



ALVAS INSTITUTE OF ENGINEERING AND TECHNOLOGY

MIJAR, MOODBIDRI



Presentation ON

LoRa and IoT based smart irrigation system

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CONTENT



1. Introduction
2. Literature review
3. Block diagram
4. Working principle
5. Software description
6. Hardware description
7. Implementation
8. Final project setup
9. Result
10. Conclusion
11. Reference



INTRODUCTION



- Water resource one of the most important natural resource problem to be paid more attention in the world in 21st Century.
- Irrigation method in traditional agriculture has low utilization of water resource with the development of IoT in this system.
- In our project irrigation node sends data to cloud through LoRa gateways via wireless transmission. The system can be controlled manually and remotely by mobile applications.



LITERATURE SURVEY

1. Daveev [1], This paper shows the useful methods that can be used in smart agriculture system with the help of LoRa technology. The sensor nodes are connected with LoRa modules in order to transfer the sensor data to the processing system, in order to upload it on cloud platform.
2. C. Bouras [2], Wi-Fi & LoRa as wireless technologies have been compared initially, however the end devices require high power consumption for processing and thus there is requirement of low power network technologies. Experiments carried out on real time basis indicate that LoRa could be an ideal option for building smart rescue monitoring



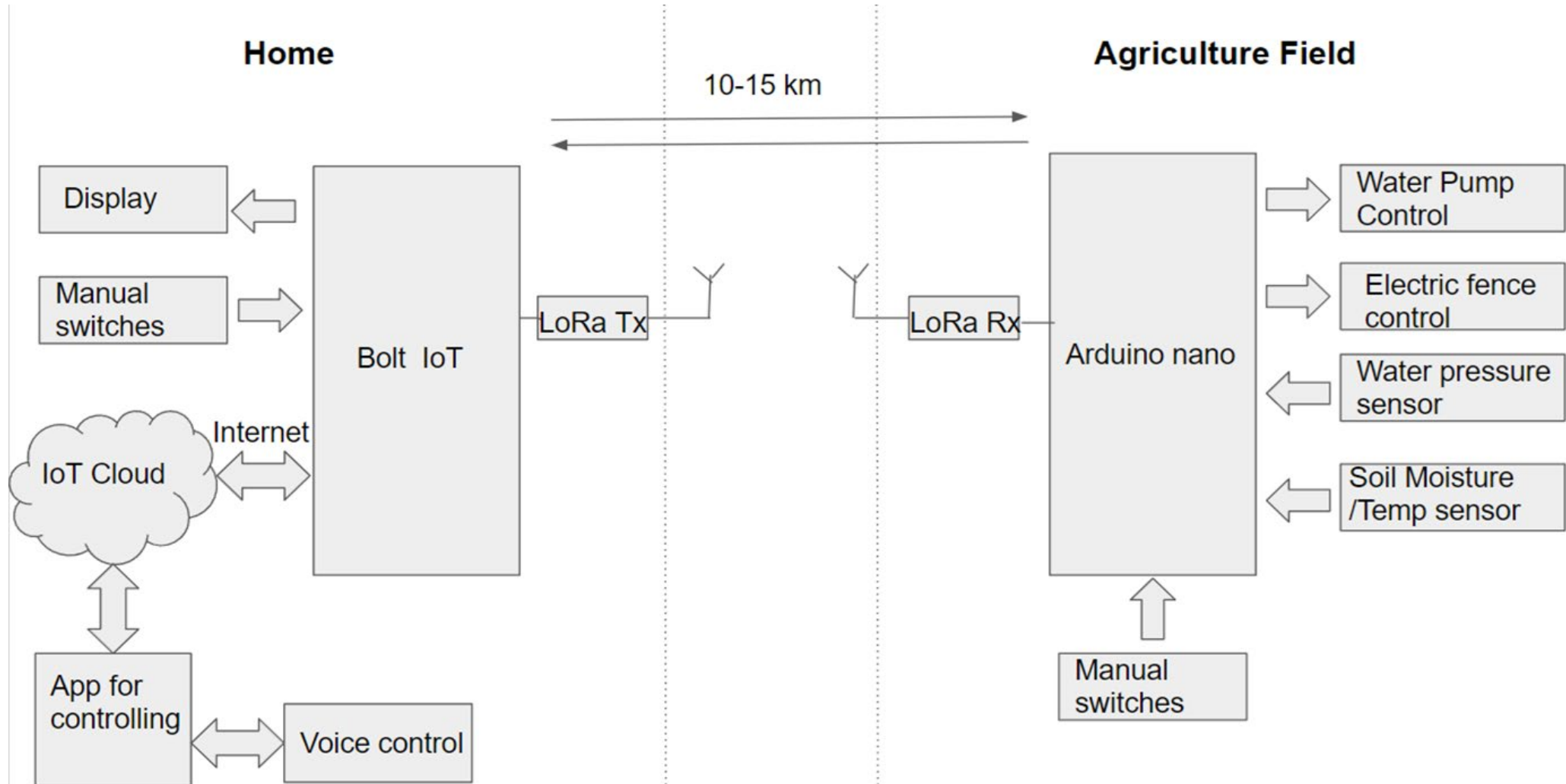
LITERATURE SURVEY

3. C. S. Gaddam [3], This paper shows the WAN technology i.e. LPWAN is popular and leading technology created for IoT networks. LPWAN is wireless based WAN technology that enables Low power consumption, long range, lower bandwidth with low bit rates.

4. A. Lavric [4], Long-range transfer of information is enabled by LoRa modules, with a low transfer rate. Considering the requirements this paper presents the evaluation of the LoRa technology in the field of IoT and Architecture requirements of LoRa WAN communication protocol have been discussed along with the evaluation of LoRa modulation performance.

