Beuth Hochschule für Technik Berlin

Tracking a Location of a Device in Real Time

Faculty III – Civil Engineering- and Geoinformation

Course of Study - Geoinformation

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Mobile Geoanwendungen F1

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Introduction

The concept of the apps is to show the GPS features of any devices like Smartphones or smart watches or even could be for pet animal tracker.

Upon clicking the location button, the exact location of the devices will be displayed on our smart devices and updated as soon as the devices are moved on.

The longitude and latitude of the device location is to be requested on the User-Interface (UI), upon which it provides the exact location as well as the address of the longitude and latitude with the help of Geocoding are to be displayed.

Background and Research

The basic idea of my App was to show the real time location of the device along with the longitude and Latitude with the help of GPS available in our devices and send the actual address of the device via instant messaging via Email or as a Whatsapp SMS.

For my Project, I have used Google Map as a Basemap, as it is widely used and also trustworthy. To use Google Maps as a Basemap firstly I need API keys which i got from Google developer account, as API keys helps in identifying and calling the project from application Site.
Likewise, "Android Studio" as a platform for Java based programming.

Implementation and Objective of the Application

Initially the **Dependency** was included in the android application(Gradle).
         --> implementation **'com.google.android.gms:play-services-location:17.0.0'**
After that a service was created to get the location and even when the user is busy on using another application the location service continues on providing the background location.
After that **FusedLocationProviderClient** was initialised, which helps in getting the location address through various clients such as GPS or through the WLAN which are used by the actual devices.
Requesting a location is done through **LocationRequest** which determines the users need to get the updated location.

