Devyansh Gupta

Work to be done in Neural Systems Lab in Spring quarter

Last quarter I assisted graduate student Nile Wilson with data collection using Neuro Electrics Enobio. Most of the task revolved around participant imagining moving their left or right arm to control the cursor on the screen. The data was collected from the motor cortex but it posed as a challenge as it came up as a very difficult task for participants to learn to produce those signals and therefore results were not as great as expected with only 50 – 60% chance of getting the desired output.

This quarter we will be using different method to collect data. We will be using **Steady state visual evoked potential (SSVEP)** based Brain Computer Interface. This method does not rely on motor cortex therefore it is relatively easier. Also, research has shown that this method gives output with up to 90% accuracy. The participant is not required to think about moving their left or right arm instead they are required to look at an LED on the respective side where they want to move. These LEDs are flickering at a rate of 13 – 15 Hz which produces response in the brain with respective frequencies and these responses can be recorded easily using the same EEG cap, Neuro Electrics Enobio. This method should provide more robust results. After getting to move the cursor in the desired direction easily, the next step would be to characterize the machine learning algorithm to learn LIVE instead of adapting after the trial is complete. This would update the algorithm while the participant is using it and should therefore give better results.

These new changes are expected to improve the results tremendously. I am excited to continue working in this lab in Spring quarter and look forward to contributing to it.