

SAMSUNG IOT

Mohamed Juliana Omar Amira Elham

PROJECT

SMART FARM

VISIC



Meat OUR Team members



About Our Team



Mohamed Salah



Omar



Juliana



Elham



Amira

Content :

Plant infection (Amira)

Security System (Salah)

Irrigation System (Juliana)

Water Level Alert System (Omar-Elham)

Solar Tracking System (Elham, Salah)

Node-RED to monitor sensor data in real-time



1.Infection Plant

1

we have build a system to detect the infected plant



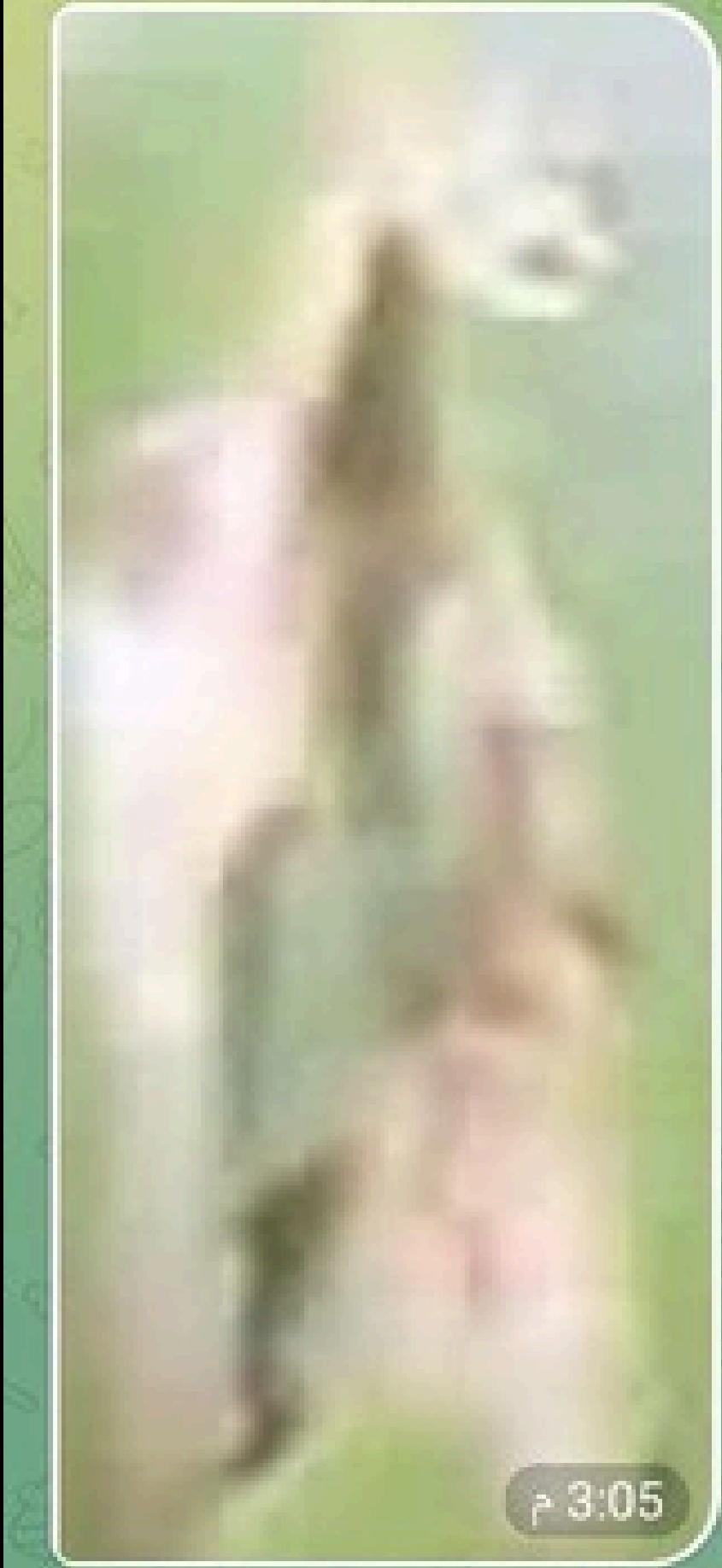
Live Streaming

2

Capture img of the
infected plant
and send it to a
telegram bot



I found 219 infected plants. 3:0



I found 220 infected plants. 3:0

3

Creating a Telegram bot (Alert Group)

We have created a telegram bot to send a notification of every thing happen to our system like (send images of the infected plant- count the infected plant - Unauthorized access - Tank level- detected sensor)



