SURGE report: Week 1
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This week, we understood how to use PsychoPy by implementing simple games, studied a paper regarding the patch foraging game, and discussed the different parameters to be considered in designing the basic model of the game.

The Posner cueing task: It is a simple neurophysiological task to understand the ability to perform an attentional shift. The participant is asked to click on targets that appear either on the left or on the right of the screen. There are arrows pointing towards either the left or the right appearing right before the target appears. These cues may or may not be correct and hence one must not follow the cues. Despite knowing this, on average, participants show a delay in response time when the cue points in the wrong direction, thus displaying a shift in attention due to the cues.

The attentional blink task: It is another attentional paradigm that shows the inability to detect two targets that are presented in quick succession i.e., in a rapid serial visual presentation (RSVP) within the time frame of 200ms to 500ms. This task can be implemented in multiple ways. The one I have implemented displays a series of alphabets displayed for 200ms and the task is to identify the alphabet that appears after the said alphabet (in this case, P appears after K). Most participants cannot detect the second target due to the said attentional blink. However, participants under stress are less attentive and are almost always in an aroused state (tonic phase) in regards to their surroundings due to which they can detect both the targets.

The virtual patch foraging game: We plan to build the basic patch foraging task (similar to the one at this link) on PsychoPy first and later decide what parameters could be varied in order to make the task more elaborate and specific.
The basic model consists of two parallel columns of patches each separated by some distance.
At each stage, the participant who is at the center must decide whether to forage at a patch that is on the right or left or to move forward to be able to access other patches.

The travel time is determined by the distance between the patches and the travel speed. We plan to move the trees using stop motion, i.e., by looping frames with small progressive changes in the position of the tree.
Foraging at the same patch results in lower reward each time due to the depleting reward rate. The reward obtained at the patch decreases linearly. We plan to use a random number generating function within a range (say between 6.5 and 7.5) to determine the reward at each stage. The mean of this range decreases linearly.
There will be two such environments with the second environment having double the travel time between patches.
The whole task is time-bound and the reward will be the sum of rewards obtained at each of the patches in both environments.

Reading: I also read a paper that discusses the role of stress in foraging behavior. A patch foraging task is performed on two sets of people, healthy controls and people with stress. On analyzing their forging behavior, it was found that people with either acute or chronic stress perform suboptimally by overexploiting.