# THERMOFLOW: INTELLIGENT TEMPERATURE-RESPONSIVE FAN CONTROL SYSTEM

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# CONTENT

# INTRODUCTION

*This project introduces ThermoFlow, an IoT-based expert system designed for dynamic, real-time fan speed control in response to changing ambient temperatures. ThermoFlow integrates high-precision sensors and powerful microcontrollers to continuously monitor and adjust fan speeds, optimizing thermal performance and minimizing energy consumption. ThermoFlow exemplifies innovation in IoT-enabled thermal management, leading the way in intelligent thermal regulation.*

# OBJECTIVES

**Enhanced Thermal Management:** To design a system that dynamically adjusts the fan speed in real-time using advanced sensors to maintain optimal thermal conditions.

**User-Centric Control Options:** We aim to offer consumers tailored control over their thermal environment through manual control as well as auto-mode, enhancing user empowerment and satisfaction.

**Energy Efficiency and Sustainability:** We aim to minimize energy consumption by adjusting fan speed in real-time based on environmental conditions, our solution promotes energy reduction and environmental stewardship.

# OVERVIEW

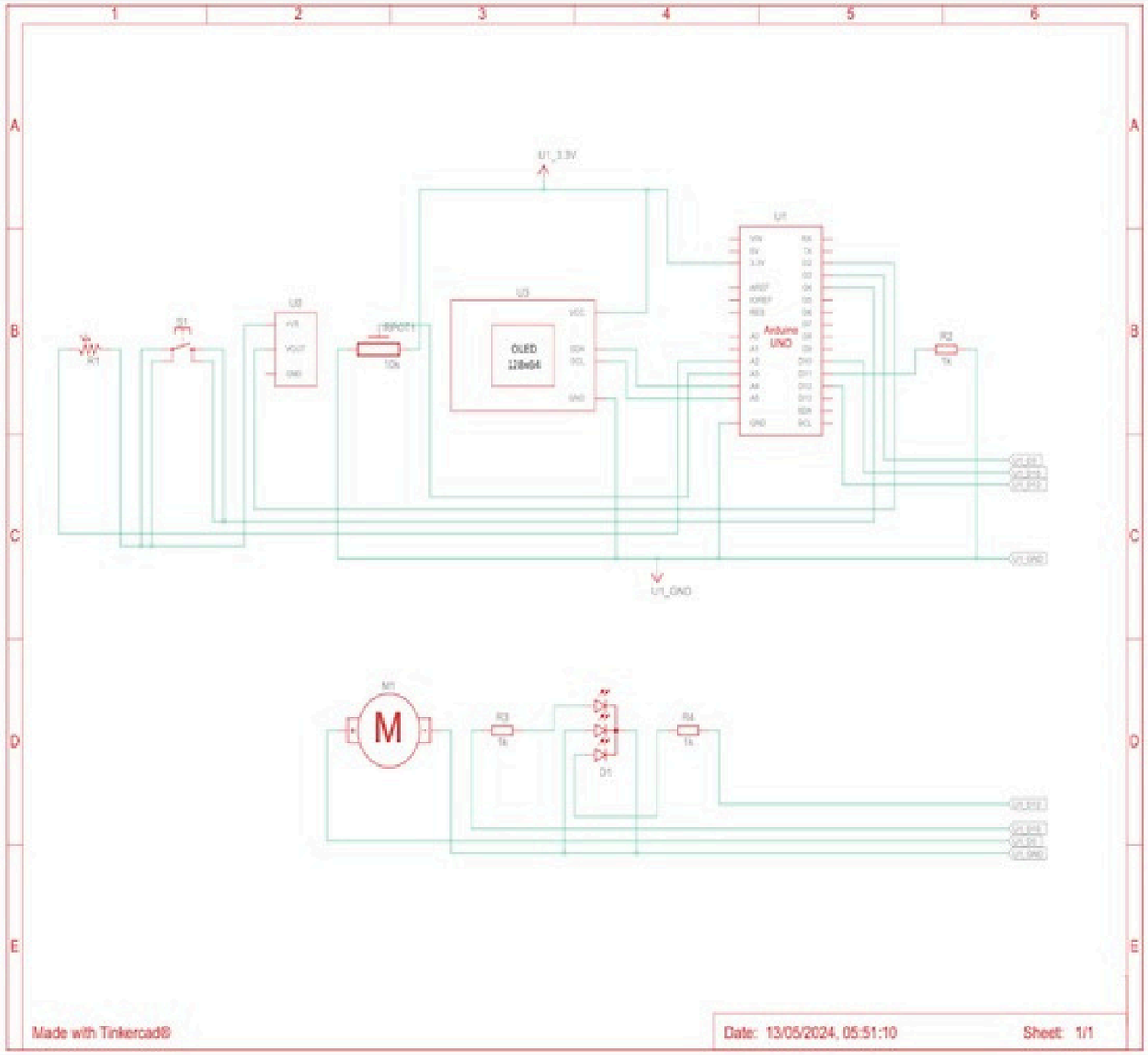
## AUTO MODE

- Uses the DHT11 sensor to maintain ideal temperature by accurately measuring temperature and humidity.
- Adjusts fan speed based on temperature data, optimizing comfort and energy use.
- Utilizes an LDR to adjust lighting based on ambient brightness.

