SMART VACUUM CLEANER

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Abstract

Using Arduino, we created a vacuum cleaner. As we all know, there is a demand for robotics and automation, and robotics are making people's lives easier in present era. In today's world, there aren't many things that a machines can't do, thus we created a cleaning robot which will be controlled by an Arduino Uno. The technology will include obstacle detection sensors that always allow the robot to clean itself without the need for human intervention. It will also include a control mode that will allow us to control it with our Android mobile. The system will be connected to the internet via the Wi-Fi module, allowing the user to control the machine from a distance. Also the presence of Level sensor provides the information about the level of Garbage tanks Capacity.

Keywords: *Wi-Fi module, Level Sensor, Ultrasonic Sensor*

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CHAPTER 1

Introduction

1.1 Project Description:

We live in a period in which the automation had taken place a vital role and through which the process of implementing the new things through robotic and automation have developed in a better and Efficient ways.This makes me an motivation to come up with an Effective way of developing an SMART VACUUM CLEANER Which was done under various Technique which involves Sensors, Actuators, Microcontrollers and so on.

1.2 Features:

- ➢ Cleans our Home even without human interuption
- ➢ Reduces human efforts.
- ➢ Low Cost & Easy to use.
- ➢ Data can be accessed from any part of the world.
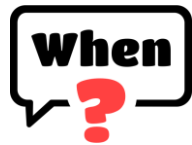- ➢ Easy to Design.

