

MLSoftwareStandAloneSetup

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Introduction

Standalone ML software setup instructions for laptops, or non-CVMFS connected devices

Conda Based Setup

These setups will create a standalone version of Python and ROOT, along with python libraries for scientific computing, numerical recipes, and ML. These will be separate from any existing ROOT or Python implementations already present on your system.

The ROOT parts of the setup are provided by NLESC (<https://nlesc.gitbooks.io/cern-root-conda-recipes/content/index.html>)

These setup instructions can work with [Anaconda](#) or with [Miniconda](#). Anaconda provides a relatively complete set of packages by default. Miniconda is a more minimal setup, in which the user specifies the desired packages, and as a result is smaller in size (since you may not want all the packages provided in the Anaconda setup).

In both cases, the deep learning implementation will be [Keras](#) built on top of [Theano](#). Keras can also work on top of [TensorFlow](#), however installation for [TensorFlow](#) can be a bit trickier and thus is not used here.

The first step is to identify the version of Anaconda or Miniconda needed for your system. Check [here for Anaconda](#) and [here for Miniconda](#). You can download the version directly, or copy the web address for the command line installers and use wget. We will assume you are using wget.

We use a Python2.7 based setup, although one can also use Python3 (although some difficulties have been seen in Python3 with the ROOT interface, see caveats section)

For Anaconda we suggest:

- https://repo.continuum.io/archive/Anaconda2-4.1.1-MacOSX-x86_64.sh for Mac
- https://repo.continuum.io/archive/Anaconda2-4.1.1-Linux-x86_64.sh for Linux

For Miniconda we suggest:

- https://repo.continuum.io/miniconda/Miniconda2-latest-MacOSX-x86_64.sh for Mac
- https://repo.continuum.io/miniconda/Miniconda2-latest-Linux-x86_64.sh for Linux

Notes for Installing:

- As a part of the installation, you will need to specify install location, choose a location with some space as total install size will be a few GB.
- The installation will also ask you if you want to add the conda directory to your PATH environment variable. If you do this, the Conda python may become your default. If this is not desired, do not have conda added to your PATH. In that case, when you specify conda commands (like conda or activate) you will need to append the path to the bin folder your conda area, e.g. "/my/conda/area/bin/conda ...".

To perform the installation from the command line do, assuming you are on a LINUX system:

```
wget https://repo.continuum.io/miniconda/Miniconda2-latest-Linux-x86_64.sh
```

```
sh Miniconda2-latest-Linux-x86_64.sh
```

After the conda installation is complete, close the terminal after the install finishes. Then reopen the terminal:

```
conda config --add channels https://conda.anaconda.org/NLeSC
```

```
conda create --name=testenv root=6 python=2 mkl jupyter numpy scipy matplotlib scikit-learn h5py rootpy root-numpy pandas
```

```
source activate testenv
```

```
pip install Theano
```

```
pip install Keras
```

Some notes:

- In general, to activate your environment (here called testenv), you type "source activate testenv"
- to exit the environment, type "source deactivate"

Known Issues

Setting up on lxplus

On LXPLUS, the ROOT setup inside of the conda environment does not seem to link properly, and causes problem when running ROOT. Oddly, this does not seem to affect running ROOT in a python session. The error arises if you open root from the terminal

```
> root -l  
[...] error while loading shared libraries: libpcrc.so.1: cannot open shared object file: No such file or directory
```

To solve the issue, after activating your conda environment, ROOT should work properly if you do:

```
source $CONDA_PREFIX/bin/thisroot.sh
```

NOTE that you will have to do this every time you activate the conda environment.

Python3 and rootpy

- Some trouble has been observed when using rootpy with python3, though the details of the issue have not yet been understood.
- As a result, we recommend using Python2.7 for now, rather than using Python3

Docker Based Setup (Not Yet Available)

Not yet available. If there is sufficient interest, we will pursue this setup as well

Major updates:

-- [MichaelKagan](#) - 2016-09-14

Responsible: [MichaelKagan](#)

Last reviewed by: **Never reviewed**

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