

Determination of Relief Centre's in Floods by using Facebook JSON Data and providing Social Information Analysis

Garvit Khurana, Mudit Agarwal, Lokeshkumar R

Abstract: A fully interactive system that allows users to access the nearest relief centre's by using integration of geolocation, GPS and multimedia data collected from the user's smartphone and using Social Information analysis of Facebook JSON data. The user will be able to share the content with other socialites in the social network. Our paper is based on collecting Facebook JSON data and applying geotagging to the location of users to recreate safe and unsafe localities, and combines them with various social media analysis tools determine a centre to escape the flood and have access to the quickest path to pursue during floods or any other emergency situations. It provides an approximation of the nearest relief centre by using Google Maps and Street View API to determine the real life location of the user and point in the direction of all the relief centre's being set up by The Indian government and help him reach there. Thus in times of natural calamities by applying various social Information analysis techniques we will be able to determine the relief centres by using Facebook JSON data and be able to mark themselves safe.

Index Terms: Clustering, disaster management, Facebook, Social media

I. INTRODUCTION

Economic development and rate of calamity reduction are fundamental preconditions for each other. Cataclysmic events seriously hamper the advancement and accomplishments of manageable advancement while, in the meantime, physical framework we are building may itself comprise a wellspring of hazard in case of future calamities. This is especially valid because of seismic tremors, where the dominant part of unfortunate casualties are executed by their own falling houses. From the points of view of natural corruption, human mediation, and security perspectives, catastrophe the executives is a problem that needs to be addressed for us all furthermore, ought to be attempted on a thorough premise. The methodology looks for networks in danger are occupied with the majority of its stage.

Revised Manuscript Received on 30 May 2019.

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In order to construct disaster-resilient populations, they first need to be endowed so that Community members can cope with the adverse effects of natural hazards. This is the best way to deal with accomplishing maintainability in managing catastrophic event dangers. The paper presents examination and a few discoveries of those projects, which draw in networks to manage debacle dangers. With the ever-advancing computations, we can reduce the effect of the calamity to an extent. Disasters cannot be stopped but they can averted and their after-effect can be minimised. We are proposing a solution to manage the mishappenings in an effective manner, which can save many lives. During a disaster, first thing which anyone is going look for is help like the one a relief centre. Seeking help or even thinking straight during the times of floods can be really endearing and can cause a lot of mental stress. Even if someone is in a straight state of mind, all the chaos around him may result in him making many poor decisions, which result in the destruction of life and property. The project is an attempt to solve a real-world problem with the help of technology, but as it is known, no software development can be undertaken without the application of software engineering practices. Thus, the following project, an application is an attempt to relief the problem of increasing disasters. It takes input from the user his/her location using the third party application that is using Facebook. Thus, the app makes it easier to manage and tackle the disaster. Thus, our project aims to treat these problems by providing the various points mentioned below.

II. PROBLEMS WITH EXISTING SYSTEMS

Currently there are only conventional methods used to handle such situations. Governing committee of countries remain dependent on the army and the relief aid provided by the NGO and other communal service authorities. Every person has to be searched by hit and trial methods and the mass of lands has to checked using aerial vehicles. Like in the recent Chennai floods in India, people were left stranded in the open fields without any support for a long period. This was the part of population, which were not worryingly hurt. Since majority of the helping aid was utilized in helping the casualties and the old people. We can use such population to help themselves by reaching the nearest relief centres so that the entire situation can be managed more efficiently. They will be given save routes and directions instead of leaving them dependent on the military. Once some people reach the centres they can also help in the calamity. The idea is new and revolutionary as there is currently no commercial application to solve this problem.

In addition, the application integrates weather data into the photo stitching process makes the experience more accurate. Travelling or even thinking straight during the times of floods can be really endearing and can cause a lot of mental stress. Even if someone is in a straight state of mind, all the chaos around him may result in him making a lot of poor decisions which result in the destruction of life and property. This model can also be used for research and to get an insight what it looks like in future or how is it going to be. At present there is not a single application that assists the user dynamically in times of floods. The closest system which we could find was an app by NDMA (National Disaster Management Authority) which gave out the basic guidelines one can follow in times of floods and other emergencies. There is no system which helps users reach a safe zone with real time dynamic co-relation and provide simultaneous social media analysis for further assistance in emergency situations. Figure 1 describes an instant of how the data can be represented.



