SURVEY ON CONTENT BASED DISASTER MANAGEMENT USING SOCIAL MEDIA

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ABSTRACT

Today, Online Social Media such as Twitter, Facebook, WhatsApp, are important sources of real-time information related to things happen around us. People use social media for discussing different situation like disaster / crisis including both natural and man-made disasters. We can use this information for Disaster management. There has been a lot of work on designing information systems that would be useful for aiding post and pre disaster relief operations. We need Automatic System for gathering critical information and coordinating relief ops. And Also need to Learn from Prior Events and be prepared accordingly. Hence we have used Twitter API to access the twitter data. In this project we propose a natural disaster analysis interface that solely makes use of tweets generated by the twitter user during the event of disasters. We observe that our analysis of data from social media provides a viable, economical, uncensored and real-time alternative to traditional methods for disaster analysis and the perception of affected population towards a natural disaster.

Keyword :- *Twitter, risk, recovery, crisis, disaster, API, relief, aiding. Social media, Disaster relief.*

1. INTRODUCTION-1

Currently information about the incidents like disasters etc. is being circulated by social media, we can get lot of news including some fake and genuine. It is hardly impossible to tell whether the news of any incident is true. For managing the crisis, the information should be accurate. Information gathered from social media should be filtered out for developing early warning signals in pre-crisis situation. This project is focusing on filtering out the tweets from twitter data. Filtering out positive and real information will help seekers to take proper actions quickly. These short messages / tweets are only of 160 characters or less. The tweets can be used to get updates from any affected areas during or aftermath of disaster. We propose to automate this task by making use of the data present on social media websites. In this project we want to create a Disaster preparedness which helps to predict, prevent disaster, mitigate their impact on population and respond to their consequences. During disaster social media provides excess amount of information which includes information about the nature of disaster, affected people's emotions and relief efforts.

Research on social media in disaster events is growing and ranges from examination of common photo repositories. Early research shows that critical up-to-date and on-location updates can be found in microblog messages about an unfolding crisis. Analysis of effects, frequency and distribution of natural disasters has been done in many ways by

various agencies and individuals, usually with the help of dedicated satellite data records made by government or interviews taken by affected people at disaster sites.

2. PROBLEM DEFINATION-2

This section will describe certain phenomena leading to disasters and emergencies: disaster trends, where they occur and who is most affected by them. From the outset it is worth reminding ourselves that disasters and emergencies are all too often regarded as aberrant events, divorced from "normal life." In reality, however, the opposite is true. Disasters and emergencies are fundamental reflections of normal life.

The following diagram illustrates this combination of opposing forces. Vulnerability is seen as the progression of three stages:

2.1 Underlying causes-1

A deep-rooted set of factors within a society that together form and maintain vulnerability

2.2 Dynamic pressures-2

A translating process that channels the effects of a negative cause into unsafe conditions; this process may be due to a lack of basic services or provision or it may result from a series of macro-forces

2.3 Unsafe conditions-3

The vulnerable context where people and property are exposed to the risk of disaster; the fragile physical environment is one element; other factors include an unstable economy and low income levels.

3. METHODOLOGY-3

3.1 Data Extraction-1

This part deals with the extraction of tweets from the web and store them locally for further analysis.

3.1.1 Tweet Capturing-1

Data extraction is mainly done with the help of Twitter streaming API. This API is capable of capturing live tweets from the web and parsing them as String objects. These String objects can be further worked upon by the program for storage and manipulation.

3.1.2 Redundancy Check-2

It is possible for them system to capture the same tweet more than once due to retweets by the user. This is done by regular expressions series method based on set threshold wherein random section of incoming tweets that are taken and checked against existing tweets etc. If a high match percent of pattern match is detected, the incoming tweet is discarded.

3.1.3 Data Storage-3

The tweets which passed the redundancy test sub-module are then stored systematically in the files in ascending order of their time of posting. The system stores the tweet message content, username of the person who posted the tweets and time stamps of that tweet. The system is capable of storing even more data such as numbers of re-tweets etc.

3.2 Data Sorting-2

The stored tweets are now analyzed and their disaster category is determined. This is done by checking each tweet against a set of predefined weighted keywords.

3.3 Analysis of data-3

The categorized data is then passed on third part for analysis and interpretation. This module is divided into four distinct sub modules which check data for Disaster Distribution, Geo Tagging, Occurrence Frequency and Sentiment Rating.

[1] Geo-Tagging

[2] Disaster Distribution Analysis

[3] Disaster Occurrence Frequency

[4] User's Emotion Analysis

4. IMPLEMENTATION-4

This website will have the information about disaster which will we filtered out and verified so that seekers can take further actions properly.

•The tweets will be extracted from Twitter using the Twitter Streaming API, Twitter4j.This API will help to get the live feed from twitter.
•For getting the relevant information about disaster only, the developer account is created which follows only verified accounts related to disaster management, Disaster relief.

•Initially, all the tweets will be extracted. These tweets will contain the information like account's username, time of tweet posted, tweet text, location from where the tweets has been posted and hashtags tagged to that particular tweet.

•The extracted tweets will be stored in the database as the dataset. External datasets containing information about disaster are used in the project.

•After that data sorting process will be carried out. In this process the tweets will be sorted on the different basis.

•Data Sorting process will have redundancy check, which will help to remove duplicate tweets by comparing them against existing tweets.

•Furthermore, in data sorting the data will be classified according to some keywords related to disaster.

•Keywords containing Need for requirement for food, blood, doctors, donations to NGOs etc.

•After sorting this data is passed to analysis and interpretation which is divided into submodules Geo-tagging, Disaster Distribution Analysis, Disaster Occurrence frequency.

•After all the process the final data is presented to the users via responsive website UI.

•In this website information is available according to categories of disaster related data.

•Particular Search bar is given so that user can search for the live tweets. Data entered in the search bar is considered as the hashtag.

•The search result will be according to the hashtag (keyword) entered in that search bar.

5. FUTURE SCOPE-5

It is desirable in future that email servers or applications should include different types of pre-defined folders. The first category includes the general traditional folders: Mailbox, sent, trash, etc. It should also allow users to add new folders that can be user defined as well as intelligent or context aware. In convergence with social networks, users should be able to classify emails based on senders or content into different groups.

6. CONCLUSIONS

It is recommended that influential individuals be identified in each country and community before disasters occur so that the necessary information can be disseminated in response to disasters. Preventing the spread of misinformation is one of the most important issues in times of disaster, especially pandemics. Disseminating accurate, transparent and prompt information to relief organizations and governments can help. Furthermore, analyzing Twitter data can be a good source to understand the mental state of the community, estimate the number of injured people, estimate who and what is affected by a natural disaster and model the prevalence of epidemics. Therefore, various groups such as politicians, government, nongovernmental organizations, aid workers and the health system can use this information to plan and implement interventions.

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