Navigation Assistant for Visually Impaired (NAVI-OSM)

TEAM MEMBERS

- *ARJUN BHARDWAJ* *2016ME10754*
- *HARMAN MEHTA* *2016BB50003*
- *TANMAY GOYAL* *2016ME20757*
- *UTKARSH AGRAWAL* *2016ME20755*

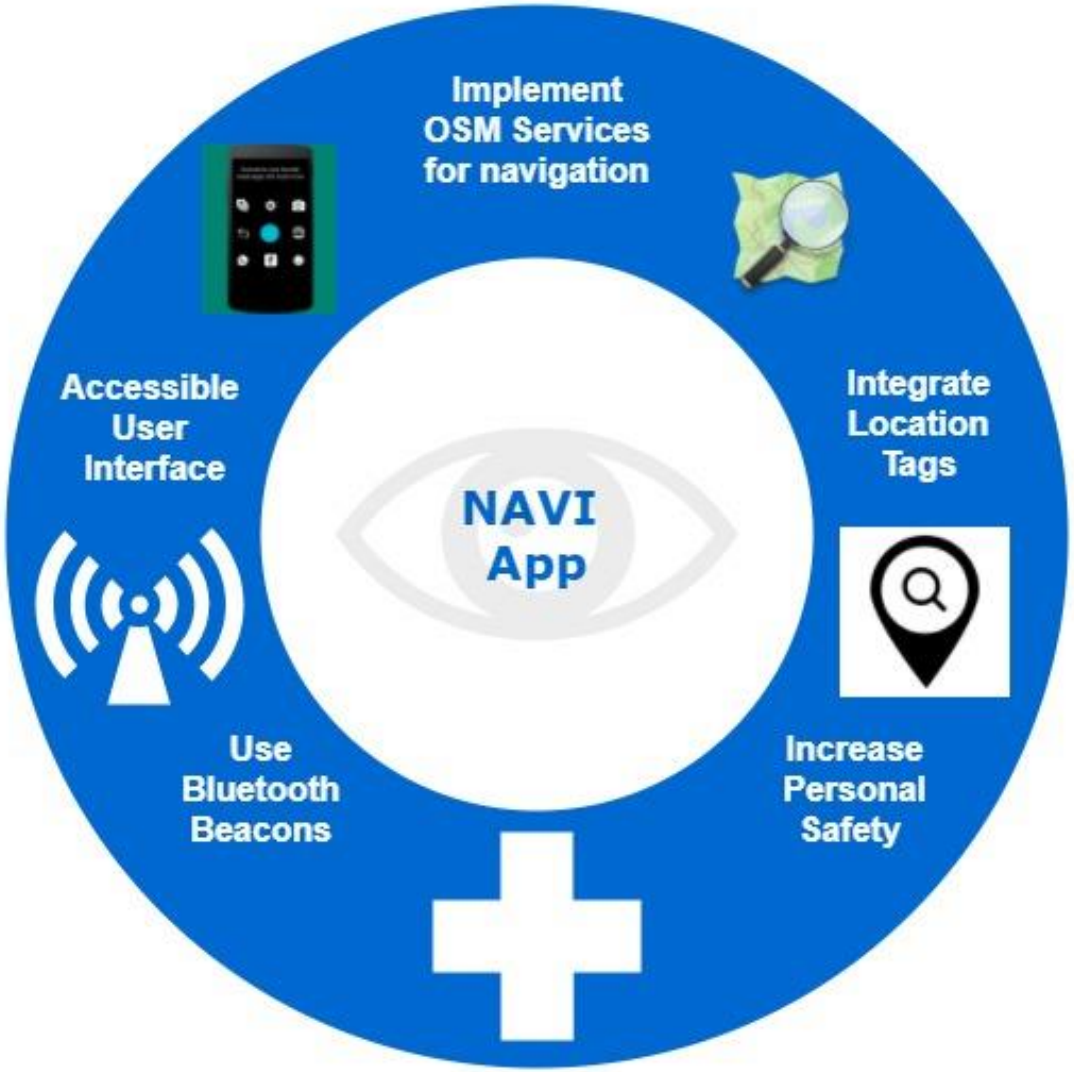
MENTOR

MR. PIYUSH CHANANA

OBJECTIVE OF NAVI

The objective of this project is to develop a fully functional Android Application to navigate visually impaired persons to the desired destination.

