Survey on Role of Social Media Applications in Public Rescue Operations during Disasters

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Abstract: *We have experienced the importance of the Public Volunteer Rescue Community during Floods and other natural disasters. In recent rescue operations like floods in Kerala, Mumbai, and Cyclone in Tamil Nadu, we have noticed social media has played a vital role in rescuing the victims, providing shelter for victims using Twitter, Instagram, Facebook. We have seen how the public community helps people during floods, they required support from technologies to operate during disasters efficiently. The social media trend has been increased day by day there are a lot of communities and groups provides help like collecting food items providing shelters, evacuation, the community has been active for twenty-four hours a day and participate in rescue operations whenever required, and few existing applications are developed in Japan due to the frequency of disasters happening there. Existing applications aim to provide disaster-related information to the people in their locality, which may reduce the panics in people, and they can find solutions based on information provided by the application, information can be provided vastly through the internet than people direct communication this will help people to take precautions. A survey was conducted based on the existing application, this paper will focus on how useful the application was and will point out the issues and drawbacks of existing applications.*

Keywords – **Public Volunteer Rescue Community, Disaster, social media, Technologies, Rescue Operations**

I. INTRODUCTION

Today occurrence of natural disasters has been increased and a new variety of technologies has been introduced to the world, based on these few applications help rescue operations by providing information's to the public, we have experienced the importance of the Public Volunteer Rescue Community during Floods and other disasters. When a disaster occurs, early evacuation of victims is one of the effective ways to save humans life, we have seen the usefulness of social media such as Twitter, Telegram for disaster recovery operations is gaining worldwide notice, the Twitter and Telegram have been utilized as an information-sharing platform in the recent operations of the natural disaster happened. For instance, in recent rescue operations like floods in Kerala, Mumbai, and Cyclone in Tamil Nadu, social media played a vital role in rescuing the victims and providing volunteer support for victims. The benefits of using social media were easy for volunteers to reach victims and easy to collect resources needed for the recovery operations, the recent rescue operation the volunteers were working so hard to reach victims, many of the rescue operations were time-consuming. After all, there is a lack of guidelines for the rescue operation and the communities were unable to track who is near to the affected places vastly.

II. SURVEY MOTIVATION AND METHODS

When a disaster occurs, early evacuation of victims is one of the effective ways to save human life, we have seen the usefulness of social media such as Twitter, Telegram for disaster recovery operations is gaining worldwide notice, the Twitter and Telegram have been utilized as an information-sharing platform in the recent operations of the natural disaster happened. For instance, in the Recent rescue operations like floods in Kerala, Mumbai, and Cyclone in Tamil Nādu, we saw social media played a vital role in rescuing the victims and providing volunteer support for victims. The benefits of using social media were easy for volunteers to reach victims and easy to collect resources needed for the recovery operations. The existing application was developed to collect information on natural disasters in Japan. They have chosen Line bot because in Japan most popular messaging service is Line which has more than eighty million active users, so they have come up with a Line bot with the same functionality as the Line messaging application have. The bot provides the following functions, (a)The bot comes with menu icons. (b) the bot will take the user information regarding disaster recovery and share it with the public as a tweet. (c)the bot will provide the information of evacuation places that are already stored in the database. (d) the bot collects both user input and images of the disaster-affected places for publishing it and mentioned the further scope to develop the bot with more appropriate information and evacuation routes according to the user's situation and current location. Based on the study conducted, it was understood that life was at risk because they were unable to contact the volunteers on time. In the recent rescue operation, the volunteers were working so hard to reach victims that many of the rescue operations were time-consuming. After all, there is a lack of guidelines for the rescue operation, The communities were unable to track who is near to the affected places.