1.3 4W's & 1H

Where? *House/Offices*

What? *Clean Floors*

When? *when at Busy*

Who? *Automatic mover*

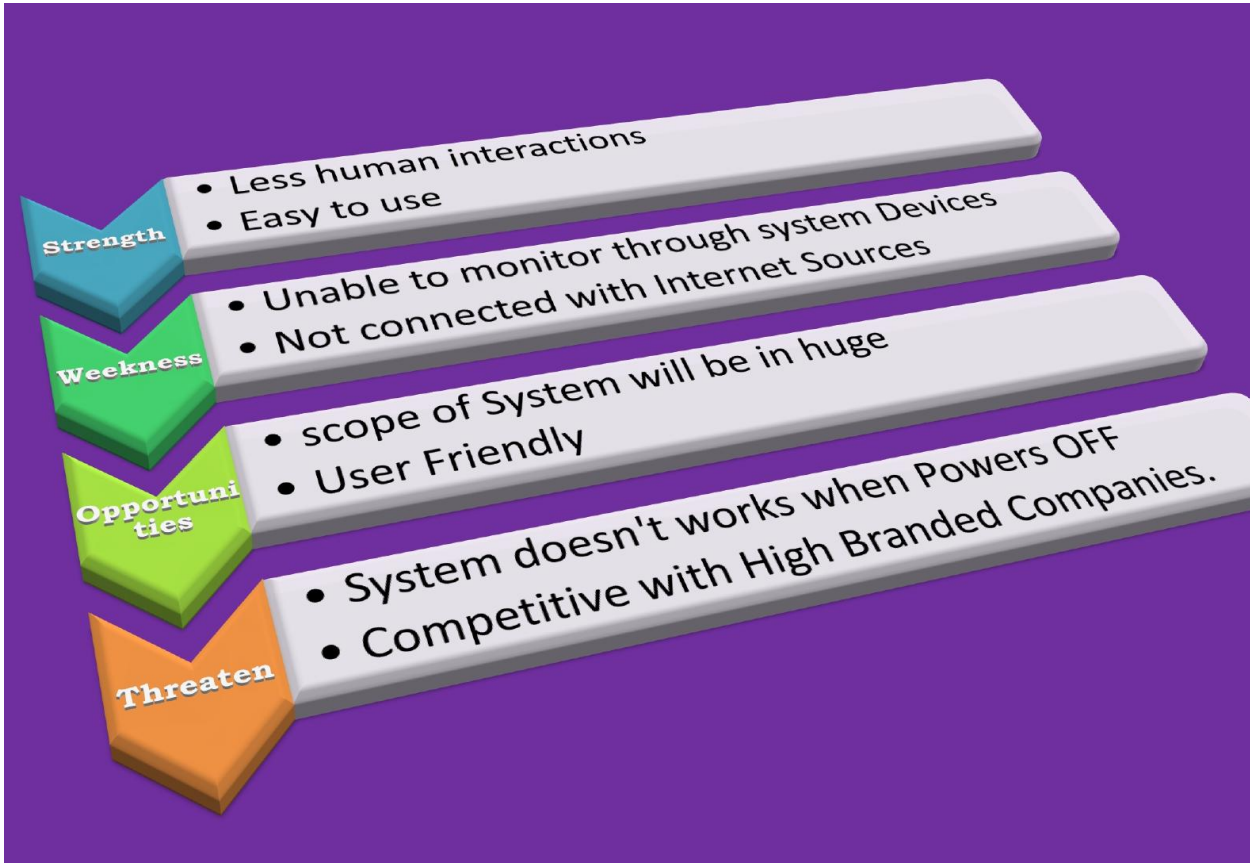**How?** *Dust Detection*

1.4 SWOT Analysis

Fig1. SWOT Analysis

1.5 Applications

- o Capture Excess Pet Hair ·
- o Exert Insect Control ·
- o Freshen Upholstery, Pillows, and Carpets
- o Prevent House Fires
- o Reduce Indoor Allergens
- o Recover Small Items
- o Trap Dust Before It Spreads

CHAPTER 2

REQUIREMENTS

2.1 High Level Requirements

RID	DESCRIPTION	STATUS
HLR1	Sucking out Dust particle	To be done
HLR2	Storing Dust particle	To be done
HLR3	Pressure Provided	To be done
HLR4	Air Release	To be done
HLR5	Friction Intaken	To be done

2.2 Low Level Requirements:

| RID	DESCRIPTION	STATUS
LLR1	Primary one to inhale Dust particle	To be done
LLR2	Inhaled Dust particle storing device	To be done
LLR3	Fan creates pressure by spinning	To be done
LLR4	exhaust port pushes clean air into your home	To be done
LLR5	friction is created by employing rotating brushes	To be done

