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13 CLIMATE ACTION

WHAT IS THE GOAL HERE?

Taking urgent action to tackle climate change and its impacts.

WHY?

Climate change is caused by human activities and is threatening the way we live and the future of our planet. By addressing climate change, we can build a sustainable world for everyone.

But we need to act now.



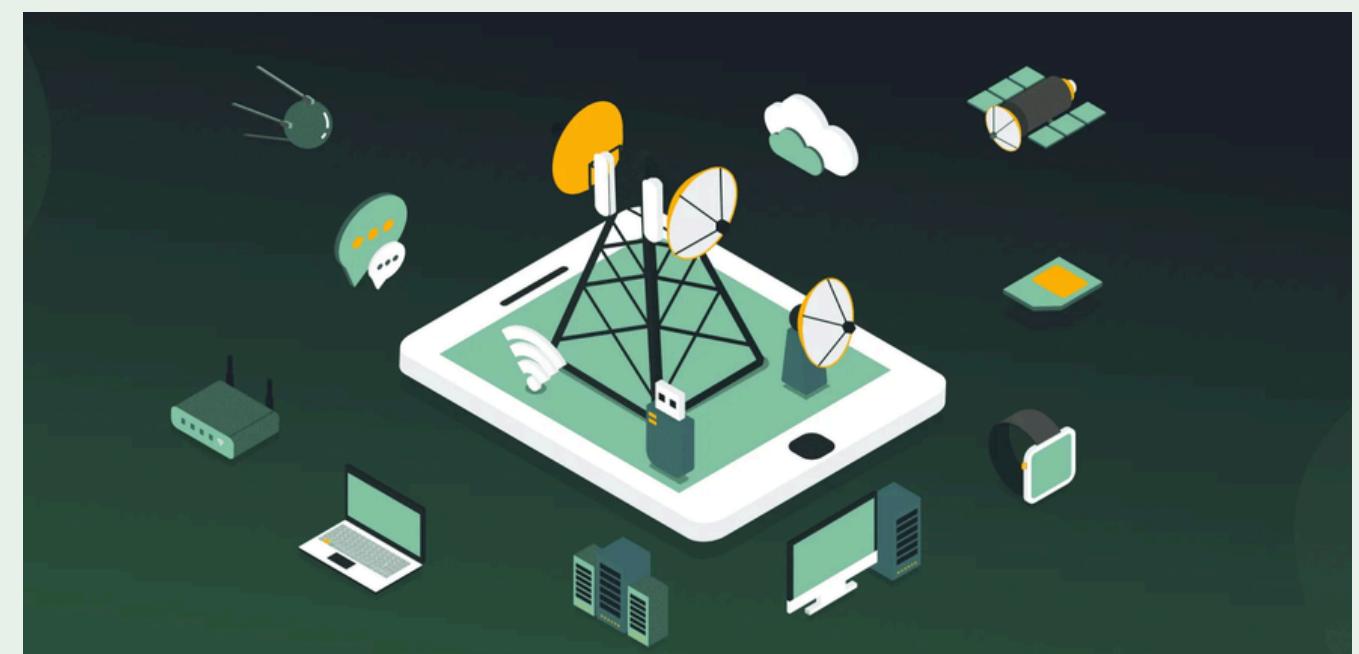


Project Details

- Intelligent Weather Forecasting System monitors environmental conditions.
- Uses solar and battery power for continuous operation.
- Integrates Smart system for sensing and real-time data transmission
- Utilizes AI for accurate weather prediction.
- Ideal for smart agriculture, disaster management, and climate research.
- Ensures reliable and automated weather tracking.

