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Earthquake Reporting System Development by Tweet Analysis with Approach Earthquake Alarm Systems

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ABSTRACT

Natural disasters like Tornadoes, floods, and earthquakes are only a few of the catastrophic events which may have devastating repercussions over vast geographical regions. Social media is now being identified as one new information source from common public for helping attain productive social outcomes. A few examples for this are monitoring any ongoing disaster incidents, tracking opinion of public, marketing, research human behavior along with public health problems, and identifying earthquakes. Considering the huge volume of data that is available on a number of platforms pertaining to social media presently in usage, one notable challenge will be extracting valid and related data toward these various objectives. A targeted and quick response toward emergencies will contribute greatly in reducing the losses caused. The earthquake grid analysis project performs one crowd-origin earthquake advance warning system on the basis of tweet information from users and a warning system procedure via admin server. The said study puts forward a statistical technique toward diagnosis of earthquakes out of the information that comes from a grid of tweet data by the twitter dataset. Also in this study, it is suggested to tweet the earthquake-related data analysis by employing semantic clustering and Nave Bays with filtering process. Gather tweet information from twitter about earthquake first and pre-process it for reducing noise using null values for removing the unnecessary tweet data. Here, we have suggested the process of Gaussian filter toward filtering incorrect user data and processing the accurate information about earthquake. In addition, our technique permits maintaining the false alarm probability under check. The statistical method gets applied to information gathered by position-based earthquake data in the twitter dataset. Also in this study, we have introduced two primary procedures, namely, admin and the user process related to earthquake tweet data handling and alert data forwarding to safe region. This analysis processes four classifications: filtering, preprocessing, Nave Bays with the semantic cluster. Results from experiments prove that the suggested system is highly qualified, meaning that both correct information recovery and distortion diagnosis are being successfully performed.

Keywords: Flood Data Set, Earthquake Alarm System, Semantic Clustering, Naive Bays with Filtering Process.

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INTRODUCTION

Natural disasters like tornadoes, floods, earthquakes, and so on, happen to be phenomena which impact several parts in the globe, a few of which have been found to be populated densely. Such regions need a continuous observation for preventing or limiting huge scale catastrophes and for acting promptly toward arrest response during the time when catastrophes strike. Particularly, timely diagnosis of certain emergency incidents, locating affected regions, and assessment of damage functions take priority for providing better assistance to the particular local population [10]. Such types of incidents normally unleash involvement of people in reporting and participation [15]. In fact, during recent years, a significant increase in social media activity has been witnessed in the wake of emergency incidents and mass convergence [3, 11]. In this connection, micro blogs like Weibo, Instagram, or Twitter have attained the privilege of being the channels of data diffusion due to their simplicity and nature [14]. At times of emergencies, usually people are reporting their experience through these media, and that are subsequently overwhelmed via information regarding the unfolding situation. Messages that are shared on such media also are frequently complemented with images, videos, or comments [8]. These days, there are quite a lot of social networking websites. But we also make use of all these sites for updating status and for sharing videos, photos, and other such things. There are no alerts toward earthquakes, bad weather condition, and so on. That is the reason for us to attempt developing such options over the existing system. For overcoming these issues, we have decided to develop alerts toward earthquake in the suggested system. It provides alerts to people. The public is watchful and careful about such warnings. In this paper, users are enabled to send about earthquakes occurring in their locations through messages. Admin has to confirm that such earthquake has occurred [12]. He then sends message to one and all the users pertaining to that site. With the help of this alert, people will be able to save their properties and lives. We have introduced for different categories in this study, namely, filtering, pre-processing, Nave Bayes along with semantic clustering algorithm. This technique involves two primary objective factors for implementation, namely, user and the admin in this analysis. The primary aim of this research is the additional alarm data toward impacted regions and conveying the information about safer place through tweets to the users [4]. The admin is empowered to check users list and also delete users. It is also possible for him or her to monitor the tweets and delete them as well. Admin receives messages about earthquakes from users. After confirming the same, he will then forward the messages to all the users present in the given site [13]. The user, during this process, can receive and scan the tweets sent by others and he can send tweets to further others as well. It is possible for the user to replay others tweets. It is possible to send 140 characters only through tweets. He also can search for people present in the particular site, he may follow other users, and he may as well be followed by the other users. User can send reports about earthquakes to the admin. The all users found in the site will receive earthquake alert from the admin [9]. When admin sends such earthquake alert, users can move on to other safe places upon receiving such alerts. It is possible for users to update their profiles and they can upload their photos also. We have looked into tweet content, network properties, and style for predicting the milling action pertaining to tweeting caution messages under impending danger [5].