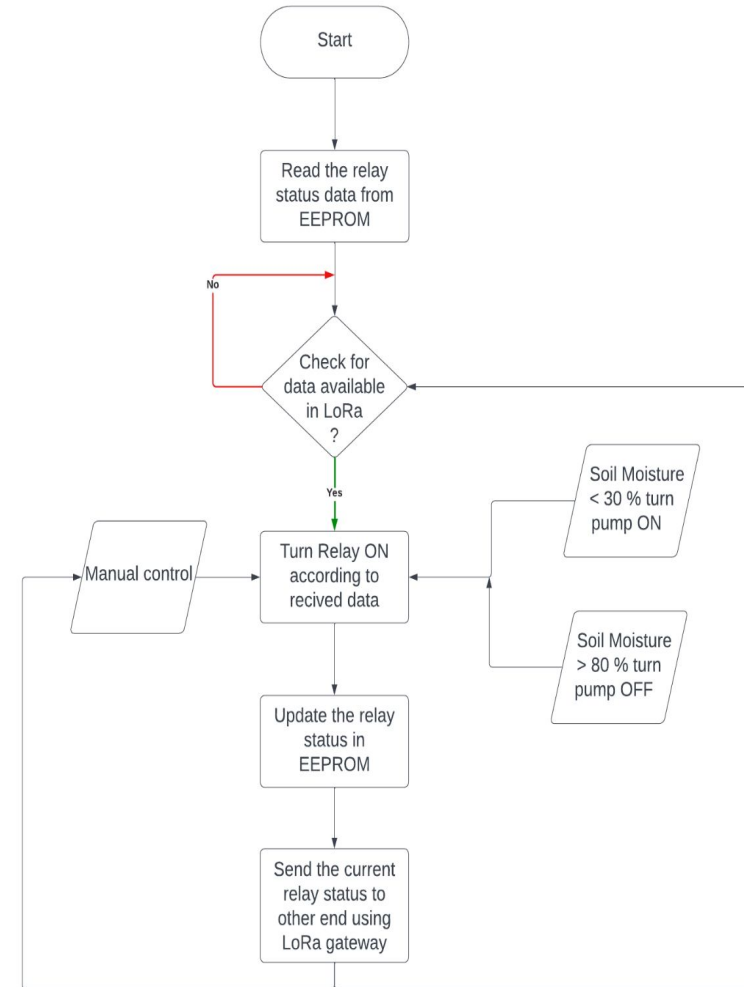
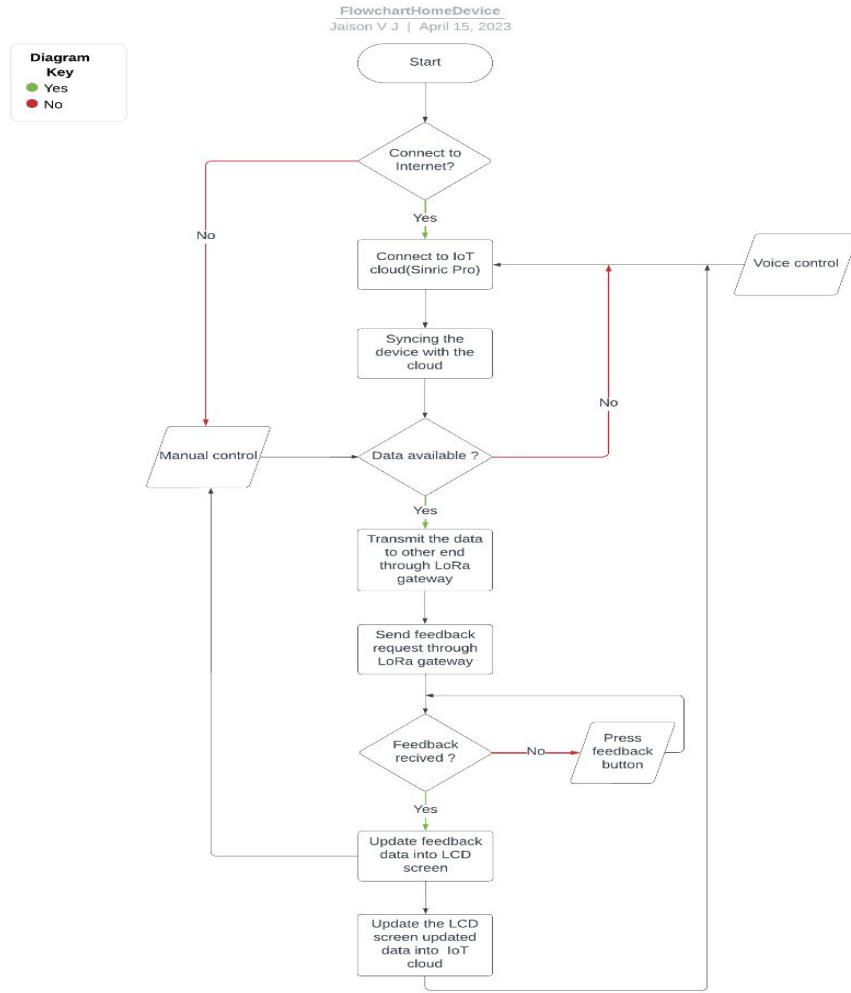


