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Wearable Robotic Arm Using Muscle Sensor for Stroke Person

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Abstract: *Artificially intelligent advances such as tech gloves allow handicapped wearers to handle daily matters as normal. A wearable hand-rehabilitation system, i.e., a robotic arm, is engineered with controlled programming to control a disabled hand with features such as movement of fingers and holding items. A life-threatening disease (stroke) is caused when brain cells start to die, causing around 50–70% of patients to face paralysis and disability. People may face after-effects such as reduced use of the hand and limb or a paralyzed hand. Many methods have been introduced to overcome these issues, including therapies, but they are not so reliable when overcoming disability issues. To overcome these issues, we proposed a smart robotic hand that encounters hand disability issues. The smart robotic hand will aid the hands of disabled people by replacing their disabled hand with the smart robotic hand and by controlling the movement of the robot with the movement of the other hand. This can also be helpful for environments where it is not feasible for humans to work, such as in nuclear reactors and in bomb disposal squads. Some people have disabilities of the hand, so this smart robotic hand can also be used in that scenario. The robotic hand is mainly controlled through a flex sensor. By using Arduino, flex sensor outputs are mapped accordingly to the servo motors. The robot is controlled by a wired arrangement..*

Keywords: Wearable Robotic Arm, Electromyography (EMG) Sensor, Muscle Sensor, Stroke Rehabilitation, Assistive Technology, Human-Machine Interface, Neurorehabilitation, Exoskeleton, Myoelectric Control, Biomedical Engineering