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**Shocking Engineers**

**Project Proposal**

a)

Reasoning

We all have been affected by the Covid 19 pandemic that started in late 2019, however the impact of the pandemic and its consequences are still around. As a result of this pandemic, temperature testing is required in some of the places we go. To help reduce transmission of the infection this device will measure people’s temperatures in different places and give a warning that the person has a fever.

Goals

Our main goal out of this project is to develop an affordable device that could help in measuring body temperature without the need of any expensive thermal cameras.

b)

Product Title:

“Infrared Thermal Scanner”

Product Description:

This product will be a small portable device that can be readily deployed without much user intervention. It will consist of small chassis capable of fitting in one hand. The device will have a 5 inch or less LCD display on one side. When a user stands in front of the side with the LCD display, his temperature will be taken, and the result will be indicated to the user on the screen. This will be done without any physical contact with the end user.

Primary Application Proposal:

This device will consist of four parts. First, a conventional camera to detect the presence of faces and their position relative to the device. Second, an infrared camera to provide real-time temperature data about those in view of the conventional camera. Third, a microcontroller that will integrate the input components create output to the final part, an LCD display. The display will indicate to end user whether they have a fever or not.

Requirements:

1. A conventional camera will need to be acquired that can easily integrate with a raspberry pi. Fortunately, the camera will not require high fidelity output, 640x480 at 30 frames per second should suffice.
2. An infrared thermal camera will be used to measure body temperature such as an Adafruit MLX90640. This camera contains a 24x32 array of IR thermal sensor and it will return an array of 768 individual infrared temperature readings over 12C.
3. The Raspberry pi will be programmed to get the result back from the thermal camera and display the result on the LCD screen

Stretch Objectives:

1. Integration thermal camera with an alarm. Alarm sound will be used if the thermal camera detected high body temperature, it would continue to sound until the thermal camera detects normal temperature.
2. Accuracy of temperature: during testing we will check how accurate the temperature measured by the thermal scanner. This can be achieved by tacking the body temperature using thermometer and check with the measurement that the scanner detected.