



JalPravah

One solution for all dams

– CROSS Coders

Our Team

CROSSS Coders

Team Members

- » Rincy Pereira (Leader)
- » Sanil Rodrigues
- » Smith Dabreo
- » Selvin Tuscano
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- » Kevlyn Kadamala

Mentors

- » Dr. Nilesh Patil
- » Ryan D'silva

Problem Statements (Ministry of Power)



#1 Title : Development of IoT based advance Public Address and Flood Warning Systems across all Hydro Power project areas

ID : LN379

#2 Title : Integrated Automatic Flood Warning and alert system using IoT

ID : PK367

Process Flow Diagram

3. Data saved and sent for processing

4. Processing data

5. Processed data used for predictions



2. Transfer data to cloud through HTTPS



1. Collect Data from sensors

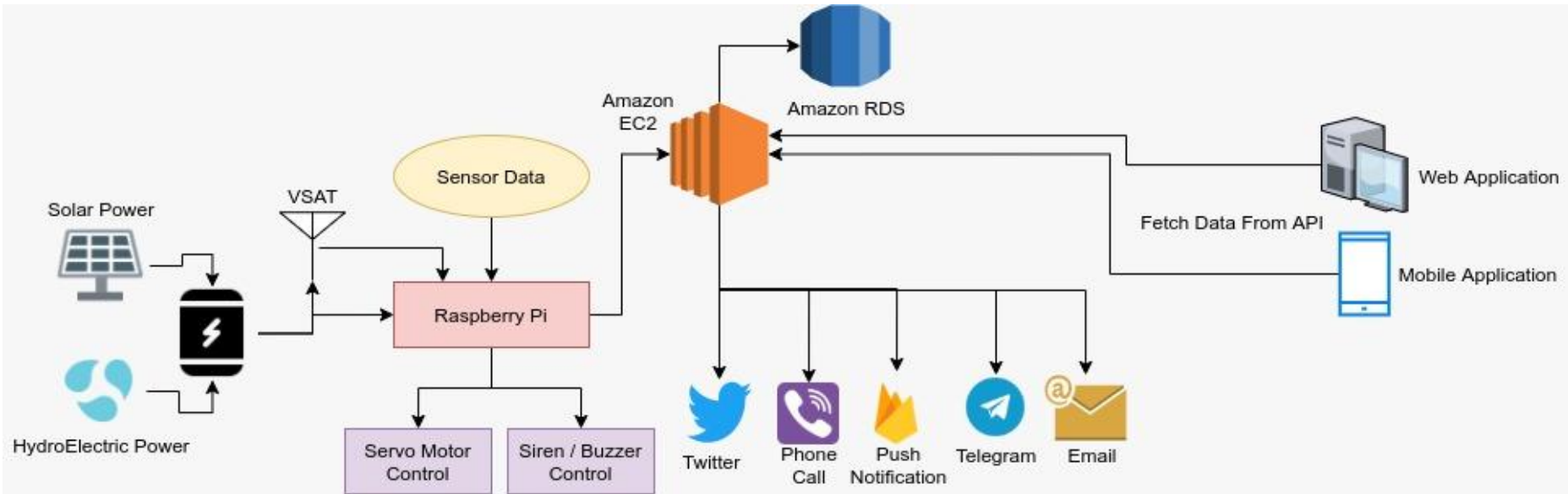


6. Alert system initiated

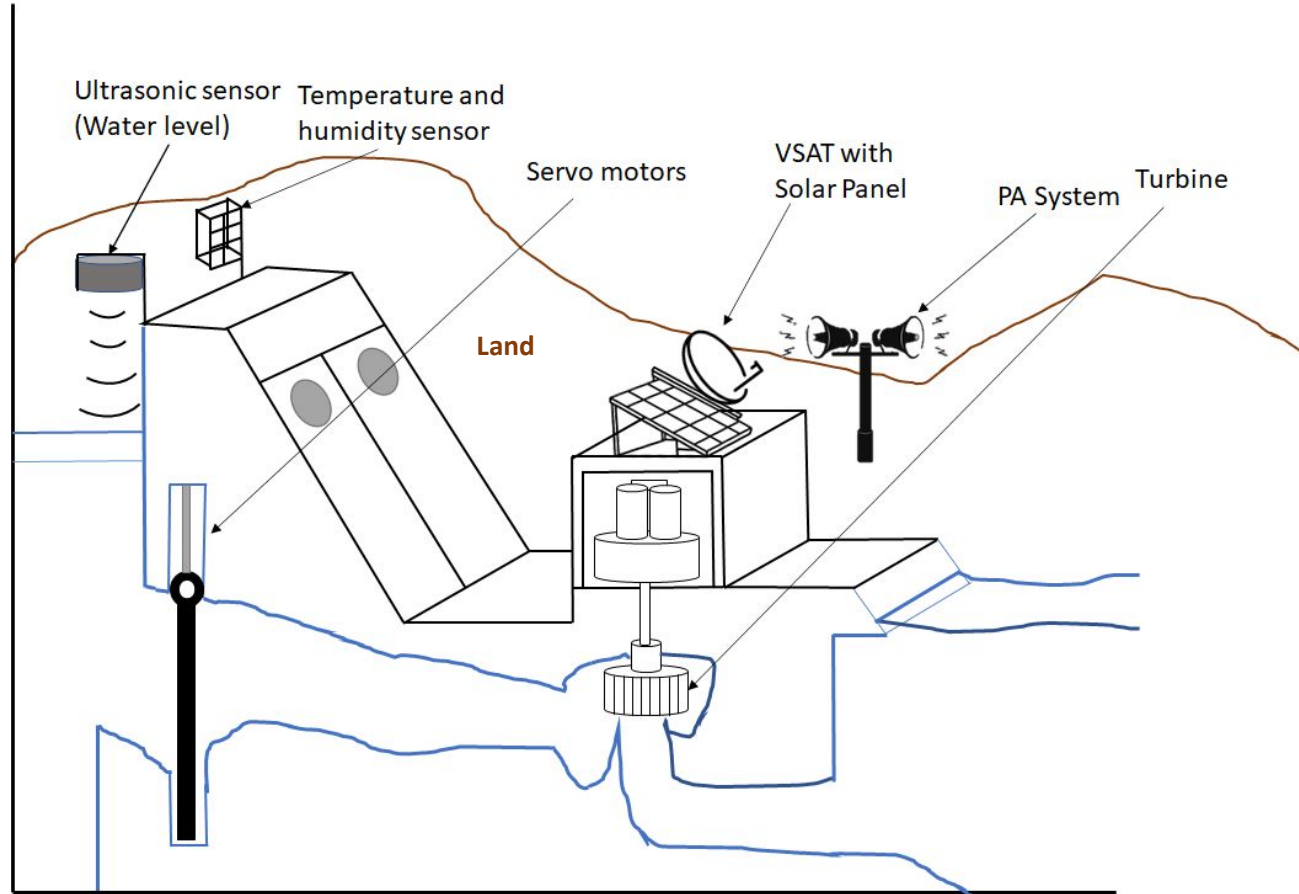


7. All Data available on all output devices

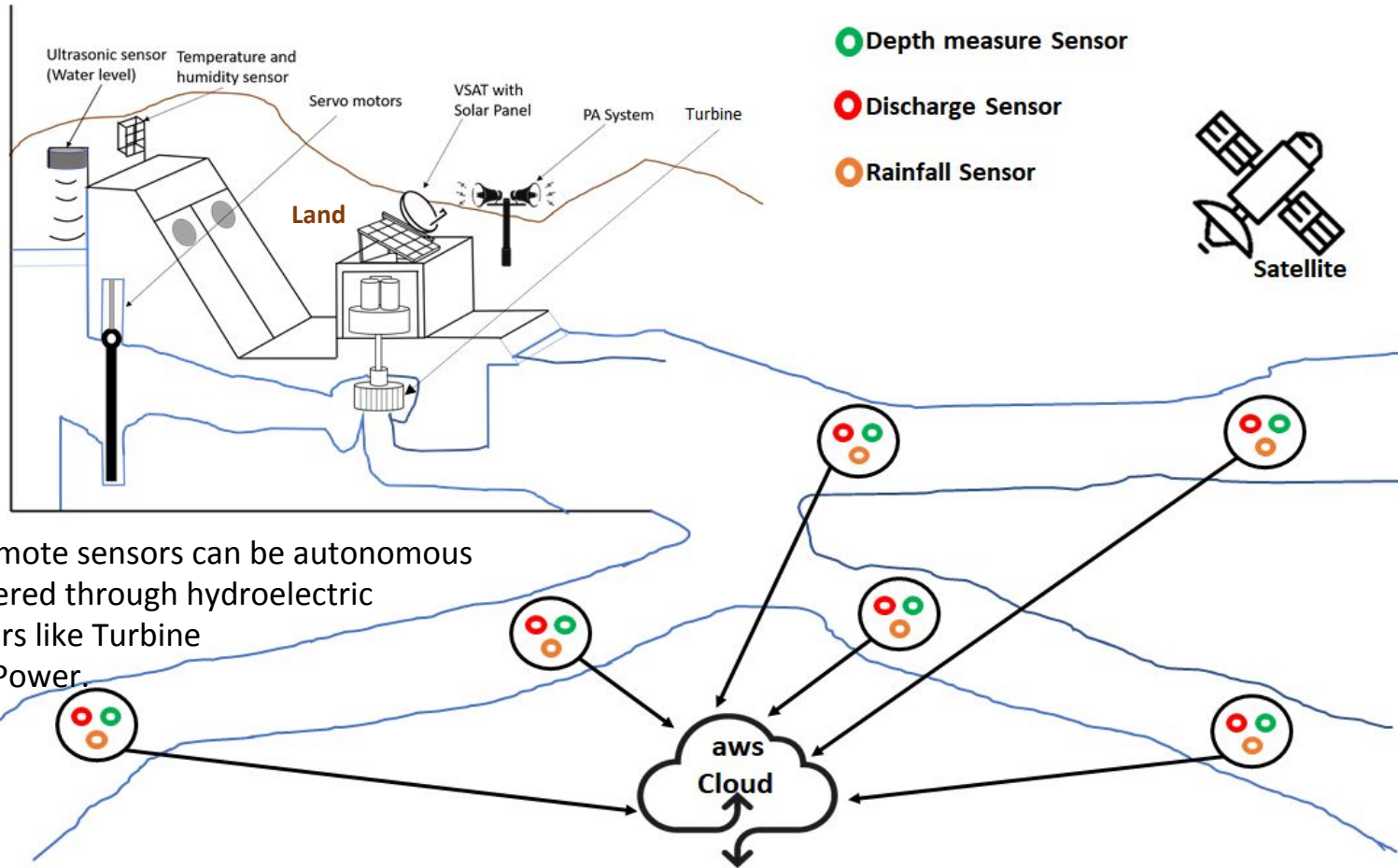
Technical Flow Diagram



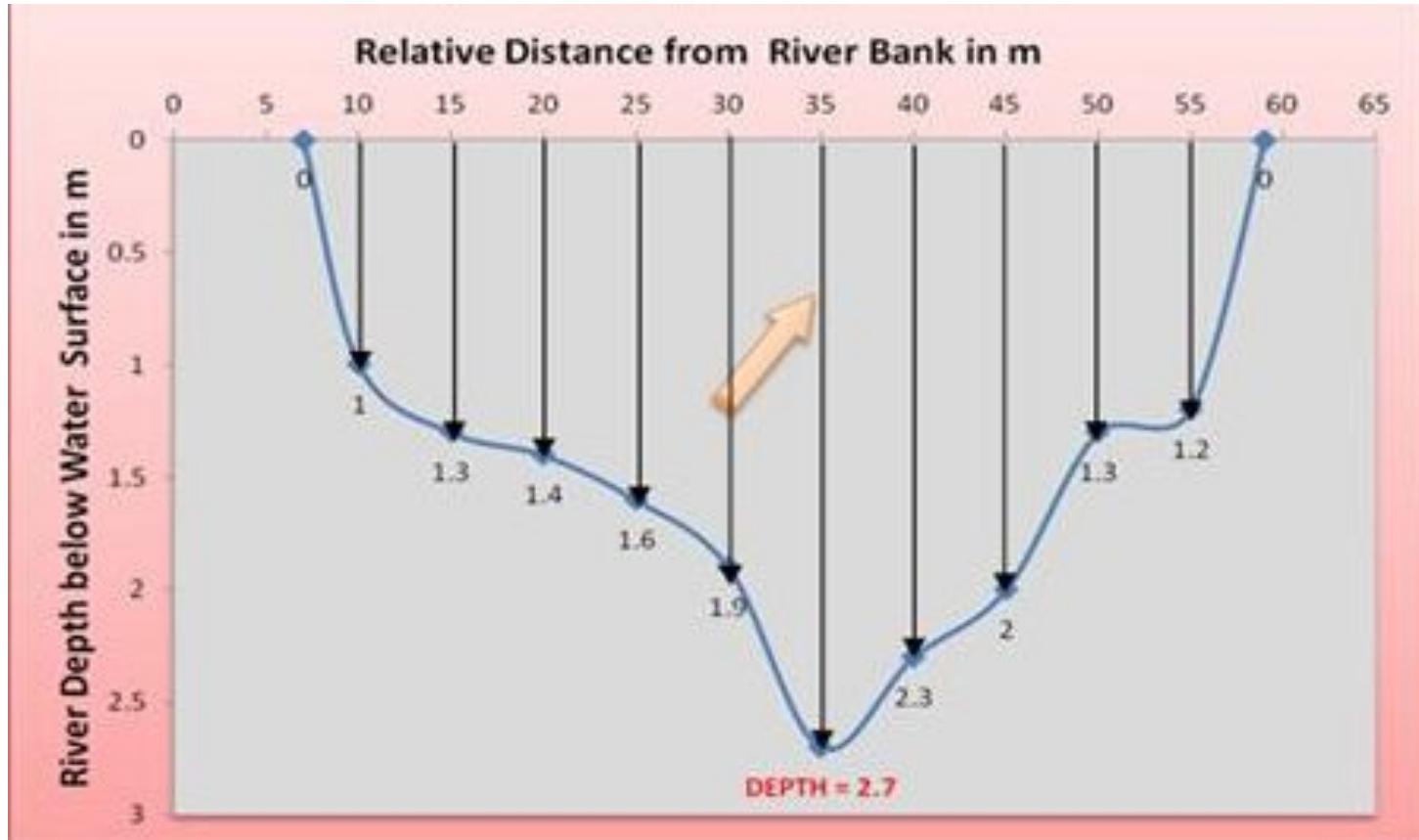
Dam Model



Dam Model with Sensors Deployed Downstream



Mathematical Model



Mathematical Model Contd.

- Let A and B be the two endpoints where discharge sensor and depth measurement sensors are deployed.
- Let D_{AB} be the distance between endpoints A and B; and T_{AB} be the average time taken by water to travel between endpoints A and B and V_{AB} be the surface water velocity between endpoints A and B.