III. SURVEY OUTCOMES

There are few related works available related to an application for public rescue operations. The paper "Disaster Information Sharing System Considering Communication Status and Elapsed Time" was developed in 2017 in Japan, In recent years, large-scale natural disasters frequently occurred in Japan and each time there occurred physical corruption or failure of the communication infrastructure, congestion of the communication network due to abrupt communication traffic occurred, The proposed system was an alert server which sends disaster information to local servers and individual phones with hazard maps for evacuation purpose. In 2019 A Prototype System using Location-based Twitter Data for Disaster Management was developed by Quan Zou as a prerequisite for disaster emergency response, timely access to disaster information is particularly important and how to extract effective and timely disasters situation is a key issue. The proposed system combines distributed real-time computing platform Apache Storm, full-text distributed search engine Elasticsearch and log analysis visualization platform to provide visual analysis and sentiment analysis of disaster-related Twitter data, creating a large-scale social media geoscience information acquisition and sharing service system, In the same year A Twitter-Based Disaster Information Sharing System was developed in Japan by Masafumi Kosugi, Keisuke Utsu The proposed system is an improved version of DITS(Disaster Information Tweeting Subsystem), it simply the workflow into straight forward with more efficiency, they missing out with some functionality like Automatic extraction of situational information from tweets and classification of tweets according to the content of those tweets, in the same year multiple applications has been developed Chatbot Application For Sharing Disaster Information Japan for sharing disaster-related information with the public, in 2020 Distress – An Application for Emergency Response and Disaster Management was introduced it was a web application developed for emergency response and disaster management using sos. It displays disaster information, can view the image of disaster that happened, chat with users through web applications, in same year A Proposal on Disaster Information and Rescue Request Sharing Application Using Sina Weibo was developed in Japan system was successful in sharing disaster-related information's which helps the government with rescue operations, and they were planning to improve the proposed system by conducting an operational test in future. In the same year, the Telegram-Based Chatbot Application for Foreign People in Japan to Share Disaster-Related Information in Real-Time was developed based on the motive to improvise the existing applications for sharing disaster information to foreign people who settled in Japan, The work was not accurate, it has limitations that will display nearby three evacuation centers based on Google Map information, in future, they have decided to combine the proposed system with twitter-Based Disaster Information developed in 2017. In 2021 Mobile Application for flood disaster in Jakarta the mobile application developed for minimizing the impact of floods, physically and non-physically by providing alerts and information about the flood, in the future, they are planning to extend the application to not just flood but another natural disaster such as forest fires, mud, etc.

IV. FLOW CHART OF THE PREVIOUS APPLICATION
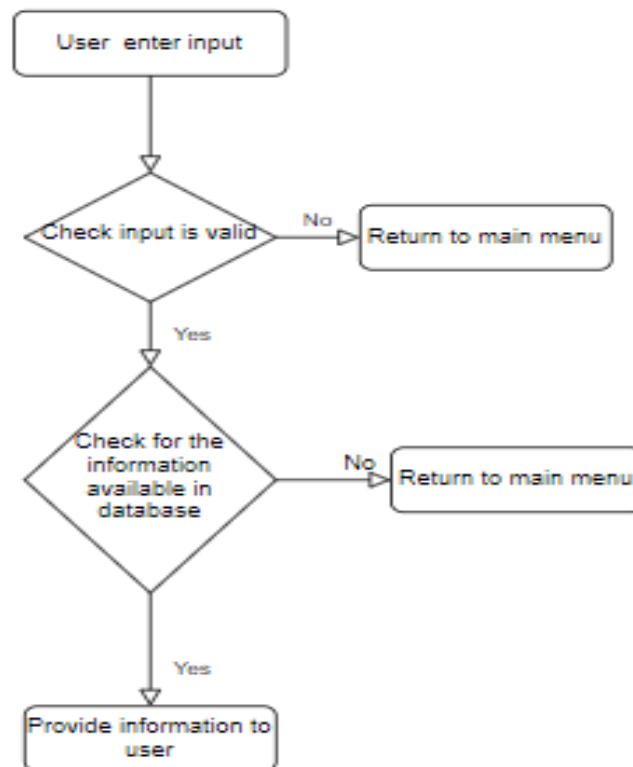
As per the above-mentioned flow chart diagram of the existing application, we can see when the user enters some input, it will check for the availability of information's in the database, if it is there then only the information will be available to users, in this scenarios, a management team should be actively updating the database that is a time-consuming task and always there is a need of servers and computers to keep track and update the databases, once the server goes down it will be difficult for the team to provide information to the public.

V. CONCLUSION

Based on the study conducted on the Role of Social Media Applications in Public Rescue Operations during Disasters, understood that there are advantages and limitations for each application which previously developed, the limitations are previous applications focused on sharing disaster-related information with the public, like sharing information related to shelters, information's about where exactly the disaster has happened, which is provided by the application previously developed, so they will be aware of taking precautions, but there are no features for sending the request for victim's needs and in the recent rescue operation, the volunteers were working so hard to reach victims, many of the rescue operations were time-consuming. After all, there is a lack of guidelines for the rescue operation. And there are limitations for maintaining on-premises databases for handling and storing information related to disasters when a disaster is happening if the server is down, it will be difficult to provide information to the public, and maintenance of databases and servers are costly.

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