MNEFUN times

Facilitating mne-python MEG+EEG data processing at ILABS

Getting started

To use MNE-Python via MNEFUN you will need:

1. A working Python interpreter and dependencies
2. A working git installation (OSX) and Github account
3. SSH keys for secure connections to data (MINEA) and Neuromag software (KASGA) workstations
4. The MNE-Python package installed to the Python distribution
5. The MNEFUN package installed to the Python distribution
6. Integrated development environment (IDE)/ other Python workflow

Python environment

Install [Anaconda](#) python:

Download the appropriate installer script to your e.g. downloads dir.

```
$ cd ~/Downloads

$ wget https://repo.continuum.io/archive/Anaconda2-4.2.0-Linux-x86_64.sh
```

Run script & follow on-screen instructions to download and unpack python environment files into your home directory. At the end allow script to modify your $PATH variable to ensure Anaconda is the default environment interpreter.

```
$ bash Anaconda2-4.2.0-Linux-x86_64.sh
```

Github + git

- Cloud and client apps for version control.
- Create Github account
- On OSX you need to install git and maybe set up Bash autocompletion
- Learn about git --git-the-simple-guide
- Learn more about [git --with-it](git-with-it)

SSH Keys

Create new SSH key in default location without passphrase

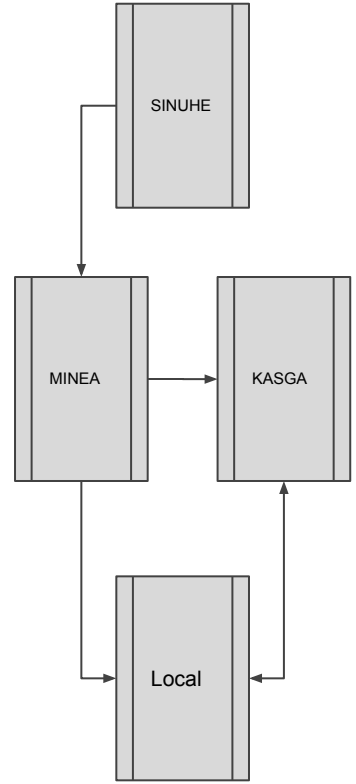```
$ ssh-keygen -t rsa -b 4096

Enter file in which to save the key (/home/demo/.ssh/id_rsa): [press enter]

Enter passphrase (empty for no passphrase): [press enter]
```

Copy SSH key to remote machine.

```
$ ssh-copy-id you@kasga.ilabs.uw.edu
```

See here for more information

MNE Python


```
$ mkdir ~/github
$ cd ~/github
$ git clone git://github.com/mne-tools/mne-python.git
$ cd mne-python
$ python setup.py develop
```

Here we use the *develop* argument to install the **development master version of MNE-Python**. A feature of python setup.py develop is that any changes made to the files (e.g., by updating to latest master) will be reflected in mne as soon as you restart your Python interpreter. The code base develops fast so regularly update to the latest version of the master development branch by doing:

```
$ git pull origin master
```

See mne-python installation instructions for more information

MNEFUN

—

Library designed to facilitate ILABS MEG pipeline development through integration with mne-python. Here we again use the python setup.py develop to install the development master version of mnefun.

```
$ cd ~/github
$ git clone https://github.com/LABSN/mnefun.git
$ cd mnefun
$ python setup.py develop
$ git pull origin master
```

An integrated development environment (**IDE**) is software that provides tools to programmers for software development. An **IDE** normally consists of a source code editor, build tools and a debugger.

Jupyter Notebook is a web application that allows you to create and share documents that contain live code, equations, visualizations and explanatory text. Uses include: data cleaning and transformation, numerical simulation, statistical modeling, machine learning and much more.

Atom is a modern text editor with host of Python oriented plugins that allows for script development. In combination with IPython interpreter users can deploy their own scripts.

Note on version control

```
$ cd ~/Path/to/mnefun
$ git status
$ git log
```

- `git status` - state of the working directory and the staging area. Shows staged changes, files tracked and untracked by Git.
- `git log` - displays committed snapshots, lists project history, filtering, and searching for specific changes. It's what you use when you need to find a specific version of a project

```
commit 3157ee3718e180a9476bf2e5cab8e3f1e78a73b7
Author: John Smith
```

MNEFUN pipeline

- Structured databasing with strict naming convention.

- Robust workflow for first level analysis of evoked response data.