

BORE WATER-LEVEL SENSOR

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Abstract:

- A bore water level sensor is a device designed to monitor and measure the water level within a borehole or well. It is essential for managing water resources, ensuring sustainable water usage, and protecting groundwater supplies. This sensor system provides real-time data on water levels, allowing for efficient monitoring and management of borehole water resources. It can be used in agricultural, industrial, and residential settings to prevent over-extraction, detect changes in water levels, and optimize water usage.

Key Features

- Real-time Monitoring: Provides continuous real-time data on bore water levels.
- High Accuracy: Delivers precise measurements with minimal error.
- Durability: Constructed to withstand harsh environmental conditions, including exposure to water and soil.
- Wireless Communication: Capable of transmitting data wirelessly for remote monitoring.
- Low Power Consumption: Designed to operate efficiently with minimal power usage, suitable for long-term deployment.

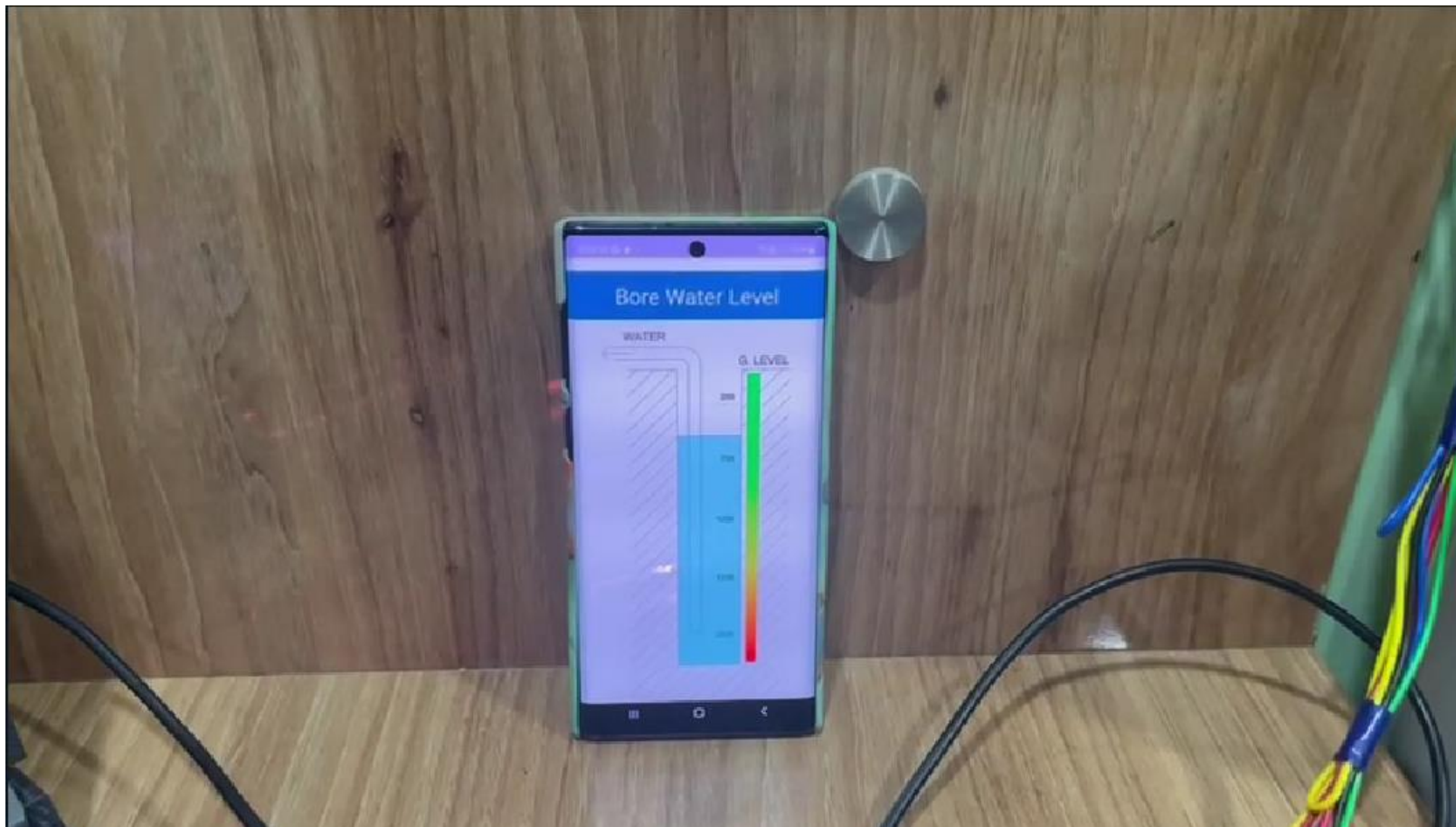
Components:

