Smart Water Scarcity Analysis and Distribution Solution

Abstract:

Water scarcity is a growing concern worldwide, requiring efficient monitoring and distribution strategies for the growth and needs of common citizens as well as the entire society. The Smart Water Scarcity & Distribution System leverages Google Earth Engine (GEE), NASA GRACE, and GPM IMERG datasets to analyze groundwater levels and rainfall trends in real-time. This system provides precise water availability predictions, enabling authorities to plan optimal water distribution based on demand and scarcity levels.

The system utilizes remote sensing data to fetch historical and real-time water availability for any given location. It classifies regions into scarcity levels and predicts future water consumption using machine learning techniques. Real-time weather data from OpenWeatherMap API further enhances accuracy. Based on the collected data, the system generates visual trends and helps governments and municipalities distribute water efficiently to high-demand areas.

The system uses WorldPop and NASA SEDAC datasets as well to fetch the real time population and population density data to estimate the water consumption for each area based on which we can predict the water demand for every area based on the historical data.

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Name 1: D Ashrith Reddy

Roll No:22261A1216

Name 2: Aruri Nikhil

Roll No:22261A1205

(Mr.B.Lokesh)

Internal Supervisor

(Mrs. U. Chaitanya)

IOMP Supervisor