



# INTERACTIVE REAL-TIME WEATHER FORECASTING SYSTEM LEVERAGING API INTEGRATION (THUNDER X)

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## Abstract

The Building Weather App with APIs project focuses on developing a dynamic and user-friendly application that provides real-time weather updates by integrating external weather APIs. The system retrieves, processes, and displays weather information such as temperature, humidity, wind speed, and atmospheric conditions. Users can search cities and view forecasts through an intuitive interface. The project demonstrates API integration, JSON handling, and asynchronous programming.

## Index Terms

Weather App, APIs, Real-time Weather, OpenWeatherMap, JSON Data, Forecast, User Interface, Data Visualization.

## 1. INTRODUCTION

Weather forecasting is the process of predicting atmospheric conditions using science and technology. The proposed weather app is a dynamic, responsive web-based application that provides real-time weather updates using APIs.

## 2. PROBLEM STATEMENT

Traditional weather applications often suffer from limitations such as inaccurate data, delayed updates, and poor user interfaces. The proposed system overcomes these challenges using real-time API integration.

## 3. LITERATURE REVIEW

Modern weather forecasting uses numerical models, APIs, and machine learning techniques to improve prediction accuracy and efficiency.

## 4. PROPOSED SYSTEM ARCHITECTURE

The system follows a Client-API-Data architecture consisting of Presentation, Application, Data, and Output layers.

## 5. METHODOLOGY

The application is built using HTML, CSS, and JavaScript. It retrieves data from OpenWeatherMap API and displays it to users in real time.

## 6. RESULTS AND DISCUSSION

The system successfully displays weather data using icons, graphs, and dynamic UI updates, improving user experience.

## 7. LIMITATIONS

The system depends on internet connectivity and API availability, and may have limited multilingual support.

## 8. CONCLUSION & FUTURE WORK

The project demonstrates the effective use of APIs for real-time weather forecasting and provides a scalable and user-friendly system.

## ACKNOWLEDGMENT

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## REFERENCES

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