## Environment Setup

Language:

*We recommend Python 3 via JupyterLab or Jupyter Notebook.*

List of packages needed in addition to the standard Jupyter Notebook kernel:

| Package | Installation Procedure | Used For |
|---|---|---|
| numpy | python -m pip install --user numpy scipy matplotlib ipython jupyter pandas | Efficient data structure for numerical framework |
| pandas | | Data analysis |
| matplotlib | | Produces high quality graphs |
| statsmodels (statistics package) | pip install -U statsmodels | Estimation of statistics models |
| sklearn (machine learning package) | pip install -U scikit-learn | Implementation of Machine learning models |
| os | [built in: standard library] | General Interface |
| warnings libraries are used for some technical issues | [built in: standard library] | |
| cvxpy | pip install cvxpy | Solves optimization problems |
| FactorModelLib | Import FactorModelLib | Library containing factor regression functions. Can be found https://github.com/bubblesort251/Factor-Model |
| error_analysis | Import error_anlysis | Library containing out of sample error analysis function<br>Can be found https://github.com/bubblesort251/Factor-Model |
| *factor_analyzer* | Pip install `factor_analyzer` | The lab of the first week Portfolio Optimization.ipynb imports *factor_analyzer*. You can find it here: https://anaconda.org/desilinguist/factor_analyzer |