## MANUAL MODE

- Users can adjust fan speed via a potentiometer to suit their preferences.
- Light intensity remains automatically controlled, ensuring consistent ambient illumination.
- Users can manually set temperature thresholds to tailor the system's behavior to their comfort and environmental needs.

# Circuit Diagram



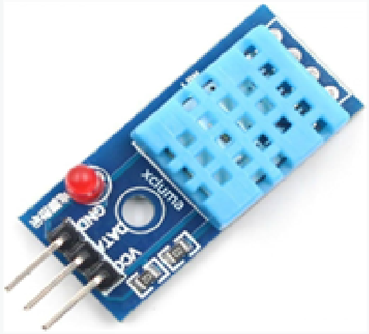
# Components Used

01

SSD1306 I2C OLED DISPLAY:

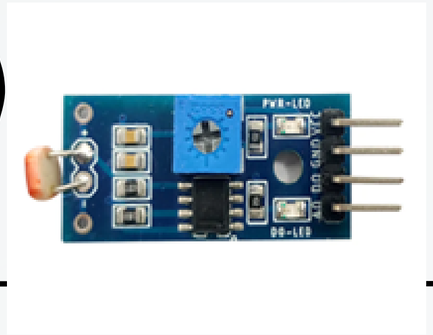

02

DHT11 SENSOR:




03

LDR (LIGHT DEPENDENT RESISTOR)




04

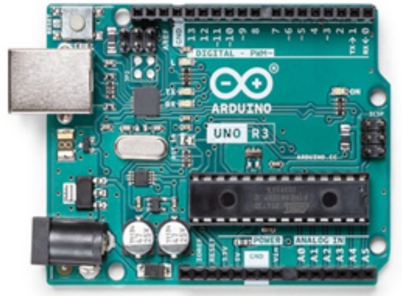
10KΩ POTENTIOMETER (POT)