RELATED WORK

The enormous earthquake which occurred in East Japan during March 2011 has altered the approach adopted by the impacted municipalities master plan goal [6]. While the approach prior to year 2011 primarily focused on building compact cities for overcoming public peril disputes like depopulation affecting urban planning of Japan. But the purpose of constructing compact city was hindered by the importance of confronting natural disasters post the Great Earthquake of East Japan. Therefore, several municipalities have started rethinking about their policies for achieving compact city with relation to mitigating social disasters in line with crucial requirements for overcoming natural catastrophes such as tsunami and earthquake also [2]. Disaster management happens to be one among the most demanded exercises in the area of emergency support and long duration maintenance of displaced persons and refugees. One particular tool that helps improving disaster management happens to be fast access to updated and perfect information regarding the hazard scenario. The aim of this paper is discussing different techniques of hazard management which can be made use of by the initial responders and common public for reducing the effects that are caused at the time of a disaster. We have reviewed different hazard management schemes in this study, namely, Tt system, UbAlert hazard application, BRIDGE system, and MRCCFR system. The various benefits and drawbacks of adopting the said systems have also been discussed [1]. With social media growing on a large scale, more particularly, with over 500 million of twitter messages getting posted every day, analysis of these messages is catching profound significance among researchers. Researchers have to face challenges with regard to

extraction of information in exercising data mining methods because of the brief tweet length against any normal text having documents of longer length. Brief messages may lead toward less perfect outputs. In this study, we have discussed about feasibility of performing successful solutions which may be utilized for overcoming the ambiguity of such short and brief texts. Also, we are discussing about strategies which may surmount stream data issues [16]. This study suggests a statistical method for detecting earthquakes with the use of information arriving from the smartphone network. The technique permits managing a dynamic grid wherein the active node count changes constantly and nodes happen to be heterogeneous in connection with sensor sensibility as well as delay in transmission. In addition, the technique permits peeping false alarm probability under check. The statistical method is applied on the information gathered via three subnet functions associated with cities of Kathmandu (Nepal), Iquique, and Santiago de Chile (Chile). Diagnosis capabilities of said approach have been reviewed in connection with detection delay and earthquake magnitude. A simulation analysis has been performed for linking probability of diagnosis and delay in detection with the network behavior under the event of any earthquake [7]. One vital quality with Twitter is the real-time characteristic that it possesses. We examine real-time synergy pertaining to incidents like earthquakes on Twitter and suggest one algorithm for monitoring tweets and for detecting some target incident. For detecting any target incident, we design one tweets classifier on the basis of features like number of the words, keywords present in tweet, and also their context. Particle filter performs better than any other equivalent techniques for assessing the position of target incidents. We establish earthquake announcing system as one utilization for usage in Japan. Due to several earthquakes and voluminous Twitter users all along the nation, it is possible for us to detect any earthquake with great probability (almost 93% of the earthquakes with Meteorological Agency of Japan (JMA)s seismic scale of intensity 3 or above can be detected) just by observing tweets. Our new system is capable of detecting earthquakes on time and notification can be conveyed much more faster compared to JMA broadcast statements [4].

PROPOSED SYSTEM

OVERVIEW

In this study, we introduce setting an alarm for an earthquake hazard with the use of tweet information found in the online data set of tweet. The techniques used by this system are filtering, pre-processing, and naive Bayes along with semantic cluster. The usage of pre processing helps reduce noise present in the input data set of tweet while by making use of filtering, it is possible to filter only the true and prompt tweet data of earthquake. Semantic clustering is being used for clustering the information and group the dataset. At the end, it is possible to locate the place where earthquake occurs as well as area of safety with the help of given tweet information on the basis of location by sending reply to the grouped dataset.

