

Assisted Kitchen Area for Wheelchair Users

BEng Electronic Engineering 2019-2020

Problems that wheelchair users face

- Lack of reaching stuff above a certain height
- Lack of storage as the upper cupboard cannot be used to store objects as the wheelchair users cannot reach them.
- Difficulty of opening/closing a door
- Difficulty to switch on/off lights or any other electrical appliances if their switches are placed too high.



Project's Aims-objectives

- This project aims to create and demonstrate an assisted kitchen area for wheelchair users who have arm movement.
 - The automated assisted kitchen area will provide wheelchair users with an ergonomic and user-friendly environment which may help them to be more independent and have a better quality of life in daily activities.
1. Research and identify an accessible kitchen area.
 2. Modify the accessible kitchen area to be work electronically.
 3. Research and identify suitable controls for wheelchair users.
 4. Research and identify how to control the kitchen lights, air-conditioning and heating from one device only.
 5. Research, compare and select different types of electronic components which may be used for the project.
 6. Create a prototype or prototypes in order to represent how the assisted kitchen area will look like in real life.

Future Work

Semi-automatic kitchen cupboard with rotary shelves

Better and more functional design in order to cover more ranges of disabilities

Light embedded on the cupboard for better vision

Use sensors to recognise if food products are running out of stock and notify the user

Automatic door

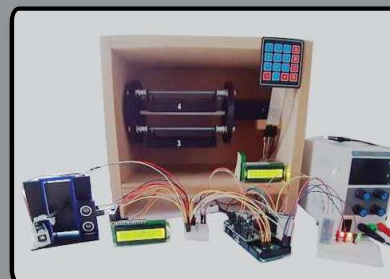
A pressure sensor for more safety

Better design

Wireless system for switching on/off lights or any other electrical appliances

Dimmable lights

Possibility to set temperatures for air-conditioning and



Solutions

A semi-automatic kitchen cupboard with rotary shelves

The wheelchair user can control the semi-automatic cupboard with a keypad which is attached on the cupboard or with a custom-made mobile application.

With the semi-automatic kitchen cupboard, the wheelchair user can store more objects and reach them easily as the shelves have been programmed to stop in an accessible height. Therefore, the lack of storage and the problem of reaching stuff above a certain height are eliminated.

An automatic door

An automatic door is essential for wheelchair users as they are not required to push or pull a door.

A wireless system for switching on/off lights or any other electrical appliances

The wheelchair user can control the lights or the other electrical appliances by using the custom-made application.

By using a smart device, the wheelchair user can control the lights or the other electrical appliances easily without the need of extending himself or herself

Student Name : Giannis Theodotou
Student ID: Q14004364
Project Supervisor : Mr David Hawkins