<http://docs.mitk.org/nightly/mitkPython_Overview.html>

Python Module

**Brief description**

The MITK Python Module provides a service class to interactively run Python code (passed as C++ strings) and evaluate the results. Furthermore, the service class offers means to convert an MITK Image to an ITK/OpenCV image in their wrapped Python environment. **Thus, one can process MITK images with Python Code from the OpenCV and ITK wrapping system**. Furthermore, one can convert an [mitk::Surface](http://docs.mitk.org/nightly/classmitk_1_1Surface.html) to a vtkPolyData in its Python environment.
Under the hood, the MITK build system takes care that the wrapping build process for SimpleITK/VTK/OpenCV is correctly initiated and all paths are correctly set within the MITK code. To use the features of the different toolkits, make sure they are enabled during the superbuild process.

**Build Instructions**

Have a look at python\_ssec3 on how to build MITK-Python with Qt5. The following [CMake](http://docs.mitk.org/nightly/namespaceCMake.html) build options are available:

* MITK\_USE\_Python3

**MITK\_USE\_Python3**

MITK\_USE\_Python3 enables the Python wrapping in MITK. When the option is activated the build of the additional dependency SimpleITK is also enabled. The default behavior is to use the Python runtime from the system is used. Only Python 3.x is supported. The user can also specify its own runtime by modifying the variables added by the FindPythonLib.cmake script. **Note:** A Python runtime with NumPy is needed to use the MITK Python wrapping. When using this option all additional libraries installed in the Python runtime will be available within the MITK-Python console.

**Supported Data Types**

The following data types in MITK are supported in the MITK Python Wrapping:

* Image
* Surface

**Image**

MITK Images can be transferred to python. The images are copied in-memory and transferred as a NumPy array to Python and vice versa. The MITK python wrapping creates a SimpleITK image using the NumPy array with the properties of the MITK Image. Two-dimensional images can also be transferred as an OpenCV image to Python.

**Surface**

Surfaces within MITK can be transferred as a vtkPolyData Object to Python. The surfaces are fully memory mapped. When changing a Python wrapped surface the original object is also modified on the C++ side of MITK.