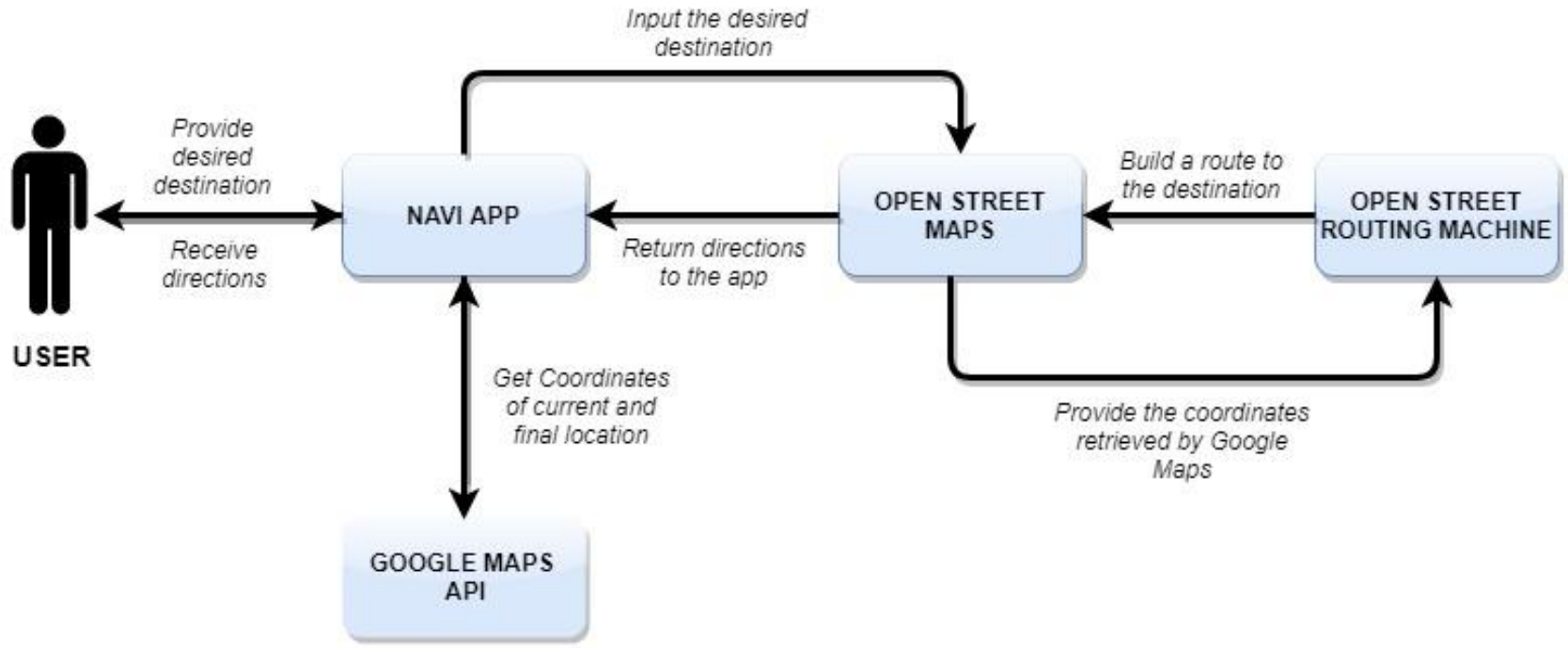
The platform should be reliable, easily customizable, crash free and should cater to a wide range of navigational difficulties of the visually impaired.


Implement
OSM Services
for navigation
Accessible
User
Interface
Integrate
Location
Tags
NAVI
App
Use
Bluetooth
Beacons
Increase
Personal
Safety

Comparison between Google Maps and Open Street Maps

FEATURE	GOOGLE MAPS	OPEN STREET MAPS
Full Extra Functionality	Full functionality is available only in a few countries	Full functionality is available everywhere
Directions	Yes	Yes, third party
Wheel-chair Directions	No	Yes, third party
Weather	No	Yes, third party
Degrees of motion	Vertical, horizontal, depth, rotation (beta), 360 panoramic (Street View), 3D mode (Google Earth JavaScript)	Vertical, horizontal, depth
Map data providers	MAPIT, Tele Atlas, DigitalGlobe, MDA Federal, user contributions	User contributions, open data and data donations

App Design


Input the desired destination
Provide desired destination
Receive directions
USER
NAVI APP
Return directions to the app
OPEN STREET MAPS
Build a route to the destination
OPEN STREET ROUTING MACHINE
Get Coordinates of current and final location
GOOGLE MAPS API
Provide the coordinates retrieved by Google Maps

Testing and Demonstration Plan

Testing –

- Testing and debugging during each phase
- Testing with potential users (visually impaired people) to find out the limitations of app.

Demonstration –

- The app will be demonstrated on a selected, well-defined path (having all the requisite tags) in Open House.
- The app will be demonstrated on both - sighted people and visually impaired people to demonstrate accuracy and reliability of app

Timeline

10th January – 31st January

Getting started with the project

- Understanding the code structure of the existing NAVI app, including its algorithm and limitations.
- Basic understanding of app development on Android Studio

1st February - 23rd February – Ist Phase

Integration of Tags on selected routes (Arjun and Utkarsh) -

- Collection and storage of data in necessary format
- Bug Identification

Distance Information (Tanmay and Harman) -

- How do we inform the user of his progress
- How would he know that he has reached

24th February – 10th March – IInd Phase (Harman, Piyush sir)

Testing with blind users

- Identification of problems in compatibility

7th March – 21nd March - Modification

- Incorporation of necessary changes based on previous work (user-review) - Arjun and Tanmay
- Bug fixes – Harman and Utkarsh

30th March – 18th April – IIIrd Phase

Testing with blind users

- Identification of problems in compatibility
- Path direction and turning angle (challenging phase) – Tanmay and Utkarsh
- Use of Bluetooth Beacon (optional) or some other hardware device (if necessary) – Arjun and Harman

Optional Work (if time permits):

- User Interface (working on design to facilitate improved blind user-computer interaction
- Initiation of development of a ‘Smart Wristband’ (app-controlled)

Thank You