Jaypee Institute Of Information Technology
Noida

DevOps Project

KHOJ : A Platform To Prevent Human Trafficking

Submitted By:

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Problem Statement

Every 40 seconds, a child in India goes missing or is abducted. Of the thousands of people who go missing in India each year, especially tragic is the disappearance of the young and vulnerable. According to the CBI and Indian Police, there are 85,459 active missing person records, of which juveniles under the age of 18 accounted for 29,758 (34.8%) as of December 31, 2018.

Proposed Solution

KHOJ will help to find a missing person. The guardian of the missing person will upload the details of that person, so the image will be added in the KHOJ database.
The cameras installed in the city can use Person Re-Identification Technology, to identify the missing person. Also if any person finds a person which was missing, he can also upload the picture of that person through KHOJ. In both the cases KHOJ will try to find that person in the database, and if found it will notify the nearest police station from where the person is found and the guardian of the missing person.

Introduction

On average, a child goes missing every 10 minutes in India, according to the women and child development ministry website for tracking missing children. At this rate, around 54,750 children would have been reported missing in the last one year in India and only about half of them would have been traced, if one goes by the police record on the missing children.
This startling data could be considered nemesis of the mob lynching incidents over suspicion of the child lifting gangs in the Hindi heartland, which has high incidence of children going missing for a population of one lakh than other parts of India. India is home to more than 400 million children below the age of 18 years, and is considered one of the countries in which youth and children comprise more than 55% of the population. These missing children represent diverse cultures, religions, castes, communities, social and economic groups.

Our solution is targeted at helping the law and law keepers with their job to find these missing children. We also aim at providing the local public with a tool to reach out to the police easily and register their complaint at the earliest. Our database is made to store all the images from various entries provided by our users and then the face recognition model uses the inputs to identify the missing ones.

There are already a very large number of cameras installed at various public spots. These cameras are targeted at catching the vehicles and identify the number plates for issuing fines, etc. The same feed from these cameras can be used to fetch the database.

Khoj is one means of cutting short the long procedure of registering the complaint and then getting the work started. The aim of this project is to design a system which can start working as soon as the complaint is registered. Another objective identified under this project targets to allow the general public to reach the police or help, if in case they find someone who was initially missing. This can actually lower the load of searching by the police. We shall be providing an option for the police to manage the requests and attend to the complaints easily and all at a place.

Methodology

The project targeted the use of many new technologies and their implementation. It is divided into two modules. Initial phase aims at creating a registration form for the user via which they can register a complaint or convey a message to the police. Then, we implement a face-recognition system which treats the uploaded data as an input case, records it, registers it and then starts parsing.

When a person is lost:

GUARDIAN

Uploads the details and images of the missing person

KHOJ

The guardian can upload the details onto the platform via means of a form submission.

KHOJ

A platform to prevent child trafficking.

First Name	Last Name
First name	Last name

Gender	Blood Group
Male	Blood Group

Face Complexion	Body Built
Wheatish	Thin

Min Height Range	Max Height Range
In centimetres	In centimetres

Aadhar Card Number	Face Shape
Enter Aadhar Card Number	Oval

Enter Last Location Before Disappearence

Ambedkar Nagar

Upload the images of the lost person
Browse... No files selected.

Upload

When the missing person is found by someone, but they don't know the credentials, the user can simply upload the person's image. The uploaded image will be matched in for face recognition, if found, the required details will be sent to the nearest police station.

When the missing person is found by someone:

KHOJ

Uploads the images of the found person
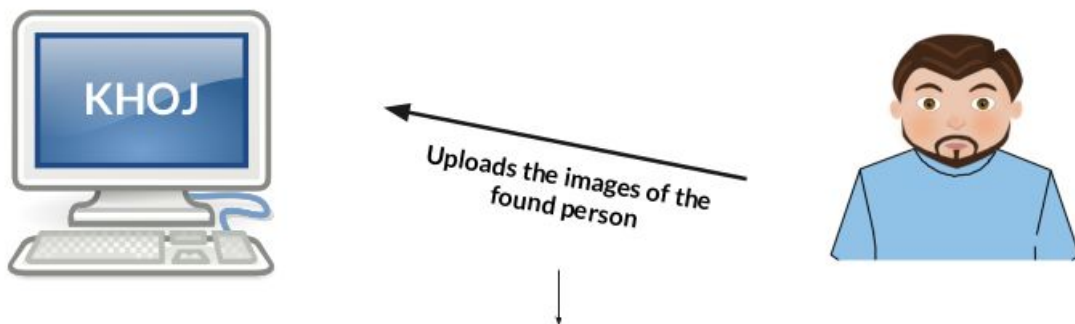
The images of the person will be searched in the KHOJ database, if found the Police and Guardian will be notified.

