Name - Subodh Dharmadhikari

Class - Msc CA Data Science

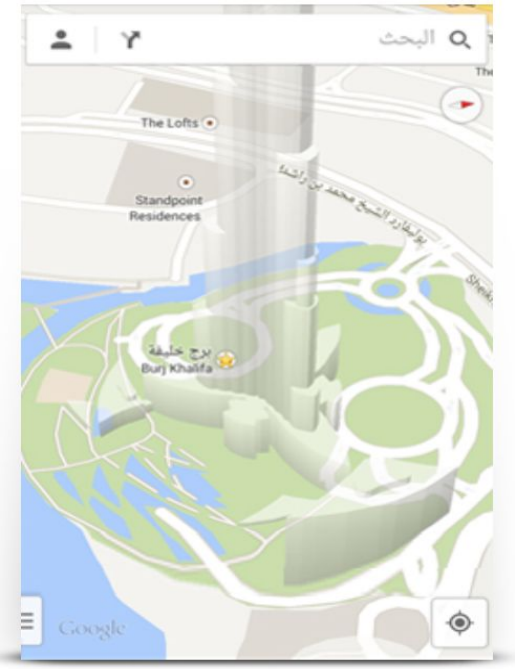
PRN - 18030142043

Course - Mobile Analytics

Google Maps

Brief History

Google maps was in the form of C++ desktop application in the company where 2 which was acquired by google[in 2005] and converted into web app and then in responsive web app later.



Initially there were many problems as detailed info was not available for many country so they followed different strategies to collect data i.e. through dedicated mapping vehicles, satellites, yellow pages and available map information.

The product improved drastically after popularity of GPS enabled smartphones and the adopted method of crowdsourcing through it.

Google earth is 3D extension of maps.

Now they are moving in era of Visual Positioning System.

The inception of cheap-feature rich smartphones boosted the accuracy of data and further idea for launching new features.

Google acquired ZipDash and started using its technology from 2007 for real-time traffic monitoring

Features more convenient on App

1 We get voice navigation assistance in real-time on mobile while travelling.

2 We can add locations where we frequently travel.

Our traveling patterns are analyzed by apps and we get notified based on that.

i.e. when I am about to leave the college I get notification about my traveling time required and traffic conditions which helps in planning sometime other things.

3 If I keep my location service active then timeline is generated which helps to remind Sometimes and you can see your monthly activity on maps.

4 We can share location to coordinate for direction while meeting or to monitor minors. We can even find lost phone if we are logged into the phone.

5 Maps has introduced bike mode in India to guide for shortcut bike only routes[avoid in the night] and to avoid suggesting routes are allowed for bikes[4 wheelers only route based on time i.e. Lakadi Bridge 9AM - 9PM]

6 When I go any public transport location and wait then I get notification about timetable of incoming options.i.e PMT buses based on route I have searched.

7 We can select area and download map for offline use.

8 We get to know about crowded timing of particular timing when search it for last minute.

9 Maps shows blue color torch with pointer which shows exact navigation pointing and helps us to forget south-north-direction conflict

10 We can add multiple locations within our routes and reminders helps us leave from places on time.

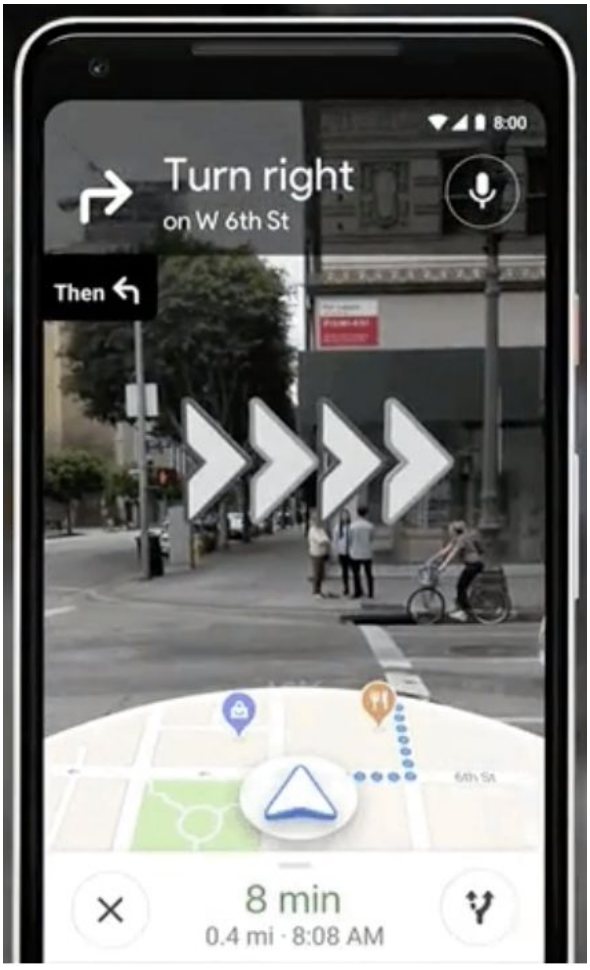
9 We can compare and book cabs or flights in few countries which helps to save a bit money. I.e ola or uber on the go.

