RESEARCH ARTICLE   OPEN ACCESS

Identifying and Reporting Sand Mining Activities

Ramprakash Reddy Arava[1], S. Sarvani[2], V. Naga Haneesha[3], S. Sreekar[4]

1(Department of Information Technology, Sree Vidyanikethan Engineering College, A.Rangampet
Email: prakash.cse.502@gmail.com)
2(Department of Information Technology, Sree Vidyanikethan Engineering College, A.Rangampet
Email: shruti.chandini@gmail.com)
3(Department of Information Technology, Sree Vidyanikethan Engineering College, A.Rangampet
Email: haneesha.naga@gmail.com)
4(Department of Information Technology, Sree Vidyanikethan Engineering College, A.Rangampet
Email: sreekar202@gmail.com)

Abstract:

In the present days, the sand mining activities are expanding in a disturbing rate. The extraction of stream material for building/foundation creation is extremely normal business action identified with waterway. The unregulated extraction of waterway bed material causes issue identified with disintegration of bank bringing about enormous loss of land and in addition property. Be that as it may, the accessibility of information with respect to sand mining is extremely insufficient. It is proposed to give stage to basic open to raise alert against unregulated sand mining. Here we propose an answer for controlling the sand mining activities with the assistance of a Portable Application. With this application anybody can catch and offer the geo-coded pictures and area of sand mining activities to the neighborhood experts. Thus, the neighborhood experts can take individual activities towards the general population associated with sand mining activities.

Keywords — **Sand Mining, Geo-coded images, Firebase and RFID**

I. INTRODUCTION

The purpose of building up this portable application is to forestall unregulated sand mining activities in precluded areas to maintain a strategic distance from soil erosion. Sand Mining activities are increasing at disturbing rate at stream bed. This loss of waterway bed materials will cause colossal harm to the land and properties. So, this application is a solution for controlling such sand mining activities. After the application installation fir the first run through, the application will show the methodology or guidelines to use the application. People in general users as well as authorities can login into this application either with their Google account or using their versatile number. The interface differs for both the parties.

The application will support multilinguistic include, where the user can select their local dialect for better data trade. In the wake of signing into the application, the users will discover a dashboard that contains list of waterway beds where the sand mining is denied. The list will be updates by the authorities for the user's reference. The authorities will also refresh the data with respect to the contractor's names who are assigned the activity of dealing with their respective waterway bed areas. This will offer learning to the users about whom they should approach or send the data. This will help the users to get information for taking actions when any illicit activity happens around those areas.

The application has features of uploading geo-coded images and the site details by the general population users who are present there. The area will be implanted into the images and site details can be uploaded in the local dialect as the application will support Multilanguage's for the user's solace. The user will have the capacity to send the message just if the caught picture have a place with the restricted areas list. User will discover a Report alternative using which the user can send the details to the respective contractor or the specialist. These details will be sent just to the local authorities of close-by villages. The local authorities are told with the data from the user after they login to the application. The local authorities

can take respective actions on the general population associated with the sand mining activity. The local authorities can save the details in their record for any future references. The details will be saved in their database.

II. WORKING

This mobile application is used by two types of users: Open users and Specialist Users. The interface is distinctive for both the types of users. Users should Sign Up into the application on the off chance that they are not registered previously. Subsequent to signing in to the application, users can see their profile and alter their profile. Open User has a Report choice in their Dashboard to report any sand mining activities occurring in stream bed areas. In the wake of selecting the Report alternative, people in general user captures the picture of the unlawful activity and sends the picture to respective local authorities. In the wake of sending the details, the Specialist users can see the details and take respective actions.

A. Objectives

To create a mobile application for recording details about sand mining activities and reporting to local authorities.
- To create a database for saving the details of site and images for future references.
- To develop a process of uploading an image and returning the position (location) and orientation of the image.

III. IMPLEMENTATION

The mobile application is developed using Android Studio Software. The programming languages used are XML and Java. Every user is authenticated with their unique mobile number by sending unique one time password (OTP) to the given mobile number. Please do not navigate from application if it is waiting for SMS. The app will automatically read the OTP once it is received. There is no provision to manually enter OTP anywhere in application. It is a security feature.

