

A Robotics Assistive Device Application in Minimizing Manibus Tremors and Persons Afflicted with Bradykinesia

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Eighty percent of people who are afflicted with Parkinson's experience tremors that affect their basic hand motions. These tremors limit daily activities. With this in mind the goal of this project was to design an assistive device that limits the acceleration of the arm in order to dampen the effect of the patient's hand motion. Portability was also a major consideration. The robotic arm is connected to the motorized chassis and controlled by two wireless gloves, worn on both hands. The motorized chassis was built by adding pre-programmed motors able to send power and data. The wireless glove was coded using Arduino C++ program which controls the motorized chassis, to limit the effects of tremors on motions. Arduinos different uno and nano boards were all programmed with a combination of coding sections and original design. The new generation of glove used a custom made copper clad board and pre-designed layout for each board. This resulted in a cleaned up version, making the boards more compact and with fewer wires. Through trial and error, the gyroscope, used to measure angles, only worked after the code was run through the serial monitor program. The radio transmitters only worked after the library and pin out was fixed. In conclusion the product increased stability in the hand by dampening transmission of palsy and the motorized chassis allowed for a wider range of product use.

Awards Won:

Fourth Award of \$500