

# N Indicator: A Tourist Information Mobile Application for Nagpur City

*A Smart and Modern Way to Travel*

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**Abstract:** In our current tourism system, whenever a tourist visits a monument or a famous spot or any particular city, to know more about the place or the city, he/she hires a guide or searches the internet. The role of the guide is being taken up by the different services and applications with the ever-increasing advancement in technology. The huge increase in usage of smartphones has made it easier to provide different applications available to the tourists 'on the go'. In this project, we are making an android based mobile application that can be used as a guide by the tourists or the people visiting the city for any particular reason like work, attending seminars or conferences, etc.

**Keywords:** GPS, Google Maps, JSON, API, Location, Weather, Flight Schedule, Train Schedule.

## I. INTRODUCTION

Nowadays, mobile phones have become a necessary part of people's life. There is a continuous rise in the number of mobile computing applications centred on people's daily life. Tourism & travelling is one of the areas in which the user can benefit from smart phone applications. Tourism employs about 20 crores people and serves around 70 crores tourists worldwide making it probably the largest industry in the global world economy. By 2020, the number of tourist arrivals around the world is expected to increase by over 200%[1]. Tourism industry is also responsible for generating an estimated 11% of the global gross domestic product(GDP)[1]. Nowadays, there is vastly enriched travel information which is available to the tourists on the Internet and through the various apps. But, there are very few or close to none mobile applications that provide all the necessary travelling information or information regarding all the important places and offices within a particular city which may be very useful for the people that are on a visit in that city as well as the regular residents of that city.

Our project eliminates the importance of a guide in tourism as it provides all the necessary information about the important places and offices as well as modes of transportation available in the city of Nagpur, present in the State of Maharashtra, India. It is an android based mobile application that can be a lot useful for the tourists visiting the Nagpur City as well for the city's regular permanent residents. N-indicator is public utility app which is a mobile application that basically provides information or data about public transportation, Hospitals, Police Stations, Blood Banks, Market Places, Cinemas, Hotels, ATMs, Hospitals available in Nagpur City. It gives details about trains and flights arriving and departing from the Nagpur City in the real time. Nagpur railway station is one of the busiest railway station in central India with around 1,60,000 passengers embarking and disembarking daily in around 228

trains coming to the station. All major cities around India like Mumbai, Hyderabad, Kolkata, Chennai, Bengaluru and New Delhi have direct trains running from Nagpur railway station. The main objective of app is to make user familiar to the city, especially the one who don't belong to Nagpur i.e. non-residential people in Nagpur.

## II. TECHNOLOGIES USED

### A. Android

Android is a Linux-based operating system widely used for mobile devices. It was developed by the Open Handset Alliance, led by Google and other companies. It has become the largest growing operating system for mobile devices. The application can run on any of the android powered devices, when a developer develops an app for android.

Our app is made for devices with Android operating system. The app requires an Android OS with an API 11, that is, v3.0 (Honeycomb) or higher. The device should have an inbuilt camera and an active internet connection.

### B. Framework 7

Framework 7 is a open source and free mobile framework used to develop web apps or mobile apps with Android and IOS native look and feel. It has found its use in the prototyping phase in the software development industry[2].

### C. Google Positioning System (GPS)

The GPS navigation system is a constellation of 27 navigation satellites out of which 24 are active and 3 act as backup. These satellites are used for providing the time and location information to any device. The devices have an inbuilt GPS receiver that communicates with the satellites through the use of radio waves. To provide the information, the device must be in unobstructed line of site to four or more GPS satellites. For finding out the location of the device the GPS receiver must determine the location of at least three satellites above it and the location of the device relative to these satellites. The exact location of the user is then determined by using trilateration.

### D. Google Maps API

Maps can be added to any application by using Google Maps Android API. The API adds maps to the application based on Google Maps data. It handles everything required to display maps in the application from access to the Google Maps server to response to map gestures. To use the Google Maps Android API, the developer must register his/her app project on the Google Developer Console and get a Google API key which can

be added to the app. The API key is necessary to access the Google maps server.

To incorporate Google Maps in our app we have made use of the GoogleMapsActivity provided by Android Studio. Using this activity android studio automatically generates all the files required for integrating Google Maps. We have to put the API key for the project in the google\_maps\_api.xml file generated.

**E. JavaScript**

JavaScript (JS) is a lightweight, interpreted, or just-in-time compiled programming language with first-class functions. While it is most well-known as the scripting language for Web pages, many non-browser environments also use it, such as Node.js, Apache CouchDB and Adobe Acrobat. JavaScript is a prototype-based, multi-paradigm, single-threaded, dynamic language, supporting object-oriented, imperative, and declarative (e.g. functional programming) styles[3].

