SMART INDIA HACKATHON 2023

Aapda Sanketak (ASAAN)

Ministry : Ministry of Jal Shakti

PS Code: SIH-1291

Problem Statement Title: A mobile app that crowd sources water-related problems from around a community, open sources data, etc. and display them on a map.

Team Name: 404 Founders

Team Leader Name: Aadarsh Verma

Institute Code (AISHE): C-49311

Institute Name: Institute of Engineering & Technology, Lucknow

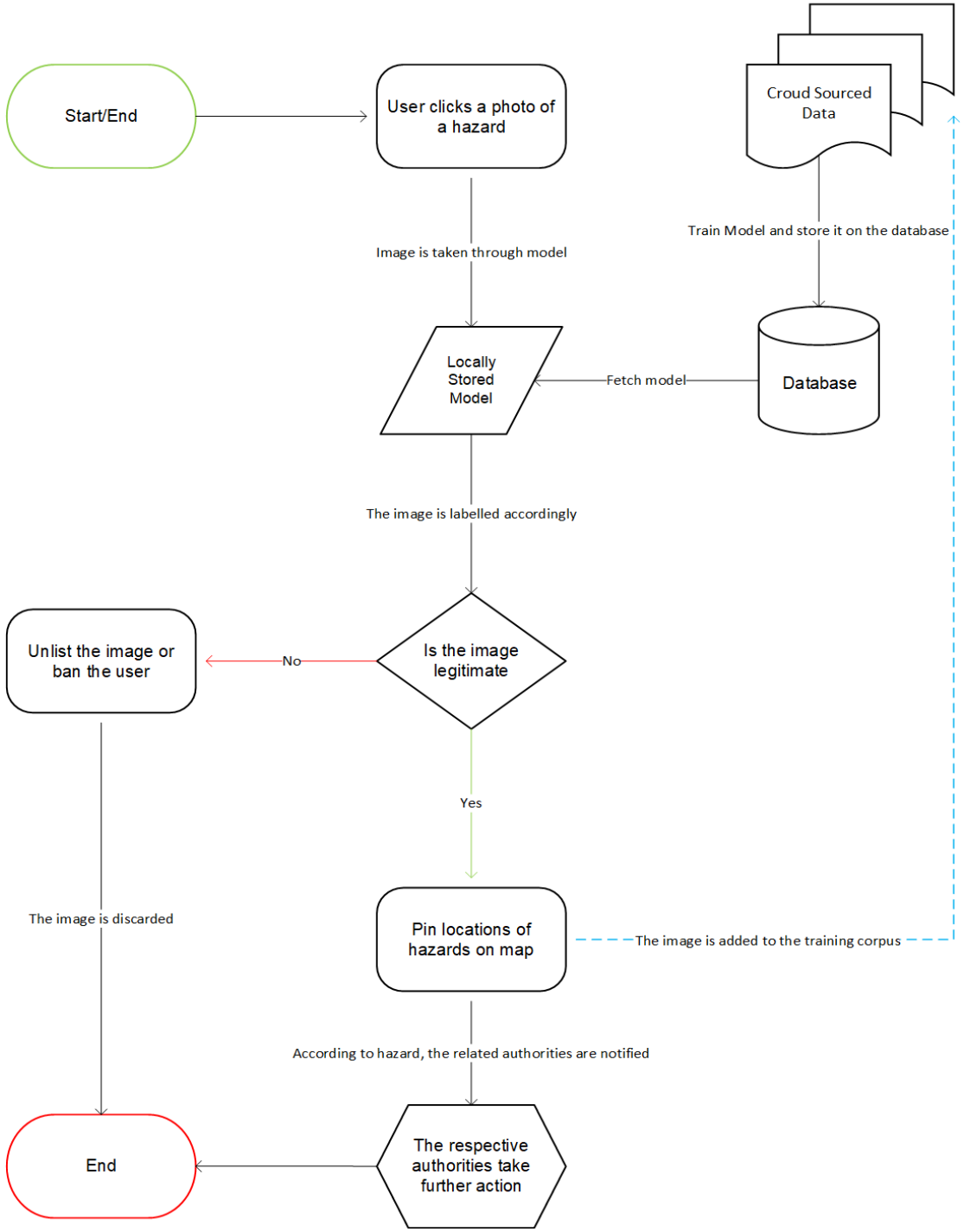
Theme Name: Disaster Management

Characteristics

- Automatically **Geo-reference** the user's GPS location in the I**mage's metadata** at the time of image capture to pinpoint the disaster's exact location.
- The model will be based on **CNN (Convolutional neural networks)** with sequential layers, activated on **ReLU (Rectified Linear Unit)**.
- The model **classifies the type of water disaster** in the photo (e.g., flood, flooding events, water quality issues in ponds/lakes, urban flooding, and drainage problem) and displays **Color coded pins** with **Mapbox API**.
- Model will target features like **Disaster type, Severity, Concerned authority** outputting a Nx3 matrix making it a **Multi class multi output problem.**
- The community will **Upvote/Downvote or Report** posts passively to spot illegitimate posts with the **image captured by the others throughout the community**. The Admins have the option to take action against false reporters.
- The model is **re-trained for every new batch of 1000 images** added to the blob storage by the community, the retraining is done admin/server side and then the trained **model is locally cached on the mobile minimizing hardware requirements** to run the app.

Tech-stack

React Native, Keras, Python, NoSQL, JavaScript, OpenCV, mapbox, Firebase, TensorFlow



Idea/Approach Details

Use Cases

- Will decrease the time taken to report a disaster.
- Authority wise categorization of the disaster.
- With geo-referenced images, it is much easier to locate a disaster by the authorities.
- The app can be a platform for promoting awareness campaigns, volunteering more crowdsourcing, and coordinating relief efforts.

Potential Show stoppers

- Circulation of fake reports and false images.
- Lack of user engagement towards crowd sourcing.

Dependencies

- Network availability in the disaster struck area.
- Camera with optimal image quality.
- Location services for geo-referencing.

Team Member Details

Team Leader Name : Aadarsh Verma

Branch : BTech | Stream : CSE (AI) | Year : III

Team Member 1 Name : Aditya Singh

Branch : BTech | Stream : CSE (AI) | Year : III

Team Member 2 Name : Sarthak Sharma

Branch : BTech | Stream : CSE (AI) | Year : III

Team Member 3 Name : Anushka Gupta

Branch : BTech | Stream : CSE (R) | Year : III

Team Member 4 Name : Saurabh Mahapatra

Branch : BTech | Stream : CSE (AI) | Year : III

Team Member 5 Name : Tanush Gupta

Branch : BTech | Stream : CSE (AI) | Year : III