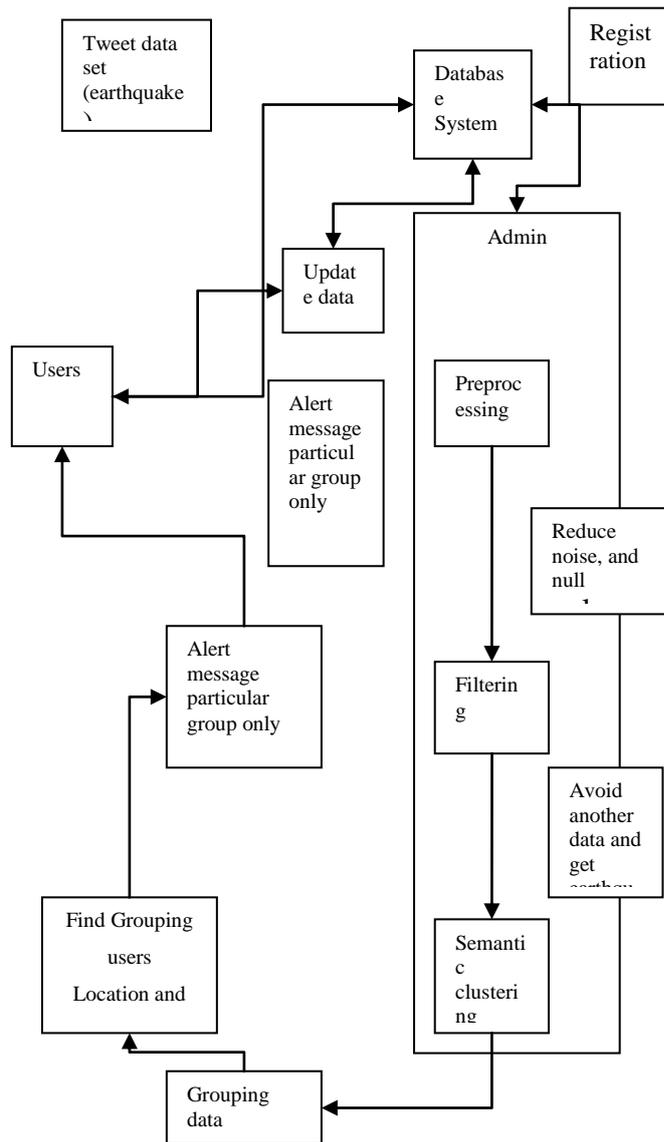
PRE-PROCESSING PROCESS

Data pre-processing happens to be one data mining method which includes converting crude data into some understandable format. Often times, real-life data can be inconsistent, incomplete, and/or inadequate in some trends or behaviors, and it likely consists of several errors. The method of data pre-processing is proven to resolve such problems. Data pre-processing arranges the crude data toward further processing. During data pre-processing, the data has to go through a sequence of steps called data cleaning. Data Cleaning Process: Data gets cleansed through certain procedures like smoothening of noisy data, filling in the values that are missing, and solving data inconsistencies.

FILTERING PROCESS

In IT, data filtering may refer to vast domain of methods or resolutions involved with data set refinement. This means that datasets get refined into just what a single user (or sometimes, a group of users would require), without involving the data which is redundant, sensitive, or irrelevant. Various kinds of data filters may be used for amending query results, reports, or other types of the data results. Data filtering typically involves drawing out information which proves needless to user or information which may be confusing. The query results and created reports from the database tools may frequently result in huge and complicated datasets. It is possible that impartial data pieces or redundant data may disorient or confuse a user considerably. Filtering the data makes the results much more efficient as well. In certain cases, the data filters may work toward preventing extensive access to vulnerable data.