Telegram

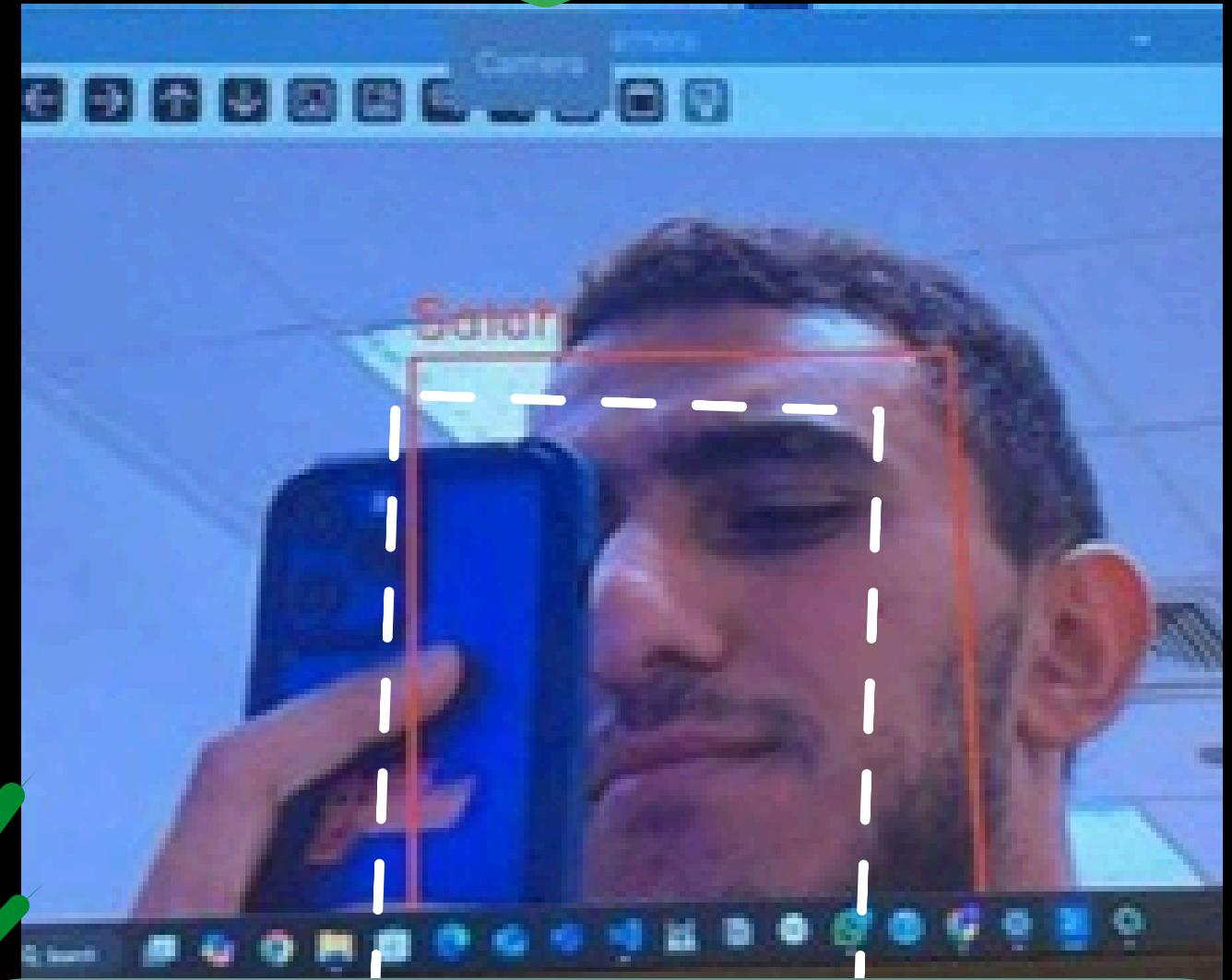


2. Security System



We have Build a Face Recognition system for our farm to not open to any UnAuthorized person

