# AUTOMATIC CLOTH DRYER

# PROBLEM STATEMENT

In many households and commercial spaces, drying clothes is a time-consuming task that depends heavily on weather conditions. Sudden changes in weather, such as unexpected rain or strong winds, can damage or delay the drying process. Manually adjusting cloth shutters to protect drying clothes is inconvenient and requires constant monitoring.

The lack of an automated solution leads to inefficiencies, especially in regions with unpredictable weather. An Automatic Cloth Shutter can solve this problem by detecting environmental changes (e.g., rain, sunlight intensity, or humidity levels) and automatically adjusting the shutter to protect the clothes. This system ensures convenience, efficiency, and protection for users, eliminating the need for manual intervention.

# SOLUTION APPROACH

To address the problem of weather-dependent cloth drying, the Automatic Cloth Shutter system will utilize sensors and automation technologies to provide a smart and efficient solution. The proposed approach includes the following key components:

1. Sensors for Environmental Detection
2. Microcontroller-Based Control System
3. A microcontroller
4. Automated Shutter Mechanism
5. A motorized shutter system
6. The shutter will automatically close when rain is detected and reopen once conditions are suitable for drying.
7. Power Supply & Energy Efficiency
8. The system can be powered by an AC/DC power supply or a solar panel for energy-efficient operation.
9. User Control & Notification (Optional Enhancement)

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# FEASIBILITY & IMPACT

Technical Feasibility

- Uses readily available components such as rain sensors, light sensors (LDR), humidity sensors, microcontrollers (Arduino/ESP32), and motors for automation.
- Can be implemented using basic programming and motor control techniques.
- Low power consumption, with an option to integrate solar power for sustainability.

Impact

- Convenience and Time-Saving
- Eliminates the need for manual monitoring and adjustment of cloth drying areas.
- Automatically responds to weather changes, ensuring efficiency.

# REQUIREMENTS & RESOURCES

1. Hardware Components
ComponentPurpose
Rain Sensor (e.g., YL-83)
Detects rain and triggers the shutter to close.
Light Sensor (LDR)
Measures sunlight intensity to optimize drying.
Humidity & Temperature Sensor (DHT11/DHT22)
Monitors moisture levels to adjust shutter operation.
Microcontroller (Arduino/ESP32)
Processes sensor data and controls the motor.
DC Motor/Servo Motor
Mechanism to open and close the shutter automatically.
Motor Driver Module (L298N)
Controls motor movement based on microcontroller commands.
Power Supply (12V/5V Adapter or Solar Panel)
Provides power to the system.
Buzzer or LED Indicator
Alerts users about system status (optional).
Shutter Material (Polycarbonate/Waterproof Fabric)
The physical cover that protects clothes from rain.
2. Software & Programming

- Arduino IDE for programming the microcontroller.

# CONCLUSION

- The Automatic Cloth Shutter is a smart and efficient solution designed to protect clothes from unpredictable weather conditions such as rain, excessive sunlight, and humidity. By integrating sensors, microcontrollers, and motorized mechanisms, the system enables automatic opening and closing of the shutter, eliminating the need for manual intervention.
- With affordable hardware components, simple installation, and minimal maintenance, the Automatic Cloth Shutter is a cost-effective and scalable solution that can be adapted for various applications. It represents a step forward in home automation and smart living, offering a reliable and user-friendly approach to managing cloth drying areas effectively.

# THANK YOU