The option to upload the image will be made available to the common user to upload the photos of the one's found alone or missing.

KHOJ

A platform to prevent child trafficking.

Upload image of the found person

Browse...   No files selected.

Enter Location of Current Find

Ambedkar Nagar   ⌄

Upload

Police or any person in authority will be contacted immediately as and when the model detects a similarity.

9:10 AM

Lost person Kaushal Bhansali(9876543) has been found at .....

Lost person Kaushal Bhansali(9876543210) has been found at ....

9:10 AM · via a

Police will be notified!

Missing person found!

kaushal.bhansali6@gmail.com
to ▾

Lost person Named: Anubhav Sinha with Aadhar Number: (258780456) has been found at Vikas Puri

↩ Reply   ➡ Forward

Name : **Keshav Bathla**

Status : **Found**

Nearest Police Station Has Been Notified!

Role of Police: When the nearest police station will be notified, the police have to make the surveillance high at that area where the person was found through the cameras installed in the cities. In this way the person who has found the missing person can not ask for any money from the guardian for the return of that missing person.

POLICE
Headquarters, Delhi NCR

Submit Found Entry

Submit Missing Entry

View Data Charts

View Heat Map

Benefits for Police: Police will be able to visualize the data, and track from which area maximum people are missing. And also he will be able to know where maximum people are being found. Also a heat map is being generated which will help the police to trace the locations from where the maximum lost reports are being found.

Police will also be able to upload the picture of the unidentified dead bodies to match them with the current database of the missing person.

Delhi Missing Reports

Found Reports
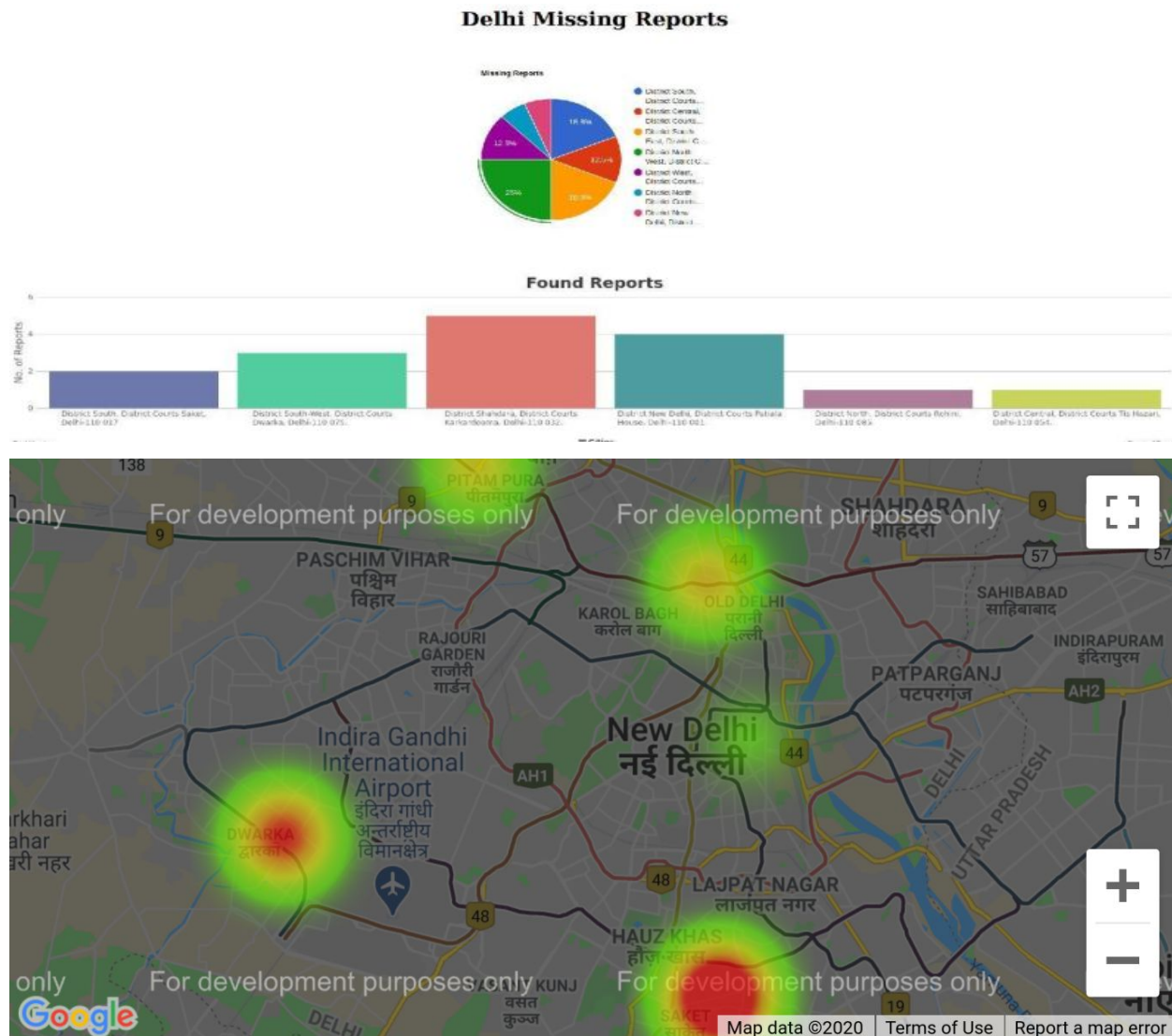
Technology Used:

Table 1: Technologies Used

Purpose	Technologies Used
Backend Support	Django, Python, OpenCV
Frontend Designing	Bootstrap, HTML5, Jinja2, Javascript
Continuous Integration	Travis CI
Continuous Deployment	Heroku, Docker
Monitoring	Jira
Communication	Discord
Testing	Unittest, Selenium

Team and Roles:

Table 2: Team and Roles assigned

Name	Role
Kaushal Bhansali (17103299)	Backend Engineer
Anubhav Sinha (17103135)	Backend Engineer
Piyush Gupta (17103067)	Frontend Engineer
Astitva Singhal (17103136)	Software Tester
Aman Khare (17103048)	Software Tester
Siddharth Batra (17103070)	Devops Engineer
Chitrank Mishra (17103103)	Scrum Master

Jira Snapshots:

Jira is a proprietary issue tracking product developed by Atlassian that allows bug tracking and agile project management.

We have used Jira by Atlassian Software for creating the user stories and to plan the sprint for the project. Following are snapshots showing the user stories implemented:

Table 1: User stories

S. No.	Description	Priority
DP-27	As a user, I want to add details of the missing person so that everyone is able to see the details of the missing person.	**Highest**
DP-28	As a user, I should be able to upload pictures with location, and contact nearest police station, so that I can report if I spotted a lost person.	**Highest**
DP-29	As a user(police), I want to login into the analytics dashboard, so that I can see the trends where the mishappenings occur the most.	**Medium**
DP-30	As a user(police), I want to view the analytics of the missing and found cases in my city so that I can write reports and enable investigations	**Medium**
DP-31	As a user(admin), I want to have the access of the database, so that I can manipulate it if needed.	**Low**
DP-32	As a user(police), I should be able to receive contact details of the person who has reported details of a missing person so that police can verify the report to be genuine by contacting the reportee.	**High**
DP-33	As a user(police), I want to get the real time tracking of a criminal person in any large gathering so that, it is easier for the police to catch.	**Medium**
DP-34	As a user(police), I should be able to get lost and found	**High**

|	details only from credible users so that there are no false positives or negatives.	
DP-35	As a user, I want to see the status of my application so that I can determine if appropriate actions are underway	**Medium**
DP-36	As a user, I want to upload more photos at a later stage of report so that it is useful for finding the person in a better way.	**High**
DP-37	As a user, I should be able to file the FIR of the missing person.	**Highest**
DP-38	As a user, I should be able to file bugs in the website so that it can be fixed at the server side.	**Lowest**
DP-39	As a user, I want an option to delete my complaint so that I can withdraw a report in case of any person found thereafter	**Medium**

Sprint 1: 15 Oct 2020 - 27 Nov 2020

Objective: Complete all the high priority objectives
Issues Completed:

Completed Issues   View in

Key	Summary	Issue Type	Priority	Status
DP-27 *	As a user, I want to add details of the missing person so that everyone is able to see the details of the missing person.	Story	↑ Highest	DONE
DP-28 *	As a user, I should be able to upload pictures with location, and contact nearest police station, so that I can report if I spotted a lost person.	Story	↑ Highest	DONE
DP-29 *	As a user(police), I want to login into the analytics dashboard, so that I can see the trends where the mishappenings occur the most.	Story	↑ Medium	DONE
DP-32 *	As a user(police), I should be able to receive contact details of the person who has reported details of a missing person so that police can verify the report to be genuine by contacting the reportee.	Story	↑ High	DONE
DP-34 *	As a user(police), I should be able to get lost and found details only from credible users so that there are no false positives or negatives.	Story	↑ High	DONE
DP-37 *	As a user, I should be able to file the FIR of the missing person.	Story	↑ Highest	DONE

Issues Forwarded to Backlog:

Issues Removed From Sprint   View i

Key	Summary	Issue Type	Priority	Status
DP-30 *	As a user(police), I want to view the analytics of the missing and found cases in my city so that I can write reports and enable investigations	📗 Story	↑ Medium	IN PROGRESS
DP-36 *	As a user, I want to upload more photos at a later stage of report so that it is useful for finding the person in a better way.	📗 Story	↑ High	IN PROGRESS

Sprint 2: 28 Oct 2020 - 1 Dec 2020

Objective: Complete these issues before complete deployment

Issues Mentioned:

Date	Issue	Event Type	Event Detail	Inc.	Dec.	Remaining
28/Nov/20 12:20 PM	DP-30	Sprint start		1		
	DP-31			1		
	DP-33			1		
	DP-35			1		
	DP-36			1		
	DP-38			1		
	DP-39			1		
						7
	DP-39	Burndown	Issue completed		1	6
28/Nov/20 12:21 PM	DP-39	Burndown	Issue reopened	1		7
28/Nov/20 9:03 PM	DP-36	Burndown	Issue completed		1	6
	DP-35	Burndown	Issue completed		1	5
29/Nov/20 3:35 PM	DP-33	Burndown	Issue completed		1	4
29/Nov/20 8:16 PM	DP-31	Burndown	Issue completed		1	3
	DP-30	Burndown	Issue completed		1	2
30/Nov/20 3:51 PM	DP-39	Burndown	Issue completed		1	1
30/Nov/20 4:04 PM	DP-39	Burndown	Issue reopened	1		2
30/Nov/20 4:05 PM	DP-39	Burndown	Issue completed			
01/Dec/20 8:43 PM	DP-38	Burndown	Issue completed			0

Burndown Chart:
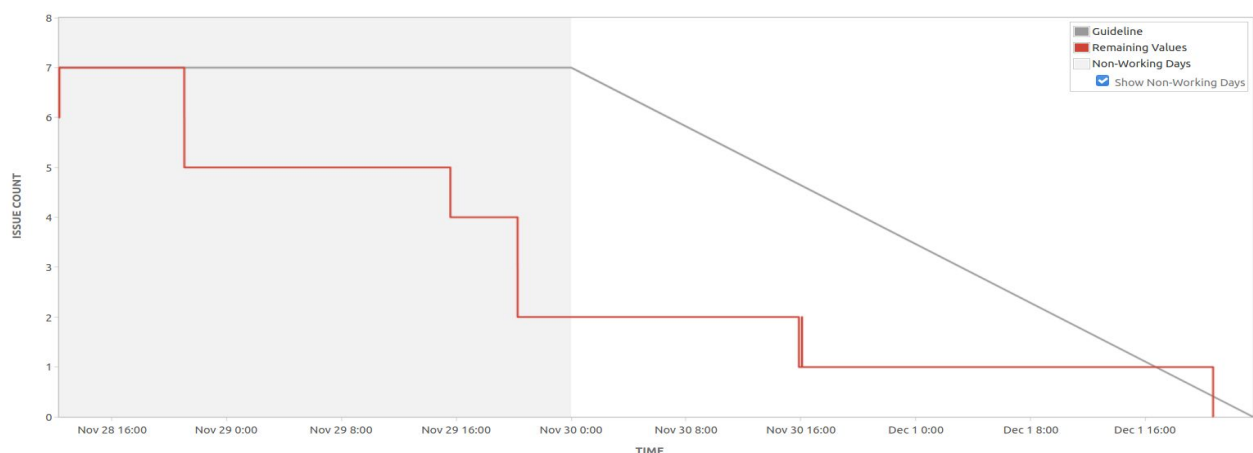
Planning Poker Snapshots:

