Weather Monitoring System for Cloth Hanging Drying Areas

REQUIREMENT DOCUMENTATION

Category	Requirement	Stakeholder	Acceptance Criteria
Functional Requirements	Cloth movement control	End Users (Cloth owners)	The system must move clothes from the drying yard to a shady place using a motor.
Functional Requirements	Weather Monitoring	End Users (Cloth owners)	The system must monitor weather conditions using DHT11, Rain Sensor, and LDR Sensor.
Functional Requirements	Motor Control	System Administrators	The system must be able to control the DC Motor based on weather conditions.
Functional Requirements	Data Collection	System Administrators	The system must collect data from DHT11, Moisture Sensor, LDR Sensor, and Rain Sensor.
Non-Functional Requirements	Reliability	System Administrators	The system should be reliable with a failure rate of less than 1%.
Non-Functional Requirements	Response Time	End Users (Cloth owners)	The system should respond to weather changes and initiate cloth movement within 5 seconds.
Non-Functional Requirements	Security	System Administrators	The system must have secure communication between Arduino UNO, Nodemcu, and the central server.
Non-Functional Requirements	Scalability	System Administrators	The system should be scalable to accommodate additional sensors or devices in the future.
Non-Functional Requirements	Power Efficiency	System Administrators	The system should optimize power usage for sustainable and efficient operation.

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REQUIREMENT TRACEABILITY MATRIX

Project Name: Real Time Weather monitoring and Smart Cloth Drying System

Cost Center: IOT LAB

Project Description: An IoT-based system for monitoring weather conditions to automate the movement of clothes from a drying yard to a shady area using various sensors and a DC motor.

ID	Associate ID	Requirement Description	Business Needs, Opportunities, Goals, Objectives	Project Objectives	WB Deliverables	Product Design	Product Development	Test Cases
1	Req001	Detect rain using Rain Sensor	Improve system reliability and response to weather changes .	Automate cloth drying process .	Weather Monitoring Module	Sensor Integration	Prototype Testing	Rain Detection Test
2	Req002	Measure humidity and temperature using DHT11	Enhance system adaptability to environmental conditions	Provide accurate weather data	Data Collection Module	Sensor Data Handling	Data Analysis Implementation	Humidity and Temperature Test
3	Req003	Detect sunlight intensity using LDR Sensor	Optimize cloth drying based on sunlight exposure	Maximize energy efficiency	Light Monitoring Module	Light Sensing Mechanism	System Calibration	Sunlight Intensity - Test
4	Req004	Measure soil moisture using Moisture Sensor	Prevent clothes from getting wet from ground moisture	Improve drying efficiency	Moisture Monitoring Module	Moisture Detection System	Sensor Integration	Moisture Level Test
5	Req005	Move clothes based on sensor inputs	Automate movement to protect clothes	Enhance user convenience	Movement Control System	Motor Control Mechanism	Automation Logic Development	Movement Automation Test

6	Req006	Control system over the internet	Provide remote monitoring and control	Increase system accessibility and usability	Communication Module	Internet Connectivity	Web Interface Development	Remote Control Test
7	NF001	system reliability	Maintain high system availability	Ensure consistent operation	Reliability Testing	System Architecture	Reliability Enhancements	Uptime Monitoring Test
8	NF002	Ensure UI accessibility	Enhance user experience	Facilitate system usage	UI Design	User Interface Design	UI Implementation	Accessibility Test
9	NF003	Scalability of the system	Support future expansion	Adapt to increased load	System Architecture Review	Scalability Testing	Architecture Optimization	Load Testing
10	NF004	Data Security and Privacy	Protect user data	Comply with data protection regulations	Security Module	Data Encryption	Security Protocol Implementation	Security Testing
11	NF005	System Maintenance and Support	Ensure long-term system usability	Provide continuous support	Maintenance Plan	Support System Design	Support Strategy Development	Maintenance Testing