After that **Locationcallback** as soon as the new location is updated the user gets the newly updated location through LocationCallback.
OnSuccessListener helps in locating the users Location and sends the successfully located location and updates the user interface(UI).
With the help of **Geocode**, the latitude and Longitude are converted to the postal address.
And finally **Sharing the actual location** of the devices through instant Messaging or via Email.
The Map API key(Maps SDK for Android) was provided by google through google cloud platform for developers.
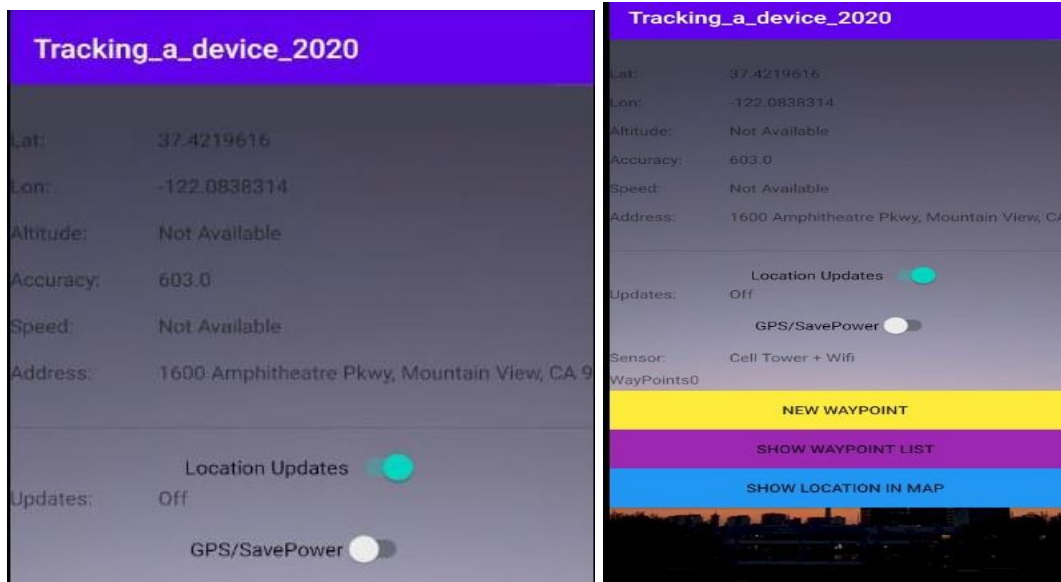
Some screenshots from the project.are below :
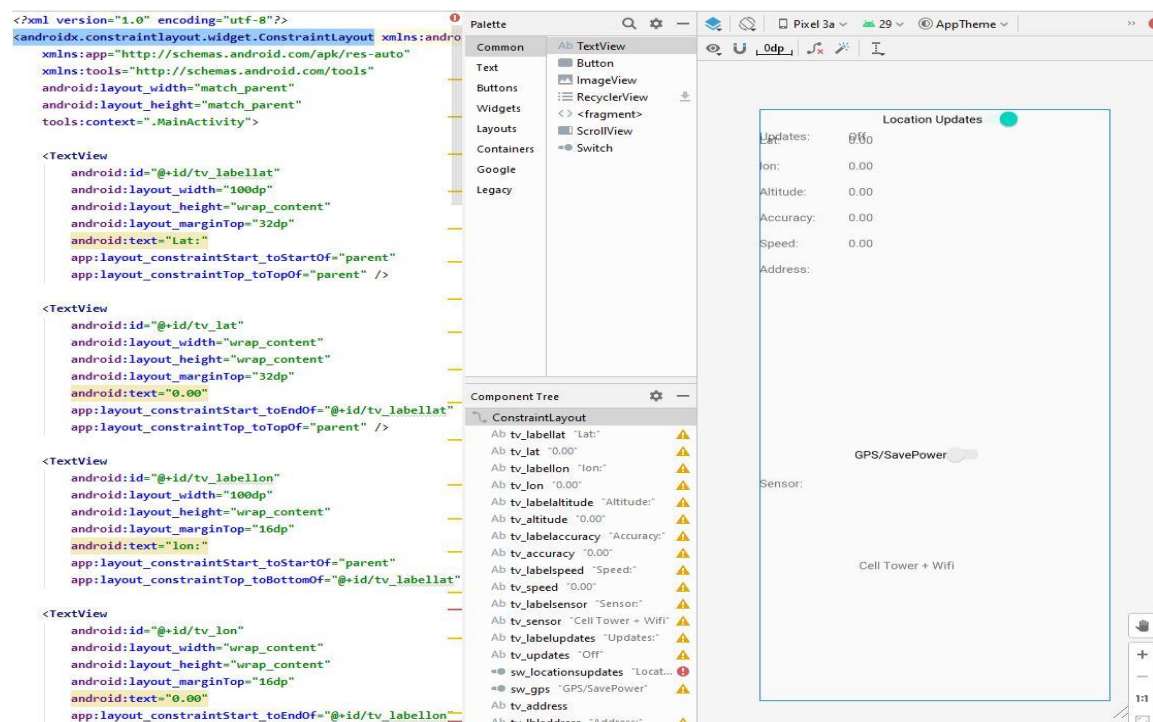
Img. 1: Initially the UI (right) looks like this.
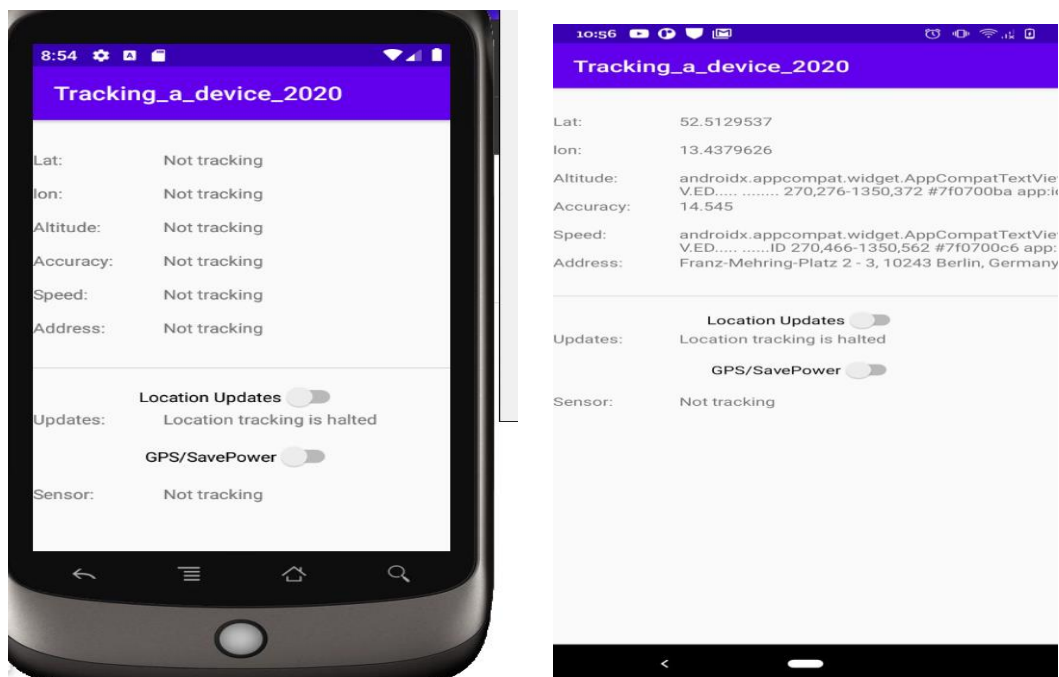