Planning poker is a consensus-based, gamified technique for estimating, mostly used to estimate effort or relative size of development goals in software development. In planning poker, members of the group make estimates by playing numbered cards face-down to the table, instead of speaking them aloud. The cards are revealed, and the estimates are then discussed. By hiding the figures in this way, the group can avoid the cognitive bias of anchoring, where the first number spoken aloud sets a precedent for subsequent estimates.

Pulling in for User stories:

Your Planning Poker® Game Summary

Devops Project Khoj

Story	Story Title	Score
1	As a user, I want an option to delete my complaint so that I can withdraw a report in case of any person found thereafter	5
2	As a user, I want to add details of the missing person so that everyone is able to see the details of the missing person.	3
3	As a user, I should be able to upload pictures with location, and contact nearest police station, so that I can report if I spotted a lost person.	5
4	As a user, I should be able to file bugs in the website so that it can be fixed at the server side.	5
5	As a user, I want to upload more photos at a later stage of report so that it is useful for finding the person in a better way.	3
6	As a user(police), I should be able to get lost and found details only from credible users so that there are no false positives or negatives.	5
7	As a user(police), I want to login into the analytics dashboard, so that I can see the trends where the mishappenings occur the most.	5
8	As a user(police), I want to view the analytics of the missing and found cases in my city so that I can write reports and enable investigations	3
9	As a user(admin), I want to have the access of the database, so that I can manipulate it if needed.	1
10	As a user(police), I should be able to receive contact details of the person who has reported details of a missing person so that police can verify the report to be genuine by contacting the reportee.	3
11	As a user(police), I want to get the real time tracking of a criminal person in any large gathering so that, it is easier for the police to catch.	3
12	As a user, I want to see the status of my application so that I can determine if appropriate actions are underway	5

Team Meeting while playing Planning Poker:

Few of the commits -

For creating the CI/CD pipeline, we are using the integration of Travis CI and Heroku, Travis CI is helping us to do the CI and post successful CI the web app will be deployed on Heroku.

Travis CI Configuration:

Allowing Travis CI for the Khoj-Devops repository, so that Travis can do the CI whenever a new pull request is triggered and a pull request is merged post code review.

Legacy Services Integration

Filter repositories		
About-This-Org	(off)	⚙ Settings
BlockChain-Learning	(off)	⚙ Settings
CodeBattle	(off)	⚙ Settings
Connect	(off)	⚙ Settings
Connect-Mobile	(off)	⚙ Settings
Data-Structures-Visualizer	(off)	⚙ Settings
EnglishAssistant	(off)	⚙ Settings
FutureDevBot	(off)	⚙ Settings
Khoj-Devops	(on ✓)	⚙ Settings
MultiThreaded-WebServer	(off)	⚙ Settings

future-devs / Khoj-Devops [build unknown]

Current   Branches   Build History   Pull Requests   Settings   More options ☰

General

⦿ Build pushed branches   ?   ⦾ Limit concurrent jobs   ?

⦿ Build pushed pull requests   ?

Auto Cancellation

Auto Cancellation allows you to only run builds for the latest commits in the queue. This setting can be applied to builds for Branch builds and Pull Request builds separately. Builds will only be canceled if they are waiting to run, allowing for any running jobs to finish.

⦿ Auto cancel branch builds   ⦿ Auto cancel pull request builds

Environment Variables

Customize your build using environment variables. For secure tips on generating private keys read our documentation

📢 If your secret variable has special characters like `&`, escape them by adding `\` in front of each special character. For example, `ma&w!doc` would be entered as `ma\&w\!doc`.

NAME	VALUE	BRANCH		
Name	Value	All branches ▼	⦾ DISPLAY VALUE IN BUILD LOG	Add

A webhook is added to the GitHub repo -

Webhooks   [Add webhook]

Webhooks allow external services to be notified when certain events happen. When the specified events happen, we'll send a POST request to each of the URLs you provide. Learn more in our Webhooks Guide.

We will also send events from this repository to your organization webhooks.

