HashCode 11

Natural Disaster Prevention, Management and Recovery

idkWhatWe’reDoing

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Problem Statement

In natural disasters like flood, all communication infrastructure breaks down, leaving victims to fend for themselves

Our solution aims to:

1. Create an easy to use mesh network that can be accessed by people in distress without prior knowledge
2. Provide a basic communication network to emergency services
3. Help emergency personnel to locate people in need as soon as possible

Solution Description

- The mesh network is made up of multiple floating devices.
- These devices create a captive portal that users can connect to and communicate their status
- Many such devices are monitored by a host device, which is relayed over to a rescue station
- The data (user location and status) goes through multiple devices before arriving at the host devices
- All the data can be monitored at the rescue station through an interactive dashboard
- System is fully self-sustained and doesn’t require any external infrastructure like Internet or Cellular Network

Solution Workflow

Step 1

Enable users to connect to a rescue device from mesh network

Step 2

Transfer the data received to rescue station

Step 3

Data is monitored through dashboard and appropriate rescue measures are taken

Tech stack - Hardware

- Captive portal is created on ESP8266
- LORA Transceiver creates a mesh network
- User’s location is captured with the GPS module
- Solar panel charges the Li-Ion cells
- Li-Ion Cells are used to power the device in absence of sunlight

Tech stack - Software

- React is used for the dashboard
- Google Maps SDK allows drawing of custom maps
- React-google-maps is used to pin user's location on the map
- Firebase Realtime Database as a cloud database, to provide necessary information to rescue personnel

Feasibility

- Intuitive and easy to follow process, that enables victims (including elderly), to receive necessary help (food, medicines, evacuation).
- Since it is a zero configuration system, it is very easy to deploy, in case of an emergency.
- The devices just have to be released into the water and they will do the rest.
- This system provides rescue services to people in distress and helps in saving their lives.