And send an alert to telegram bot for any Anauthorized access



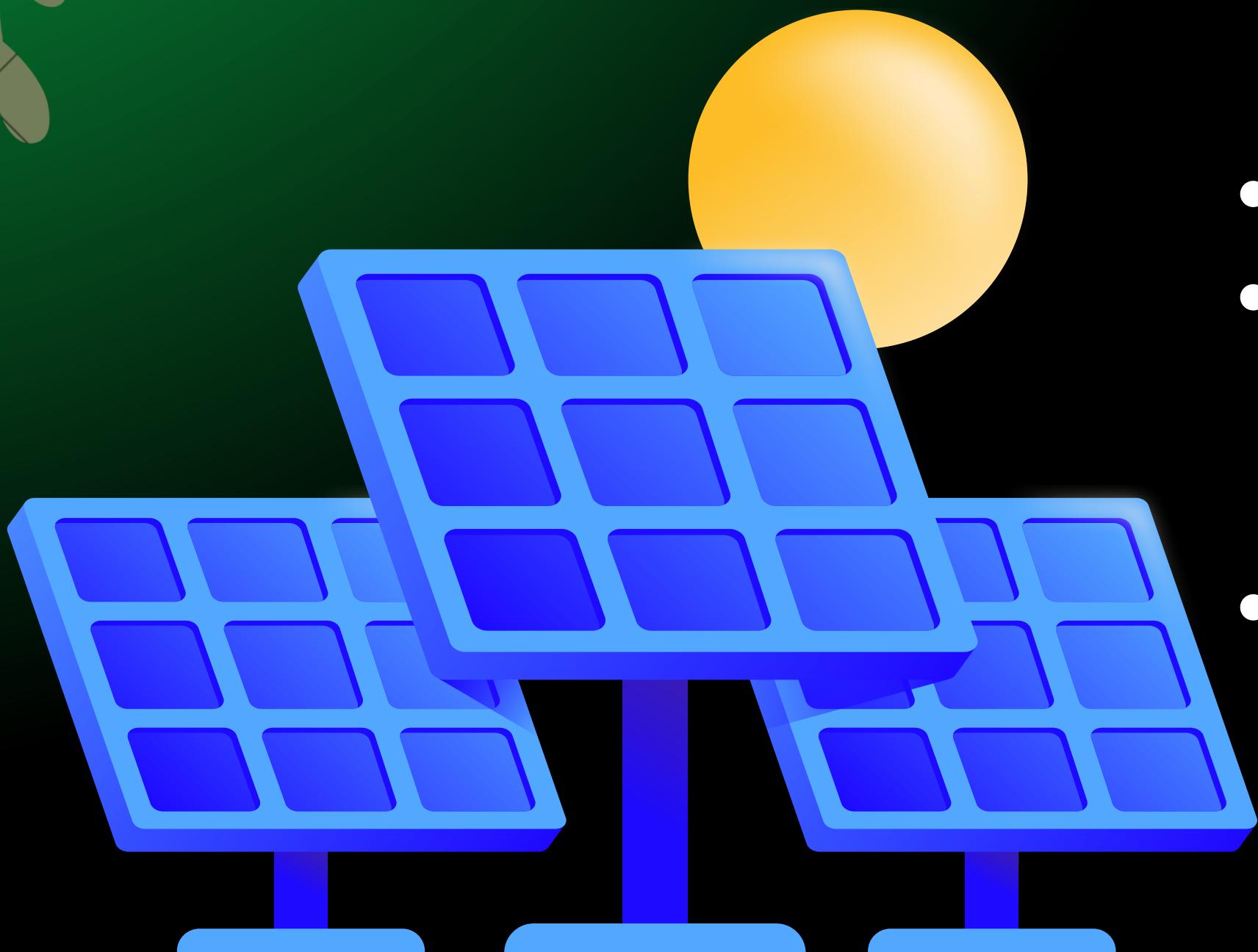
Salah

3.Irrigation System

we have made an irrigation system to irrigate plant automatically using a water pump, moisture sensor , gas sensor, lcd to print the data, arduino uno ana Relay