**F. Open Weather Map API**

Open Weather Map is an online service that provides weather data. It is owned by OpenWeather Ltd, London, UK. It provides forecasts, current weather data and historical data. More than 20 APIs have been developed for getting different types of weather data

**F. Android Studio**

Android Studio is the official integrated development environment (IDE) for Google's Android operating system. Android Studio is built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. It is available for download on Linux, macOS and Windows based operating systems. It replaced Eclipse Android Development Tools (ADT) as the primary IDE for native Android application development[4].

It has peculiarly been used to provide a native wrapper to the web content of N-Indicator application.

**F. HTML 5**

HTML5 is the latest evolution of the standard that defines HTML. The term represents two different concepts. It is a new version of the language HTML, with new elements, attributes, and behaviours, and a larger set of technologies that allows the building of more diverse and powerful Web sites and applications[5].



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**III. COMPARISON WITH EXISTING WORK**

Some of the already existing apps similar to our application are listed below.



**A. m-Indicator**

**m-Indicator** is a tourism and transportation related mobile application that primarily provides information about public transportation in the cities of Mumbai and Pune. It has been downloaded by over 1 crore users till date. It was created in 2010 by an IT engineer, Sachin Teke. Sachin Teke is founder and CEO of Mobond Software Consultancy that owns the application. m-Indicator hosts a unique chat feature on real time information regarding cancellation or rescheduling of train services is shared by Mumbai's millions of commuters.

**B. Bangalore Guide**



**Bangalore Guide** is also a tourism and transportation related android mobile application that primarily provides information about public transportation in the city of Bangalore. It is developed and owned by GSquare Technology based in city of Pune. GSquare Technology also developed and owns a similar Pune based transportation application called Pune Guide. The application is currently downloaded by over 10,000 users.

**IV. WORKING**

In this section we will describe the working of our app. This section shows all the functionalities provided by this app.

**A. The Home Screen**

A main screen or home screen (Fig. 1) is the first screen of any application. This screen gives the main functionalities and features of the application. The main screen of our application contains buttons and slides for each of the functionalities provided by the application. These buttons and slides are:

- About Nagpur
- Train

- Flight Info
- Weather
- Hotels
- Hospitals
- Police

Fig. 1 Home Page

D. 'Flight Info' Button

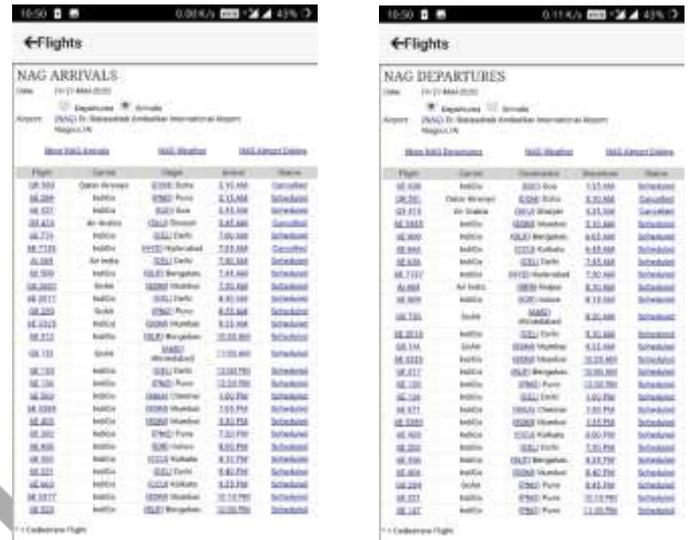


Fig. 4 'Flight Info' Button: Nagpur Arrivals and Departures

B. 'About Nagpur' Slide

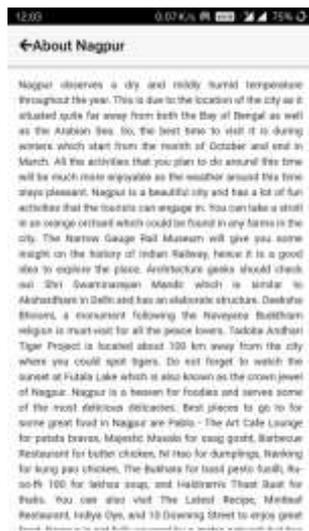


Fig. 2 About Nagpur Slide

- Emergency
- Banks
- Petrol
- Shopping
- ATM

This slide gives proper information about Nagpur City. The screen shown (Fig. 2) will be displayed when this slide is clicked. This slide is designed to provide the people visiting the city or the tourists a brief overview of the Nagpur City. This screen provides following information about Nagpur:

- Best time of the year to visit Nagpur.
- Typical climate of Nagpur.
- Some famous locations and places to visit in Nagpur.
- Tourist destinations such as tiger reserves which are located along the vicinity of the Nagpur.