CHAPTER 3

STRUCTRAL DIAGRAMS

3.1 Initial Case study Block Diagram Development

Initially an case study developed with actual Vaccum cleaner on which the proposed Block diagram been developed as mentioned below.
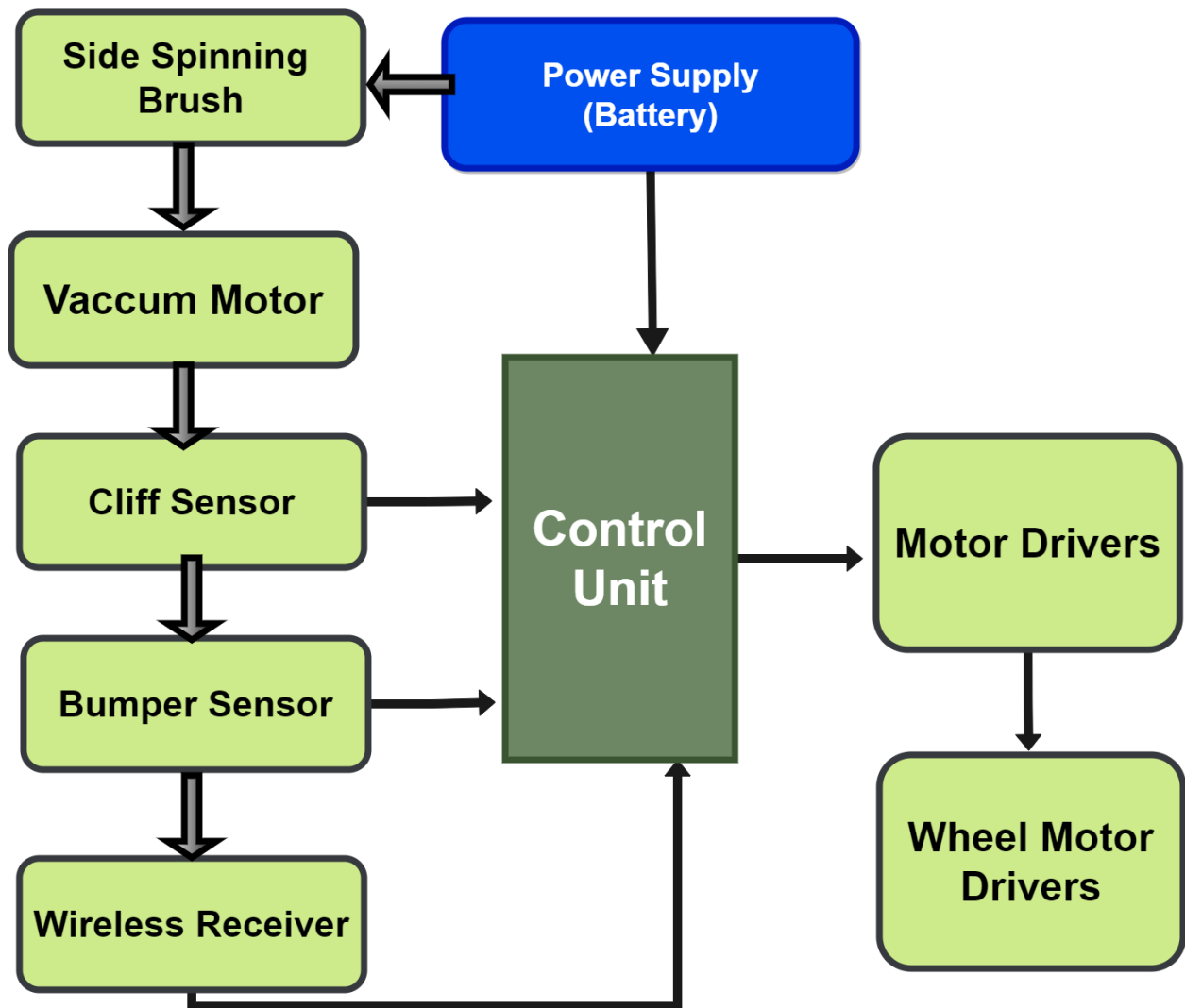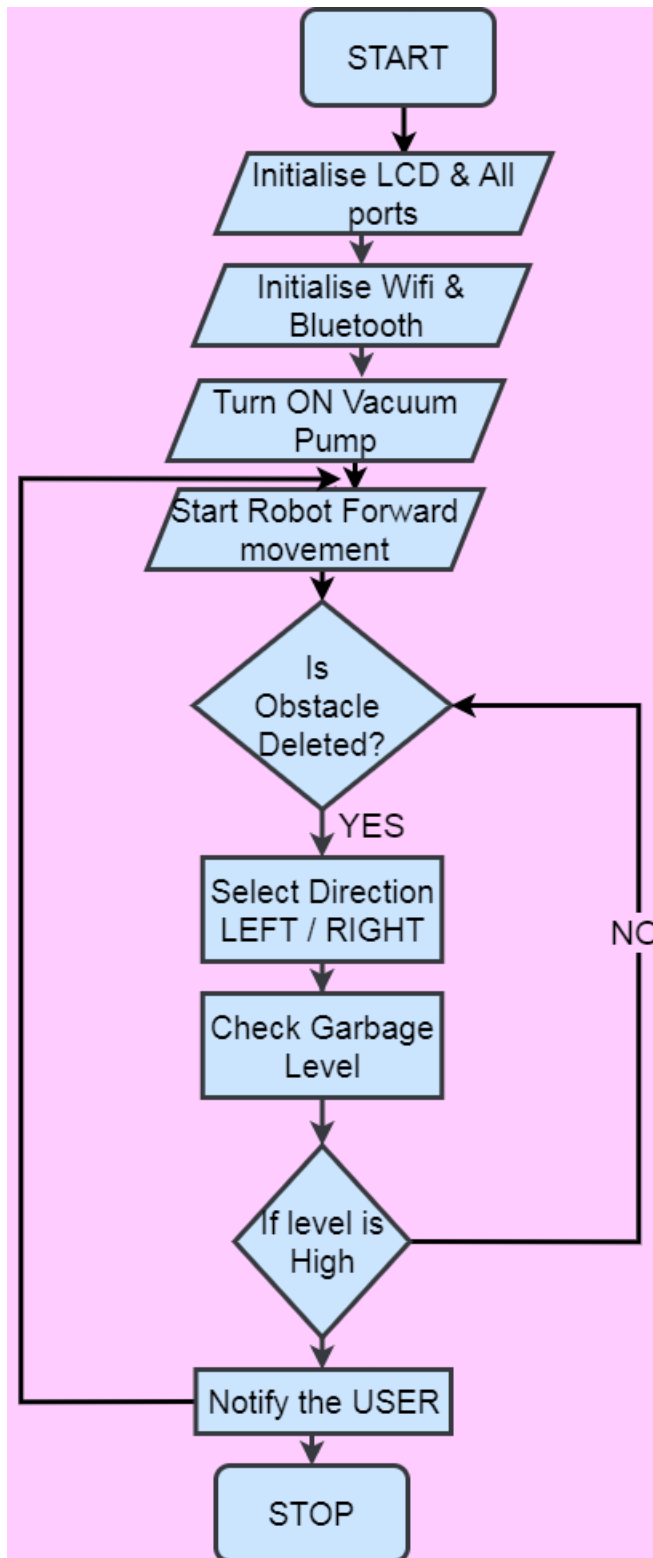
3.2 PROPOSED SYSTEM BLOCK DIAGRAM