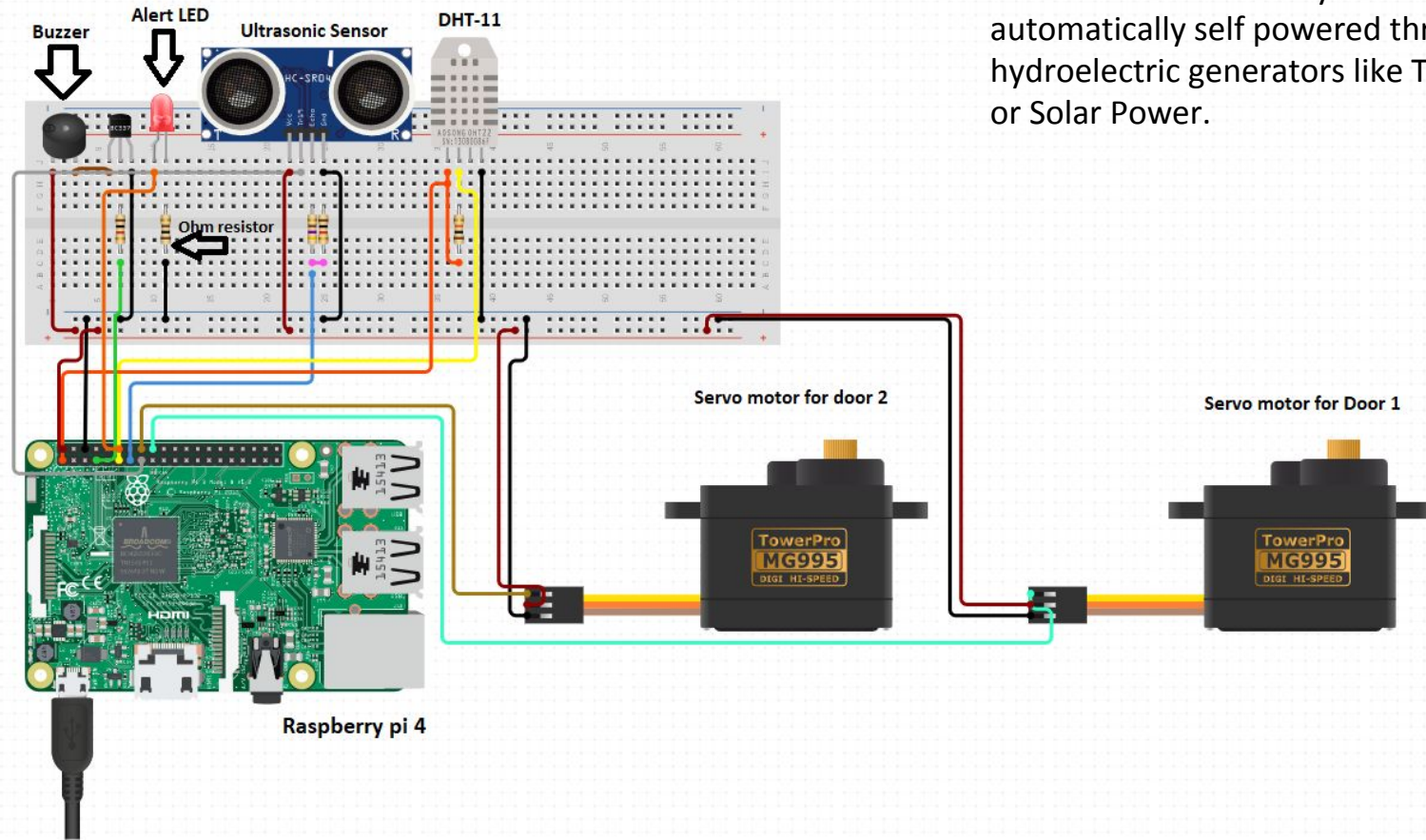
$$V_{AB}(m/s) = \frac{D_{AB}}{T_{AB}}$$

- Let d_{AB} be the average depth of river between endpoints A and B.

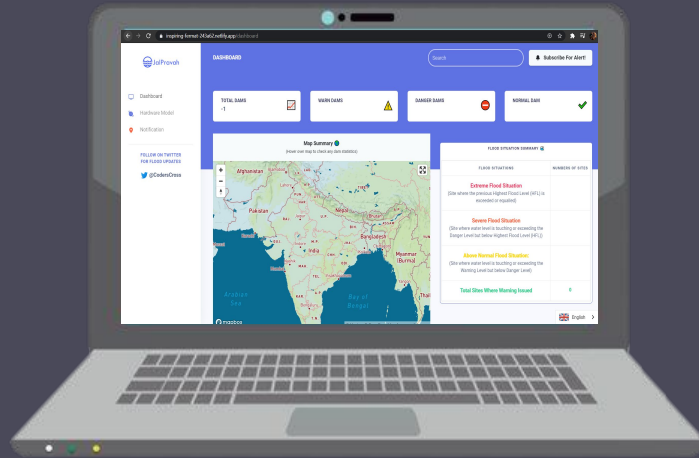
$$Waterflow(m^3/s) = V_{AB} \times d_{AB}$$

- Then we can set the threshold value for waterflow.
- If waterflow > threshold, sent Danger Level Alert message; else sent Warning Level Alert message.

