

IDEA PROPOSAL

Project title: D-Alert (A Next Generation Disaster Rescue System for Floods)

TEAM NAME: XtreamThinkers

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Abstract

Floods are most frequent natural disasters in India and more than 15% percent of our country's geographical area is prone to floods. Floods cause most socio-economic damage compared to other natural disasters and according to reports, India is one of the severely flood-affected countries in Asian continent. Improper planning and inefficient post disaster responses are the major regions for severity and deaths during floods. Our idea is to provide a solution for efficient post disaster response during floods by creating an automated software system for connecting distressed people and rescue teams. The system consists of an android app where people stuck in the flood hit zones can send their exact GPS coordinated to rescue teams using an app and rescue teams are assigned to groups of people by an algorithm considering their distance and severity of the flood in the region. The app also contains a unique feature where even if there is a lack of internet connection, the user can send his/her location to the rescue through Bluetooth mesh network which doesn't require any network connection. Android app updates the user with evacuations routes for base camps, emergency supplies and precautions to be taken during emergencies.

Keywords: Post disaster response, Android application, GPS location, Evacuation routes, Emergency Supplies, Bluetooth mesh network

1. Introduction

Floods are the predominantly occurring disasters in India and also cause most devastating damage to human life and property. Most of the geographical areas in India are prone to floods and in this year of 2020, Assam, North Bihar, Eastern Uttar Pradesh, Madhya Pradesh, Mumbai, Telangana, Andhra Pradesh, Karnataka, Kerala have encountered the destruction caused by floods and the situation is becoming even worse annually.

We have researched the major problems faced by people and the government during floods and have listed out some essential problems for which we are devising a solution.

Major problems faced by people and government during floods:

1. People stuck in the flood hit zone have no common medium for communicating with the government which is the major issue. Due to the lack of information on conditions in the flood hit zone and number of people affected; government rescue operations will get delayed which will cause more damage.
2. When the flood is hit at some area there is a fair chance that by planning the evacuation routes at early stages people can evacuate through those routes from the danger zone before the flood hits and many lives can be saved, but due to improper planning of evacuation, most people are hit by the floods.
3. People stuck in a flood zone might not have access to mobile network or internet connection and cannot call for help or another emergency.
4. Most of the people stuck inside the flood hit zone will be intimidated by the situation and might not know what to do next. Due to lack of information and the safety steps to be followed, they might risk their lives by not taking precautionary measures.

These are some of the problems that we have listed out and we are trying to solve the above listed problems by creating an android app (D-Alert) for the people and a website for the government. Further details are mentioned below.

2. Motivation

Almost 60 to 70 percent of India is surrounded by water body and every year we see the coasts of Bay of Bengal getting hit by floods which has caused serious economical damage to the people of that area so we have come up with a solution which will help in reducing these effects drastically, since flood and tsunami are the natural disasters in India which have the highest effect we have proposed this idea to overcome all of this.

3. Methodology

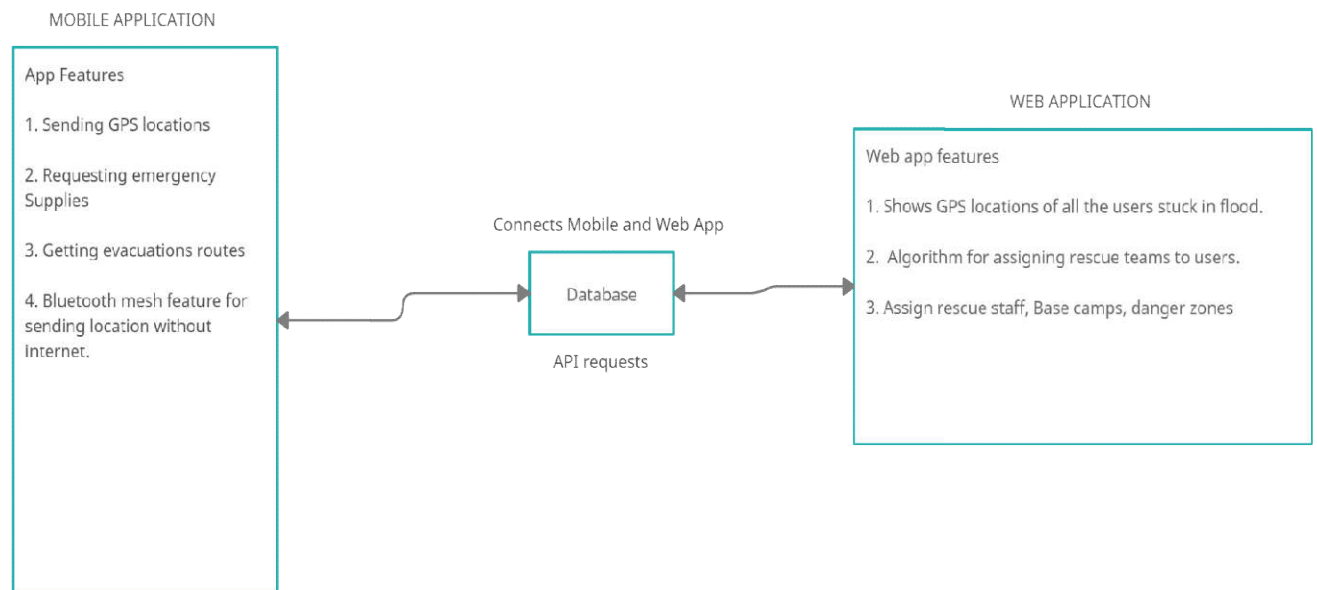


Fig 3.1

4. Solution

- As there is a problem of lack of information for the government on the exact situation inside the flood hit zone, to solve this problem we have devised an idea where we plan to create an app using which with just one click people can send their GPS location to the government and they can track people in the website, which will be a crucial information for them to plan the next steps in the rescue operation.
- For planning the evacuation, we are designing an algorithm which analyses the current flood situation in the particular region and previous years flood data and plan the evacuation routes so that the government can take next actions in the rescue

operations. This feature will be integrated in the website which we are planning to create for the government.

- The android app will be equipped with a new feature where if the user has a lack of internet connection, he can connect to nearby person using Bluetooth and send his location via Bluetooth to the second person. The second person connects to third person via Bluetooth and sends first person's location and his location to third person and the chain continues. At some point if a person with the internet is found, the android app automatically sends all the previous locations to database. This is called Bluetooth mesh network.
- To inform the people about the precautions to be taken, we can create an AI (Artificial intelligence) chatbot in the app which will answer the user's questions. Some other features like daily weather updates and the latest disaster news across the country will be integrated in the app for the benefits of the user.

5. Social Impact

With the present technology in hand it is very difficult for the people in remote areas to ask for help during natural disasters, we believe that this idea will solve the problems of common people who suffer a lot during these natural disasters by helping them to communicate with each other for help and also call for help from the rescue squad, it mainly solves the problem of migrating to safe place, using the proposed idea the public who are in danger can migrate to a safer place, the main impact of this idea is that it can save the lives of many people, since this is an era of technology even the common people won't find it difficult to use a simple user friendly app to ask for help.

6. Market Survey

Our main idea is to provide a service for a person during disaster's and also help in getting connected to rescue teams assigned or to show him the safe evacuation route to the base camps. This application is also helpful NGO, NPOs, Government bodies related to disaster response and management.

Since our idea is to develop a software application, the development cost will be less and the user can install the android app for free.