This Block diagram stating with different marketly available sensors used for our Project and hence User-Friendly.
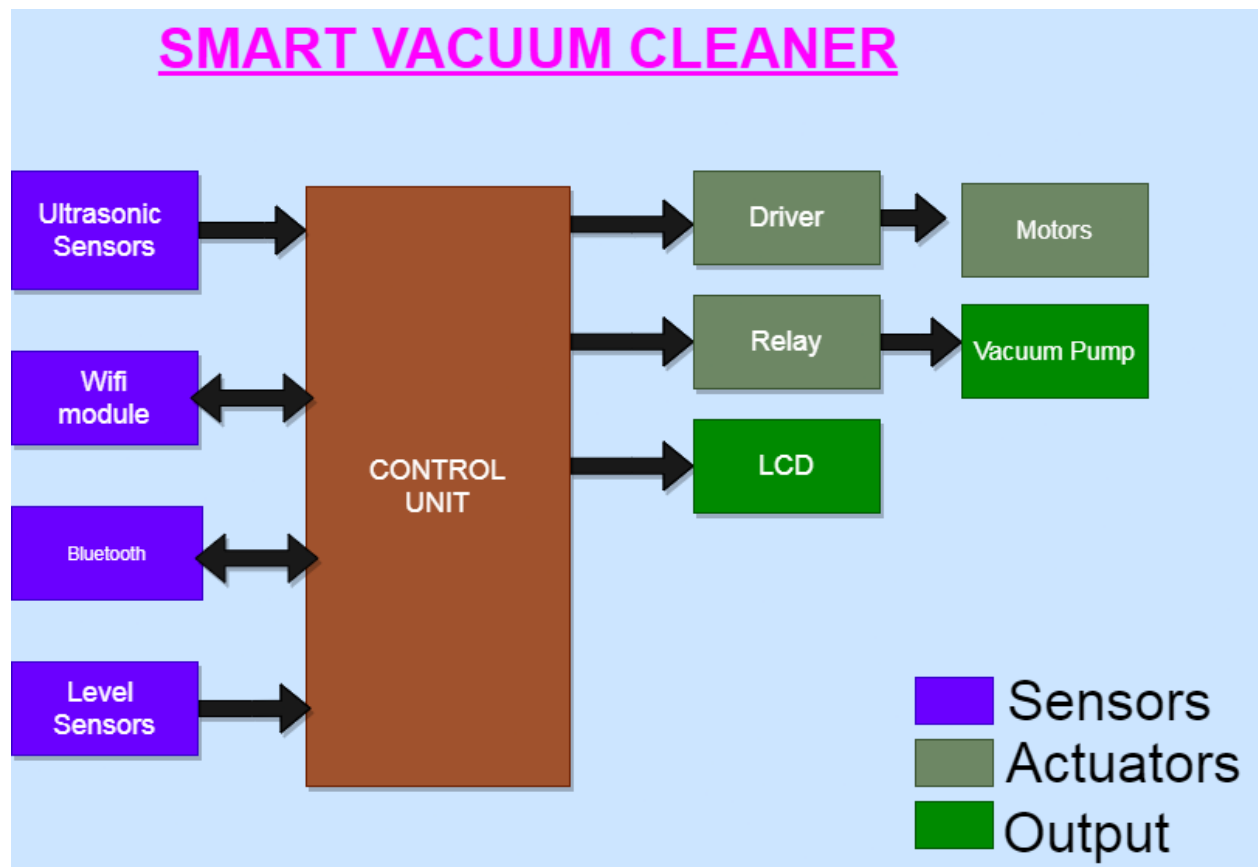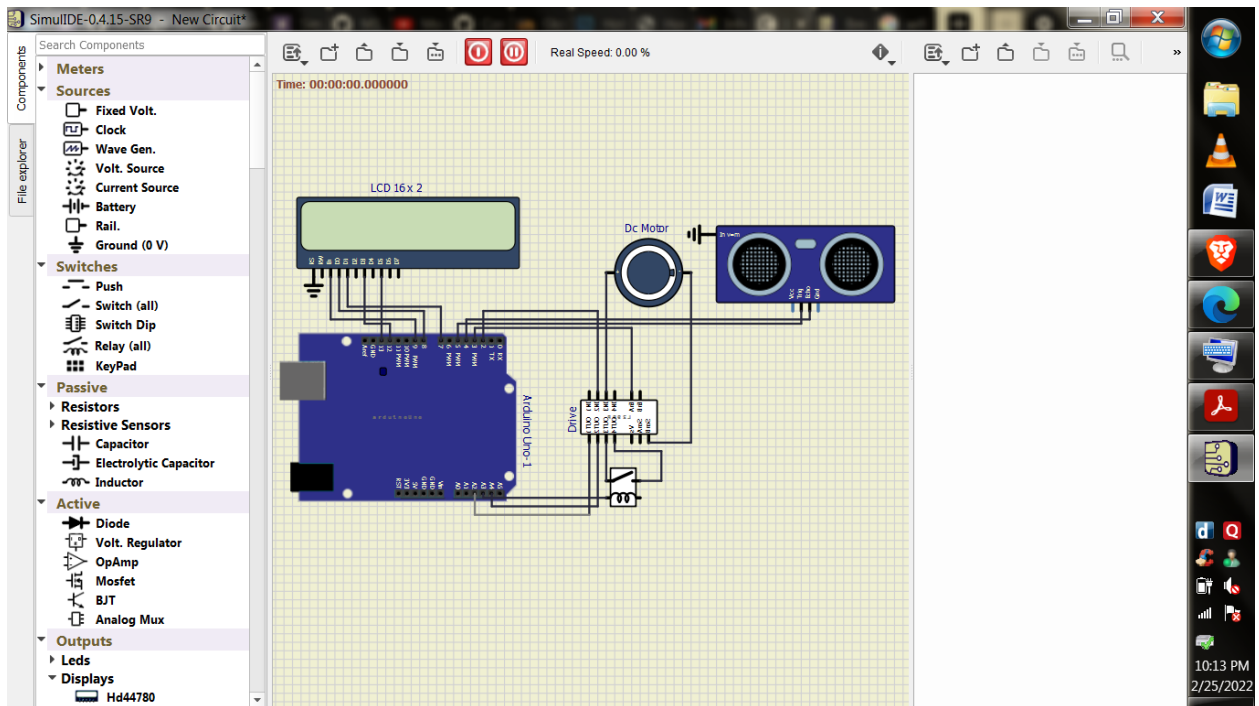
3.3. PROPOSED SYSTEM FLOW CHART

