

Wheelchairs have become indispensable for elderly and differently abled people. The electrical wheelchairs that are currently available in the market are mostly controlled by a joystick control system. It may be very difficult, even impossible, for people who are totally paralysed due to amyotrophic Lateral Sclerosis (ALS) and Parkinson disease, to use such type of systems.

This project aims to develop a prototype of a smart wheelchair that is controlled by eye movements and detects obstacles in the path. The smart wheelchair not only controls the movement of the wheelchair, but can also be used for communicating with the caretaker by sending a message to a smart phone. The system consists of four components - image processing module, wheelchair-controlled module, obstacle detection module and appliance-controlled module. The image processing module comprises of a webcam and a customized image processing software. The captured image which is send to a Raspberry Pi microcontroller will be processed using Open CV to derive the 2D direction of the eyeball. The coordinates of eye ball movement are used as the cursor control on the Raspberry Pi screen to control the wheelchair movement via the wheelchair-controlled module, and ultrasonic sensors are used to detect obstacles. And the Arduino connects to the caretaker via an instant messaging app like telegram and sends messages during emergencies.

Features:

- Useful for communicating with the caretaker by sending a message via a smart phone.
- It is controlled by eye movement and detects obstacles in the path.



1. Face and Eye detection

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EYE CONTROLLED SMART WHEELCHAIR

Divya M
CSE

D Lakshmi Soumya
CSE

Kavya G.P
CSE