Motion pRF

This program runs an adaptation of the bars used in the pRF mapping described in Dumoulin and Wandell, 2008. We have adapted the stimulus to use coherent global motion in an effort to better map areas of the parietal cortex. In addition, this program can be used with subjects detect changes in the direction of global motion within the stimulus (to take advantage of attention benefits) or while subjects perform a fixation diming task at a central fixation point (to reduce the tendency of subjects to make eye movements toward the mapping stimulus). Task difficulty also can be titrated across subjects and tasks.

Motion pRF Quickstart:

Go to http://sourceforge.net/projects/psychpy/files/ to download the latest version of psychopy. The current code was written in 1.79.01 and tested on 1.63 and 1.73.

Download file folder Motion_PRF_032014 to working directory

Start up psychopy in coder view and open the program new_monitor.py. Run the file by clicking on the green running man in the upper right corner of the screen. This will use the stored text files to create the calibration files necessary to gamma correct the monitor. Note that this will not create an accurate gamma correction- below there is a description of how to create a gamma correction file for your setup.

Open motion_pRF.py and run by again clicking on the green running man. You will be prompted to enter values for a set of variables:

'Subject':'SS' – enter subject initials here
'Task':'M', - enter task here- M for attend motion, F for attend fixation
'Debug':1 – used for debugging and practicing subjects on the task. There is a shorter delay before beginning the first run and only 4 walks (+2 blank periods)are used instead of 8 (+4 blank periods). Also debug mode does not wait for a trigger
'DotCoherence':.5 – what proportion of the dots are moving in the same direction, used to titrate performance across subjects and runs in the attend motion condition
'DimColor':0.15 – what is the luminance of the fixation point when the fixation point dims. The standard is .30, so higher values make the task harder.
'ScreenDistance':25.4 –Distance between the subject and the screen (cm)
'ScreenWidth':24.1 – Width of the screen (cm)
'UseMask':0 – A mask can be used in cases of irregular screen shapes, not common
'trigger':5- The trigger at Berkeley is set to a 5- change this to reflect the trigger output of your scanner.

Motion pRF with gamma correction:

In order to create a gamma correction for your monitor/projector, it is necessary to have a files with the luminance values for each monitor gun. This file has will have 4 columns, the first with the output of the monitor, and then one value each for the red, green, and blue. This file must have at least the minimum output and the maximum output, and the more readings you have the more accurate the calibration will be. This file should be stored in the calibration folder, and should be named thisMonitor_data.txt, where thisMonitor will be the name of the monitor you want to use.

Next, open setup_monitor_Durham.py and change line 14 to use your own monitor. This will create a thisMonitor.calib file used to linearize the monitor output. Run this for each monitor you will be using, one for practicing subjects, one for in the scanner.

Finally, in the motion_pRF.py file, go to line 58. This is where the monitors are set up. In line 61 (under if debug ==1:), change the monitor name to your practice monitor. In line 67, change the monitor name to your scanner monitor. Also, you can also change lines 63 and 69 so that which_monitor is equal to 1 in case you do not want to mirror the displays. This is helpful if you do not want your subjects to see their performance.

Line 15 shows all the defaults for the experimental input. These defaults can be changed to reflect your scanner set up (i.e., trigger should be set to whatever your scanner trigger is programmed to be).

Below are also some variables that you may want to change and the lines of the code where the variables can be found:

fov line 37- field of view. Changes the aperture.

dotSizeDeg line 93- size of individual dots in degrees of visual angle. Task become difficult if dots are too big or too small.