# A Contract Tracing based approach to classify regions according to COVID-19 contamination scores

Shourja Mukherjee
IIIT-Hyderabad
Hyderabad,Telangana
shourja.mukherjee@students.iiit.ac.in

## Abstract

*This paper proposes an approach to tackle the emerging COVID-19 cases using contact tracing techniques to enable faster and more efficient testing to locate hot-spots. Location data from affected patients devices can be matched with potential victims to alert and recommend isolation due to risk of contraction of the virus. Takes location and hospital data as input and provides hot spots and risk zones as output. The application also attempts to give contamination scores to each area in order to help estimate the risk in each area.*

## 1. Introduction

The COVID-19 pandemic has spread across the earth at an alarming rate and does not seem to be slowing down any time soon. The rate at which it is spreading makes it hard to track and this in turn causes the limited testing resources we have to not be utilised in the right places at the right times. We often end up using more resources in the locations that are at a lesser risk than the ones that are suffering bigger blows from the virus. One way to streamline and use resources efficiently by identifying the correct zones of contamination is contract tracing.

### 1.1. Contract Tracing

**Contact tracing is a technique used by public health authorities to measure and slow the spread of infectious diseases.** It requires gathering information from infected individuals about the people they've previously been in contact with. These people can then be notified by public health authorities to take appropriate safety measures, such as undertaking self-quarantine and getting tested.

Governments, public health authorities, and NGOs around the world are starting to deploy contact tracing as a valuable tool for managing the COVID-19 pandemic. It is a very good approach to solve this problem.

Technology can play an important role in those efforts. Mobile devices can be used in an automated and scalable way to help determine who has been exposed to a person that later tests positive, and sending a notification with instructions on next steps. Health authorities can then use this information to help control the spread of COVID-19.

## 2. Literature Review

## 3. System Architecture

The system makes use of the recent Google and Apple collaboration API which allows Public health services to use all mobile devices to collect location data. Contamination scores will be assigned to areas based on the movement and location matching data of certain affected individuals with non affected individuals.

The contamination score of each area is calculated by a location data matching algorithm. The main implication is that the more the movement of infected people collides with the movement of un-infected people, the higher the contamination risk and hence the higher the contamination score.

## 4. Conclusion and Future Work

## References

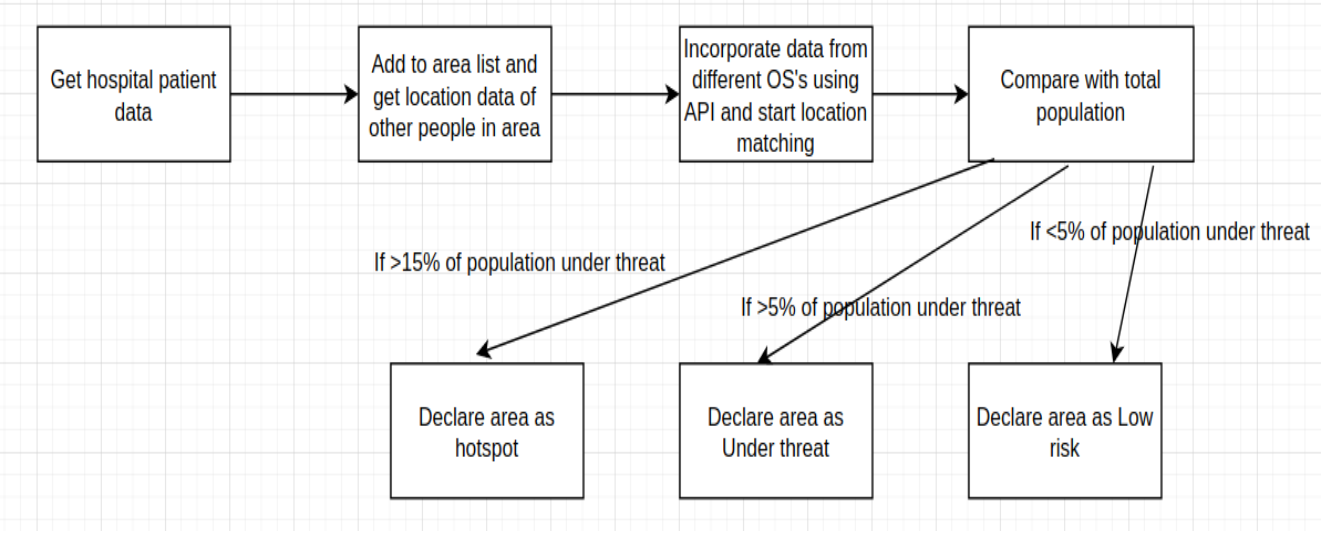


Figure 1. Overall flow of the software system.