Basic Details of the Team and Problem Statement

Ministry/Organization Name/Student Innovation:

Ministry of Power

PS Code: **SIH1374**

Problem Statement Title: **Cloudburst prediction system**

Team Name: **Swastik**

Team Leader Name: **Abhinav Kumar Jha**

Institute Code (AISHE): **C-46112**

Institute Name: **ABES Engineering College**

Theme Name: **Disaster Management**

SMART INDIA HACKATHON 2023

SIH

Idea/Approach Details

Describe your idea/Solution/Prototype here:

➢ Analysis of altitudes ranging from 3 to 7 KM due to its susceptibility to cloud burst events.

➢ We employ cutting-edge wind mapping technology to track moisture-laden wind patterns. We will monitor the movement of these winds in real-time.

➢ We cross-reference wind data with weather maps to identify locations where cumulus clouds are above nimbus clouds to predict cloud bursts.

➢ Factors influencing cloud burst are cloud volume and regional temperature.

➢ Our approach not only predicts cloud burst events but also contributes valuable insights to weather forecasting.

➢ It aids in disaster preparedness efforts, ultimately helping mitigate the risks associated with these natural phenomena.
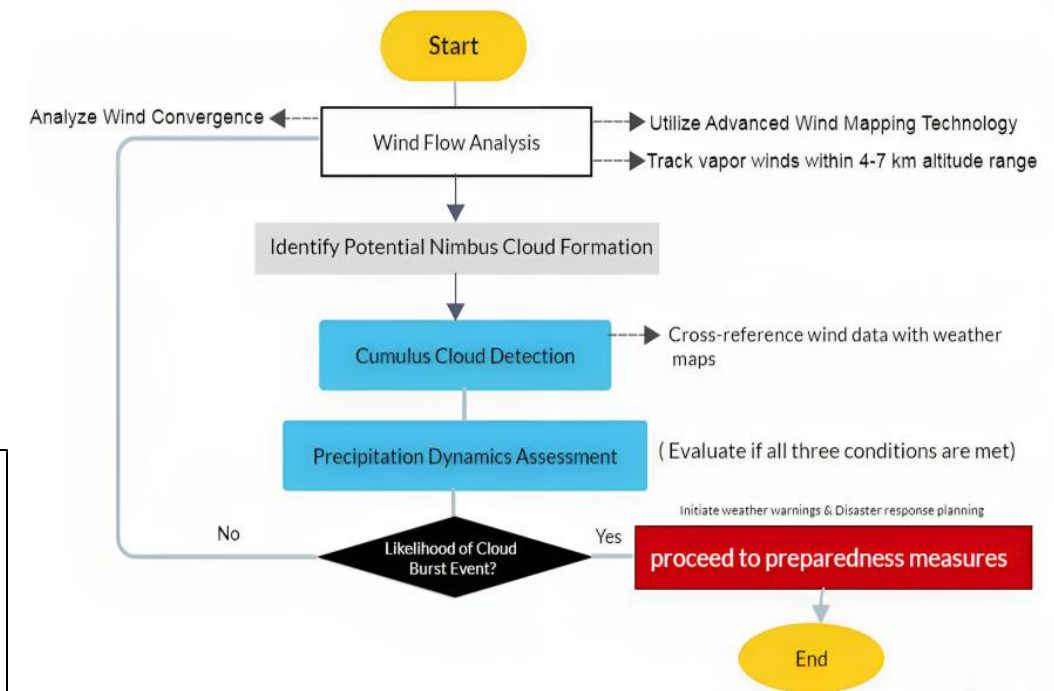
Describe your Technology stack here:

➢ Python

➢ NumPy

➢ Pandas Library

➢ Linear Regression Model

➢ Random Forest Classifier

➢ Weather API (OpenWeather API)

➢ HTML, CSS, JS, Flask (Web App)

➢ Kotlin/ Flutter (Mobile App)

Idea/Approach Details

Describe your Use Cases here

- Disaster Preparedness and Response.
- Ensuring timely evacuations and resource allocation.
- Infrastructure in mountainous regions can be designed with better resilience against cloud burst-related disasters.
- Tourism and Outdoor Activities can be prior informed in mountainous areas to ensure safety.
- Environmentalists use this data to monitor and protect fragile ecosystems in regions susceptible to cloud burst events.
- Leads to better meteorological predictions and early warnings for various weather-related events.
- The project's broad potential is to benefit society, from disaster management and build environmental conservation and beyond.

Describe your Dependencies / Show stopper here

- This project represents a pioneering effort, marking its inaugural implementation with no prior existence.
- The project heavily relies on accurate and up-to-date wind and weather data.
- Adequate infrastructure for advanced wind mapping technology.
- Compliance with regulations and ethical standards related to data collection.
- The project requires a team of skilled meteorologists and data analysts to interpret complex weather patterns accurately.
- Ensuring that local communities are informed and engaged in disaster preparedness efforts.
- Rigorous testing and validation of the predictive model to demonstrate its accuracy and reliability.

Team Member Details

Team Leader Name: **Abhinav Kumar Jha**

Branch : B.Tech   Stream : CSE-AIML   Year : III

Team Member 1 Name: **Anirudh Pratap Singh**

Branch : B.Tech   Stream : CSE-AIML   Year : III

Team Member 2 Name: **Mishita Saxena**

Branch : B.Tech   Stream : CSE-AIML   Year : III

Team Member 3 Name: **Aditya Sharma**

Branch : B.Tech   Stream : CSE-AIML   Year : III

Team Member 4 Name: **Nandini Garg**

Branch : B.Tech   Stream : CSE-AIML   Year : III

Team Member 5 Name: **Aditya Srivastava**

Branch : B.Tech   Stream : CSE-AIML   Year : III

Team Mentor 1 Name: Ms. Deepali Dev

Category : Academic   Expertise : AI/ML/DS   Domain Experience (in years):   16