SOCIAL DISTANCING ALERT GENERATION SYSTEM : BREAK THE CHAIN

GROUP NUMBER : 8

SUBJECT : SOFTWARE ENGINEERING

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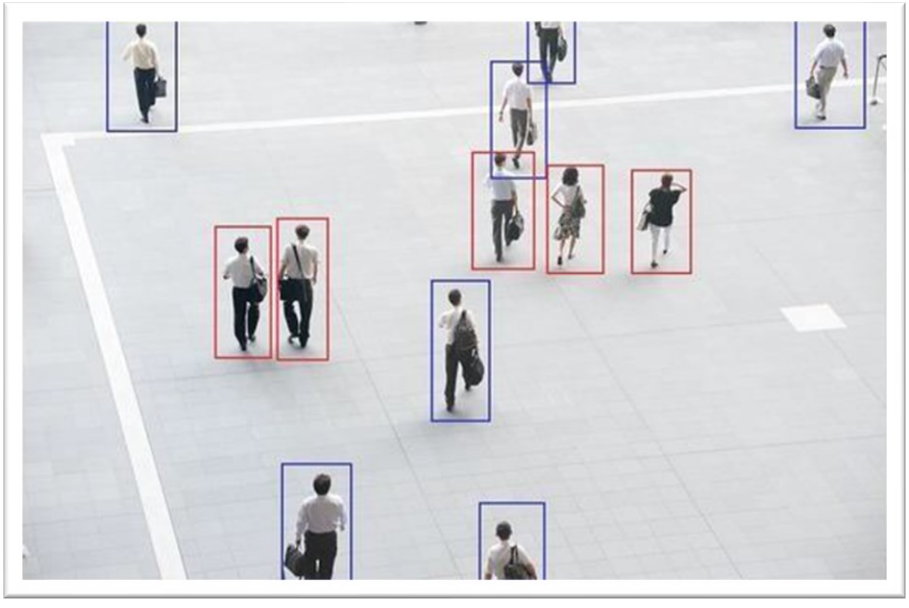

PROBLEM STATEMENT

Social Distancing – the term that has taken the world by storm and is transforming the way we live. The only way to prevent the spread of COVID-19 is Social Distancing. Keeping a safe distance from each other is the ultimate way to prevent the spread of this disease (at least until a vaccine is found). We decide to build up such a software that can deployed with the cameras and that software will tell us that the people captured in the camera follow social distancing rule or not.

PROPOSED SOLUTION

Build a tool that can potentially detect where each person is in real-time and return a bounding box that turns red if the distance between two people is dangerously close. This can be used by governments to analyze the movement of people and alert them if the situation turns serious. The software would work on real time video and generate alert when the social distancing would not be followed. After the situation becomes normal, we all must have to follow all the precautions for our safety. So, this software would be really useful even after this pandemic period. This software could be used at public places, social gatherings, family gatherings etc.

TECHNOLOGIES USED

A mobile application built using Flutter SDK that will use the mobile camera for real time monitoring of social distancing. For the backend we would be using the built in Machine Learning modules of Flutter for object detection. Flutter apps are built using Dart, a simple object-oriented programming language and make use of many of the language's more advanced features. For the front-end Flutter has built-in beautiful Material Design and Cupertino widgets, rich motion APIs, smooth natural scrolling, and platform awareness.

FUNCTIONAL REQUIREMENTS

The android application will have following features:

Social distance Monitoring: It will be the main feature of our mobile app. This feature is demonstration of how one can do social distance monitoring at public or private places. We will capture the image using the device camera only. It will

be a real time monitoring. We will be going to use AI object detection models for this purpose. Persons who would be captured in the camera would be bound by blue or red colored boxes, showing social distancing is followed or not by the people.

Get Covid-19 Stats: It will be a side feature of our mobile app. User will get to know about covid-19 stat in their district. One must have to enter their state and district correctly. If the provided info will be correct, then the stat for that district will appears on the screen otherwise India's covid-19 stat will appear. We will be using APIs for this purpose.

Apart from these, our application will be having function of detection of internet connectivity. As our app will going to use APIs, so for this purpose internet must be ON. So, whenever the internet will be OFF, a separate screen will be shown to user having a message *"Check your Internet Connectivity"*.

NOTE: If we able to achieve these two features before time then we also have a plan to add "Get Health News" functionality in our app. As it depends on time, so we will not include this feature in our UMLs at this time. When it completes then we will update the UMLs.

NON-FUNCTIONAL REQUIREMENTS

As it is going to be an android application, so it must be compatible for all types of android mobile devices. So, we will be going to use flutter technology for android development which handles this various screen size issue automatically. The user interface will be soothing to the eyes. The homepage will have two separate buttons, one for each feature. As we will going to use already built model for human detection in image stream, so performance will be quite nice. But there may be some inaccuracy in detection. Also, as we will going to calculate distance between two humans from image, so it may be inaccurate, but we will be going to do our best for calculating distance.