Img(2) Screenshots from the android Emulator

Img (3) App on the final appearance on Emulator

Sharing the device location

Since the lower end of the application seems empty and unattractive, I decided to add a share button so that the app looks good and also a pretty good idea to share my location as SMS or through an EMail.
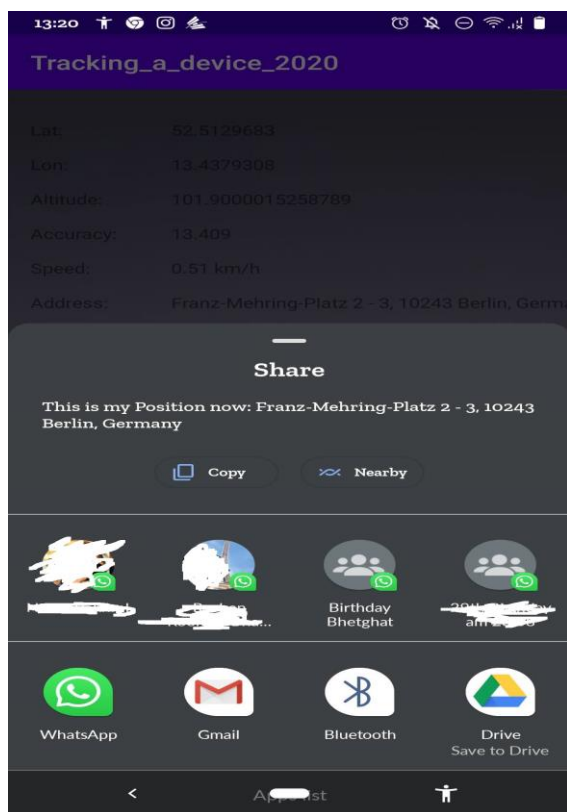
I have tried here also on my real device and it works fine without any errors. Below I have added some of the images from the emulator and also from a smartphone.
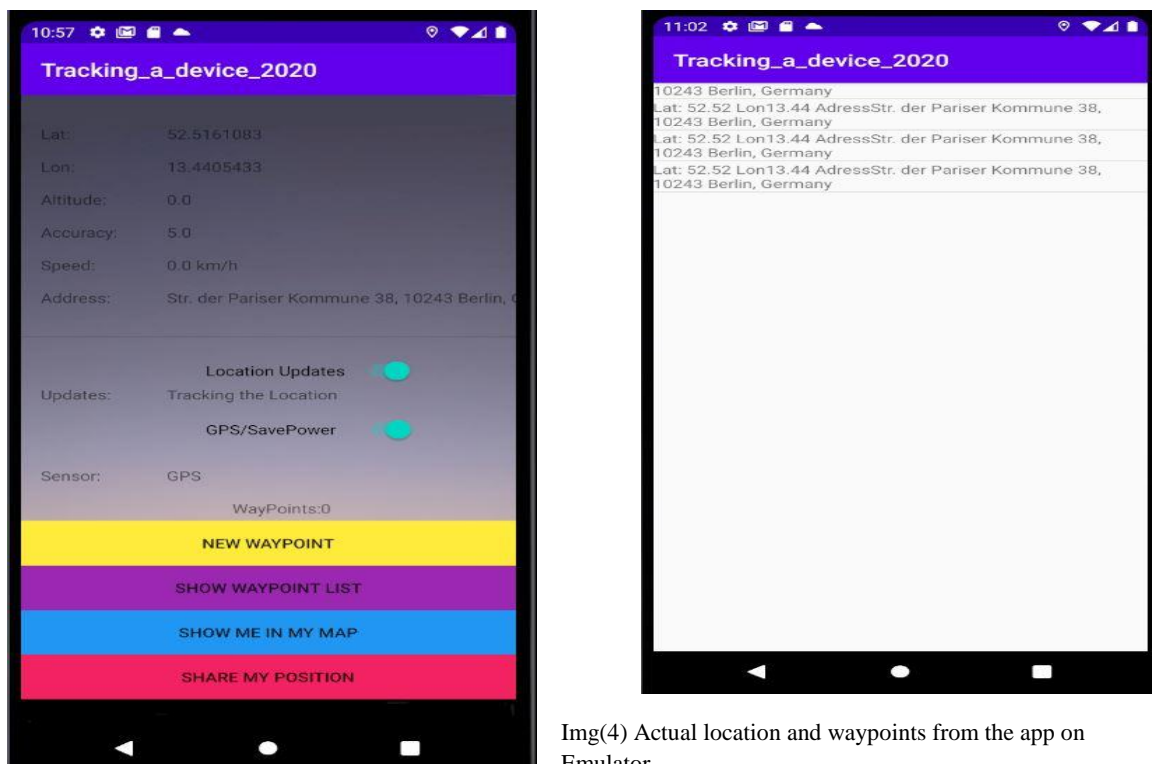
Img(4) Actual location and waypoints from the app on Emulator
