Open-CV Based Real Time Temperature Indication on screen: Research Review

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1.ABSTRACT

The effects of the global pandemic are widespread and widespread. Many sectors such as tourism and entertainment stopped temporarily, but sectors such as construction, construction and maintenance did not stop due to their importance to people. These activities involve close contact with workers and therefore the risk of infection. People are advised to maintain social distance and wear masks to reduce the spread of Covid-19. To this end, we recommend COVID Vision, a neural network (CNN) for social media and facial recognition sold to help people reduce their dependency on staff and manage COVID-19 standards and restrictions. COVID Vision can detect from live video whether a person is wearing a mask or simply covering their mouth with their hands, and whether people are violating social distancing rules. It may also collect information about people who have tested positive for COVID-19 or are at risk using facial recognition.

INTRODUCTION

Since the outbreak of COVID-19, it is very difficult to identify people affected by COVID-19 because many people with COVID-19 do not experience symptoms. COVID-19 ICMR vaccine products have a high rate of false positives and falsely indicate that the person is free of the disease. One of the main symptoms of COVID-19 is fever. Therefore, WHO recommends measuring temperature to identify COVID-19. Wearing a mask in public is also necessary because many studies have shown that wearing a face mask is effective in reducing the risk of infection. A number of heat guns are available, but they are not intelligent enough to simultaneously control the temperature of the body and the mask and alert the supervisor to take appropriate action if procedure is not followed. In many parts of the world, many people work in public places such as stores, cinemas, shopping malls, schools, universities and train stations, where temperature measurements are performed while wearing masks. This is probably one of the worst, most dangerous jobs a person can do; It requires people to wear masks and have their temperatures checked. It can also lead to the spread of Covid-19 from the public to the employees who pay attention to masks and body temperature. The solution to this problem is the use of an automatic facial and body temperature sensor supported by the Raspberry Pi microcontroller. The device has its own camera module that comes from the monitoring face, it has a non-contact thermometer that can read body temperature and allows people to use it in accordance with the COVID-19 protocol, otherwise it will sound an alarm to the Hon'ble police officers..

HARDWARE DESCRIPTION

RASPBERRY Pi

Raspberry Pi is a small credit card computer developed by the Raspberry Pi Foundation. Supports learning computer science and DIY projects. Featuring GPIO pins for physical computing and support for a variety of functions, it is affordable and versatile, enabling a wide range of applications from hobby projects to professional models.

TFT LCD DISPLAY FOR RASPBERRY PIMLX90614

The combination of the TFT LCD display with the MLX90614 non-contact infrared temperature sensor on the Raspberry Pi provides a compact solution for temperature measurement. Temperature measurement is now done by connecting the sensor to the Pi's GPIO pins and installing the appropriate libraries. A Python script collects temperature data from the sensor and displays it on a TFT LCD screen. This configuration provides a simple and portable way to monitor temperature in a variety of applications such as home automation, industrial processes or consumption-related healthy tasks.

NON CONTACT INFRARED TEMPERATURE SENSOR

Non-contact infrared temperature sensors measure temperature without touching the body. It detects the infrared radiation emitted by an object and converts it into a temperature sensor. These sensors use thermopiles or pyroelectric detectors to detect infrared radiation and create an electrical signal equivalent to temperature. Non-contact infrared sensors are used in many applications such as industrial processes, medical equipment, automotive technology and home appliances. Advantages include fast response time, high accuracy, and the ability to measure the temperature of moving or stationary objects over long distances.
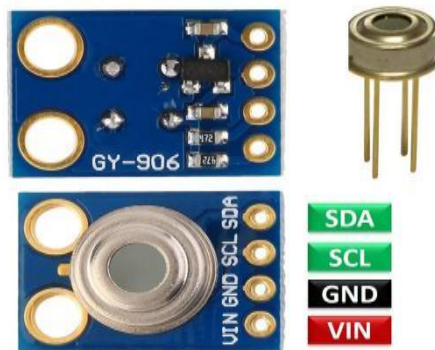

SERVO MOTOR

A servo motor is an electric motor that controls the accuracy of position, speed and speed. It has a motor combined with feedback such as a potentiometer or encoder for precise control. Servo motors are mainly used in robotics, automation and motion control systems. They provide high torque output, accurate positioning and maintain position even under heavy loads; This makes them ideal for applications requiring precise and controlled movement.

