

Calling MATLAB from Python

This reference shows common use cases but is by no means comprehensive. The [»](#) icon provides links to relevant sections of the MATLAB® documentation. For general information, see <https://www.mathworks.com/products/matlab/matlab-and-python.html>.

Setup

Requirements [»](#)

Install MATLAB Engine API for Python

To use MATLAB Engine API for Python®, you need to have both installed on the system. Install the engine API as a Python package.

Install Using pip

From the system prompt:

```
$ python -m pip install
matlabengine
```

Install Using setup.py

Run the `setup.py` file from the system prompt:

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

For troubleshooting, ensure privileges (run as administrator) and check the `PYTHONPATH` and system paths.

MATLAB Engine API

Use MATLAB Engine API to call MATLAB from Python. [»](#)

Import the module and start the engine:

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

Call functions through the engine:

```
>>> x = eng.sqrt(42.0)
```

Capture multiple outputs:

```
>>> x = eng.gcd(42.0,8.0,nargout=3)
>>> x = eng.plot(x,y,nargout=0)
```

Stop the engine:

```
>>> x = eng.exit()
```

Data Type Conversions

Data types will be automatically converted where possible. [»](#)

Python	MATLAB
float	double
complex	complex double
int	int64
float(nan)	NaN
float(inf)	Inf
bool	logical
str	char
dict	struct
list	cell array
set	cell array
tuple	cell array

You can create MATLAB arrays in Python to pass data easily to MATLAB functions:

```
>>> x = matlab.
double([1,4,9])
```

Using MATLAB Apps

Use MATLAB Engine Workspace [»](#)

The MATLAB engine workspace can be used to access variables from MATLAB and Python and facilitates app use.

Add a variable to the workspace:

```
>>> x = 4.0
>>> eng.workspace['y'] = x
```

Access the variable from the MATLAB workspace:

```
>>> x = eng.workspace['y']
```

Execute statements using the `eval` function:

```
>>> a = eng.eval('sqrt(y)')
```

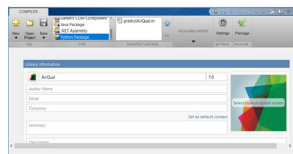
You can open apps in MATLAB from Python by using the command for the app:

```
>>> eng.signalAnalyzer()
>>> eng.classificationLearner()
```

Create Python Package

Package MATLAB Functions [»](#)

Use the Library Compiler app to create a Python package for MATLAB functions:



Invoke MATLAB functions from the Python package

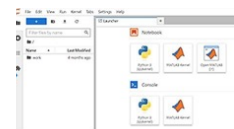
```
>>> import PackageName
>>> pkg = PackageName.
initialize()
>>> result = pkg.Foo()
```

Close Package

```
>>> pkg.terminate()
```

MATLAB in Other IDEs

You can use MATLAB from Jupyter® or VSCode. The installation and setup steps are detailed in the links included here. [»](#)



Install MATLAB Integration for Jupyter [»](#)

For example, install the package to execute MATLAB from Jupyter.

```
$ python pip install
jupyter-matlab-proxy
$ install-matlab-kernelspec
```

Now you can use MATLAB in a browser or run code in your notebook with the MATLAB kernel.