

## Planning and Design

The tremor detection will be using a 9 dof IMU attached to the left index finger of the patient using a flexible material to wrap around the finger.

An arduino uno will be used as a microcontroller to receive the data from the IMU and will send the received data to the external machinery via a bluetooth module. The arduino will be attached to the patient's forearm with a similar flexible material as used for the finger wrapped as a sleeve. The patient will be asked to lift their finger to touch 1.5", 3", and 6" high markers. The resulting data will be analyzed based on UPDRS (Unified Parkinson's Disease Rating Scale) standards of identifying parkinson's tremors based on frequency of movement.

The detection of the mood and stress levels of the patient will be assessed from EEG data collected by an EMOTIV Insight 5-channel dry EEG headset. Further inquiry is needed to see if we can get current data or if we will need to begin forming our own data from scratch for mood and stress detection.

If the EMOTIV Insight 5-channel was not available an alternative design using the MUSE EEG device with 4 channels would be used. The MUSE has less channels than the EMOTIV and is less capable of detecting dynamic brain activity throughout the brain.



IMU placed on index finger.



Arduino microcontroller connected to IMU, 9v battery and the bluetooth device.