This system collects and analyzes various environmental parameters, including:

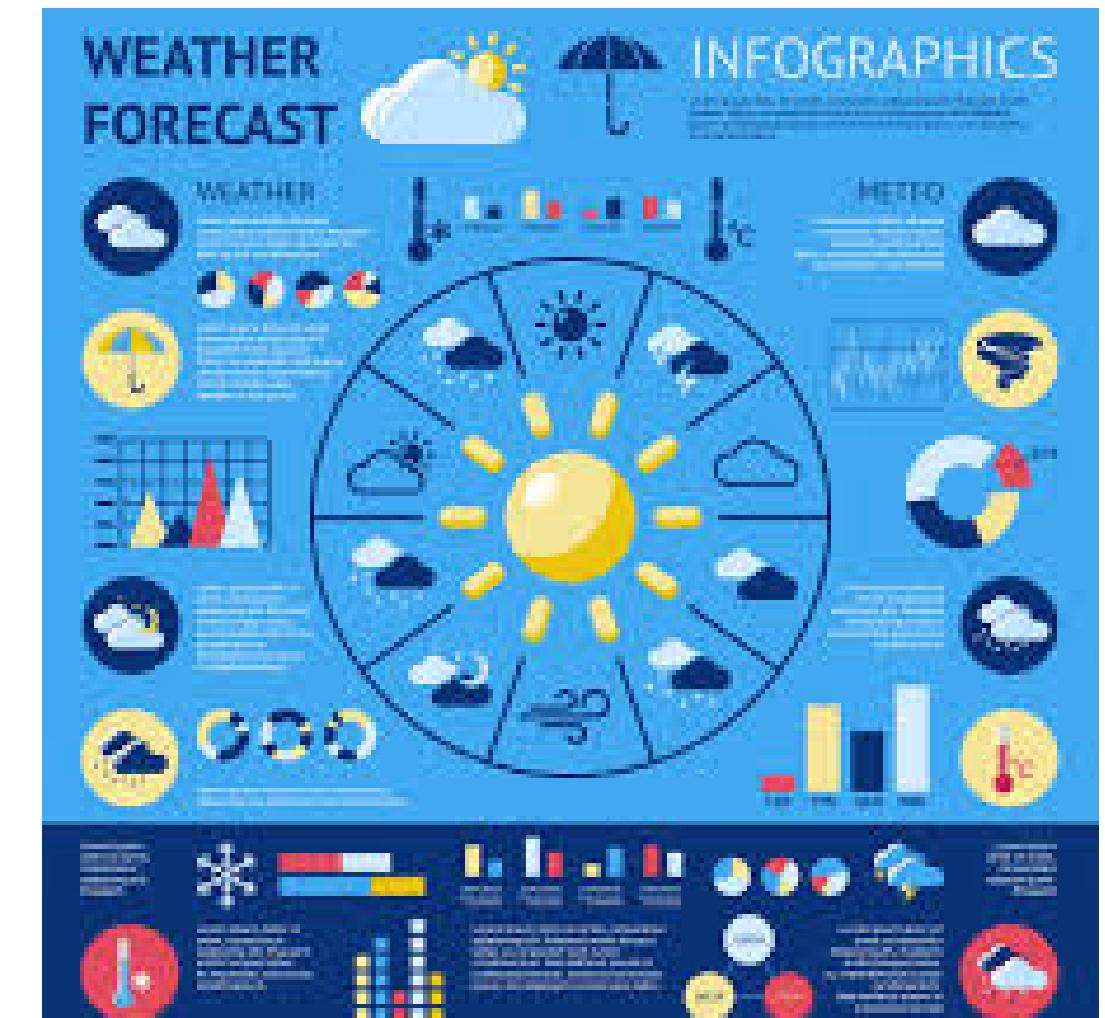
- Temperature
- Humidity
- Wind Speed
- Rainfall
- Atmospheric Pressure
- Pressure & Solar Density





Concept of the solution

- The system utilizes ESP8266(Node MCU) for WiFi-based data collection, ensuring a cost-effective solution for real-time monitoring.
- The collected data is securely stored in MySQL (cloud server) and visualized using Grafana, allowing users to track environmental changes efficiently.
- AI processes the data to predict weather conditions and automatically sends alerts to mobile phones or computers, enhancing preparedness and decision-making.