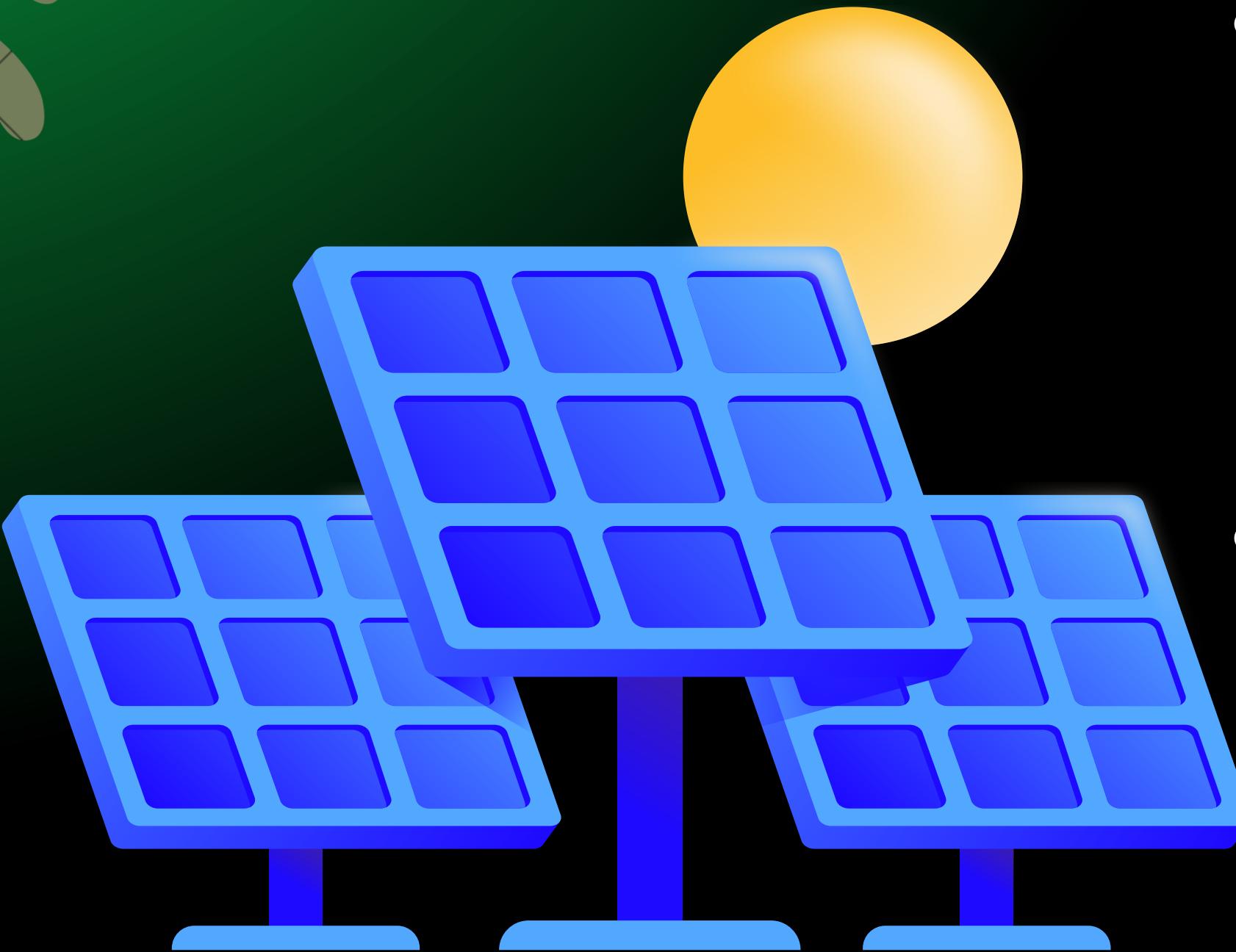
5. Solar Tracking System



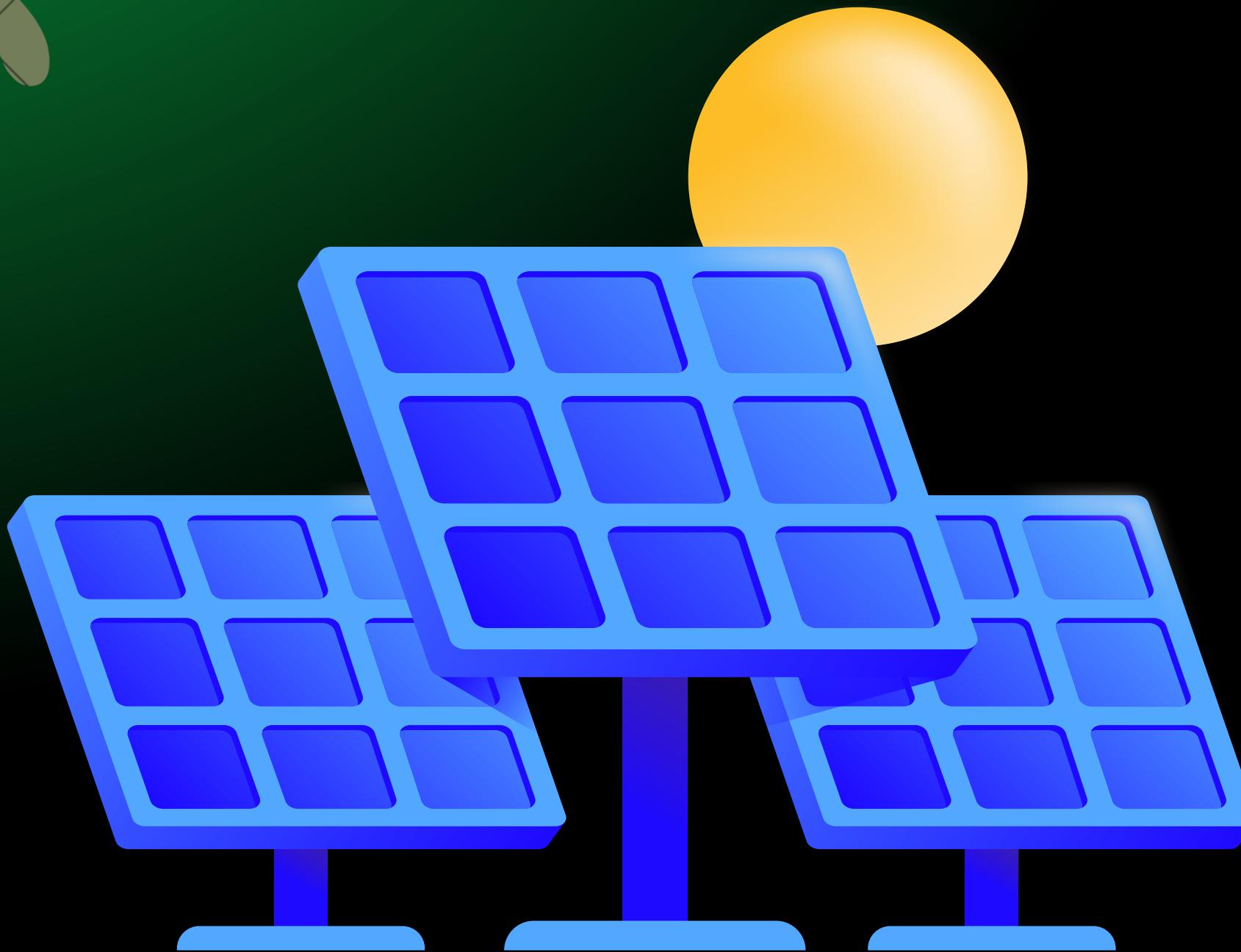
- Introduction
- Purpose: To maximize the efficiency of solar panels by ensuring they are always oriented toward the sun.
- Motivation: Increase energy output for the smart farm, reduce energy costs, and support sustainable farming practices.



System Overview

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- Solar Tracking: A system that adjusts the position of solar panels to follow the sun's path, ensuring optimal exposure to sunlight throughout the day.
 - Smart Farm Integration: Helps power farm operations, including irrigation systems, sensors, and other automated systems.

Components Used



- Light Dependent Resistors (LDRs): To detect sunlight intensity from different angles.
- Servo Motors: To adjust the solar panel position in real-time.
- Microcontroller: (e.g., Arduino/ESP32) to control the system and process data from the LDRs.
- Solar Panel: To generate electricity from sunlight.
- Battery: To power the tracking system and store excess energy.

