RAIN PREDICTION WEB APPLICATION USING MACHINE LEARNING

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1. INTRODUCTION

This project develops a Machine Learning-based Rain Prediction Web Application integrated with Live Weather API using Flask.

2. IDEATION PHASE

The idea was to build an intelligent rainfall prediction system that integrates real-time weather data.

3. REQUIREMENT ANALYSIS

Functional and non-functional requirements were analyzed for system efficiency and usability.

4. PROJECT DESIGN

The system includes user interface, Flask backend, API integration, and ML model deployment.

5. PROJECT PLANNING & SCHEDULING

Project divided into phases: Data preprocessing, Model training, Web development, API integration, Testing.

6. FUNCTIONAL AND PERFORMANCE TESTING

Model accuracy, API response time, and web response time were tested.

7. RESULTS

The system successfully predicts rainfall using live weather data.

8. ADVANTAGES & DISADVANTAGES

Advantages include real-time prediction and user-friendly interface. Limitations include API restrictions.

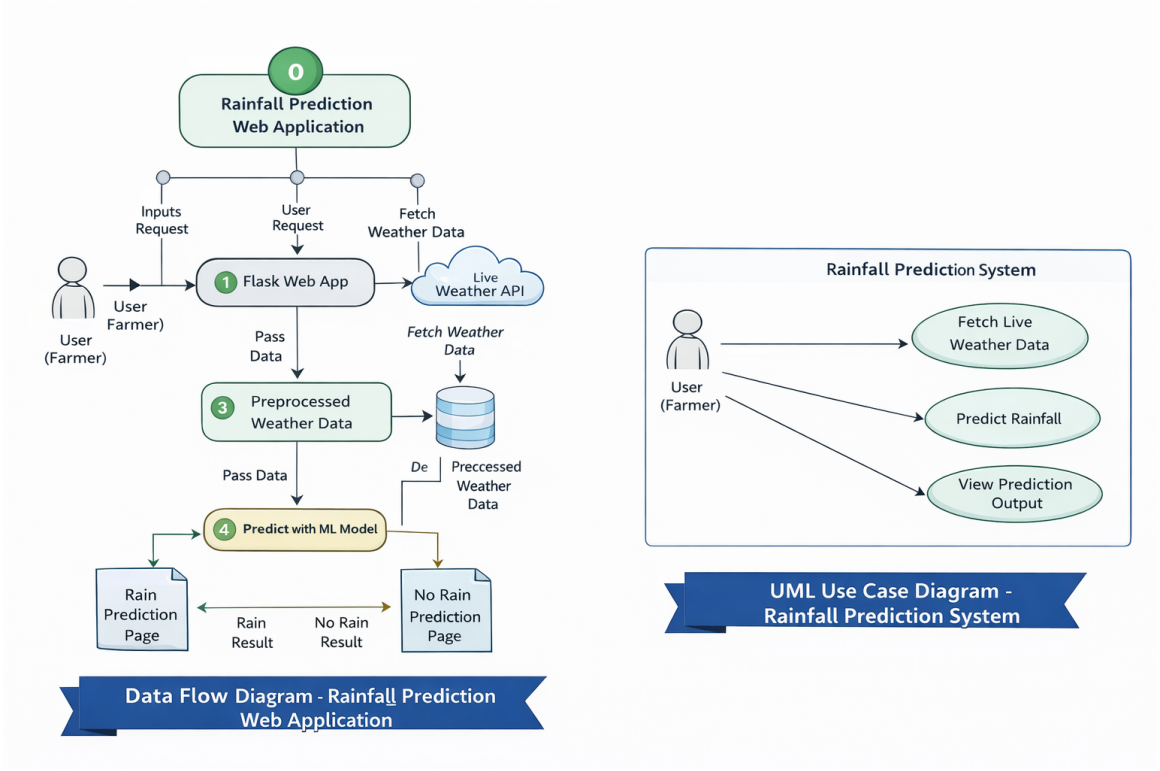
9. CONCLUSION

The project demonstrates end-to-end ML deployment integrated with web technologies.

10. FUTURE SCOPE

Future improvements include cloud deployment and advanced weather forecasting.

Data Flow Diagram & UML Diagram



11. APPENDIX

- Dataset: https://www.kaggle.com/datasets/jsphyg/weather-dataset-rattle-package
- API Documentation: https://openweathermap.org/api
- Python Documentation: https://docs.python.org/3/
- Scikit-learn Documentation: https://scikit-learn.org/stable/
- Flask Documentation: https://flask.palletsprojects.com/