

ANDRO SOCIO: Android Application for Social Cause

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Abstract: We are living in the 21st century so called as the modern century, as a member of this century we all have seen many technological developments in the field of Information and Technology. Development in the technology has lead to a more comfortable lifestyle but still there are many general problems which are not yet been solved. Problems involving accidents, municipal related issues and crimes are increasing at a higher rate. Everyday accidents occur causing one death every four minutes. Garbage, water problems, sanitation, power supply etc., municipal issues are a common site every day and crimes exist in various forms everywhere. But people don't readily come forward for reporting these issues due to the fear of revealing oneself. Therefore, we are proposing such a system that will help people to present their issues without any fear. Registering a complaint about a civic issue is now just an App away. The prime objective of the proposed system is to preserve the privacy of people while they are reporting for any of the problems which we discussed earlier. With smart phones becoming increasingly popular, citizens can now download any Android applications at any-time since they are cost efficient and easily available. Hence, we are developing an Android Application which is very helpful for the people to come forward and raise their voice against any issues(which are discussed above) they might be facing. Using our proposed Android Application people can lodge complaints and report incidents such as accidents. The techniques used in our system are Shamir's Secret Sharing Algorithm for encryption purpose to preserve identity of users, Google APIs for Location prediction so that when user reports any complaint it can be registered in the data set of specific location. Also location tracing is required for finding near-by hospitals in emergency cases like accidents. Citizens can not only make a complaint on several issues using the application but they can also upload photographs of the civic problem. After registering on the application the user can make complaints regarding garbage, cattle, potholes and street lights. User can also report incidents that are dedicated to social issues like lost items, events, local crime spotting etc.

Key Words: Android, Encryption, Google API, Privacy Preserving, Social Issues.

1. INTRODUCTION:

Now-a-days, mobile phones are becoming more and more popular. So, they began to cost less money, and more people could afford them. The modern form of mobile phone is called "Smart Phone". It has become very popular. The majority of mobile phones made after 2010 are "Smartphones". They can be used as computers as well as making voice calls. Mobile communication is one of the latest and the handiest way of transmitting the message to the receiver.

Android provides a rich application framework that allows you to build innovative apps and games for mobile devices in a Java language environment. Android's user interface is mainly based on direct manipulation, using touch gestures that loosely correspond to real-world actions, such as swiping, tapping and pinching, to manipulate on-screen objects, along with a virtual keyboard for text input.

The world problem that preoccupies human thought today and touches its core reality is that of the social system. Social issues (also social problem, social evil, and social conflict) refers to any undesirable condition that is opposed either by the whole society or by a section of the society. It is an unwanted social condition, often objectionable, the continuance of which is harmful for the society. India is facing a large number of social issues such as caste system, child labor, illiteracy, gender inequality, superstitions, religious conflicts, and many more. It is high time to get relief of these undesirable social evils. Sanitation and cleanliness is a basic problem and one of the important social issues of our country. People should clean their areas and take care of personal hygiene to stay healthy and away from any diseases.

In our proposed system, we will be providing instant help to people who need immediate help in critical situations like accidents or in reporting of some social issues like municipality related complaints. We are developing an android app which will fulfill our proposed system. It mainly focuses on privacy preserving techniques so as to

encrypt user's identity. There are two options for registration of new users, one for local citizens and second one for politicians. The privacy of local citizens is to be preserved since they hesitate to come forward to report the incidents fearing their involvement with high authority. In proposed methodology, local citizens can not only report on several issues via SMS service but also they can make Emergency calls. Emergency calling option can only be available in situations like accidents.

2. LITERATURE SURVEY:

The paper presented by Xiaohui Liang, Rongxing Lu, Le Chen, Xiaodong Lin, and Xuemin (Sherman) Shen in year 2011 describes a privacy-preserving emergency call scheme, called PEC, to implement a decentralized emergency response system for a rapid response of emergency care in the mobile healthcare social network [1]. It uses attribute-based encryption technique to enable fine-grained access control of emergency data to patients. The limitations of this system are it does not provide messaging facility and also its response time is very less.