Novelty / Scope of Solution

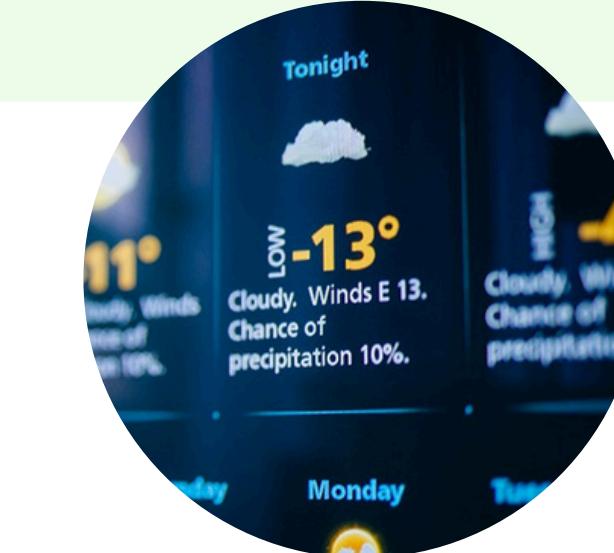
AI-Powered Weather Forecasting

Utilizes AI algorithms to analyze environmental data and provide accurate forecasts with automated alerts.



Real-Time Data Monitoring

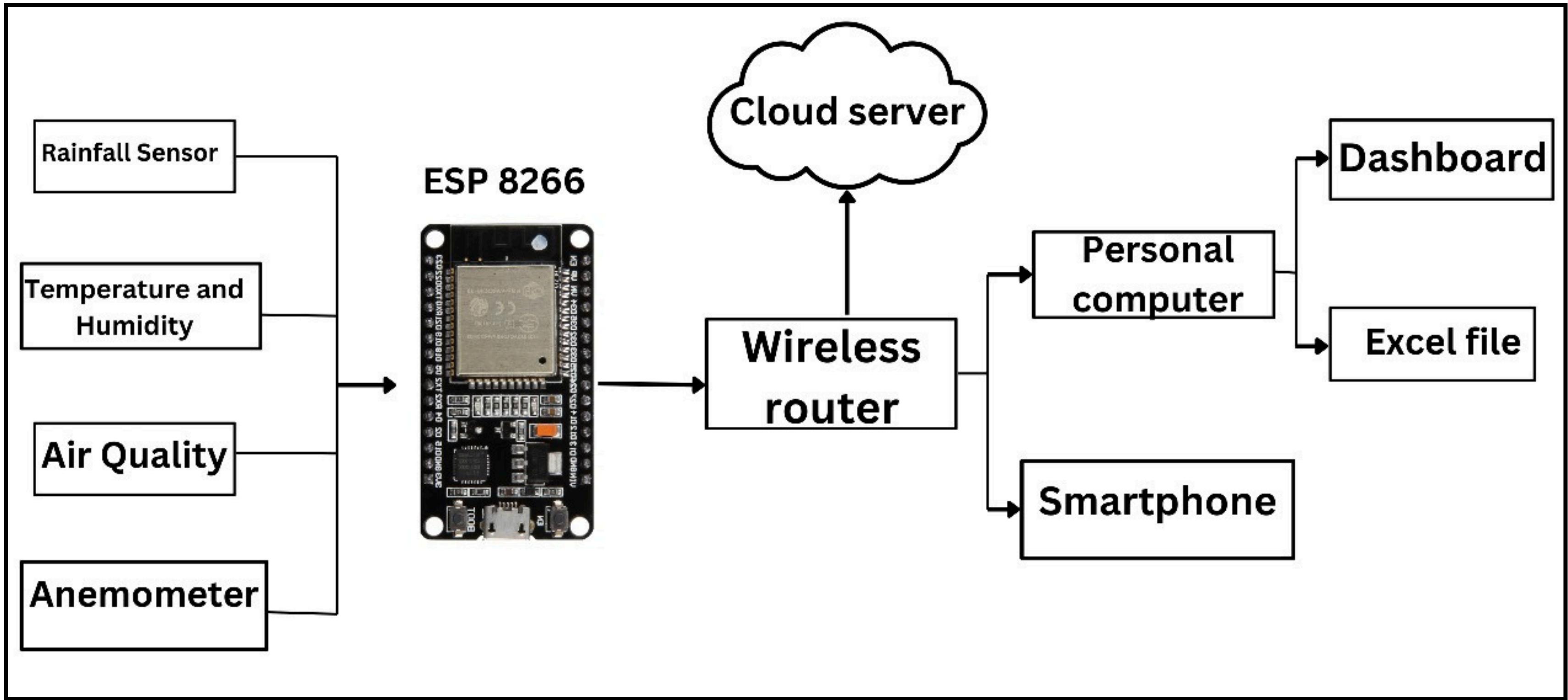
Collects and stores data in a MySQL cloud server and integrates Grafana for live tracking and analysis.