- Arduino Uno R3: An Arduino Uno is required.
- Sensor Probes: The primary component that detects and measures the water level.
- Data Logger: Records and stores water level data over time. The cloud solution used in the project is the Thingspeak database.
- WiFi Communication Module: Facilitates data transmission, often using technologies like GSM, LoRa, or Wi-Fi. The one used in the project is a NodeMCU WiFi component.
- Mobile phone: The mobile phone has an application that was built to read data from the cloud and display the water level readings using images.
- Power Supply: Typically includes batteries or solar panels to power the sensor system. The power supply to the Arduino Uno in the demonstration is the laptop.
- Pipe with covering: It has a tap built-in to demonstrate the project.
- Buckets and containers: Required to fill and drain water from the pipe.

Demonstration of the Project



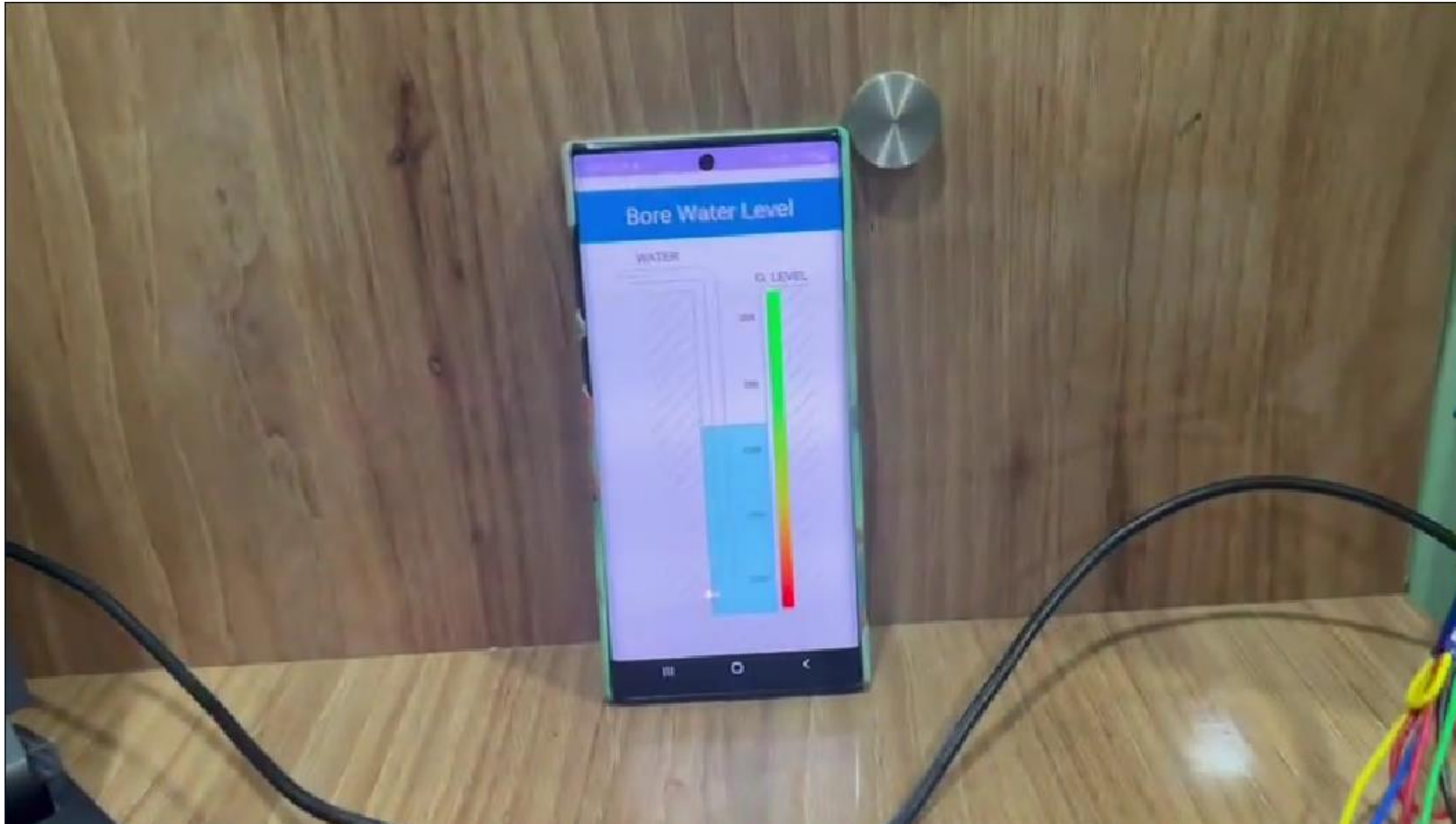
Demonstration of the Project



Demonstration of the Project



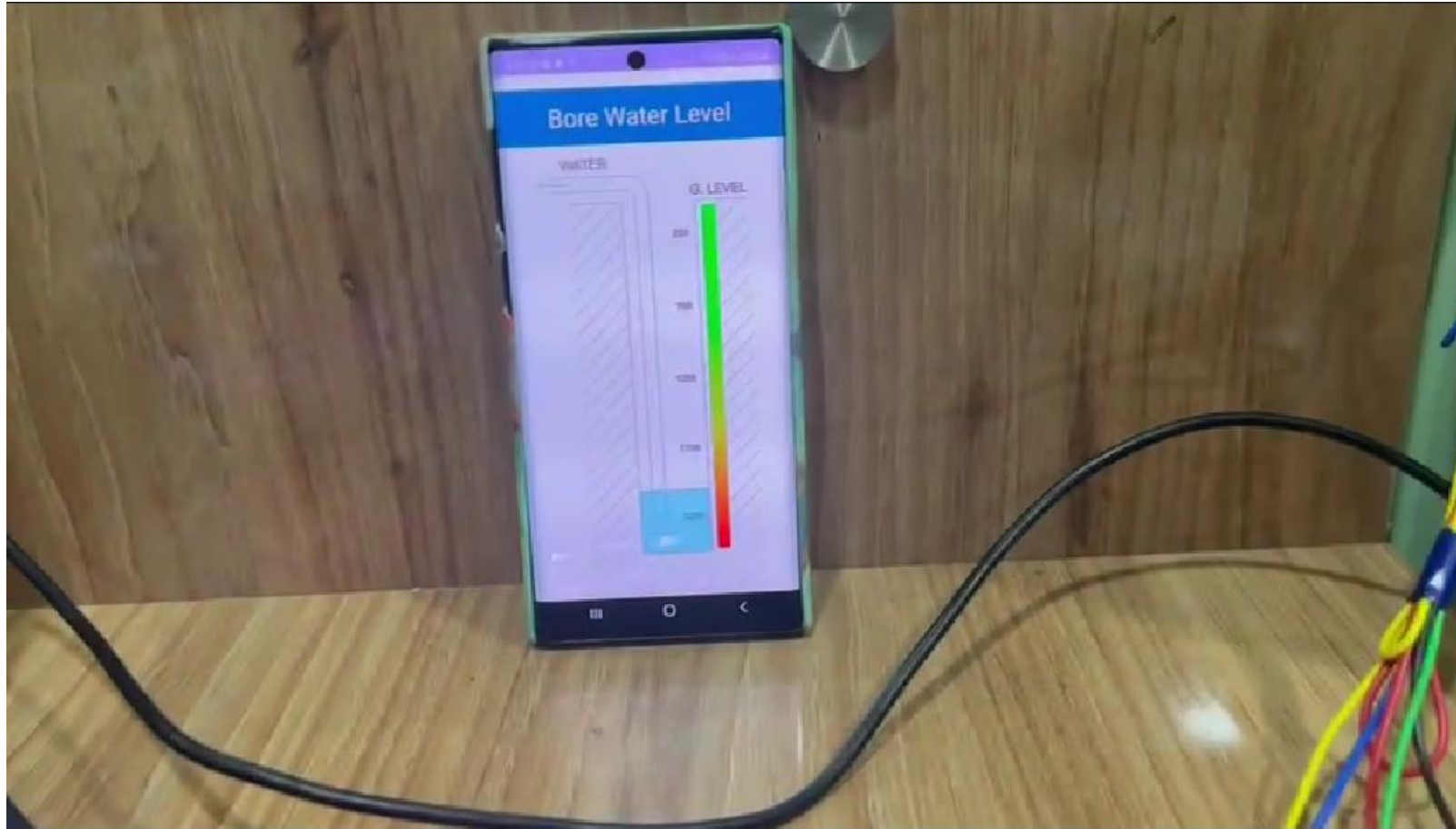