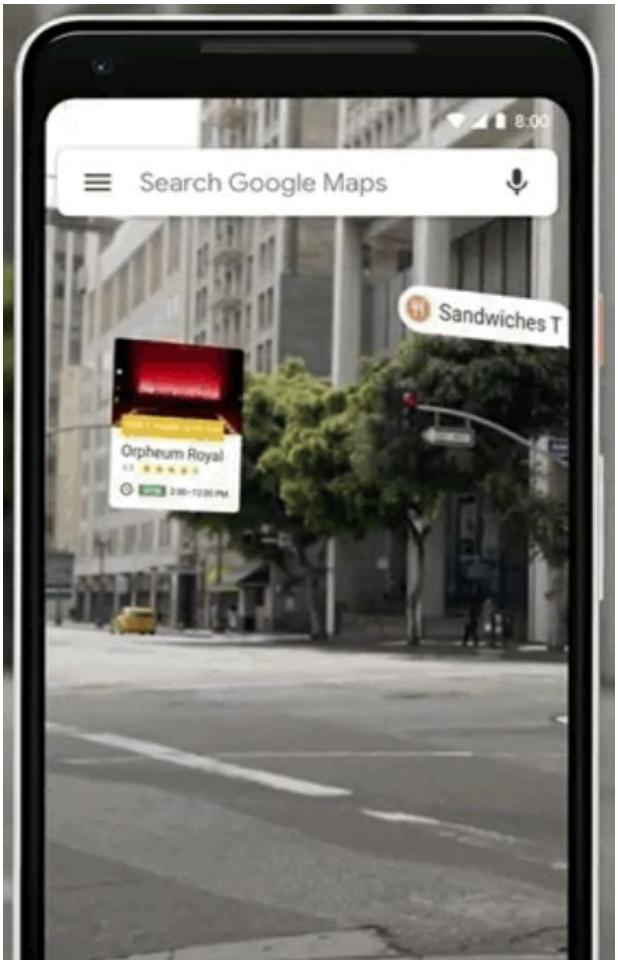
10 Indoor maps and outlines helps to navigate in large structures like malls.

11 Street view helps micro navigation and we get to know about landmarks.

12 We get notification about natural disasters to stay away from them and save our life.

13 We can take photo or video and upload on the go. Visual Positioning example -





Features similar on Responsive Webapp

1 We can search the location[broader term it could shop or IT park or Government Establishment or anything meaningful to be directed for], lat-long or simply zoom in to explore - distance will be shown when we click on locations nearby.

2 We can choose transit mode - Bus,Train,Tram or Metro subject to location.

We can choose best route based on lower - transfers,traffic,cost or walking required.

3 We get idea about routes available, best route, real-time traffic and time required

4 We can contribute proactively to google maps and earn point which give benefits like early access to newly launched google products or some other benefits.

Once someone contribute to maps significantly then that person get local guide badge whose reviews are generally taken seriously by audience.

Reviews give information about that particular location and its pros and cons sometimes some minor details given in reviews benefits customer for availing decisions.

5 Small businesses get visibility and if they provide good service then through reviews they get popularity with chances to have growing customer base.

Businesses have to verify their location through pin received by postal service.

6 We can get streets view.In some countries streets views are updated every 2 weeks and they are not older than 3 years in most places.

7 We get weather details for most locations in realtime to plan our short time vacations.

8 We get to know nearby hospitals , ATMs, banks, fuel stations[with real time prices in some countries],coffee shops, restaurants, parking lots, groceries, post offices from first screen itself.

9 We get bird eye view and even city touring of new locations.Maps API was free till 2018 which enables developers to integrate maps with their application.

Analytics and Machine learning behind Google Maps

1 Real-time predicting based on historical as well as current data.

2 Personalised updates - traffic,public transit and reminders

Captures data and adopts travel patterns for notification.

For you tab gives suggestions based on historical data.

3 Interpretes signs displayed on roads and suggests routes based on imagery data.

4 Interpretes changes in street-view and shows timelapse.

5 Improvises routes - if some some new route is started and people started using it then based on crowd sourced data new route is automatically added in maps.

6 If traffic is diverted because of some reasons based on crowd sourced data then prefered route is altered for all possible commuters in suggestion or through notification and when normal traffic starts on that route then again it is suggested.

7 Data is used to get geological information.

HDFC bank app only features

1 We can generate and use QR code.

2 UPI transfer is easy on app.

3 OTP can be used with one tap.

4 Easier integration with other apps i.e contacts with bank account number can be used directly for payment.

5 Easy login with MMID.I can access my mPassbook

6 More secure because its isolated -no cookies-less digital footprints.

They are App Store approved.It has lite version for lower end phones.

7 Brand awareness and customer engagement as customer tend to spend more time on app than web app.

I am not lazy but I find one tap access is easy than manually entering the address or opening it with bookmarks

But yes people will access brand more often if it could be opened with one tap.

8 Easy micro management of account with UI - easy overall account management i.e multiple accounts, credit card, debit cards, voucher promotional cards and virtual cards.

9 Raise and track complaints on the go.

10 Next level personalization ,push notifications for discounts, offeres and business growth as its constant reminding part of life.

11 One tap call to customer care or virtual relationship manager.

12 I get alerts of credit card due bills and other billers and I don't prefer auto payment for credit cards.Supports device specific hand gestures.We can add favourite transactions.

Factors for new App

Suppose we are developing Enterprise Mobility solution i.e. CRM mobile app for Tata Hitachi then factors to consider.

1 Existing erp system and its functionality.

2 Cost ,how much customer is willing to pay.

3 Detailed information about customer i.e. website,other technology used,competitors,existing solutions available ect.

4 What are cash leakages in system ?

5 Detailed database structures.

6 How much functionality is need to be implemented and there staging ?

I.e. number of screens and duration.

7 Can it be treated as domain product ?

If answer is yes the detailed requirement analysis will be done generic product model can be shown to similar potential customers.

8 Utilisation of mobile features

I.e. Location of salesperson can be traced in background in working hours,

Push notifications will be sent for new orders

Push notification will be sent to service team if service is requested and ticket is generated.

9 Integration of payment,tax,TA and DA for on field team ease.

10 Visualisation of CRM app form to get information of potential customers so that analytics can be easily applied.