

ECE Capstone program
Spring 2018
Project Abstract & Info

Please provide the following information to be shared with on capstone information exchange platform:

1. Project number: SA-16

2. Project title (as will appear on the poster): Portable EMG sensor device and mobile application for recording muscle activation and improving workout efficiency

3. Team members: Ridwan Khan, Mhammed Alhayek, Sean Olejar, Brian Monticello

4. Adviser(s) name(s): Yingying Chen

5. Up to 5 keywords that will help to classify the project scope: Hypertrophy, muscle, activation, application, electromyography

6. Project abstract (up to 250 words) to be shared with judges:

Our project is centered around the construction of a wearable, wireless network of sensors which are designed to measure the activation of muscle groups during athletic activity. The network consists of one or more nodes, each one placed at a target muscle group. Each node will continuously monitor the voltage differential across two electrodes, placed to surround the desired muscle group. The output signal of each such node is collated at the center hub of the device, which is constructed with an Arduino microcontroller. This hub performs any necessary preprocessing before digitizing and sending the signals over a BLE connection to a user's phone. We will be designing an end-user mobile application to consume from this BLE input stream. This application is then responsible for interpreting and visualizing the signals to the user. By comparing the data streams to a pre-existing corpus of user data, we'll be able to quantify the quality of the user's workout, and inform them appropriately.