Gizem's Installation Guide to S2kit10

-- so no one needs to go through the pain of installing it again

1. Download S2kit Matlab files from here:
http://users.fmrib.ox.ac.uk/~crodgers/s2kit/mexs2kit.zip

2. Extract the .zip folder and put it somewhere you will remember. It is even better if you add this folder to your Matlab Path. You can do that by going to this folder in Matlab, right click on the folder and select Add to Path > Selected Folders and Subfolders

3. Download FFTW3 library. Here is the latest version for Mac:
http://www.fftw.org/fftw-3.3.4.tar.gz

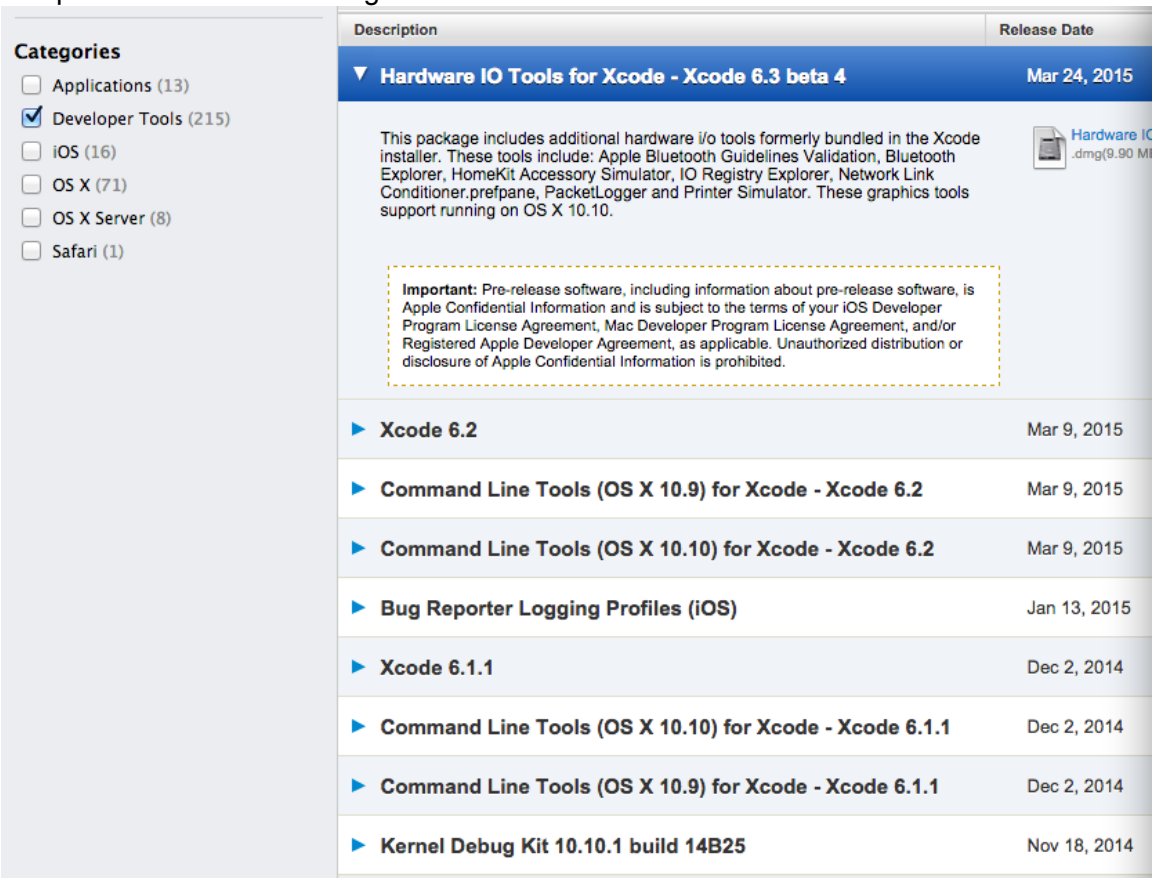
4. In order to be able to install this library you will need Apple Command Line Tools installed (to be able to compile c code you will need gcc which comes with the developer tools)

Skip to step 8 if you already have Apple Command Line Tools installed.

5. Login to your Apple account from here. Simply enter your AppleID and Password (same ID and password you use to buy Apps/Music etc.)

6. On the left under Categories menu, uncheck everything but "Developer Tools". Make sure to choose the correct Command Line Tools that matches your current OSX version. You can check your OSX version by clicking the Apple sign on the top left on your

computer screen and clicking “About This Mac”.



6. After the download is completed, simply open the .dmg file and follow the installation instructions.

7. Sadly, you will also need to download Apple’s developer software XCode, which can also be downloaded from the same page.

8. Ok, now back to FFTW3. After you download the .tar.gz package unzip it. Then open a Terminal window.

9. In the terminal go to the folder you unzipped which has fftw in it, the folder should be called “fftw-3.3.4” if you downloaded the linked version above. In the Terminal you can go into a folder by typing “`cd yourfoldername`”, you can one-level above in the directory by “`cd ..`” and see folder contents by typing “`ls`”.

10. Now you are inside the fftw3 folder, in the Terminal type:
`./configure`
`sudo make install` → This is going to ask you a password, enter your root password

11. If that worked without errors we are ready to install S2kit. Go to Matlab and go into the folder where you extracted S2kit. Make sure to go into the second folder so something like …/s2kit10/s2kit10

12. In this folder find Makefile and open it in Matlab. Change these lines so they say:

```
FFTWINC = -I/usr/local/include
FFTWLIB = -L/usr/local/lib -lfftw3
```

13. Make sure this line looks like this:

```
CFLAGS = -O3 ${FFTWINC} -m64 -fPIC
```

Or this (this is the default):

```
CFLAGS = -O3 $FFTWINC
```

14. Save your Makefile! Then again in the Terminal window you need to go to the folder that has Makefile in it so cd ../s2kit10/s2kit10
Then type:

```
make all
```

15. Almost there!
Now go back to Matlab, your current folder should be ../s2kit10
There should be 2 files with names “FST_semi_fly_mex.c” and “InvFST_semi_fly_mex.c”

16. Double-click to open “FST_semi_fly_mex.c”
Edit below lines so they look like this:

```
#include "s2kit10/makeweights.h"
#include "s2kit10/FST_semi_fly.h"
```

Save!

17. We need to do this for the other function as well. Double-click to open “InvFST_semi_fly_mex.c”
Edit below lines so they look like this:

```
#include "s2kit10/makeweights.h"
#include "s2kit10/FST_semi_fly.h"
```

Save!

18. Now in your Matlab command window type this for compiling forward spherical trasnform:

```
mex -v FST_semi_fly_mex.c -I/usr/local/include -L/usr/local/lib -lfftw3
s2kit10/pmls.o s2kit10/cospmls.o s2kit10/seminaive.o s2kit10/csecond.o
s2kit10/primitive.o s2kit10/makeweights.o s2kit10/naive_synthesis.o
s2kit10/FST_semi_fly.o
```

And now for the other .c file, the inverse transform:

```
mex -v InvFST_semi_fly_mex.c -I/usr/local/include -L/usr/local/lib -
lfftw3 s2kit10/pmls.o s2kit10/cospmls.o s2kit10/seminaive.o
s2kit10/csecond.o s2kit10/primitive.o s2kit10/makeweights.o
s2kit10/naive_synthesis.o s2kit10/FST_semi_fly.o
```

Remember, if you installed the libraries in different folders the command above might need to change indicating the correct installation paths.

19. Now, s2kit should be running, to try you can run Test.m and TestInv.m
Happy spherical transforming!