Apple Silicon Python Setup for Science and Machine Learning (MacOS 12 Monterey)

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Setting up Python, Conda, Accelerated Numpy and Tensorflow on Apple Silicon

Step 1: Install Anaconda for M1:
https://repo.anaconda.com/archive/Anaconda3-2022.05-MacOSX-arm64.pkg

Step 2: Add conda-forge as a channel and make it the default
```
conda config --add channels conda-forge
```

Step 3: Create a new environment:
```
conda create -n phy3287 python=3.9 pybind11 cython
```

Step 4: Activate your new environment
```
conda activate phy3287
```

Step 5: Installing Tensorflow
```
conda install -c apple tensorflow-deps
python -m pip install tensorflow-macos
python -m pip install tensorflow-metal
```

Step 6: Install accelerated numpy
```
pip uninstall numpy
pip3 install --no-binary :all: numpy==1.23.2
```

Step 7: Testing Numpy - this should show veclib/accelerate in your numpy config:
```
python3
import numpy
numpy.show_config()
```

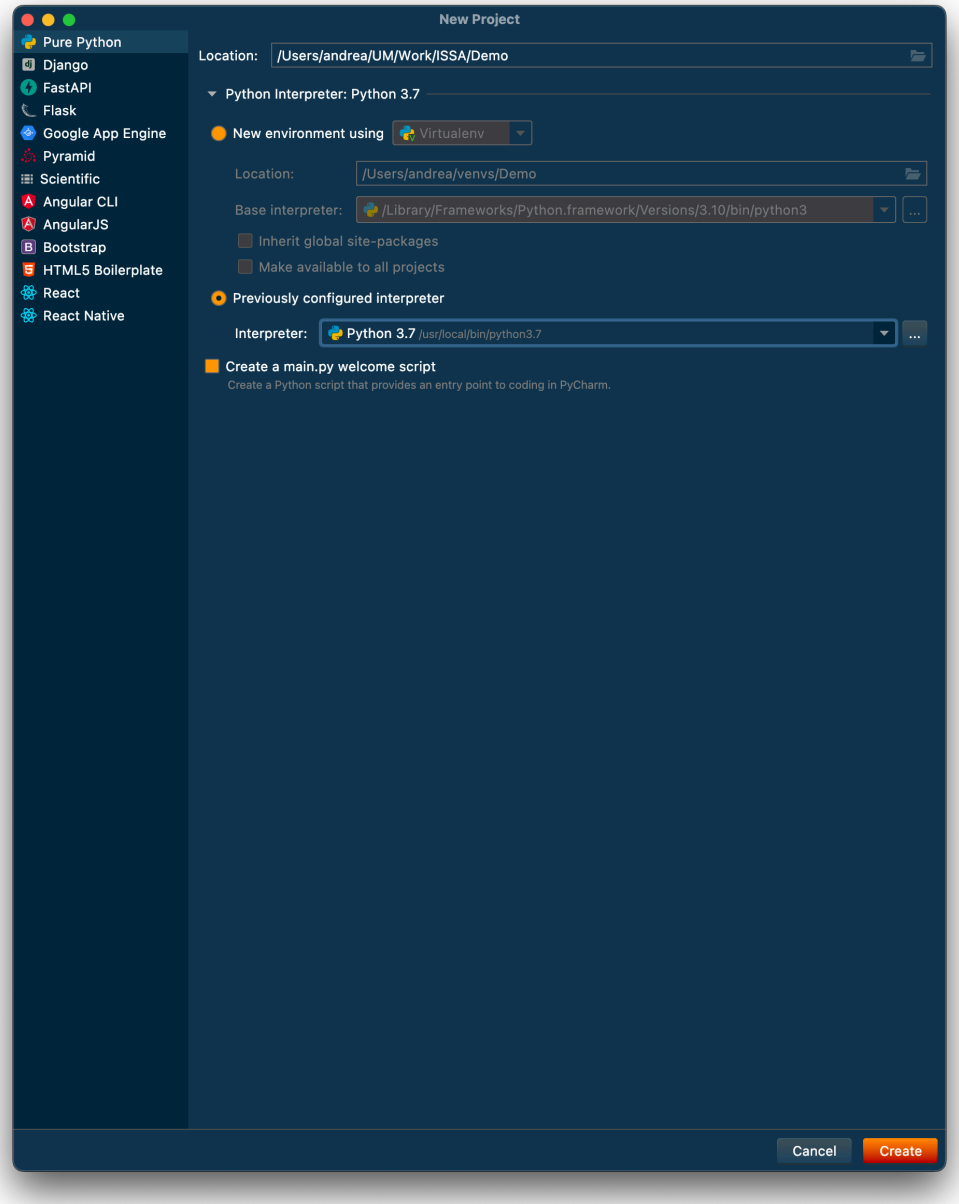
You should see a line: extra_link_args = ['-Wl,-framework', '-Wl,Accelerate']
Exit back to terminal with the exit() function.

