank you

**MATLAB
+
Python**

