Robotic Arms for Paralyzed Arms

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I. REASONS TO CHOOSE THE TOPIC + There are many disabled people in the world. + There are a number of technological products for people with disabilities such as robotic arms that use brain waves, muscles, learning commands and voice to control, but they must be made suitable with individual users. That makes approaching and using such devices complicated. + For people with total arm paralysis or with a short arm residue, it is almost impossible to use a robotic arm on the market. + The high price of the commercial arms makes it difficult for the users to access. II. PURPOSES OF THE PROJECT + To use the flexion amplitude of toe to control this robotic arm. + To help the users to feel the pressure from the forefinger tip. + To integrate wrist rotation and elbow flexion which is hard to find in other products on the market. + To apply SLA 3D printing technology to ensure durability and lightweight. + To create a robotic arm that costs less than 450 USD and use materials and components that are easy to find. III. SUMMARY OF THE RESULTS + The project opens a new control method using flexion amplitude signal of toe to control the arm. We have successfully built a robotic arm capable of performing well with basic grip operations such as holding, pressing of the fingertips, stretching of the elbow, rotating of the wrist and especially can feel the force obtained from the tip of the forefinger. + The 3D printing SLA details are optimally designed to help keep the overall structure; meet the requirements for durability and certainty when put into use. + The arm ensures stable operation; It is easy to use, at low cost and easy to access; It reduces the effort and time for the novice user to control the arm.

Awards Won:
Third Award of $1,000