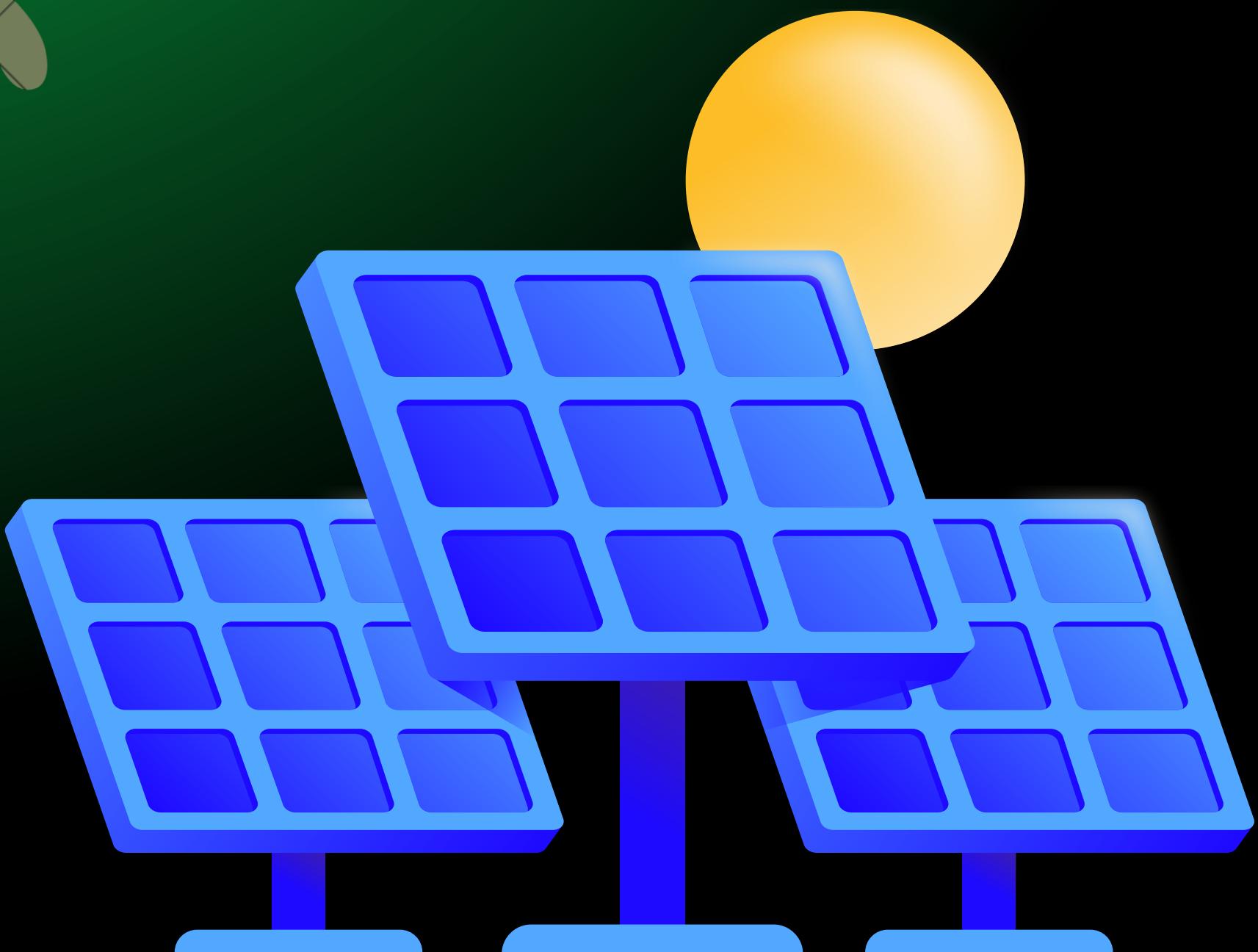


How It Works



- LDRs sense the intensity of sunlight from different directions.
- The microcontroller processes the data and commands the servo motors to adjust the angle of the solar panel.
- The panel follows the sun's position throughout the day, maintaining optimal alignment for maximum energy capture.

Benefits



- Increased Efficiency: Captures more sunlight compared to static panels, increasing energy output by 20-30%.
- Cost Savings: Reduces the need for external power sources on the farm.
- Sustainability: Reduces reliance on non-renewable energy, contributing to eco-friendly farming.

Applications in the Smart Farm

Powering Smart Irrigation: Provides energy to pump water and run automated irrigation systems.

Sensor Network: Powers the farm's sensors (e.g., soil moisture, temperature) for efficient monitoring and control.

Farm Automation: Ensures continuous power for other smart devices like drones, cameras, or greenhouse controls.



Smart Farm Monitoring System

Overview:

Purpose: Implement a smart farm system using Node-RED to monitor sensor data in real-time.

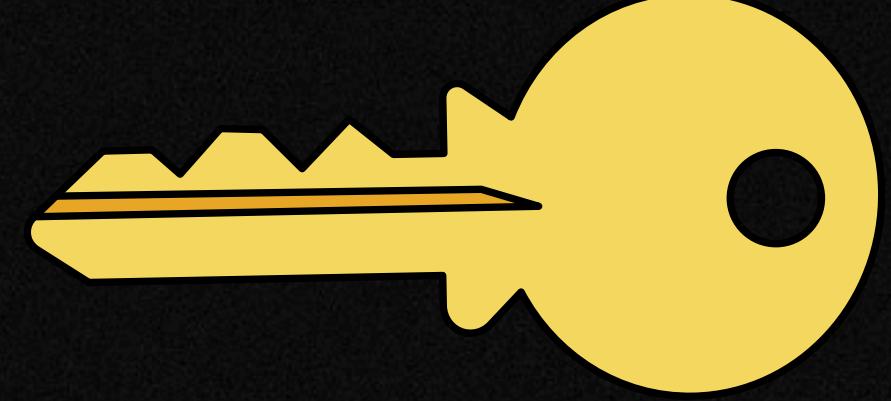


1. MQTT Client:

- Function: Connects to various sensors (e.g., solar panel) and subscribes to their data.
- Topic: Solar_Panel
- Data: Automatically detects incoming data for further processing.