✓ https://notify.travis-ci.org/ *(create, delete, issue_comm...)*   [Edit | Delete]

Deployment on Heroku -

We have connected the GitHub repo to the Heroku for the deployment, and then we have enabled the option such that when the Travis test passes only then new version should be deployed, and we have also enabled Automatic Deploys option, which will deploy the latest code immediately once the CI passes.

On our GitHub repo two webhooks of Travis and Heroku has been added -
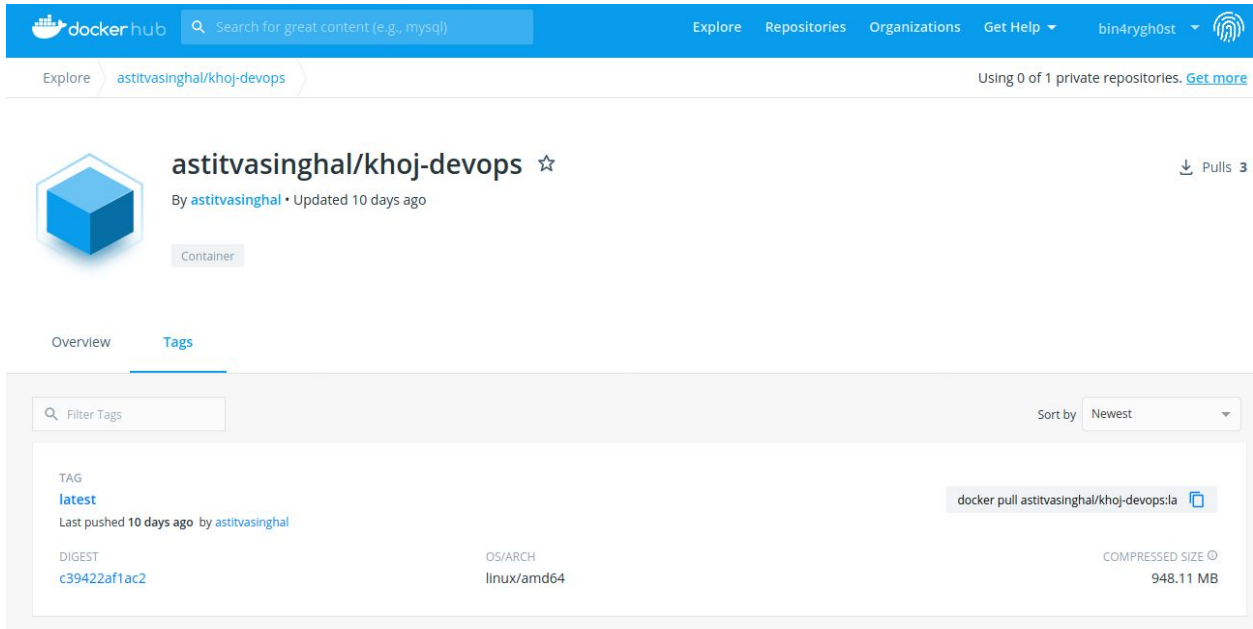

Testing Data:

Sample Tests -

```python
import json
import unittest
import sample_test_results
from core import stats


class DjangoTestCases(unittest.TestCase):
    def test_lost_stats(self):
        self.lost_count_at_places = stats.lost_stats()
        self.assertNotEqual(self.lost_count_at_places, 0)
        self.assertNotEqual(self.lost_count_at_places, None)
        self.assertEqual(str(type(self.lost_count_at_places)), "<class 'dict'>")
        self.assertEqual(self.lost_count_at_places, sample_test_results.SAMPLE_TEST_LOST_STATS_RESULTS)

    def test_found_stats(self):
        self.found_count_at_places = stats.found_stats()
        self.assertNotEqual(self.found_count_at_places, 0)
        self.assertNotEqual(self.found_count_at_places, None)
        self.assertEqual(str(type(self.found_count_at_places)), "<class 'dict'>")
        self.assertEqual(self.found_count_at_places, sample_test_results.SAMPLE_TEST_FOUND_STATS_RESULTS)
```

Docker image hosted on docker hub:

https://hub.docker.com/r/astitvasinghal/khoj-devops/

Github Configuration:

We made an organization on GitHub known as Future Devs and then we created a repository on it, and gave the admin access of the repo to all the users.

Link of the GitHub Repo -
https://github.com/future-devs/Khoj-Devops