



Problem Statement – Pothole Challenge

Category – Software

Ministry – Government Of Goa

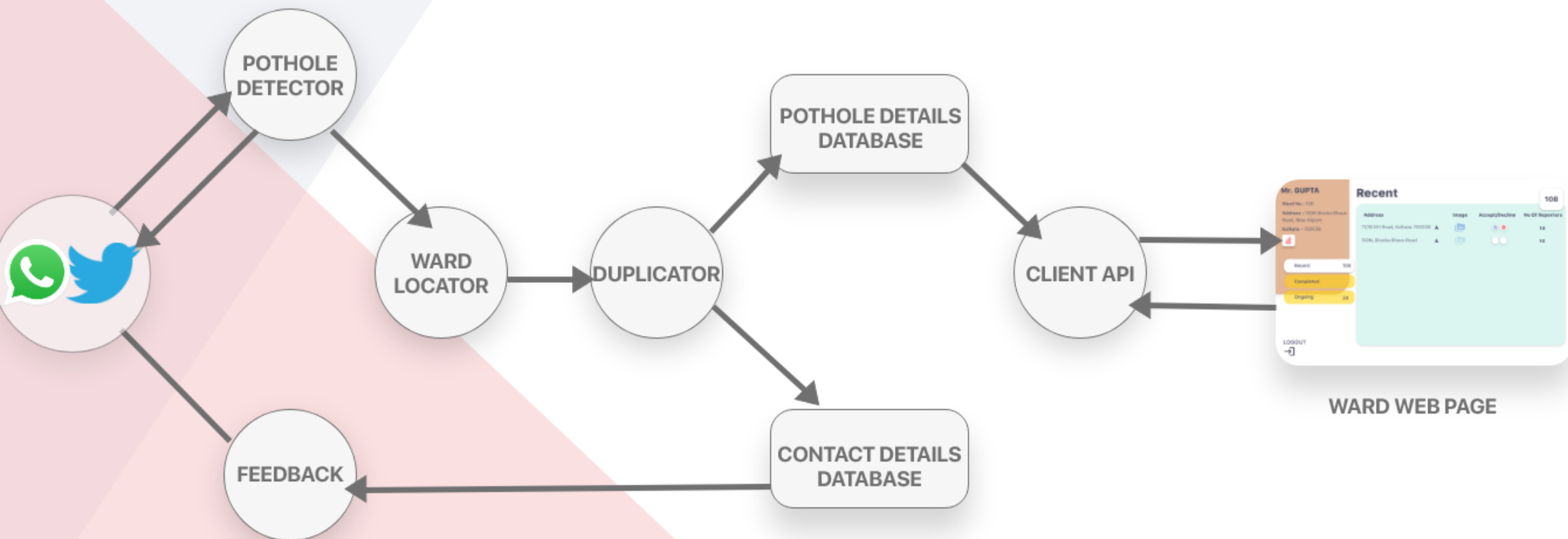


Objectives

1. To establish a connection between the officials and the citizens
2. To incorporate maximum public involvement
3. To facilitate dynamic reporting system and structured data management system



Process Flow



Ward Official Endpoint

- Each ward having their own web pages, where they can log in using unique ward number and password.
- Webpage having 3 sections - **Recent, Ongoing, Completed.**
- On clicking the location, the official will be directed to the google maps.
- The website having a special feature - MIS(Management Information System) providing the statistical analysis of the pothole complaint over a period of time.

GOA MUNICIPAL CORPORATION

Account Login

Ward Number

Password

LOGIN

Mr. GUPTA
Ward No : 100
Address : 150N Bhooba Bhave Road, New Alapora
Kolkata - 700038

Recent 108
Completed
Ongoing 24

Recent

Address	Image	Accept/Decline	No Of Reporters
71/1B DH Road, Kolkata-700038		<input type="radio"/> Accept <input type="radio"/> Decline	10
150N, Bhooba Bhave Road		<input type="radio"/> Accept <input type="radio"/> Decline	10

LOGOUT

Mr. GUPTA
Ward No : 100
Address : 150N Bhooba Bhave Road, New Alapora
Kolkata - 700038

Recent 108
Completed
Ongoing 24

Ongoing

Address	Date of Starting	Mark As Complete
71/1B DH Road, Kolkata-700038		<input type="radio"/>
71/1B DH Road, Kolkata-700038		<input type="radio"/>

LOGOUT

Mr. GUPTA
Ward No : 100
Address : 150N Bhooba Bhave Road, New Alapora
Kolkata - 700038

Recent 108
Completed
Ongoing 24

Completed

Address	Date of Completion
71/1B DH Road, Kolkata-700038	
71/1B DH Road, Kolkata-700038	

LOGOUT



Social Media Platform

The most widespread form of communication



- In a total population of 1.38 billion, social media users in India count up to above 400 million.
- Social media applications work platform independent. Hence accessible to all OS users.
- An average Indian spends 3 hours daily on social media.

A social media based grievance redressal system
to register all pothole complaints.



