**COFFEE installation guide**

This filelists all of the prerequisites for COFFEE and how to install them on a Mac.

Last updated September 18, 2023.

**Basics**

**Python**: python.org/downloads

**Command Line Tools**:

If you are sitting at the machine, then in the terminal

% xcode-select --install

If you are working remotely, such as from MobaXterm

% touch /tmp/.com.apple.dt.CommandLineTools.installondemand.in-progress;

% PROD=$(softwareupdate -l | grep "\\*.\*Command Line" | tail -n 1 | sed 's/^[^C]\* //')

% softwareupdate -i "$PROD" --verbose;

If the operating system has been updated, then

% xcode-select -p

will return the active developer directory (eg /Library/Developer/CommandLineTools), but don’t be fooled, the Command Line Tools still need to be reinstalled.

Homebrew: <http://brew.sh>

% PATH=/opt/homebrew/opt:$PATH

% brew install coreutils

Git: % brew install git

FSL: <https://fsl.fmrib.ox.ac.uk/fsl/fslwiki/FslInstallation>

Upgrade BASH: <https://itnext.io/upgrading-bash-on-macos-7138bd1066ba>

* The “vim” step is annoying but for basic vim navigation see <https://opensource.com/article/19/3/getting-started-vim> , Step 2
* Final step (chsh -s /opt/homebrew/bin/bash) may need to be completed by all users
* Alternatively, for users who wish to keep the native zsh

Create softlinks in /usr/local/bin

sudo ln -s /opt/homebrew/Cellar/bash/<version>/bin/bash /usr/local/bin

sudo ln -s /opt/homebrew/Cellar/bash/<version>/bin/bashbug /usr/local/bin

Ex. sudo ln -s /opt/homebrew/Cellar/bash/5.2.12/bin/bash /usr/local/bin

sudo ln -s /opt/homebrew/Cellar/bash/5.2.12/bin/bashbug /usr/local/bin

Usage: At the top of your bash scripts use the shebang

#!/usr/local/bin/bash

**Freesurfer** https://surfer.nmr.mgh.harvard.edu/fswiki//FS7\_mac

**Freesurfer is used by the pipeline. Versions 5.3.0-HCP, 7.2.0 and 7.3.2 have all been implemented in the pipeline.**

Download

curl -O <freesurfer URL>

Ex. curl -O https://surfer.nmr.mgh.harvard.edu/pub/dist/freesurfer/7.3.2/freesurfer-darwin-macOS-7.3.2.tar.gz

Install

sudo tar -C <where to install> -zxvpf <downloaded file>

Ex. sudo mkdir /Applications/freesurfer

sudo tar -C /Applications/freesurfer -zxvpf freesurfer-darwin-macOS-7.3.2.tar.gz

Rename so this version is not crushed by a future version.

mv /Applications/freesurfer/freesurfer /Applications/freesurfer/<version>

Ex. mv /Applications/freesurfer/freesurfer /Applications/freesurfer/7.3.2

License: <http://surfer.nmr.mgh.harvard.edu/registration.html>

**qt**

**qt is used by Tim Coalson’s CiftiLib which is used by in house software.**

Change permissions. This line of code was provided by brew itself after first attempting the install command.

sudo chown -R $(whoami) /opt/homebrew

Install

/opt/homebrew/bin/brew install qt<version>

Ex. /opt/homebrew/bin/brew install qt@5

**OpenMP**

**OpenMp is used by the pipeline and Tim Coalson’s CiftiLib which are used by in house software. Freesurfer also has OpenMP capability, but I saw in the run logs on the old machine that it didn’t know we had installed it. We’ll need to check and implement if that is the case on this new machine.**

Install

/opt/homebrew/bin/brew install llvm

/opt/homebrew/bin/brew install libomp

**Boost**

**Boost is used by Tim Coalson’s CiftiLib which is used by in house software.**

Install

/opt/homebrew/bin/brew install boost

**pkgconfig**

**pkgconfig is used by cmake and CiftiLib which are used by in house software.**

Install

/opt/homebrew/bin/brew install pkg-config

**cmake**

**cmake is used to build Tim Coalson’s CiftiLib and also used to build in house software.**

Install

/opt/homebrew/bin/brew install cmake

**Connectome Workbench for Mac**

**Contains some underlying algorithms**

Download from <https://www.humanconnectome.org/software/get-connectome-workbench>

Move the two folders into /Users/Shared/pipeline/HCP/workbench-mac

Set PATH correctly as described in the ‘readme’ file

In the bin\_macos64X folder, repeat the following process for each wb\_XX file, to permanently bypass security:

Double click it to open it. You will get an error message.

System Preferences > Security > General.

“Open Anyway” button. Confirm by hitting “open”

**Dcm2niix**

**Converts dicom files to nifti format**

Download from <https://github.com/rordenlab/dcm2niix/releases>

Use installer package

Move to a better location

sudo mv /usr/local/bin/dcm2niix /Users/Shared/pipeline/dcm2niix

**Update .bash\_profile**

Add the following lines, with paths as appropriate for your machine:

export PATH=$PATH:/Users/Shared/pipeline/HCP/workbench-mac/bin\_macosx64

export PATH=$PATH:/Users/Shared/HCP

export HCPDIR=/Users/Shared/HCP

export FREESURFER\_HOME=/Applications/freesurfer/7.3.2

source $FREESURFER\_HOME/SetUpFreeSurfer.sh