

Hand Posture Control of Robo-chair



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Certificate

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Dedication

We would like to dedicate this project to our loving parents who have been a constant support and should rely on. They have given us inspiration to tackle each and every task with enthusiasm and determination. Their love, affection and belief in us have made us push our limits and aim to aspire a lot more in life.

We would also like to dedicate our work to the paralyzed people who can't move their wheelchair by applying a mechanical force or depend on another person to move their wheelchair. It will ease their hard hips as it will enable a handicapped person to move without applying much energy. This project will surely make the lives of paralyzed people simple and effortless.

Abstract

Gestural interface has been the subject of research for more than 40 years. The implementation of a novel intuitive and adaptive manipulation scheme is proposed by developing a human-machine communication interface between the Leap Motion controller and the wheel chair. An algorithm is developed to allow an optimum mapping between the user hand movement, tracked by the Leap Motion controller, and the wheel chair. The system should allow for a more natural human-computer interaction and a smooth manipulation of the wheel chair, by constantly adapting to the user hand tremor or shake. The implementation would specially enhance the quality of living, especially for people with lower limb problems, and would support them in performing some of the essential Activities of Daily Living “ADLs”.

This thesis deals with the design and testing of an applicable software interface that allows a user to control a wheel chair by using a Leap Motion Sensor while defining and keeping a safe workspace for the wheel chair to operate. The sensor is used to sense the gestures and move the wheel chair according to the gestures. It will track the movement of the fingers and hand to recognize the gesture & then through Arduino the motors will perform the desired operation. In interfacing we will control the motor of Robo-chair through serial communication to move the chair left, right, forward or reverse.

The Leap Motion Sensor is a small and portable device which is able to sense human hands above it and to keep track of them. The user will feel an interesting touch-free control experience while controlling the wheel chair.

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