KEY COMPONENTS:

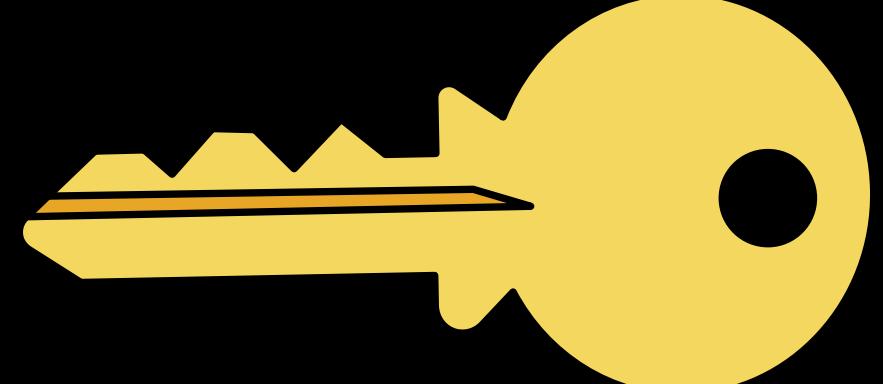
KEY COMPONENTS:



2. Function Node: RFID, Sound, and Ultrasonic Processing

- Authorized Access: Checks RFID tags against a list of authorized IDs.
- Sound Detection: Alerts when sound is detected.
- Ultrasonic Distance Measurement: Determines tank levels based on distance.
- Generates messages for low, safe, or overfilled tank statuses.
- Message Generation: Sends notifications via Telegram if any conditions are met.

KEY COMPONENTS:

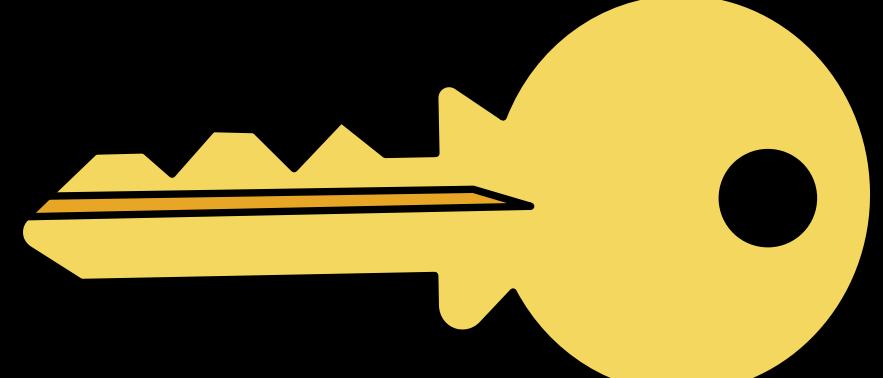


3. Telegram Sender

- Purpose: Sends alerts directly to specified chat on Telegram based on sensor data.
- Chat ID: Specifies the recipient of the messages.