Hardware Model



Features



Web Features:

- » Email alert
- » SMS Alert
- » Live map data
- » Simple UI
- » Live data for dams
- » Live IoT data
- » Notification Management
- » Admin model for easy control
- » Multi lingual support



Mobile Features:

- » Call Alert
- » SMS Alert
- » Telegram Bot
- » Mobile App

» App Features:

- » Nearby API
- » Live data for dams
- » Live IoT data
- » Notification management

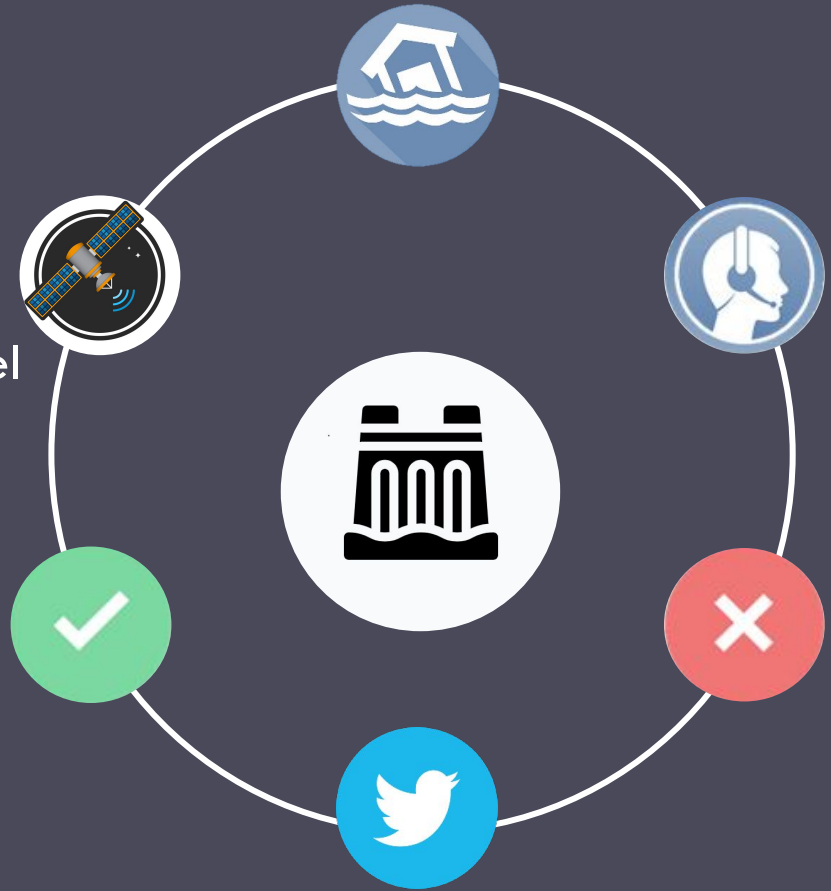


IoT Model:

- » Cost effective
- » Automated and manual control
- » Siren Alert
- » Lossless data
- » Provides humidity and temperature readings
- » Measures water level constantly

Additional Features:

