Literature Survey

Date	22/11/2022
Team ID	PNT2022TMID45774
Project Name	Containment Zone Alerting Application
Maximum Marks	4 Marks

1. Social Distance Alert System to Control Virus Spread using UWB RTLS in Corporate Environments

The author proposed a method to develop a real-time location system (RTLS) based on ultra wide band (UWB) wireless technology that gives the most accurate locations of approximately 10cm using methods like trilateration and TDOA (Time Difference of Arrival).

Coordinates of the location can be obtained by installing RTLS in predefined areas which are used to calculate the distance between Mobile UWB Devices (MUD's). An alert triggered by a system to maintain distance if distance between the employees is less than the prescribed social distance can keep the work premises safe and control the spread of coronavirus. This study can be a great solution to control the spread of virus in corporate working environments which are mostly confined in size and indoor in nature.

2. A Detection, Tracking and Alerting System for Covid-19 using Geo-Fencing and Machine Learning

The author proposed a complete Covid-19 Detection, Tracking and Alerting Mobile Application Kit which helps people to defend against Covid-19 spread. This is a first of its kind application that uses Geofencing and Machine learning together to combat the spread of Coronavirus. This app is a threefold app. The first fold is a Detection System for a user to undergo a Symptomatic Quiz based on a Risk Assessment ML Model to detect the presence of Covid in the user's body. The second fold is an efficient Tracking system that uses Geofencing technology to keep track of all the people who come into contact with the user. And the third fold is an Alerting system that sends the alert message to all those people who came into contact with the user if the user is tested as Corona positive. Thus, by using the technology, Geofencing allows to perform contact tracing of potential patients and alerts the possible network of people, who might be infected by coronavirus.

3. Android Application based Smart Bus Transportation System for Pandemic Situations

Smart Bus Transportation System was introduced which guides the passengers in booking the bus tickets using the Android Application and it also helps the passengers to keep an update

on bus location based on their request. This system also sends alert message few minutes in advance to the passengers before the bus reaches the

passengers boarding point. This system also sends the precautionary instruction priorly to the passengers that have to be followed while traveling in the bus. In order to provide additional safety to the passengers the temperature of the passengers is monitored and intimated to the bus in change before they are permitted into the bus.

4. Social Distancing Inspection To Mitigate COVID-19 Using K-Nearest Neighbor

In this paper, a model is recommended where the total number of people present in the frame is detected using the YOLO object detection algorithm, and distance between each individual is measured Using K-Nearest Neighbour. If the distance between any two individuals is less than 6 feet or 2 meters then a red bounding box pops around them indicating that they are violating the rule of social distancing. This model is implemented on Raspberry Pi with a buzzer system for alert.

5. Social Distancing and Face Mask Monitoring System Using Deep Learning Based on COVID-19 Directive Measures

The author proposed a system consisting of data processing, data augmentation, image classification using mobilenetv2 and object detection. The modules are developed using TensorFlow and open-cv python programming to detect faces with masks. If a person wears a mask they will be in a safe zone and the system shows a green box where if the person doesn't wear a mask, then it will be shown in a red box and with the message of alert as well. Social distancing detection will detect that two or more person in a single frame are walking with maintaining social distancing with at least 2 meters of range with each other using the Euclidean distance method, it will work in a Reliable manner with accurate results during this current situation which will easily help to track the person and collect fine if they violate any government directive guidelines so our system, will prevent the spread of the disease. Every Automation process reduces manual inspection to inspect the people which can be used in public places to control the spread of the virus and this prototype could be used in many places like park, hospital, airports, temples, railway station etc. to control this pandemic situation

6. Application of Face Recognition in Tracing COVID-19 Fever Patients and Close Contacts

The author developed a face recognition system to detect patients with fever symptoms and to trace close contacts. A real-time alert is sent to the account manager on a web or mobile app to enable further actions to quarantine the patients and close contacts. The RGB camera is used to detect a face and locate theforehead. The thermal image of the face is used to measure the temperature of the skin in the forehead. A black body is optional to improve the temperature measurement accuracy. After a patient is confirmed, his identification can be recognized using face recognition. By face recognition clustering, all face images of this person in the past given period of time (e.g., 14 days) can be retrieved.

Furthermore, close contacts of this patient can also be retrieved from saved frame images or the camera ID and time stamp. The work [2] proposed a similar idea of using face recognition to trace fever patients and close contacts but did not give an algorithm on how to trace them. These retrieved results are displayed in an account console, and a notification is sent to the personnel (account manager) on duty in real time, and safety action can be taken to quarantine the persons, achieving the goals of stopping the virus spreading.

References

1. https://ieeexplore.ieee.org/document/9711880 2. https://ieeexplore.ieee.org/document/9432254 3. https://ieeexplore.ieee.org/document/9356316 4. https://ieeexplore.ieee.org/document/9388625 5. https://ieeexplore.ieee.org/document/9609407

6. https://ieeexplore.ieee.org/document/9356316