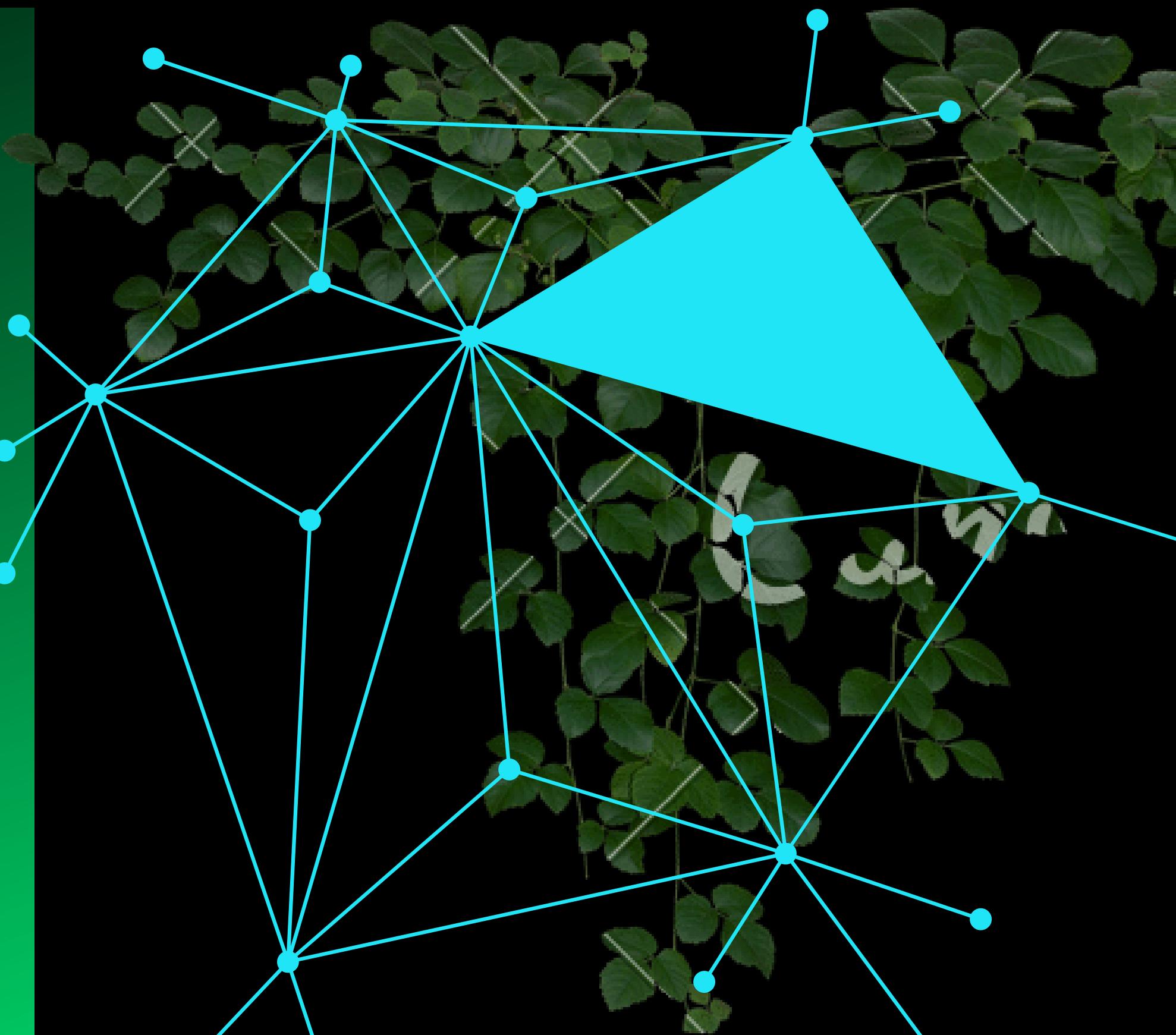


KEY COMPONENTS:

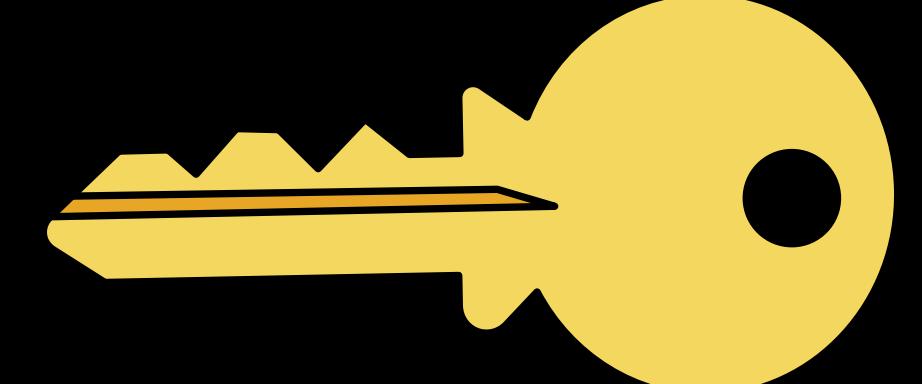


4. Debugging Nodes:

Monitor Data: Debug nodes to visualize and troubleshoot incoming data.



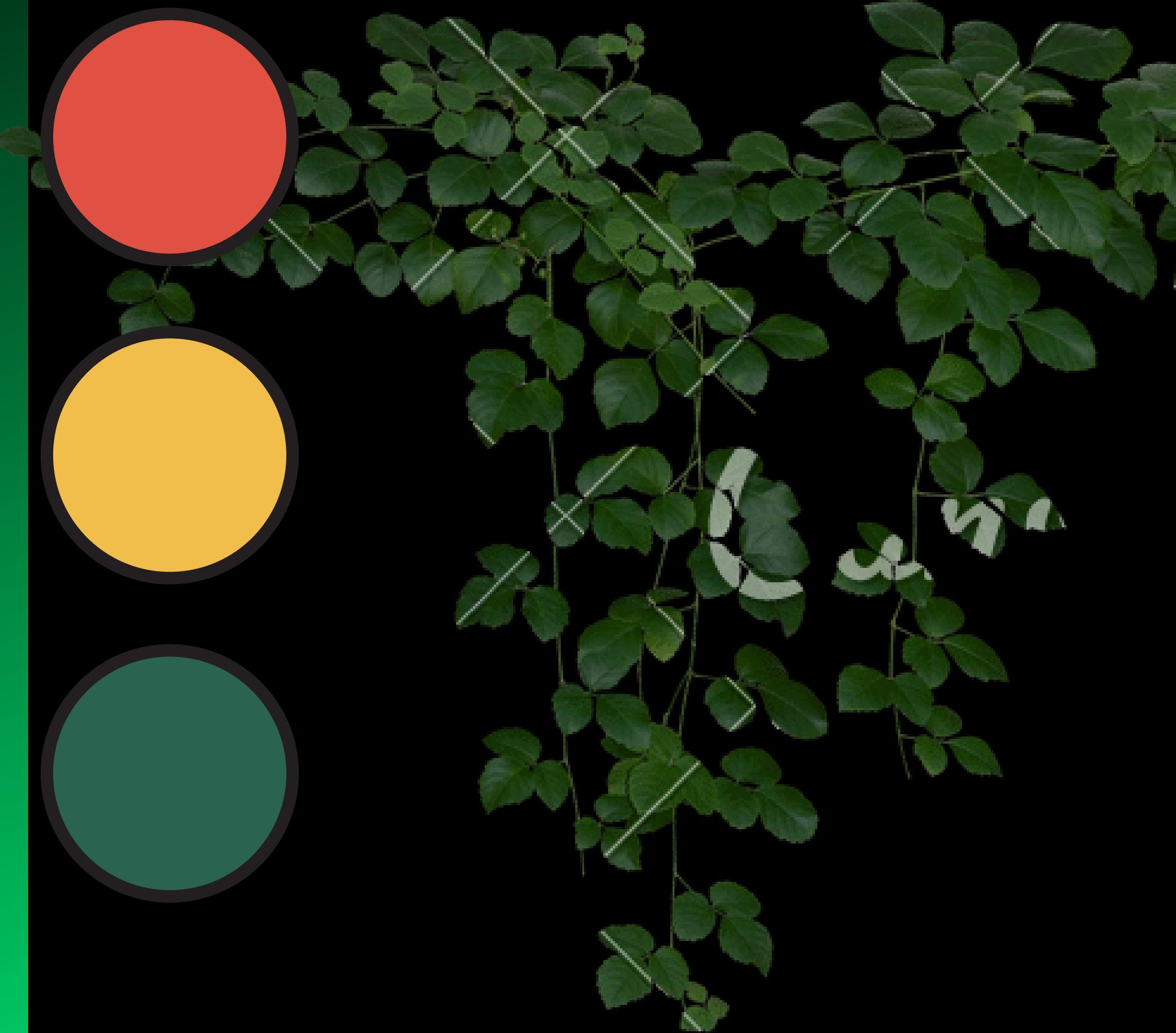
KEY COMPONENTS:



5.UI Elements:

Gauge Visualization:

Displays real-time voltage readings from the solar panel on the dashboard.

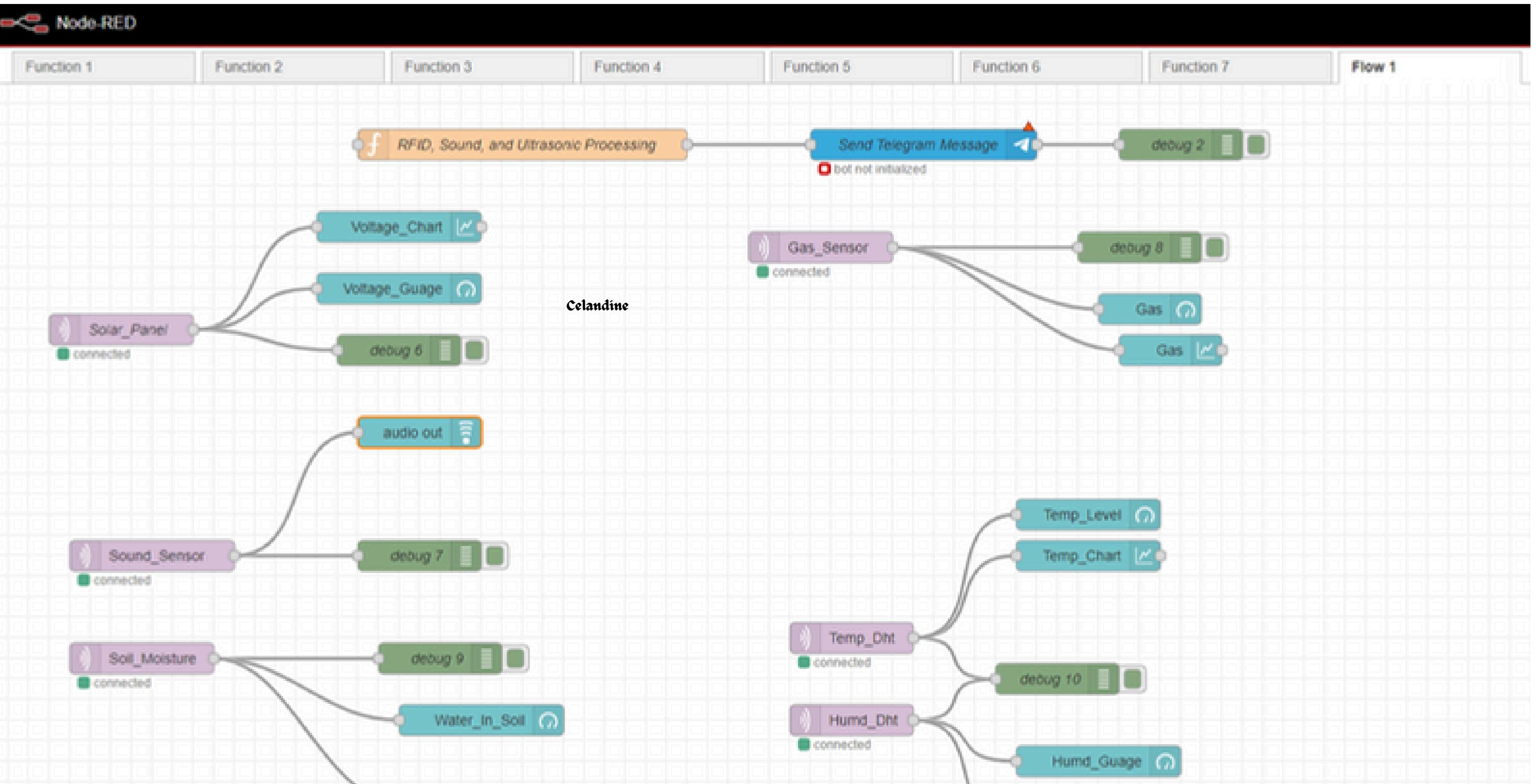


CONCLUSION:

Benefits: Enables real-time monitoring, automated alerts, and enhanced farm management through a user-friendly interface.



NODE-RED BLOCKS



Node Red Dashboard