Twitter Bot



WhatsApp Bot



Reporter End Point

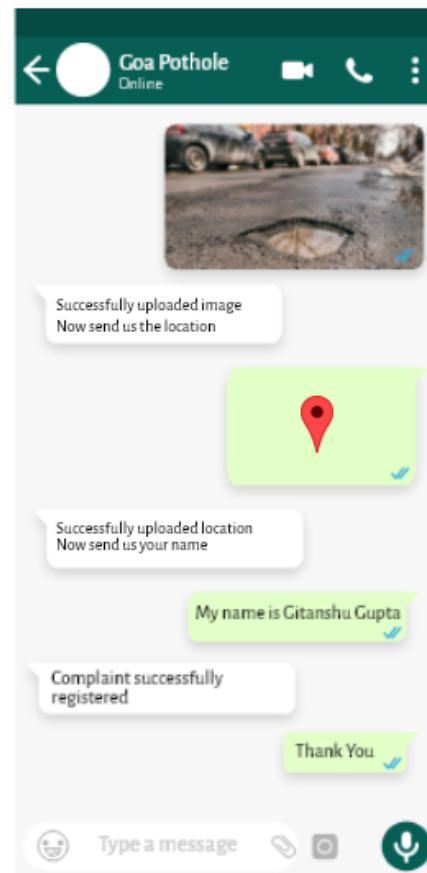
WhatsApp Bot

1. The user has to provide name, upload an image and send location of pothole
2. Both On-Spot and Off-Spot service
3. Image detection is done to verify the authenticity of the image

Third-Party APIs used

1. **WhatsApp API** - To send and receive text, images and location.
2. **Google Places API** - To fetch location from geographical coordinates.
3. **Google Vision API** - To check if the image is downloaded from the internet or not.

Twilio library for
WhatsApp





Reporter End Point

Twitter Bot

1. Upload an image, type the location and add specific hashtags
2. Immediate reply made if there is any data missing in tweet
3. Image detection is done to verify the authenticity of the image

Third-Party APIs used

1. **Twitter API** - To access the entire twitter RESTful API methods.
2. **Google Places API** - To fetch location from geographical coordinates.
3. **Google Vision API** - To check if the image is downloaded from the internet or not.

Tweepy library for
Twitter



GitanshuGupta @GuptaGitanshu

[#goapothole](#)

158N, Binoba Bhave Road, Kolkata
700038



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GoaGovt @GovtGoa

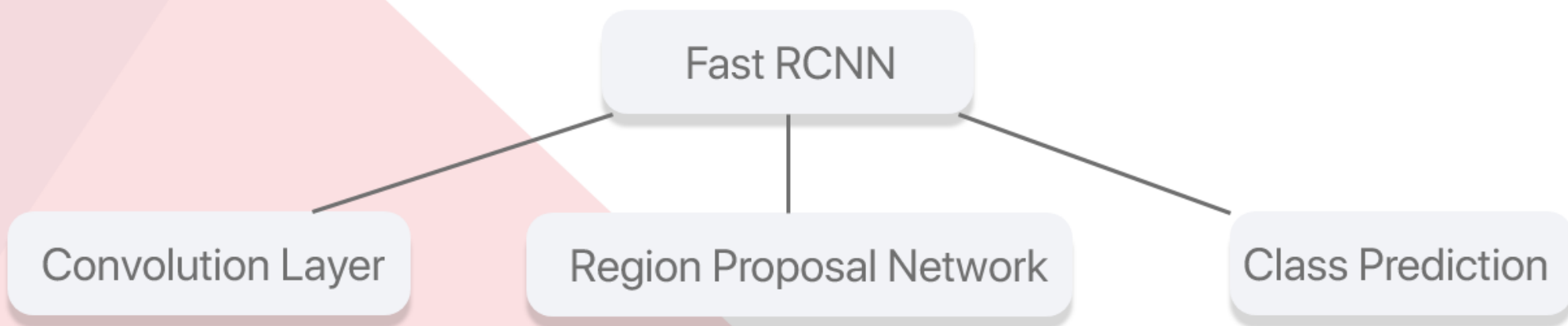
You have successfully registered the
complaint



Common Features

Image Detection

1. Deep Learning Technique using **Fast RCNN** algorithm
2. CNN facilitates high accuracy image detection
3. Accuracy is about 95%





Common Features

Ward Locator

1. Automatic detection of respective wards, using **geojson** data.
2. Comparison done on the basis of geographical coordinates.

Duplicator

1. Check for duplication is done on every new complaint.
2. Comparison done on the basis of geographical coordinates based on a particular threshold distance.
3. Number of reporters increased, adds to the urgency of the complaint.



Common Features

Feedback System

1. Notifies the reporter after a complaint is lodged successfully.
2. Sends corresponding feedback if an already reported pothole is being reported again.
3. After repairing a pothole sends notification to all the reporters who reported that particular pothole.



Advantages of Chat Bot Over Applications

Chat Bot

Already existing vast user base

OS independent hence maximum public involvement

Any new feature added can be implemented **without updating**

High portability across many mobile devices

No extra **storage space** is required

Android Application

User base needs to be created, which would take time

Restricted to specific OS

Every time a new feature is added the user needs to update the app

Might be restricted to certain android versions

Extra storage space is required



Security Prospects

1. Negligible sensitive information extracted from the user, hence very less chances of data breach
2. Encrypted Data At Rest
3. There is scope to handle DDoS attack
4. Implement two-factor authentication



Future Prospects

1. Support for native language using NLP
2. Filtering explicit content and take necessary action
3. More intuitive conversations using NLP
4. Campaigning using twitter and WhatsApp to create awareness



THANK YOU