Energy-Efficient & Cost-Effective Design

Runs on solar and battery power, using ESP8266 for low-cost, WiFi-based data collection







phpMyAdmin

Server: 127.0.0.1 » Database: weather_data » Table: sensor_data

Browse Structure SQL Search Insert Export Import Privileges Operations Trig

Recent Favorites

New flask_db information_schema mysql performance_schema sakila sys weather_data New sensor_data world

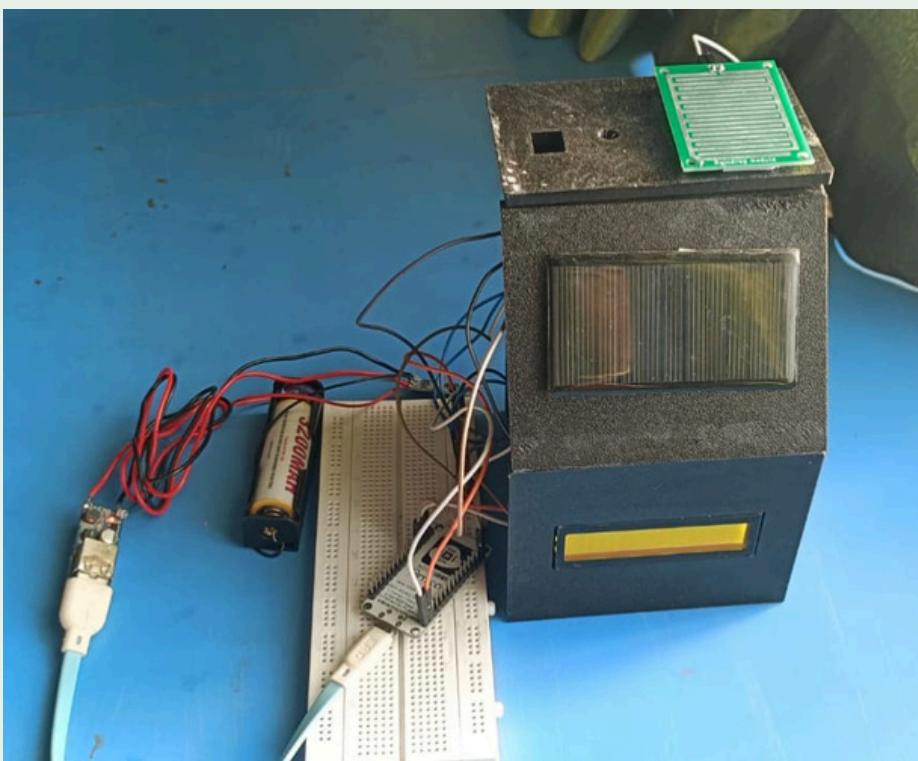
← → id temperature humidity rain rain_status timestamp

	<input type="checkbox"/>	Edit	Copy	Delete	1	31	63.1	0	No Rain	2025-02-06 15:51:18
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	<input type="checkbox"/>	Console	Copy	Delete	20	31.1	62.2	0	No Rain	2025-02-06 15:52:56



Validation / Testing / Analysis

- Sensor calibration ensures accuracy in data collection.
- System stress testing ensures reliability during harsh weather conditions.
- Historical vs. real-time data comparisons improve prediction accuracy.





Category	Estimated Cost (INR)
1. IoT Devices & Sensors	₹5,050
2. Power Supply & Backup	₹2,700
3. Validation & Testing	₹1,400
4. 3D Printing (Enclosure & Casing)	₹2,000
5. Miscellaneous	₹650
Total	₹11,800

Cost Estimate(if required)





PROS..

- **High accuracy** – Uses **real-time sensor data for weather prediction**.
- **Easy data collection** – ESP8266 enables seamless **WiFi-based data transmission**.
- **User-friendly visualization** – Uses **Grafana** for an interactive dashboard.
- **Low cost** – Affordable hardware components with **solar-powered operation**.

- Stable internet connection

CONS..





THANK YOU