05

AC MOTOR

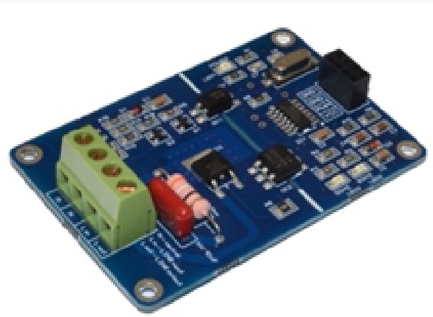
06

ARDUINO UNO R3

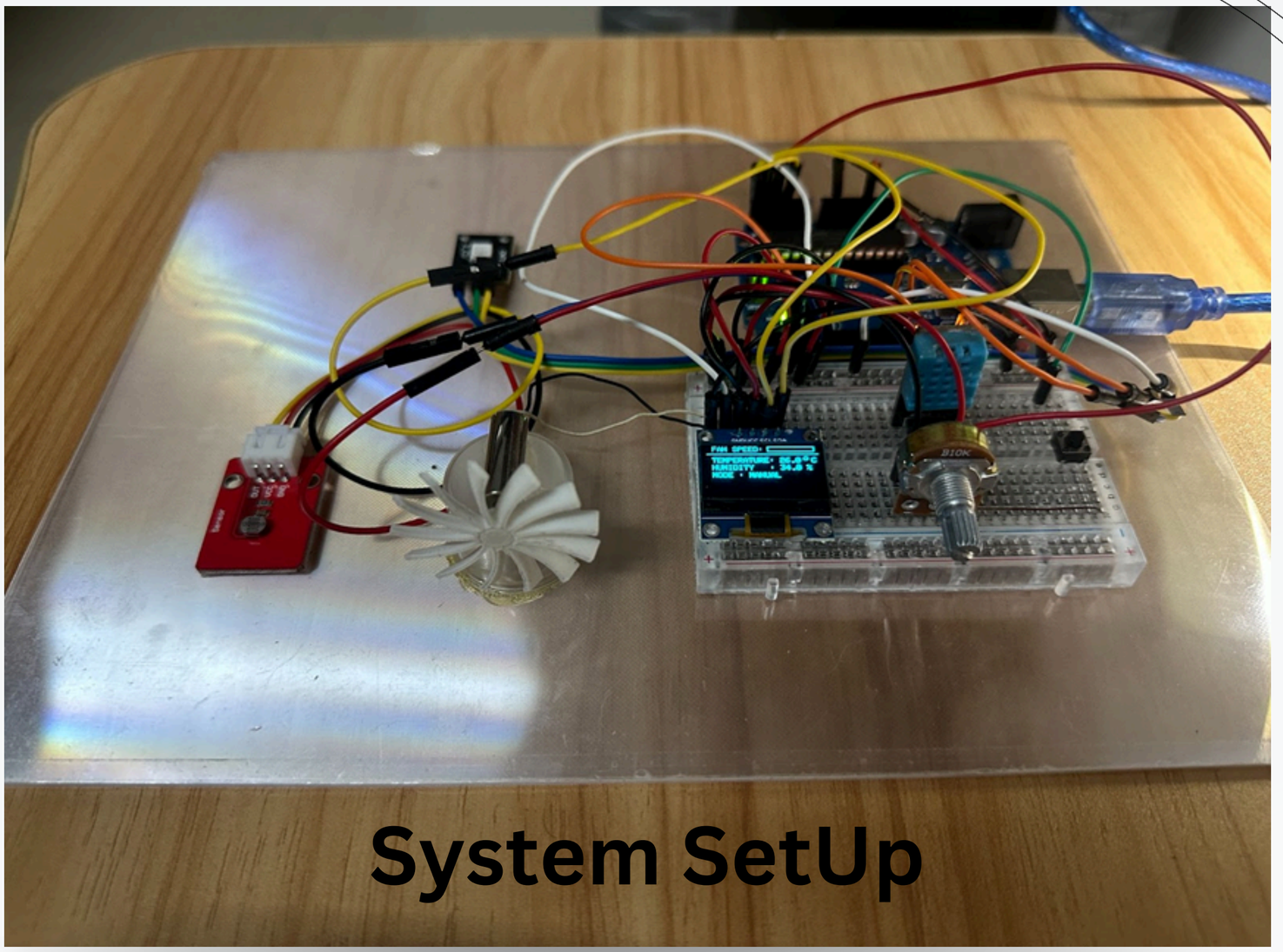



07

PWM AC DIMMER



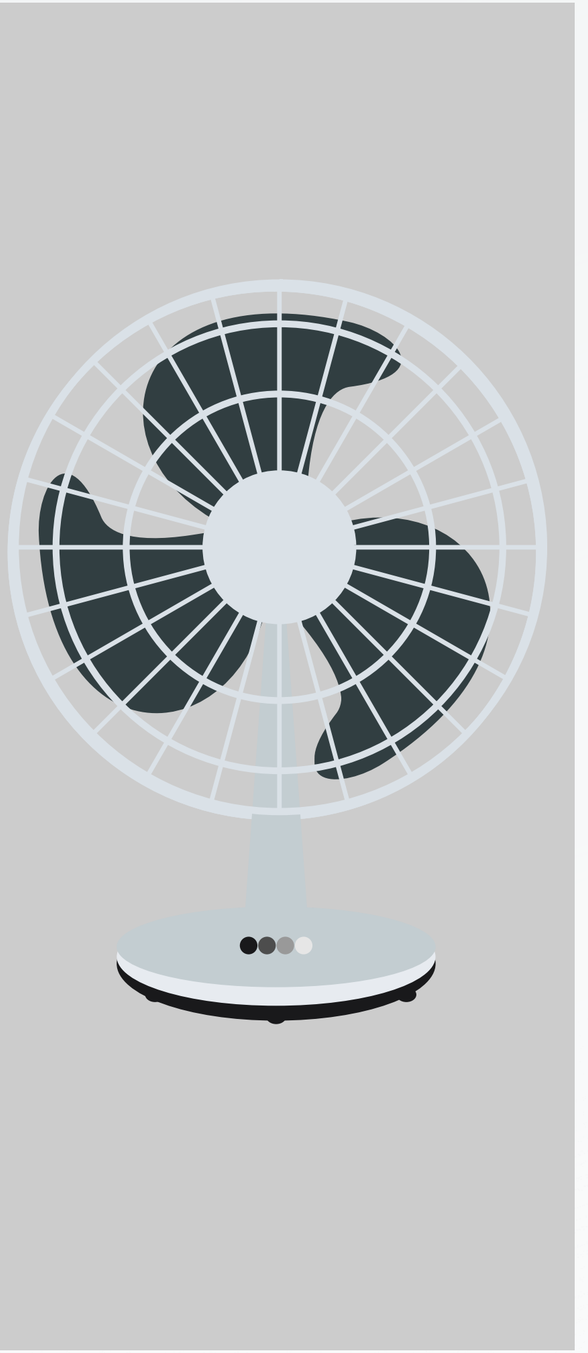
# OUTPUT




System SetUp

# Conclusion

In summary, our solution is a major leap in user-centric temperature-responsive fan speed control. By combining advanced sensor tech with intuitive interfaces, it optimizes thermal conditions, improves energy efficiency, and enhances user comfort by dynamically adjusting fan speed. Our success showcases innovative ways to tackle contemporary thermal management challenges.



# THANK YOU