St. Francis Institute of Technology

Information Technology

IoE Mini Project (ITL702)

Rain Monitoring Based On IOE

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Overview

- Introduction
  - Need for the project
  - Problem statement
  - Objectives
- Requirements
  - System requirements
  - Data analytics algorithm
- Performance parameters
- References

Need for the Project

- Management of water resources and proper usage have become increasingly important in recent years.
- Rain sensor senses rain and sends an alert so that we can manage water to use for other purposes later.
- Even though water is a scarce resource, it is carelessly wasted due to improper handling.
- In this context, the real time monitoring of rain and data analysis can prevent wastage of water.

Problem Statement

To build a rain sensing/monitoring smart device which will sense the environment and alert the user about rain and conduct analysis.

Objectives

- The primary objective of this project is to introduce an intelligent rain sensing and monitoring system in IoT platform which would help users take appropriate actions.
- To conduct analysis on the data collected by the sensors.

System Requirements

Hardware :-
ESP32 Modules
Rain sensor
Humidity sensor
Temperature sensor
Resistors
Buzzer
Jumper Wires

Software :-
OS: Windows 7 or above
Browser: Chrome/Firefox/Edge/Brave
Application: Arduino IDE

Data Analytics Algorithm

- Linear Regression is a method that describes the relationship between a dependent variable and a set of independent variables.
- The equation of the line is given as y=wx+b.
- It provides an estimate of rainfall using various atmospheric variables like cloud cover, humidity, wind, and average temperature to predict rainfall.
- Root mean squared error can be used to evaluate performance of a linear regression model.

Performance Parameters

- Rain sensor should detect rain and esp module should update the data on the webapp.
- Webapp should receive the signal for further applications.
- Data collected can be used for analysis.
- Root mean squared error can be used to evaluate performance of a linear regression model.

References

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