Also paper presented by Soumyasri S.M. and RajkiranBallal in year 2013 describes preserving privacy in wireless sensor networks [2]. In this system, two location anonymization algorithms have been proposed, namely, resource and quality aware algorithms. The paper presented by Manoj Patil, Prof. Vinay Sahu and Prof. Anurag Jain in year 2014 describes SMS Text Compression and Encryption on Android O.S [3]. Here they proposed an efficient technique of sending SMS text using combination of compression and encryption. The data to be send is first encrypted using Elliptic curve Cryptographic technique.

In 2016,Chen Zhang, Ziheng Sun, Gil Heo, Liping Di*, Li Lin presented the paper A Geo Package Implementation of Common Map API on Google Maps and Open Layers to Manipulate Agricultural Data on Mobile Devices[4].In this paper, we present a Geo Package based mobile application implementing Common Map API on both Google Maps TM and Open Layers to assist in the manipulation of agricultural data on mobile devices. In [5], MengyuQiao, Andrew H. Sung, and Qingzhong Liu proposed Merging Permission and API Features for Android Malware Detection. In this paper, we propose a novel machine learning approach to detect malware by mining the patterns of Permissions and API Function Calls acquired and used by Android Apps. Based on static analysis of source code and resource files of Android Apps, binary and numerical features are extracted for qualitative and quantitative evaluation. Feature selection methods are applied to reduce the feature dimension and enhance the efficiency. Different machine learning methods, including Support Vector Machines, Random Forest and Neural Networks, are applied and compared in classification.

3. PROPOSED METHODOLOGY:

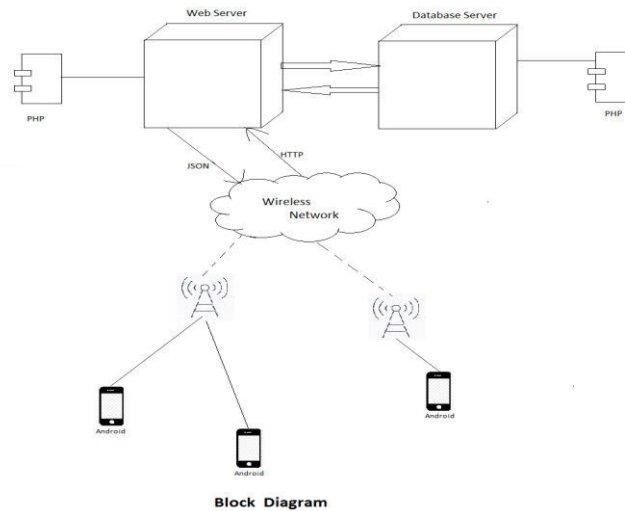
Our Andro-Socio App plays an important role in reporting any of the social issues like municipality related problems, any criminal activities or accidents. Andro-Socio App preserves the identity of the user who is reporting any of the above incidents. We use Shamir's Secret Algorithm for encryption of the user's information which helps in preserving the privacy of the user. Our App records any report submitted by the user systematically. This well maintained record is further used for making a rating scheme corresponding to the politicians based on User's review. This rating will be very useful when voting for the Politician at the time of Elections.

Sr. No.	Incident	Action taken by app
1	Accidents	Sends an immediate message to the nearest medical centers.
2	Criminal activity	Sends an alert message to the police station in-charge of that specific location as soon as the user reports this activity.
3	Municipal issues	Stores the issues reported by the user for the politicians specific to user's location to take action on it as soon as possible.

TABLE I. TYPES OF INDIDENTS AND ACTION TAKEN

As we discussed in Table I, in all the incidents mentioned, location service and maps are a must. For which we use Google API's. Out of many services provided in Google API, we integrate some of the main services like Google Maps and Google Maps distance matrix. In case of accidents and criminal activities, an immediate alert message is sent to the nearest medical centers or the police station, as per the location respectively. As for the municipal issues, the report is lodged in the database for the politician of that concerned area can take action on it.

4. PROPOSED ARCHITECTURE:



In our proposed system architecture the Key terms are Android Phones, PHP Servers, Web Servers and Database servers. Android Phones are used by the Users for sending signals or messages and reporting the incidents. These signals/messages are transmitted through the wireless network to the Web Server. In wireless network, for transmission, we use HTTP while sending and JSON while receiving the signals/messages. The reports and the messages send by the users are stored in the Database Server. Also the registration information of the User is stored on the Database Server in Encrypted format. The overall management of the Web Server and Database server is done by PHP Server.