Step 8: Make sure future package installations do not overwrite your accelerated numpy package:
```
conda config --set pip_interop_enabled true
```

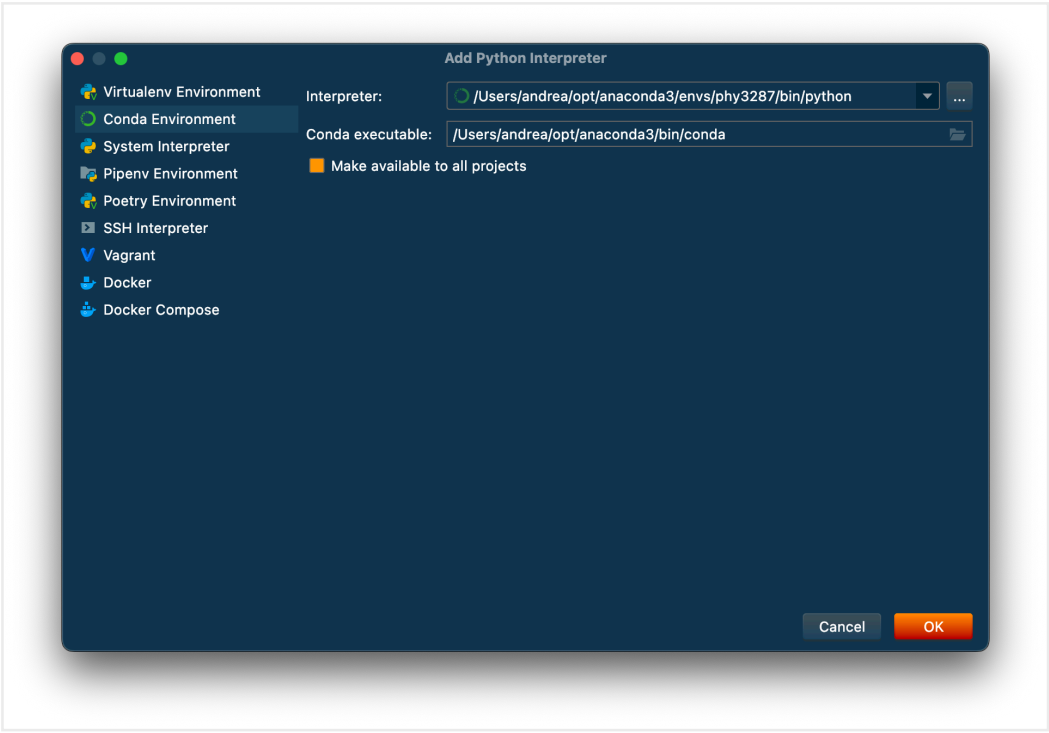
Step 9: Install any other packages you need e.g. matplotlib
```
conda install matplotlib
conda install scikit-learn
conda install ……..
```

Step 11: Using this virtual environment in your PyCharm IDE Projects

1. Start PyCharm
2. Create new Python project
3. Selecting the conda virtual environment



a. Previously configured interpreter
b. Click '...'
c. Select Conda Environment on the left panel
d. PyCharm should automatically find your Users/name/opt/anaconda3/envs/phy3287/bin/python directory, if not, navigate to this path yourself



e. Click OK
f. Click Create.
g. You may keep using the terminal to install packages via Conda, or else do it from PyCharm directly. In the menu bar, PhCharm > Preferences > Project > Python Interpreter

This will show you currently installed packages. You can search and install others by clicking the ‘+’ button.