# **Development of an IoT Weather Monitoring and Forecasting System**

## Overview

This project focuses on the development of an IoT Weather Monitoring and Forecasting System using Arduino ESP8266 and ARIMA (AutoRegressive Integrated Moving Average) model in machine learning. The goal is to predict temperature and humidity for the next hour, providing valuable insights for users in various applications.

## Components

1. Arduino ESP8266: Acts as the main microcontroller for data acquisition and communication with the cloud.

2. Sensors (Temperature and Humidity): Gather real-time environmental data.

3. ARIMA Model: Utilized for time-series analysis and prediction of temperature and humidity trends.

## Features

- Real-time monitoring of temperature and humidity.

- Cloud-based data storage for historical analysis.

- Machine learning model for short-term weather forecasting.

## Setup

1. Connect the Arduino ESP8266 to temperature and humidity sensors. (DHT11)

2. Upload the Arduino code provided in the ‘Arduino\_Code’ directory to the ESP8266 using the setup on the Arduino IoT cloud

4. Configure the ESP8266 to send data to the cloud platform (Arduino IoT cloud)

4. Create a webhook on IFTTT and link it to the cloud platform to collect the data from the cloud to a spreadsheet in real-time

5. Train the ARIMA model using the weather data collected using the code in the ‘TrainModelArima.py’ directory.

6. Deploy the trained ARIMA model.

Usage

- Access the real-time weather data through the spreadsheet generated by the IFTTT platform

- Utilize the forecast feature to get predictions for the temperature and humidity of the next hour.

## Contributors

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