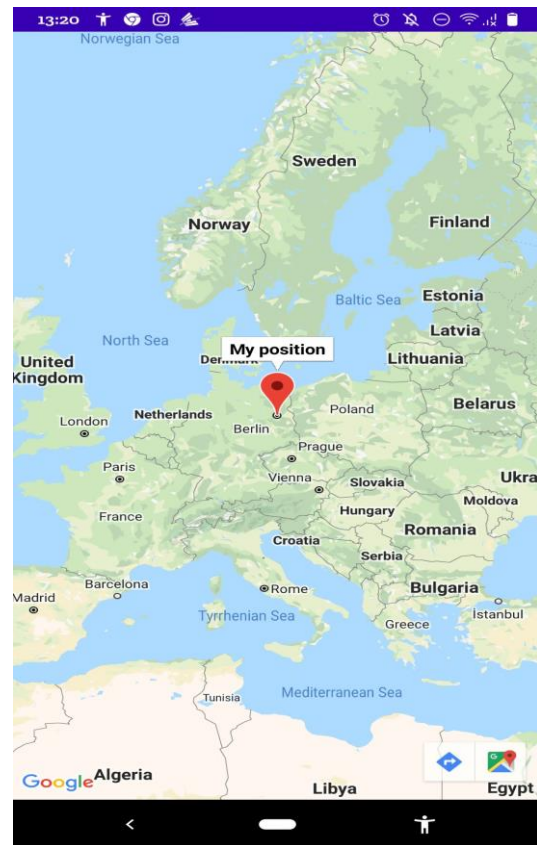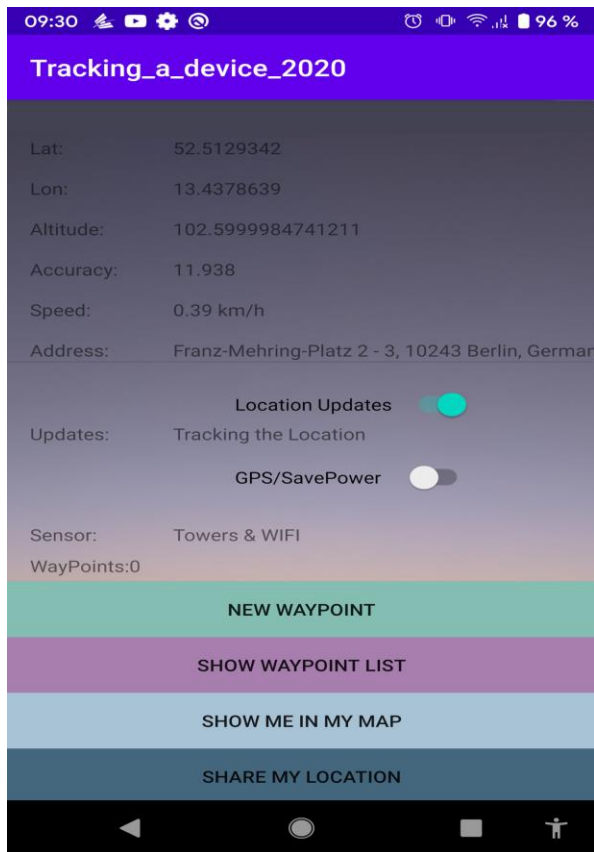
Img(5) An image from a real smartphone where Latitude, Longitude, Altitude, Speed, Accuracy are shown.

Img(7) Using share button the actual location of the devices can be shared

Sources:

1. Android studio

2. appdome.com

3. github.com

4. Google Maps developer [developer.google.com]

5. Google Cloud platform (console.google.com)

6. mapstyle [mapstyle.withgoogle.com]

7. nextpit.com [https://www.nextpit.com/how-to-share-location-on-android#:~:text=Go%20to%20the%20WhatsApp%20conversation,be%20entered%20into%20the%20conversation.]

8. stackoverflow.com