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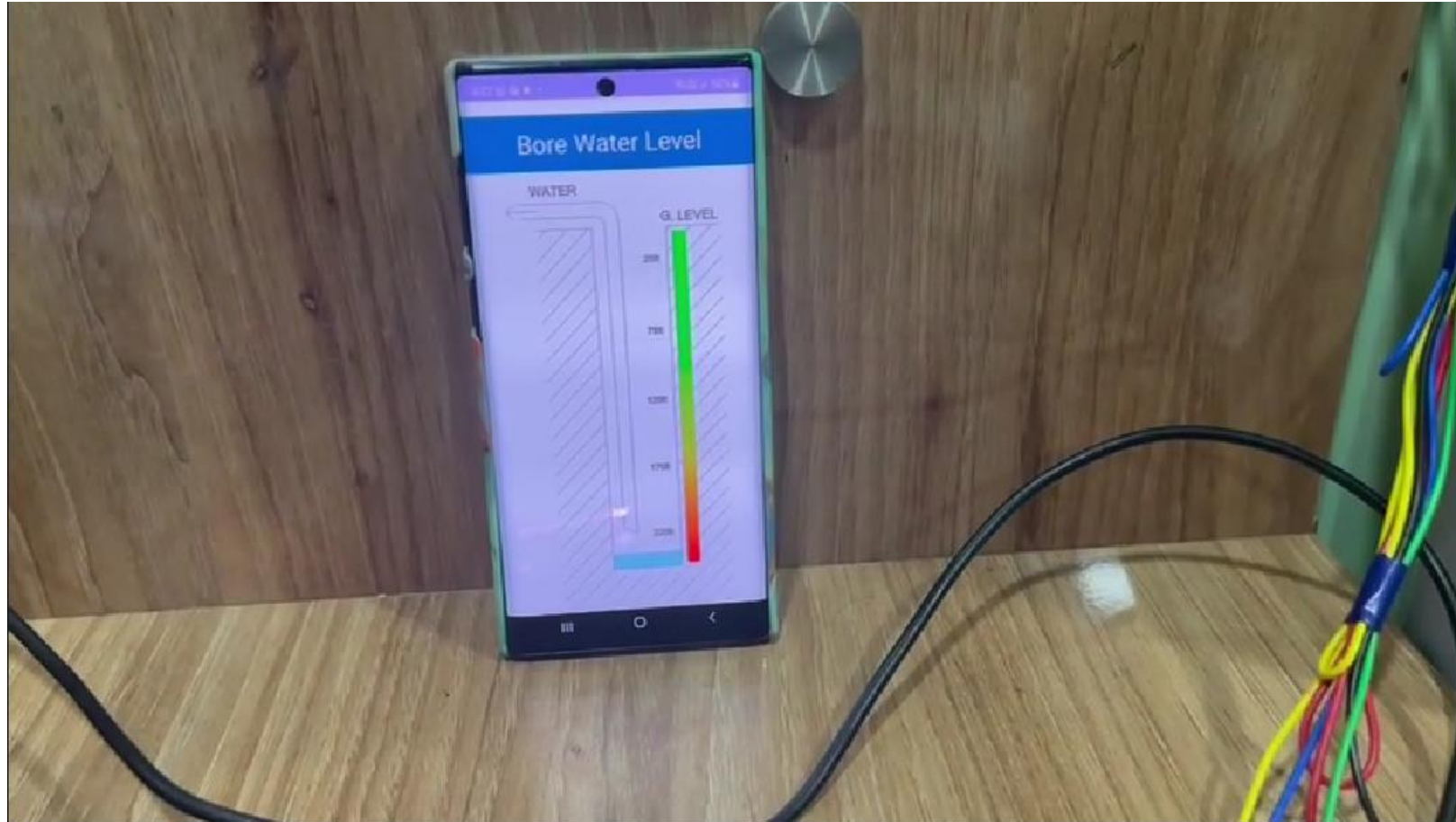
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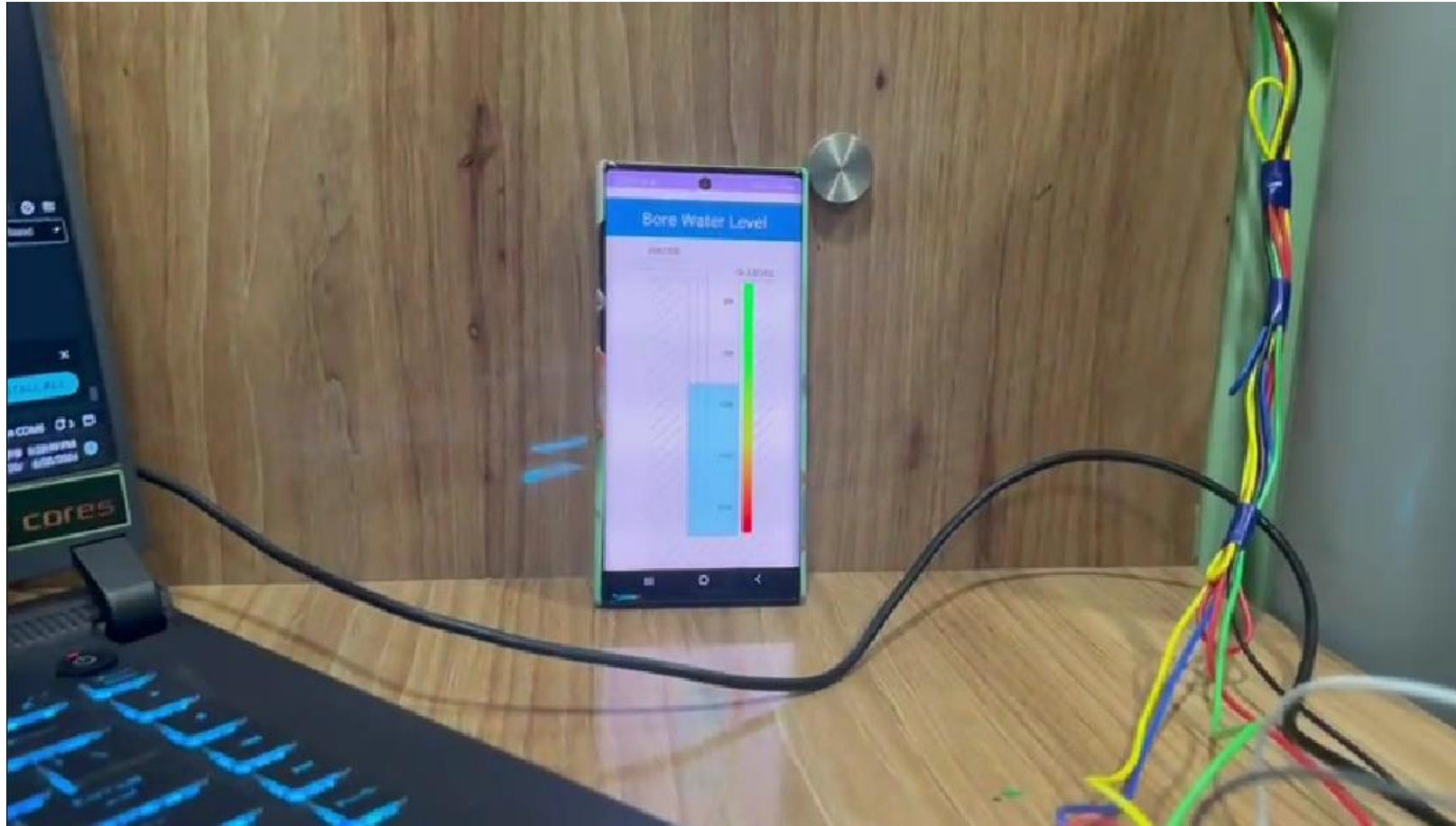
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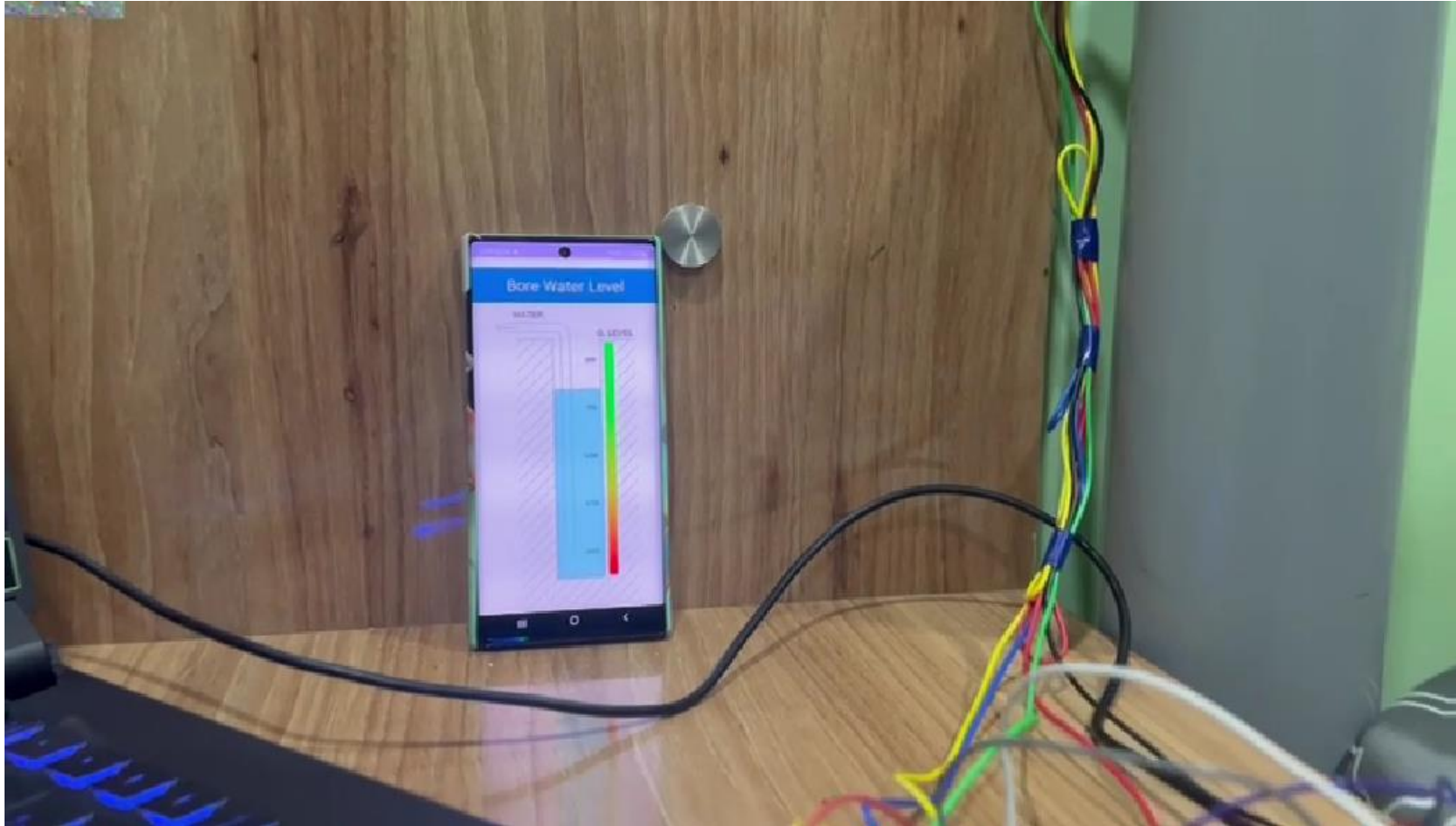
Demonstration of the Project



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Demonstration of the Project



Conclusion

- The Bore Water Level Tracking System works as intended.
- The probes kept at different levels inside the pipe do a proper job of sensing the water level in the pipe.
- These values are later sent via the cloud to the Thingspeak Database.
- The android application that was developed in order to enable easy and convenient water level tracking reads the data from the Thingspeak database.
- It then proceeds to render an appropriate image on the screen, displaying the current level of water.

Significance

- The implementation of bore water level sensors is a crucial step towards responsible water usage and management. By providing reliable and accurate water level data, these sensors support various sectors in making informed decisions to preserve this vital resource.
- Water Resource Management: Helps in the sustainable management of groundwater resources by providing accurate data on water levels.
- Environmental Protection: Prevents over-extraction of groundwater, which can lead to environmental degradation and depletion of water resources.
- Agricultural Efficiency: Assists farmers in optimizing irrigation practices, ensuring efficient water usage for crop production.