The 'Flight Info' button on clicking displays the following screens as shown in the Fig. 4. It displays the following information regarding flights arriving at or departing from the Babasaheb Ambedkar International Nagpur Airport: flight number, carrier's name, destination or origin of the flight, arrival or departure time of the flight and the current status of the flight (ex: delayed, cancelled, etc.)

E. The 'Weather' Button

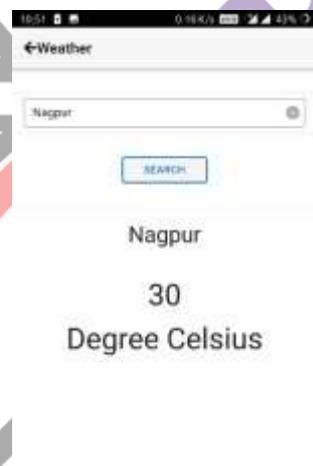


Fig. 5 'Weather' Button

The 'Weather' Button on clicking displays the following screen as shown in Fig. 5. The user can type the name of the city whose current weather information they want to know in the search box provided and upon clicking the 'search' button it will show the current weather information like temperature of that particular city.

C. 'Train' Button



Fig. 3 'Train' Button

The 'Train' button is used for obtaining the real time information about the trains arrivals and departures at the Nagpur Railway Station.

This button provides following functionalities and features regarding trains (Fig.3):

- Name and train number of train that is scheduled to arrive at the Nagpur Junction.
- Platform number at which the train will arrive.
- Platform number from which it will depart along with the train's expected departure time.
- Weekly timetable of that particular train.
- Types of bogeys/classes available in that train. (ex: SL)

F. The 'Hotels' Button



Fig. 6 'Hotels' Button

The 'Hotels' Button on clicking displays the following screen as shown in Fig. 6. It shows the nearby hotels that are present in the Nagpur City with the help of Google Maps. The user can click on a particular hotel's location to view details of that particular hotel such as the hotel's name, hotel's address, user ratings along with an option to view the hotel on the Google Maps application by clicking the 'View larger map' link. The user can change the view into satellite view (and again into normal view) by clicking a button present at the bottom left corner. The user can reload the whole screen by clicking the reload button present at the bottom of the screen.

H. The 'Police' Button

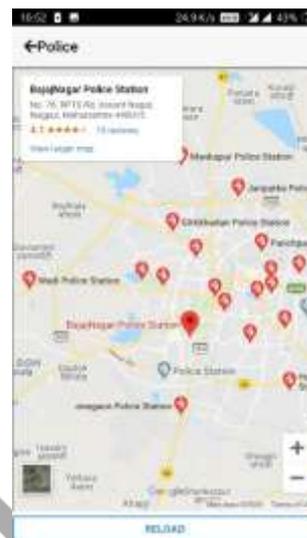


Fig. 8 'Police' Button

The 'Police' Button on clicking displays the following screen as shown in Fig. 8. It shows the police stations that are present in the Nagpur City with the help of Google Maps. The user can click on a particular police station's location to view details of that particular police station such as the station's name, station's address, user ratings along with an option to view the police station on the Google Maps application by clicking the 'View larger map' link. The user can change the view into satellite view (and again into normal view) by clicking a button present at the bottom left corner. The user can reload the whole screen by clicking the reload button present at the bottom of the screen.

G. The 'Hospitals' Button

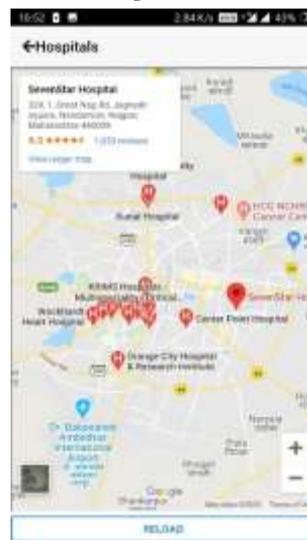


Fig. 7 'Hospitals' Button

The 'Hospitals' Button on clicking displays the following screen as shown in Fig. 7. It shows the nearby hospitals that are present in the Nagpur City with the help of Google Maps. The user can click on a particular hospital's location to view details of that particular hospital such as the hospital's name, hospital's address, user ratings along with an option to view the hospital on the Google Maps application by clicking the 'View larger map' link. The user can change the view into satellite view (and again into normal view) by clicking a button present at the bottom left

corner. The user can reload the whole screen by clicking the reload button present at the bottom of the screen.