Here Firebase acts as the backend for whole project. Firebase is used to store the details sent by the public user to the authorities. The image and the details of the public user is fetched from the database and sent to the authority. The authorities can view the saved details in the Firebase Database. The combination of software products and programming languages used to develop this mobile app are listed below:
- Programming Languages: Java
- Front End: XML and Java
- Back End: FIREBASE
- Software: Android Studio 3.0.1
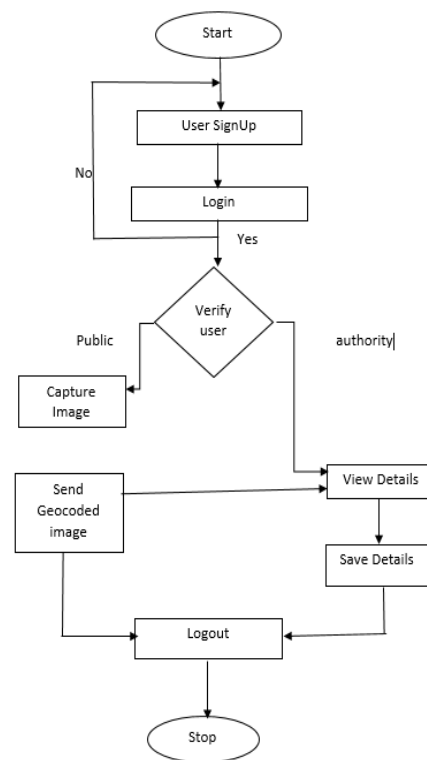- Operating System: Windows 10

Fig 1: Flowchart on Software Implementation

IV. GRAPHICAL USER INTERFACE

A. Signup

Authority can enter name, designation, mandal, district, state, Mobile number and click on verify button. Please do not navigate from application if it is waiting for SMS. The app will automatically read the OTP once it is received.

There is no provision to manually enter OTP anywhere in the app. It is a security feature. After entering all fields' authority can signup into the app by clicking signup button. After signup into the app authority can edit his/her profile.

Fig 2. Signup Form for the users
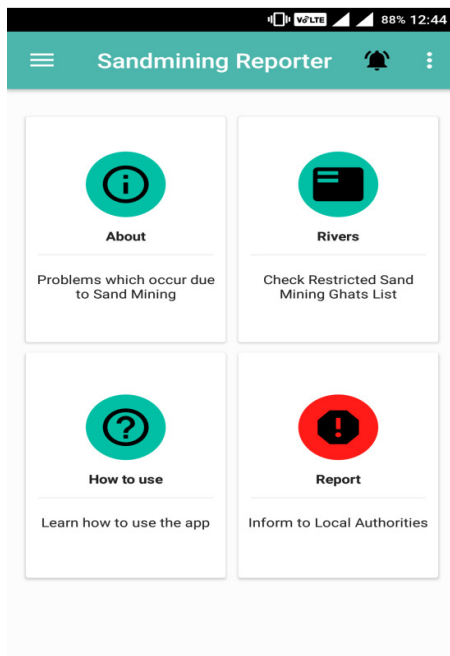
B. Dashboard

Fig 3. Dashboard

Dashboard contains About the application, List of

restricted River Ghats, How to use the application and report to local authorities about the people involving in sand mining activities.

V. CONCLUSION

To control sand mining activities this mobile application will be a decent stage, instead of using any equipment components and RFID tags. Because, nowadays everybody is using smart phones, this simple application can be used by any person to give an account of sand mining activities.

REFERENCES

1. Mehrnaz Zouqi, Jagath Samarabandu , and Yanbo Zhou, "Fusion of GPS and image data for accurate geocoding of street-level fisheye images" + Electrical and Computer Engineering department, The University of Western Ontario, London, Ontario, Canada

2. L. Pei, R. Chen, J. Liu, Z. Liu, K. Heidi, Y. Chen, L. Zhu. "Sensor Assisted 3D Personal Navigation on a smart Phone in GPS Degraded Environments. Proceeding of Geoinformatics" 20 Il.pp.I-6.

3. Li, Xun, Wang 1., Knight, N., Ding W., "Vision-based Positioning with a Single Camera and 3D Maps: Accuracy and Reliability Analysis", UPLNLBS, Oct. 2010, 3(7), 1406-1426.

4. Chen R., H.Kuusniemi, 1.Hyyppa, 1.Zhang, 1.Takala, R.Kuittinen, Y.Chen, L.Pei, Z.Liu, L.Zhu, , Y.Qin, H.Leppakoski, and 1. Wang (2010). "Going 3D, Personal Nav and LBS. GPS World", Vol. 21, Nr. 2, pp 14-18.

5. Bokuniewicz, "Sand mining in New York Harbor," Marine Mining, vol. 7, pp. 7-18, 1988.

6. J. P.-Y. Maa, C.H. Hobbs, III, S.C. Kim, and E. Wei, "Potential impacts of sand mining offshore of Maryland and Delaware: Part 1 - Impacts on physical oceanographic processes," Jour. Coastal Research, vol. 20, pp.44 -60, 2004.

7. C.W. Finkl, and C.H. Hobbs, "Mining sand on the continental shelf of the Atlantic and Gulf coasts of the US," Marine Georesources and Geotechnology, 27, pp. 230-253, 2009.

8. C.H. Hobbs, "Considerations in marine sand mining and beach nourishment,"2007 OCEANS Conference, Vancouver, Canada, pp. 33-42, 2007.