Winter of Code - NITK (2020)
IET NITK

COVID-TRACKER

https://github.com/gaurav-chaurasia/covid-tracker

Domain and Tags

Web Development, App Development(flutter), Javascript, google Maps JavaScript API, segment tree.

What is the project about?

This project is to provide a platform on which one can look and get status of current situation nearby for example currently it very hard to find weather a person standing next to me has some symptoms of COVID-19 or not so the basic idea is that a registered user of this app can make ALERT and that way his locations will be store in database and then will be added on map so that other user could get a alert saying there is someone near you who might be corona positive.

What will the students learn/ Why is the project significant?

In this project we will be using many technologies but the core part of this entire project is to use geospatial data, store, and perform operations/calculation on that i.e.we can show how many users in 500m range with positive symptoms of any contagious disease(COVID-19).

- Segment tree
- Hilbert curve
- Google maps javascript api
- Queri on geospatial data (user in 500m)

Difficulty level - Hard

There are two parts of the project.

1) Simplay gets a user location who has symptoms and adds a data layer on map with all those points which represents that this particular location is a danger zone and you should take extra care while traveling in this area.
2) This part of the project is more challenging because instead of simply storing the longitude and latitude and then plotting it on a map we are going to calculate and give more statistical data such as how many users are in the 500m range.

Prerequisites/Skills

The initial idea was to build a web application but a mobile app would be better but still would be implementing both web and mobile versions of this app.

- Nodejs(web)
- Flutter(mobile)
- Google Maps JavaScript API(map)
- Hilbert curve (for converting 2D plane into 1D line)
- Segment tree

Deliverables expected

It could be used for any contagious disease for the first part of this application is straightforward and we can directly store users current longitude and latitude and then can plot it on the map.

Mentors

- Mentor 1 Gaurav Chaurasia
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- Mentor 2 Suhas Gopinath
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Recommended reading

Links to get started off with the project.

Hilbert curve:

https://youtu.be/3s7h2MHQtxc

Google's S2:
https://blog.christianperone.com/2015/08/googles-s2-geometry-on-the-sphere-cells-and-hilbert-curve/

https://blog.mapbox.com/a-dive-into-spatial-search-algorithms-ebd0c5e39d2a

https://developers.google.com/maps/documentation/android-sdk/overview

https://developers.google.com/maps/documentation/javascript/overview

https://developers.google.com/maps/documentation/javascript/get-api-key

https://developers.google.com/maps/documentation/javascript/geolocation