BLOCK DIAGRAM



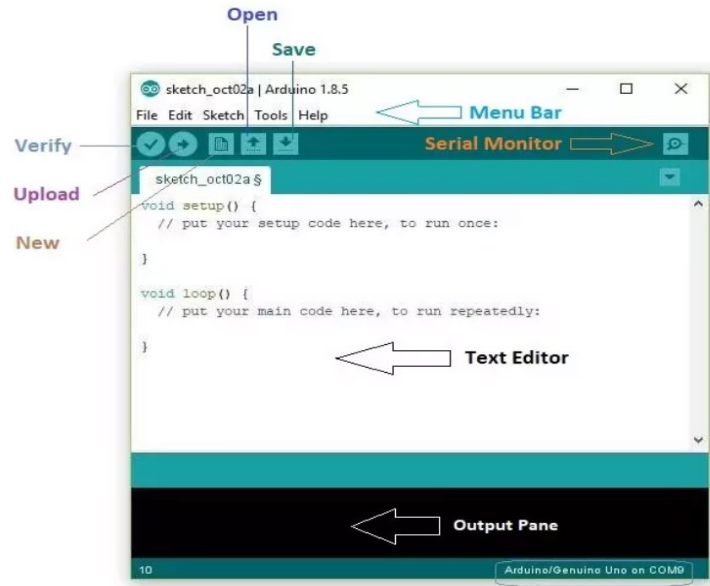


WORKING PRINCIPLE





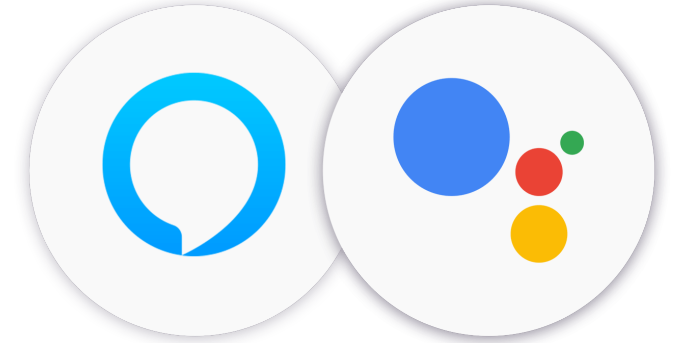
SOFTWARE DESCRIPTION



Arduino IDE (Integrated Development Environment) is an open-source software used for programming Arduino boards.



Sinric Cloud is a platform that enables the development of smart home applications, allowing users to control their smart devices.



Google Assistant and Alexa are popular voice assistants developed by Google and Amazon, respectively.



HARDWARE DESCRIPTION



Transmitter Lora circuit:

- Lora Module REYAX RYLR998 - 1
- ESP8266 NodeMCU - 1
- 1k Resistors - 2
- 4.7k Resistor - 1
- 10k Resistor - 1
- 5-mm LED - 2
- 0.96" OLED Display - 1
- Push button - 5

Receiver Lora circuit:

- Lora Module REYAX RYLR998 - 1
- Arduino UNO - 1
- 5v 4-channel Relay Module - 1
- 2k Resistor - 1
- 4.7k Resistor - 1
- 5-mm LED - 1
- Push Buttons or Switch - 4

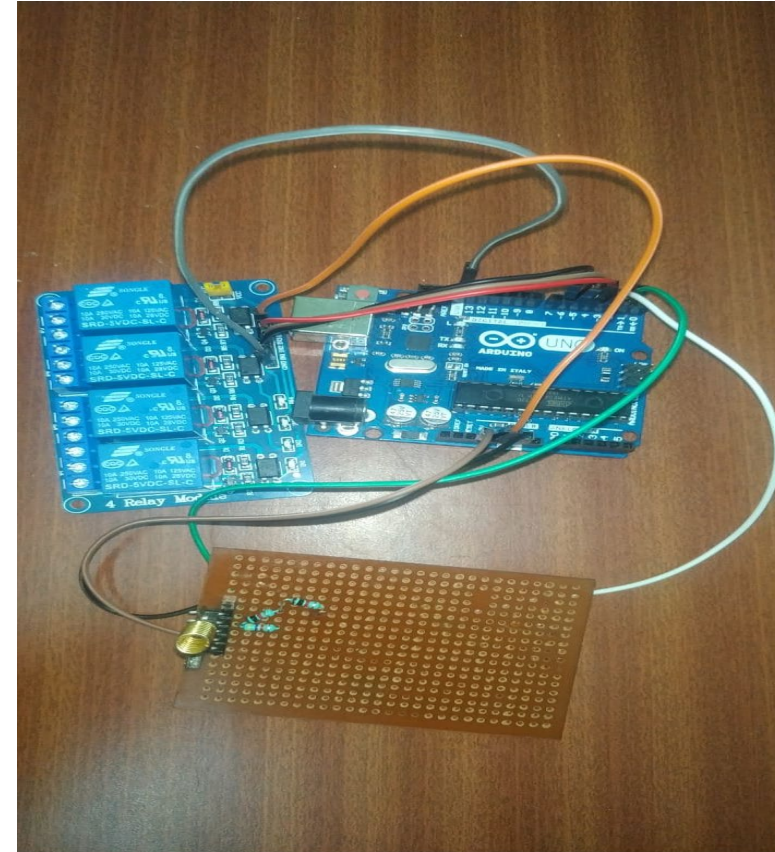


IMPLEMENTATION

- Design of circuit for the implementation of the project.
- Purchase of component required for the project.
- LoRa module configuration.
- LoRa range test.
- LoRa AT command testing.
- Node MCU Coding.
- Cloud configuration and application building.