SEMANTIC CLUSTER PROCESS



RESULT AND DISCUSSION

USER REGISTRATION

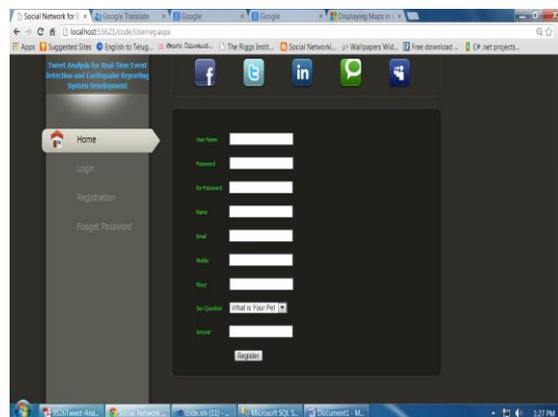


Figure: 2 User Registration

Figure 2 shows user registration. The user have fill user name, password, email, place and for security give security question and answer these details will give by user at the time of registration.

REPORT DETAILS

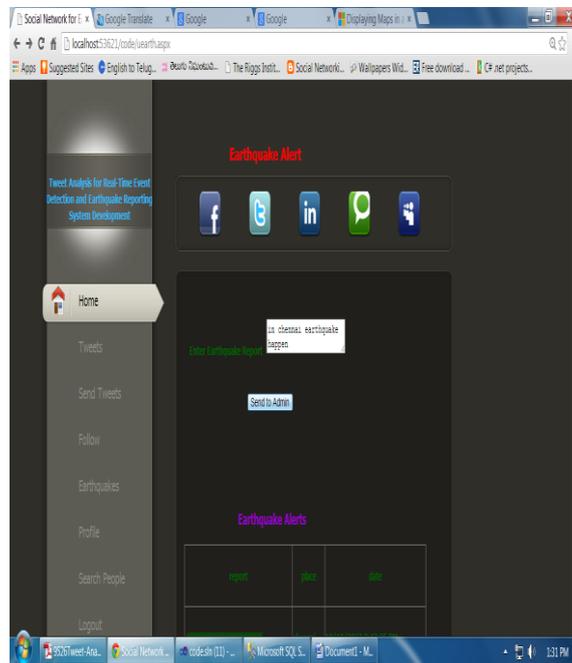


Figure: 3 Report Details

Figure 3 shows report details. The user sending the earth quake report to the admin.

ADMIN ACTIVITY

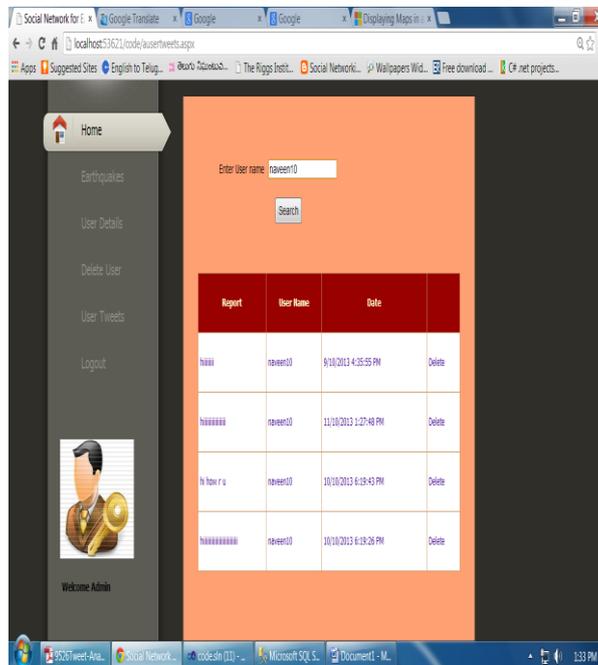


Figure: 4 Admin Activity

Figure 3 shows admin activity. The admin can able to delete false report of user.

CONCLUSION WITH ENHANCEMENT

As explained in this study, we have examined the real-time characteristic of Twitter, by dedicating specific attention toward detection of events. Semantic investigations were applied on tweets for classifying them as negative and positive class. We consider every Twitter as one sensor, and fix the issue as diagnosis of an incident on the basis of sensory observations. Position assessment strategies like particle filtering have been employed for assessing the positions of incidents. As an appliance, we have established one earthquake reporting procedure that is one innovative technique for notifying the public punctually about an earthquake incident. As explained in this study, we have furnished an example which leverages real-time characteristic of Twitter for making it helpful in resolving a vital social issue: natural disasters.

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