1. Encryption:

The registration detail of the user is stored on the Database Server. As the important aspect of our project is to preserve the Privacy of the User we use encryption techniques for this purpose. The Shamir’s Secret Algorithm is one of the efficient Encryption Techniques. It is a type of secret sharing, where a secret is divided into parts, giving each participant its own unique part, where some of the parts or all of them are needed in order to reconstruct the secret. Goal is to divide some data D (e.g., the safe combination) into n pieces D_1, D_2, \dots, D_n in such a way that:

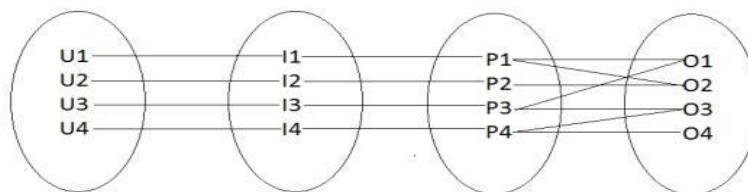
- Knowledge of any k or more D pieces makes D easily computable.
- Knowledge of any k -1 or fewer pieces leaves D completely undetermined (in the sense that all its possible values are equally likely).

This scheme is called (k, n) threshold scheme. If k=n then all participants are required together to reconstruct the secret.

2. SMS Service:

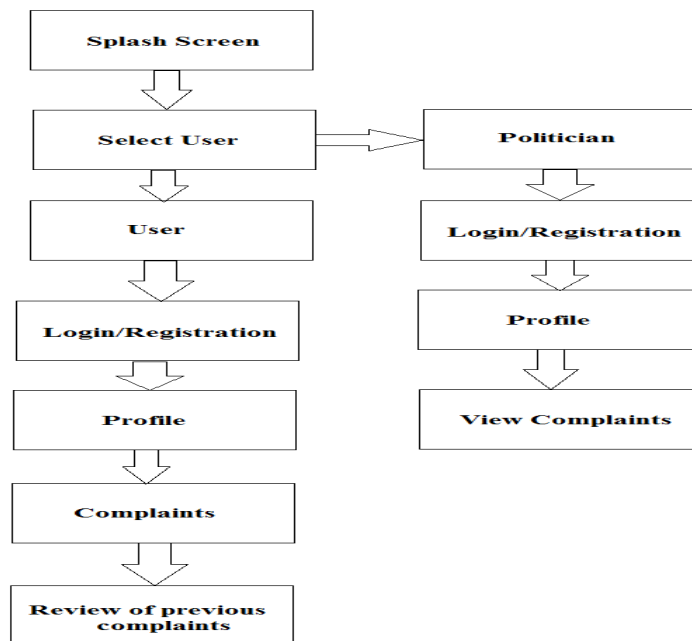
Software is required for sending and receiving bulk messages and various software packages are available. These software packages provide users with the opportunity to add as many phone numbers as required and these phone numbers can be managed in a variety of ways. So we are providing this facility to the users after we acquire this software facility.

3. Location and Google APIs :



Single process can generate multiple outputs.
E.g. Successful login will result in lock open, SMS send and camera on.

In our app we are integrating Google API services for location tracing of nearest required medical center or police station. The Google Maps Distance Matrix API returns information based on the recommended route between start and end points, as calculated by the Google

System Flow:

The first screen which appears when we open the Andro-Socio App is the Splash Screen. The Splash Screen contains the User icon and Politician icon for Login and also at the bottom of the screen there is an option for registration for new users. Registration of local citizens and the politicians is distinct which is stored on the Database Server in encrypted format. Users can upload their pictures on their profile and they can change or update the information anytime. Users should Login to their respective accounts for reporting any kind of complaint or accidents. The Politicians can view these complaints and can take required actions as soon as possible.

5. CONCLUSION:

The proposed system facilitates privacy preserving of the people's identity while they lodge complaints, report incidents like accidents, municipal related issues and crimes with the help of data encryption techniques. In our app there is login for two users i.e. Politician and Common people. In this app, citizens can not only make a complaint on several issues but also they can upload photographs of the civic problems. So far instant messaging facility is provided. It provides review scheme which can be used for polling purpose. Emergency calling facility is also provided for some critical situations.

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