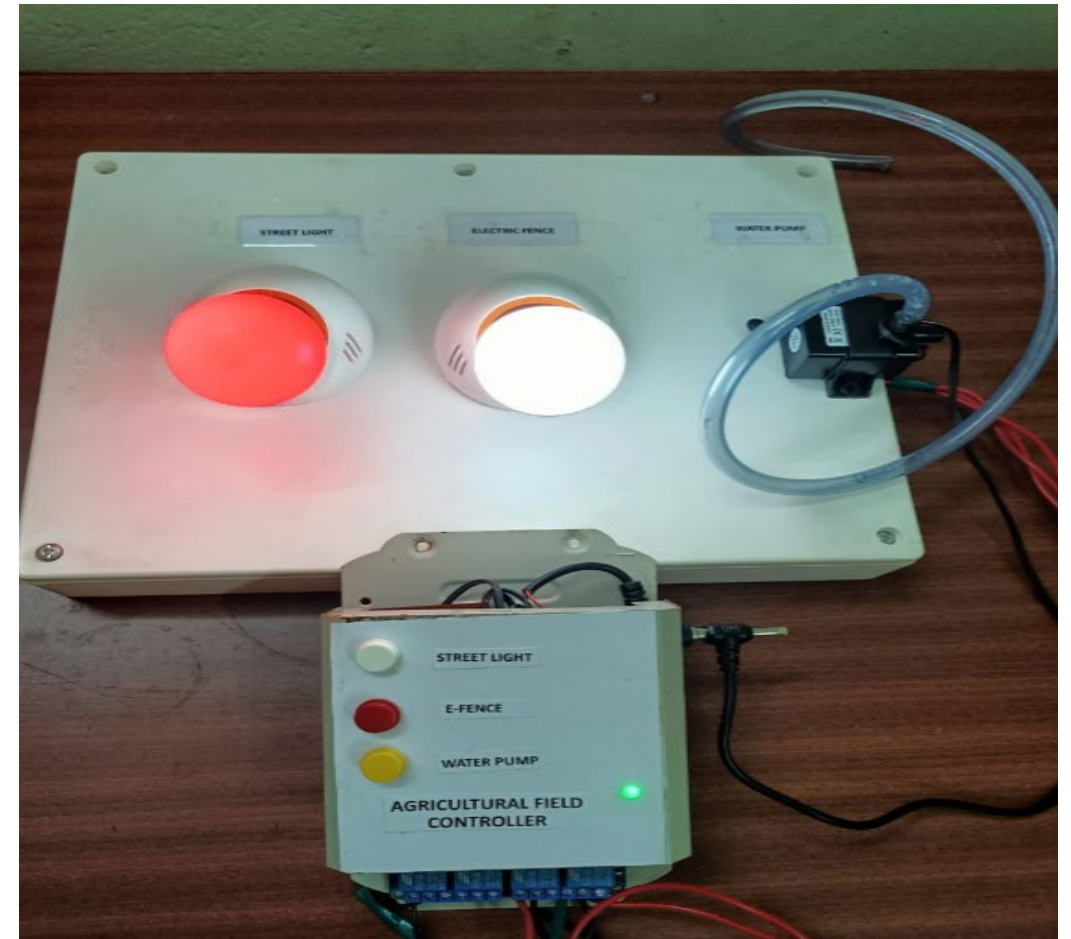


FINAL PROJECT SETUP



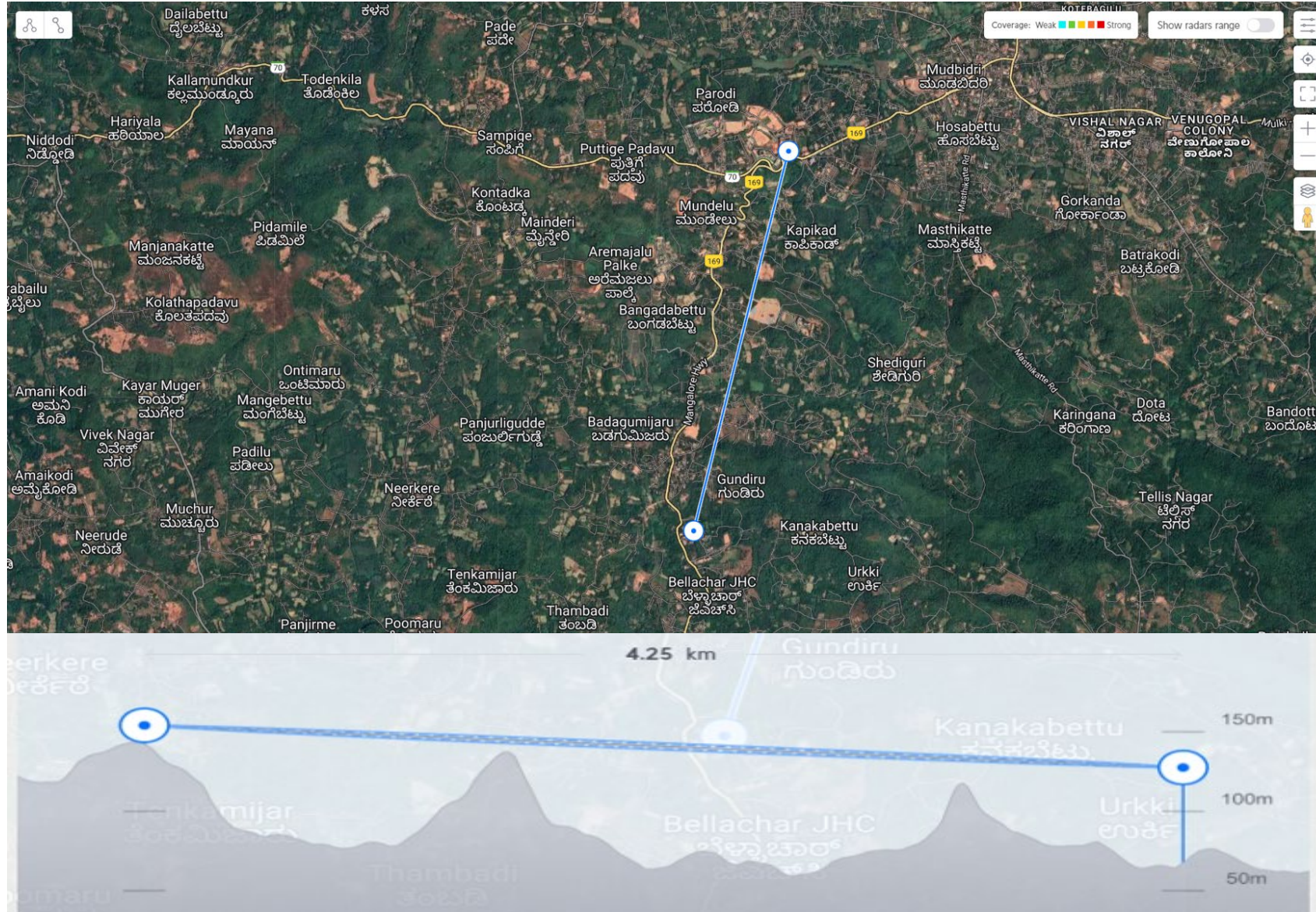


RESULT





RANGE TEST RESULT





CONCLUSION

- In conclusion, a LoRa and IoT-based smart irrigation system can offer many benefits for farmers and other stakeholders in the agriculture industry.
- By using this model labour cost reduced, increases the crop yield, increase the efficiency, improves the plant health and improves the monitoring and controlling.
- The benefits of long-range, low-power wireless communication make LoRa technology to use at many cases.



REFERENCES

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4. A. Lavric and V Popa, "Internet of Things and LoRa™ Low-Power Wide-Area Networks: A survey," 2017 International Symposium on Signals, Circuits and Systems (ISSCS), Iasi, 2017



THANK YOU