TremorTech: A Stabilizing Glove for Parkinson's Disease Tremors

Vaidya, Aadi (School: McIntosh High School)

Parkinson's Disease (PD) is a neurodegenerative disease estimated to affect around 1 million people in the US. It is also the fastest growing neurodegenerative disease with growth rates comparable to that of an infectious disease. PD is also incurable, as of today. PD causes tremors, or involuntary shaking, in the hands of the patients who have the disease. These tremors cause a severe decrease in the quality of life for these patients. Relatively simple tasks like filling up a glass of water become nearly impossible, as the patient fails to hold the glass firmly and fill it. Drinking the glass of water is another issue, as the hands shake so violently that water spills everywhere. This study presents a novel glove prototype aimed at reducing the effect of these tremors through a gyroscope, shock absorbers, vibration motors, and an accelerometer. Through research, it was determined that the accelerometer and vibration motors were both appropriate and effective ways to detect and soothe tremors. This study then was able to test the gyroscope and shock absorbers in an experimental setting, using test benches designed to replicate human tremors. In the end, it was found that the gyroscope and shock absorber systems provide anywhere between 50%-75% extra watts worth of resistance on the human hand. However, additional testing is necessary when it comes to the gyroscope, as it was not run at full speed.

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