Fig. 1: Proposed App UI

III. LITERATURE SURVEY

Disaster monitoring dependent on social media posts has raised a ton of enthusiasm for the space of software engineering the most recent decade, [1] essentially because of the wide zone of uses in broad daylight wellbeing and security and because of the inescapability not exclusively on day by day correspondence but rather likewise in life-threatening circumstances. Social media can be utilized as a significant hotspot for delivering early admonitions of prominent disasters. The paper exhibited here gives a structure to examine social media multimodal content, so as to choose if the substance is significant to flooding. The expanding prominence of social media has brought about enormous volumes of openly accessible, client created multimodal content. Social media are not just changing the manner in which individuals convey in their everyday lives, yet additionally amid disasters that imperil general wellbeing. Thusly, social media contain a critical wellspring of data, which reports any real occasion including catastrophic events [10] [8]. It is seen that social media stages, for example, Twitter, Facebook, are a rich wellspring of data about true occasions, especially amid mass crises, from the natives' perspective. The bounteous Idea of this information renders them as a standout amongst the most significant sources to remove and deduct early alerts or recognize a progressing disaster. Social media can bolster both early alerts instrument and choice emotionally supportive networks since they offer constant national perceptions, chiefly printed and visual and they have been built up as a standout amongst the most essential correspondence channels. Here, the creator propose a system for a social media observing device that slithers,

speaks to, and investigations content found in social media so as to choose whether the substance is connected or not to a catastrophic event, utilizing a blend of Deep Convolutional Neural Networks on visuals and Random Forests on textual features Social media as a crowdsourcing component gives total situational mindfulness [6][11], essential and new correspondences pathways, and a few open doors for help on an individual dimension.

[2] In any case, to make crowdsourcing a valuable device, we should deliver a few difficulties to use both the information and interchanges capacities, including sense making, security, and coordination. To handle these issues, we can utilize content mining and social information processing advancements by overseeing social tweets or status of the victims amid by the disaster. [3] As of late Twitter has assumed an expanding job as a clearinghouse for data identified with crises and disasters, for example, out of control fires, surges tropical storms, seismic tremors and tidal wave. Despite the fact that news data is broadly accessible through social media, for example, Twitter, the validity of that data might be flawed. To survey the validity of data proliferated through Twitter, Castillo, et al proposed utilizing features [4] from clients' posting and re-posting ("retweeting") conduct, from the substance of the posts, and from references to outside sources. The investigation led by Westeman, et al, found a curvilinear example between the quantity of supporters and the Twitter client's validity; with the end goal that excessively few or such a large number of devotees really influence a Twitter client to appear to be less tenable.

IV. PROPOSED SYSTEM

Product Perspective

Mapping the real world problem and relative positions to the digital environment. Provide a column for putting some notes and relevant information that can be used later like a broadcast enabled messaging portal. Online storage of data of the nearby surroundings and the way flood has affected the different areas. A web app needs the following information:-

- *Application Details*
User Real-Time Location and Geocoordinates
All the Geo-tagged points in a single JSON type file.
- *User Description.*
It includes User's name, contact, gender and family details. This information may be used for keeping the records of the user for any emergency or for any other kind of Notification

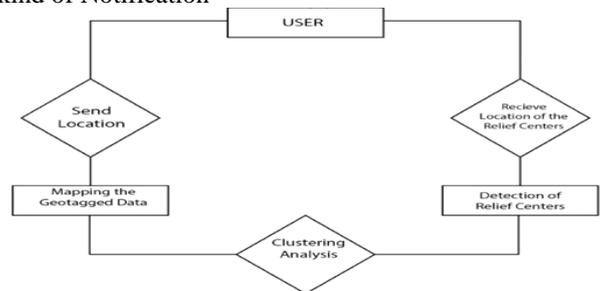


Fig. 2: Proposed Algorithm Flowchart

User Functions

Users of the system should be able to send his location through the mobile application. They will also be provided with a designated column to broadcast any kind of information. The system will support two types of user authorized personnel and user. Users will have access to user functions, and the management will have access to both user and management functions.

1. Send his location through the app
2. Get the location of the nearest relief centre.
3. Broadcast messaging for any useful information.