I. The 'Emergency' Button



Fig. 9 'Emergency' Button

The 'Emergency' Button on clicking displays the following screen as shown in Fig. 9. It shows a stacked menu list of the various emergency contact numbers of important government offices and emergency services. It shows the emergency contact numbers of the following offices or services:

- Police
- Commissioner of Police
- Fire Brigade
- Railway Enquiry
- Nagpur Municipal Corporation
- Blood Donation
- Ambulance
- Anti-Corruption

J. The 'Banks' Button



Fig. 10 'Banks' Button

The 'Banks' Button on clicking displays the following screen as shown in Fig. 10. It shows the nearby banks that are present in the Nagpur City with the help of Google Maps. The user can click on a particular bank's location to view details of that particular bank such as the bank's name, bank's address, user ratings along with an option to view the bank on the Google Maps application by clicking the 'View larger map' link. The user can change the view into satellite view (and again into normal view) by clicking a button present at the bottom left corner. The user can reload the whole screen by clicking the reload button present at the bottom of the screen.

L. The 'Shopping' Button

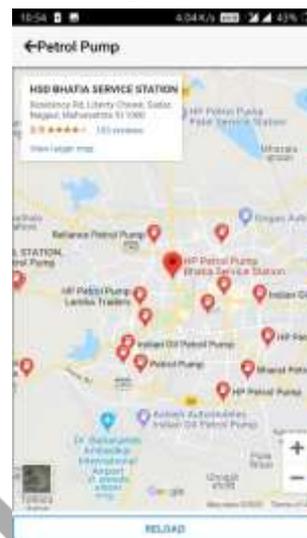


Fig. 12 'Petrol' Button

The 'Shopping' Button on clicking displays the following screen as shown in Fig. 12. It shows the nearby shopping malls that are present in the Nagpur City with the help of Google Maps. The user can click on a particular shopping mall's location to view details of that particular shopping mall such as the mall's name, mall's address, user ratings along with an option to view the shopping mall on the Google Maps application by clicking the 'View larger map' link. The user can change the view into satellite view (and again into normal view) by clicking a button present at the bottom left corner. The user can reload the whole screen by clicking the reload button present at the bottom of the screen.

K. The 'Petrol' Button



Fig. 11 'Petrol' Button

The 'Petrol' Button on clicking displays the following screen as shown in Fig. 11. It shows the nearby petrol pumps that are present in the Nagpur City with the help of Google Maps. The user can click on a particular petrol pump's location to view details of that particular petrol pump such as the pump's name, pump's address, user ratings along with an option to view the petrol pump on the Google Maps application by clicking the 'View larger map' link. The user can change the view into satellite view (and again into normal view) by clicking a button present at the bottom left corner. The user can reload the whole screen by clicking the reload button present at the bottom of the screen.

M. The 'ATM' Button



Fig. 13 'Banks' Button

The 'ATM' Button on clicking displays the following screen as shown in Fig. 13. It shows the nearby ATMs that are present in the Nagpur City with the help of Google Maps. The user can click on a particular ATM's location to view details of that particular ATM such as the ATM's name, ATM's address, user ratings along with an option to view the ATM on the Google Maps application by clicking the 'View larger map' link. The user can change the view into satellite view (and again into normal view) by clicking a button present at the bottom left corner. The user can reload the whole screen by clicking the reload button present at the bottom of the screen.

V. FUTURE WORK

The implementation and use of the proposed app will replace the current guides with 'electronic guides'. These 'electronic guides' can act as universal travel guides and tourists do not need to hire a new one at every new place. Some enhancements that can be carried out in the future in this app are:

- Metro route will be added.
- News around the world will be added.
- User will get the real time notification.
- Module that provides schedule of city buses.

- Although Google Maps dominates the mapping industry, there are viable open-source alternatives that have no copyright restrictions and let the crowd update the map. OpenStreetMap is the leading name in this area and powers travel app Citymapper.
- Instead of relying on a computer to provide you with a series of boring left and right turns, Nagpur Indicator wants friends to share directions with each other, including memorable stops between A and B.
- Mapping the virtual and physical world

The use of this app during travelling will make it an even more wonderful experience as tourist will not have to go through the hassle of hiring a guide at every place they visit.

## VI. CONCLUSION

The main purpose of this project is to eliminate the need of a hired guide. The app we are proposing can provide the following results:

- Real time schedules for trains, airways.
- Real time weather information for a particular city.
- People will be able to find trains, airways routes going away or coming towards Nagpur.
- To make user familiar to the city, especially the one who don't belong to Nagpur i.e. non-residential people in Nagpur.
- Information about picnic spots in the vicinity of Nagpur, hotels, hospitals and movie and drama theatres.
- Important contact information of various government organizations, police stations, NGO's, women's grievance cells.

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