3.4 SIMULIDE SOFTWARE DESIGN

Thus our Ultimate Goal to develop an Simulation done with higher level implementation and hence provided with an design of our Project which includes Ultrasonic Sensors, Relays - acts as an Actuators, Motor and respective drivers, Microcontroller and an LCD display

CHAPTER 4
TEST PLAN & OUTPUT

High level Test Plan

Test ID	Description	Input	Expected output	Actual Output
01	LCD Display	Data from MCFS	Displays Amount of Dust stored/level	✓
02	Servo Motor	Data from MCFF	Shall change position of SVC	To be done
03	Ultrasonic Sensor	Data from Microcontroller	Detect Obstacle upto 4m	To be done
04	Level Sesnor	Data from Microcontroller	Give signal when Tanks gets full	To be done
05	Bluetooth	Connect from users module	Receive command	To be done

Low level Test Plan

Test ID (for LCD)	Description	Input	Expected output	Actual Output	passed / not
01	Check for LCD_Char()	N	N	N	✓
02	Check for LCD_String()	automation	automation	automation	✓
03	Check for LCD_String()	Home	Home	Home	✓

CHAPTER 5

CONCLUSION

Through the use of an Arduino Board with more electrical functionality, a cheaper and user-friendly Vacuum Cleaner device could be constructed with two separate modes of control (Manual and Autonomous mode). This project's future goals include battery monitoring, self-charging, a reduced body weight, and the ability to manually set alarm on/off times.

References

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