AzureWare: A Novel Approach for Quantifying Tremors and Progression of Parkinson's Disease through an Android App and Bluetooth Low Energy Technology

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Parkinson’s disease is one of the most common neurological diseases in modern society. As Parkinson’s disease continues to worsen overtime, severe symptoms, such as Parkinsonian tremors, become more prevalent. These tremors reduce the daily quality of life by reducing the physical ability of the patient. Current methods of tracking symptoms are expensive, time-consuming, and inaccurate. Medications are being altered according to the disease symptoms and opinions from the patients. Therefore, to meet these needs, and improve the quality of life for Parkinson’s patients, the AzureWare App and Glove was developed. In this project, a glove was developed with an accelerometer to send information about the speed, frequency, and intensity of a tremor occurrence to a phone via Bluetooth Low Energy connection. An Android app was developed to create an effective testing mechanism for the patient; interactions with the UI of the Android App enable testing. Algorithms within in the app are used to accurately classify and rate tremors according to the Unified Parkinson’s Disease Rating Scale. Sharing features are included within the app to share tremor rating results. A graph is created to show the movement of the tremor in one trial of testing. In addition, a logging mechanism is created using CSV files. Through this, each test result is logged in one file, giving doctors, patients, and caregivers a more accurate depiction of the progression of their case of Parkinson’s disease. Because of this nuance testing, the results from the AzureWare App and Glove can be used to provide individualized care for each patient. Therefore, the AzureWare App and Glove help give a positive change aiding the daily lives of Parkinson’s patients.

Awards Won:

Oracle Academy: Award of $5,000 for outstanding project in the systems software category.

International Council on Systems Engineering - INCOSE: Certificate of Honorable Mention