The Employee should have following management functionalities:

Administrative Functions

1. Compile the data received
2. Make a JSON format file
3. Decide the total number of relief centres.
4. Limit the number of people at a centre.
5. Broadcasting Service

System Functions

In times of natural calamities by applying various algorithms and respective techniques we will be able to determine the relief centres by using Facebook JSON data and be able to mark themselves safe or unsafe particularly. A fully interactive system allows users to access the nearest relief centre's by using integration of geolocation, weather and multimedia data collected from the user's smartphone and using Information analysis of Facebook JSON data. The user will be able to share the content with other socialites in the social network.

Functional Requirements

Easy User Interface and User Experience

Using primarily the app or the existing Facebook app, which is there on mostly everyone's phone, we will be collecting the data. All user has to do is mark his location to help others. and he'll be directed with the best possible path and data of real time to escape for the natural calamity and at the same time the government can get a clear picture from the people facing the problem that where they have to put their resources to use.

Non Functional Requirements

1. To determine the nearest relief centre in times of natural calamities.
2. To provide various social media analysis and tools to simplify the determination and direction in times of disasters.
3. Provide an approximation of the food and utility estimates and the general population of the individual nodes and how it is suitable to each individual.

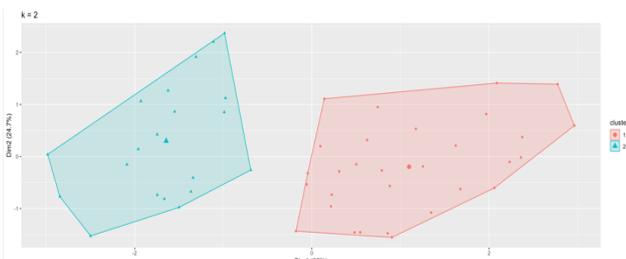


Fig. 3: Clustering performed

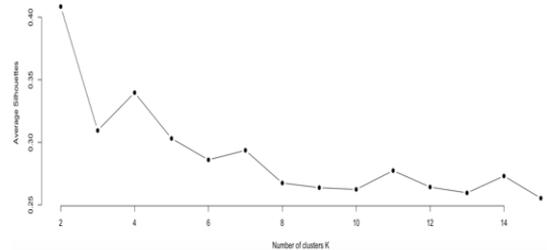
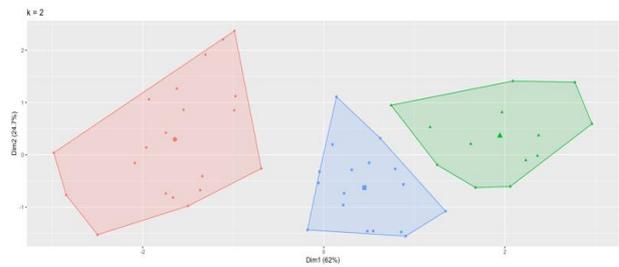


Fig. 4: Silhouette Analysis of k-means

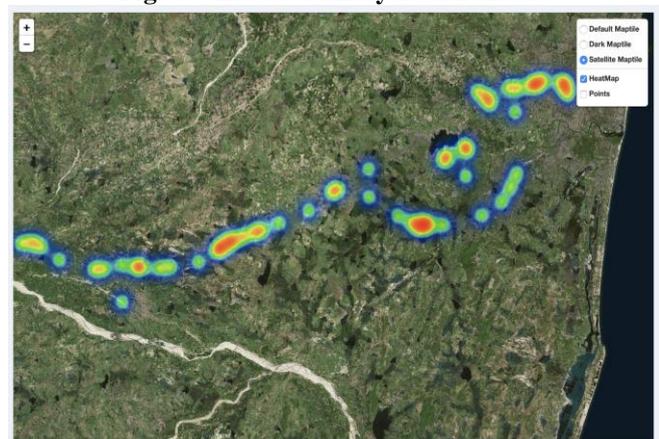


Fig. 4: Final Clusters indicated using Heat Map

V. CONCLUSION

We have developed a model of a fully interactive system that allows user virtually be able to access real life data in times of real hardship by him using integration of geolocation, weather and multimedia data collected from the user's smartphone and stitching them to generate a heat map. Our website is more interactive and will be more niche specific which will provide geo-tagging places from Google maps. Thus in times of natural calamities by applying various social Information analysis techniques we will be able to determine the relief centers by using Facebook JSON data and be able to mark themselves safe.

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