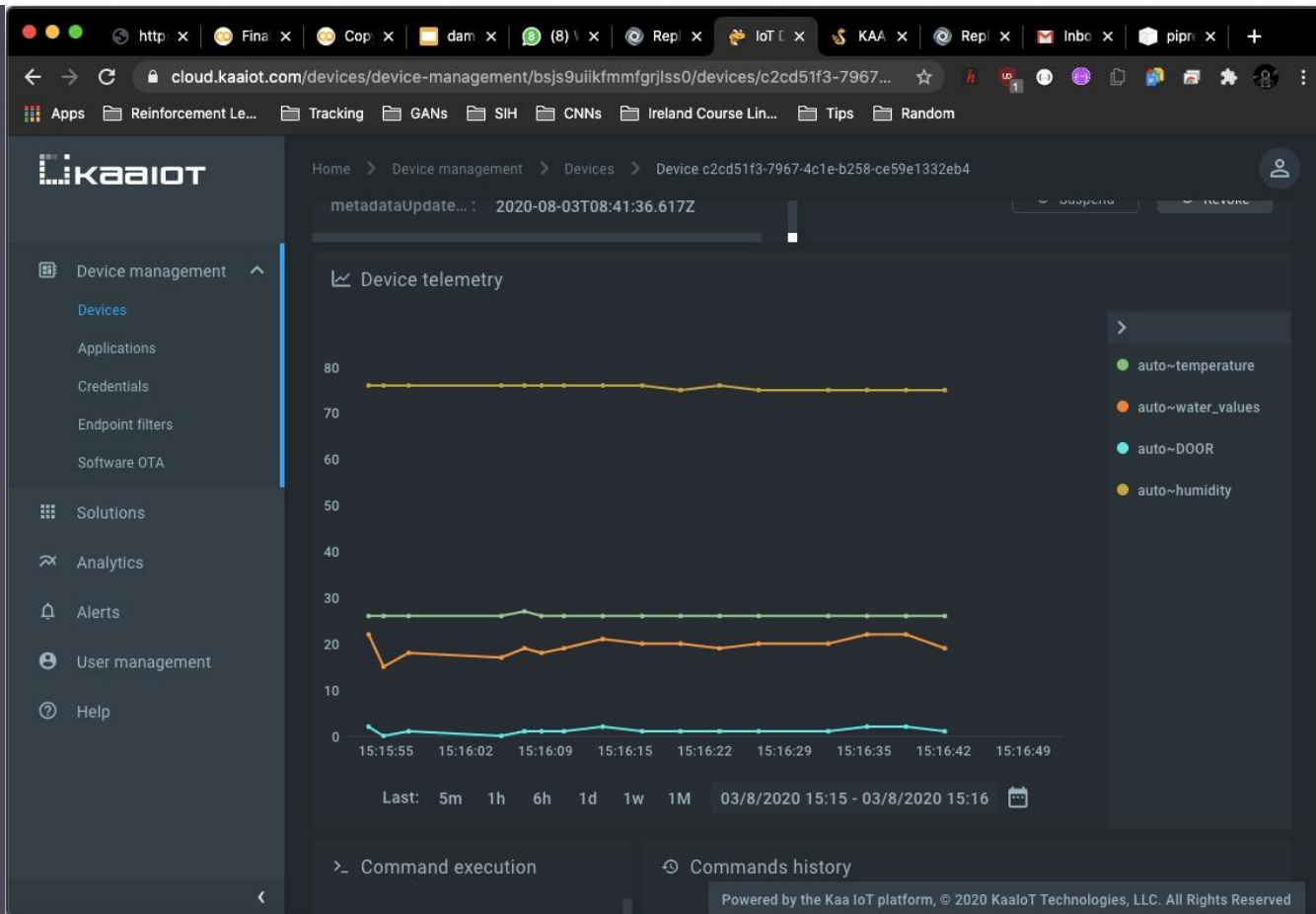
- » Forecast Model
- » Satellite Imagery and Water Level Extraction
- » Twitter Bot
- » Helpline Numbers
- » Do's and Don'ts



New Features

- » Kaa Dashboard
- » Call Alert
- » Telegram Bot
- » Nearby API
- » NGINX for server encryption (Backend: <https://api.pushpak1300.me/> & Frontend: <https://jalpravah.pushpak1300.me>)

KaaloT Dashboard





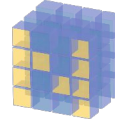
Redis



Flask



Python



NumPy



Docker



Technology Stack

Backend

- ✕ Redis
- ✕ MySQL
- ✕ Docker
- ✕ MSG91

- ✕ Flask
- ✕ Pusher
- ✕ Telegram API
- ✕ AWS

- ✕ Python
- ✕ MailGun
- ✕ Twilio
- ✕ Nginx
- ✕ Twitter Developer



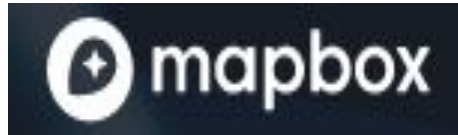
Chart.js



Bootstrap



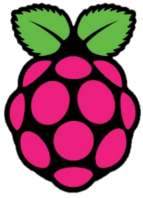
Vue



Technology Stack

Frontend

- Chart.js
- Bootstrap
- Mapbox
- PWA
- VueJS
- Sass



Raspberry
Pi



Python



Git



Flutter



Nearby
API



Firebase



Technology Stack

IoT, Build Tools and Mobile App

- ✕ Raspberry Pi
- ✕ KaIoT
- ✕ Python

- ✕ Git
- ✕ Netlify
- ✕ Vercel

- ✕ Flutter
- ✕ Firebase
- ✕ Nearby API
- ✕ Hive



Thank You