WORKING

The OpenCV-based thermometer now includes a non-contact infrared thermometer with Raspberry Pi and display. This sensor detects the infrared radiation emitted by an object and converts it into a temperature reading. With OpenCV, a Python script can play live videos captured by a camera module connected to the Raspberry Pi. This script recognizes the face in the video stream and collects temperature data from the sensor. Using OpenCV's drawing capabilities, the script instantly overlays temperature data onto the visual surface. This setting allows everyone's temperature to appear in real time in the video stream. It can be applied to many situations where instantaneous temperature measurement is important, such as healthcare, temperature measurement or quality control process. The system combines computer vision and temperature measurement capabilities to provide solutions for instant monitoring and display of temperature data.
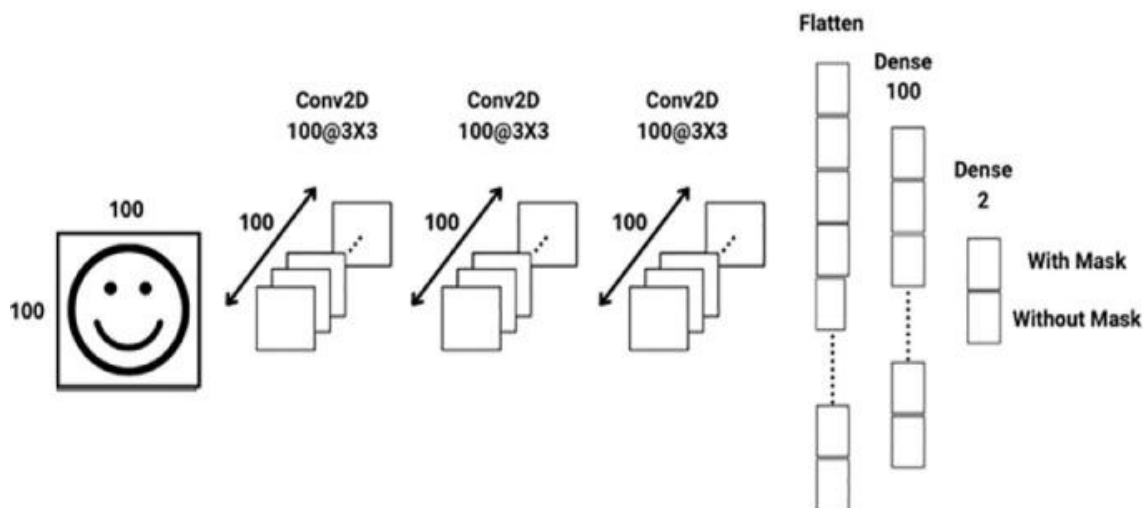
CONCLUSION AND FUTURE WORK

In this project, we completed the working model of the mask and body temperature sensor. This plan is suitable for schools, colleges, offices, shopping malls, etc. It can be used in large gathering areas such as The non-contact thermometer reads the person's body temperature and after checking it, opens the barrier arm and allows the person to enter. Thanks to this project, automatic solutions were implemented so that no one needs to follow the COVID-19 process. The accuracy of the mask can be achieved by training the model using a larger dataset. The Raspberry Pi 4B barely has a calculator that needs to detect faces from photos/videos, but this can easily be done in future Raspberry Pi versions. In short, masks and thermometers can help us reduce the number of faceless people in many places and reduce the risk of infection. Additionally, other data sets can be combined to include "present" or "absent" masks in groups such as "invalid masks." We aim to improve our model by using the FaceNet model together with YOLO v3 for face detection. However, we are aware of limitations that affect accuracy, such as photo quality and depth of field. Our vision includes remote compliance monitoring and integration into a single Android app for easy monitoring. Future efforts include deployment of face shields Temperature measurement for mass surveillance, possibly using blended learning for human surveillance.

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