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| Group – 2 Detailed Design Document  EECE-8040 Engineering Capstone Project Mentor: Amrinder Singh Ghotra |
| |  |  |  | | --- | --- | --- | | Sejal Chovatiya / Divyesh Korat / Utkarsh Purohit | 5/20/22 | [Course title] | |

**Table of Contents**

[**Team Name** 2](#_Toc103972172)

[Team Members 2](#_Toc103972173)

[**Project Description** 2](#_Toc103972174)

[**Problem Statement** 2](#_Toc103972175)

[**Project Requirement** 2](#_Toc103972176)

[**Team Member Roles/Responsibilities** 3](#_Toc103972177)

[Team Leader 3](#_Toc103972178)

[Recorder 3](#_Toc103972179)

[Specific Project Tasks 3](#_Toc103972180)

[**Project Task Timeline** 3](#_Toc103972181)

[Week 1 3](#_Toc103972182)

[Week 2 3](#_Toc103972183)

[Week 3 3](#_Toc103972184)

[Week 4 4](#_Toc103972185)

[Week 5 4](#_Toc103972186)

[Week 6 4](#_Toc103972187)

[Week 7 4](#_Toc103972188)

[Week 9 4](#_Toc103972189)

[Week 10 4](#_Toc103972190)

[Week 11 4](#_Toc103972191)

[Week 12 4](#_Toc103972192)

[Week 13 5](#_Toc103972193)

[Week 14 5](#_Toc103972194)

[Week 15 5](#_Toc103972195)

# **Team Name**

Covid Preventers

## Team Members

1. Sejal Chovatiya – 8740076
2. Divyesh Korat – 8716950
3. Utkarsh Purohit – 8739830

# **Project Description**

* The main purpose of this project is to ensure does people wear mask or not.
* Also, it checks the temperature of individual.
* So, we can automate the manual work of the covid- 19 protocols.

# **Problem Statement**

* Scanning for fever is the initial step in detecting Covid-19.
* We also need to keep an eye on everyone for a mask.
* Many people have been employed in many parts of the world to ensure that people wearing facemasks and to monitor body temperature at public places of interest such as shops, movies, shopping malls, schools, colleges, and train stations.
* In this project, we propose a Raspberry Pi-based system for identifying people who are not using a facial mask and measuring the temperature of a person.
* Instead of handheld thermometers, which require a person to take a person's body temperature, our system uses the MLX90164 to provide a contactless and efficient temperature check, and an OpenCV subsystem based on a Raspberry Pi single-board computer equipped with a camera module to check whether people wear a mask or not.

# **Project Requirement**

* There are three parts to the proposed scheme.
* The first part incorporates a camera for mask detection.
* The MLX90614 sensor is used in the second part, which is for temperature measurement.
* The third part, the output section includes an LCD module.

# **Team Member Roles/Responsibilities**

## Team Leader

* **Sejal Chovatiya**
* She will organize weekly meetings.
* She will assign a task to each group member.

## Recorder

* **Divyesh Korat**
* He will keep the records of all meeting information.
* Also, he will take care of parts of the projects.

## Specific Project Tasks

* Divyesh will build software for the Raspberry Pi and OpenCV.
* Utkarsh and Sejal will oversee software testing.
* Divyesh and Utkarsh will interface the hardware with the software.
* Hardware will be tested by Sejal and Utkarsh.
* All team members will contribute to the final project report and presentation.

# **Project Task Timeline**

## Week 1

* In first week, we had an introduction from our mentors in the lab.
* After that, we made a team for this capstone project.
* Go through the project ideas given by the professors.
* Submit three proposals of projects to the mentor.

## Week 2

* Discussed all given project proposals with a mentor and finalise the project.
* Do research for the finalized project such as which parts and software are required for this project.
* Select components and make a list of components and submit it for order all components.

## Week 3

* Learn different software required for this project.
* Install required software in systems and testing of it.
* Test some basic example programs.

## Week 4

* Install OS in Raspberry Pi.
* Do some programming with Raspberry Pi using some GPIOs and get familiar with it.
* Understand the architecture of Raspberry Pi.

## Week 5

* Searching for which are available libraries in python for facial recognition.
* Select best suitable library for the project.
* Install it and start programming with that.

## Week 6

* Interface webcam with Raspberry Pi.
* Testing and troubleshooting of webcam.
* Start developing of program for face detection.

## Week 7

* Complete the face detection program.
* Testing of face detection program.
* Troubleshooting errors in program if any.

## Week 9

* Modify above developed program for face mask detection.
* Test the system whether it detects mask or not.
* Resolve error if not working properly.

## Week 10

* Build a program for temperature monitoring.
* Interface temperature sensor with Raspberry Pi.

## Week 11

* Merging both features in one application.
* Testing new developed application.

## Week 12

* Design whole hardware with Raspberry Pi, Webcam and Temperature Sensor.
* Testing of hardware design.

## Week 13

* Testing of whole application including software and hardware.
* Check the performance of application.
* Resolve errors and try to improve performance as much as possible.

## Week 14

* Create a project report.
* Make presentation for final demo.

## Week 15

* Final demo of the capstone project.