PARSHVANATH CHARITABLE TRUST'S
A. P. SHAH INSTITUTE OF TECHNOLOGY
Department of Information Technology
(NBA Accredited)

AGGRO-ASSISTANCE (KISAAN DOST)

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Project Guide
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Contents

1. Introduction

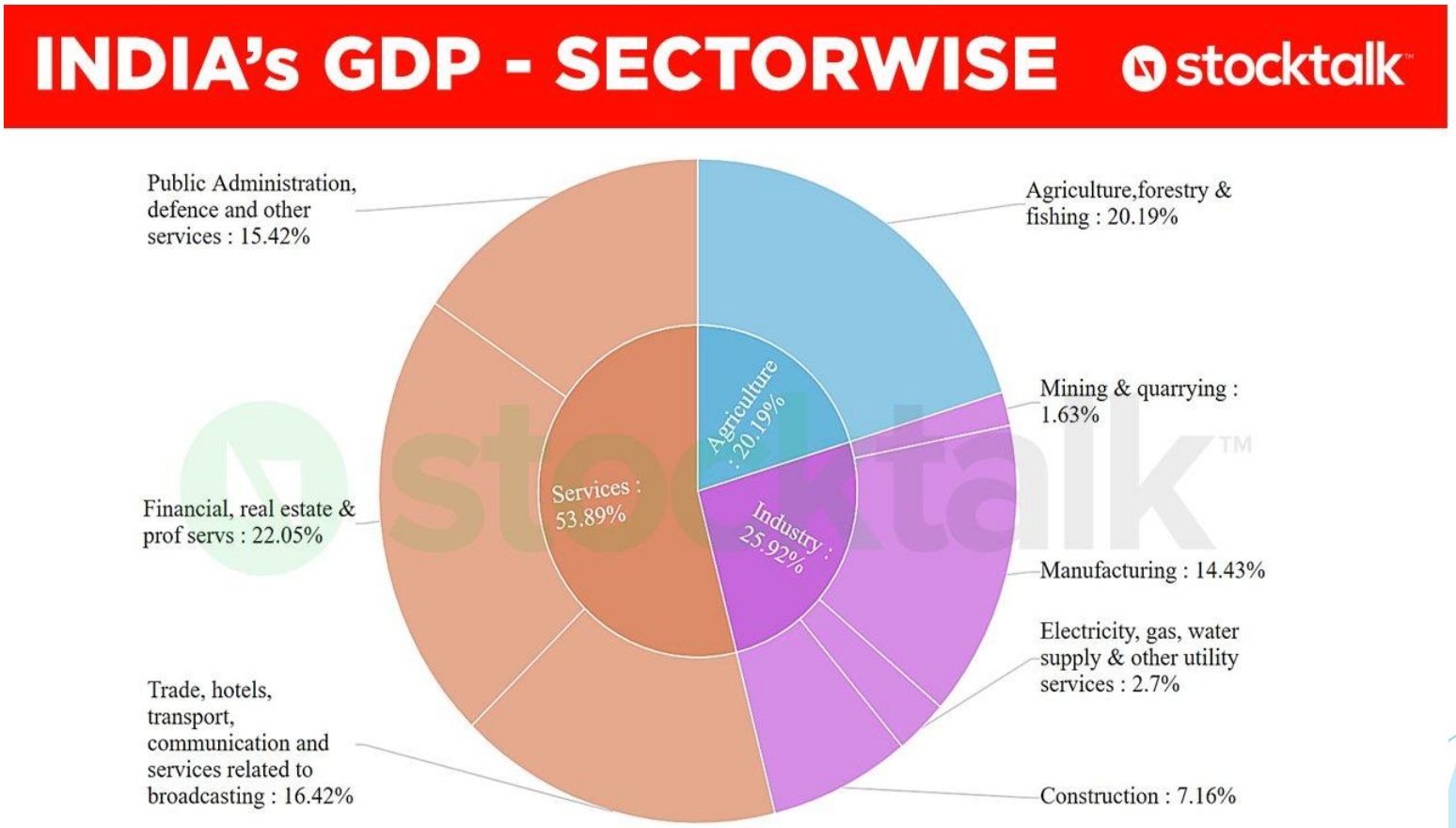
- Problem Identified :

Inefficiencies in management and control of crop growth due to large scale human intervention and unpredictable climatic conditions leading to lower the agricultural yield. This reduction in crop produce is one of the major issue faced by the farmers who depend on agriculture for living.

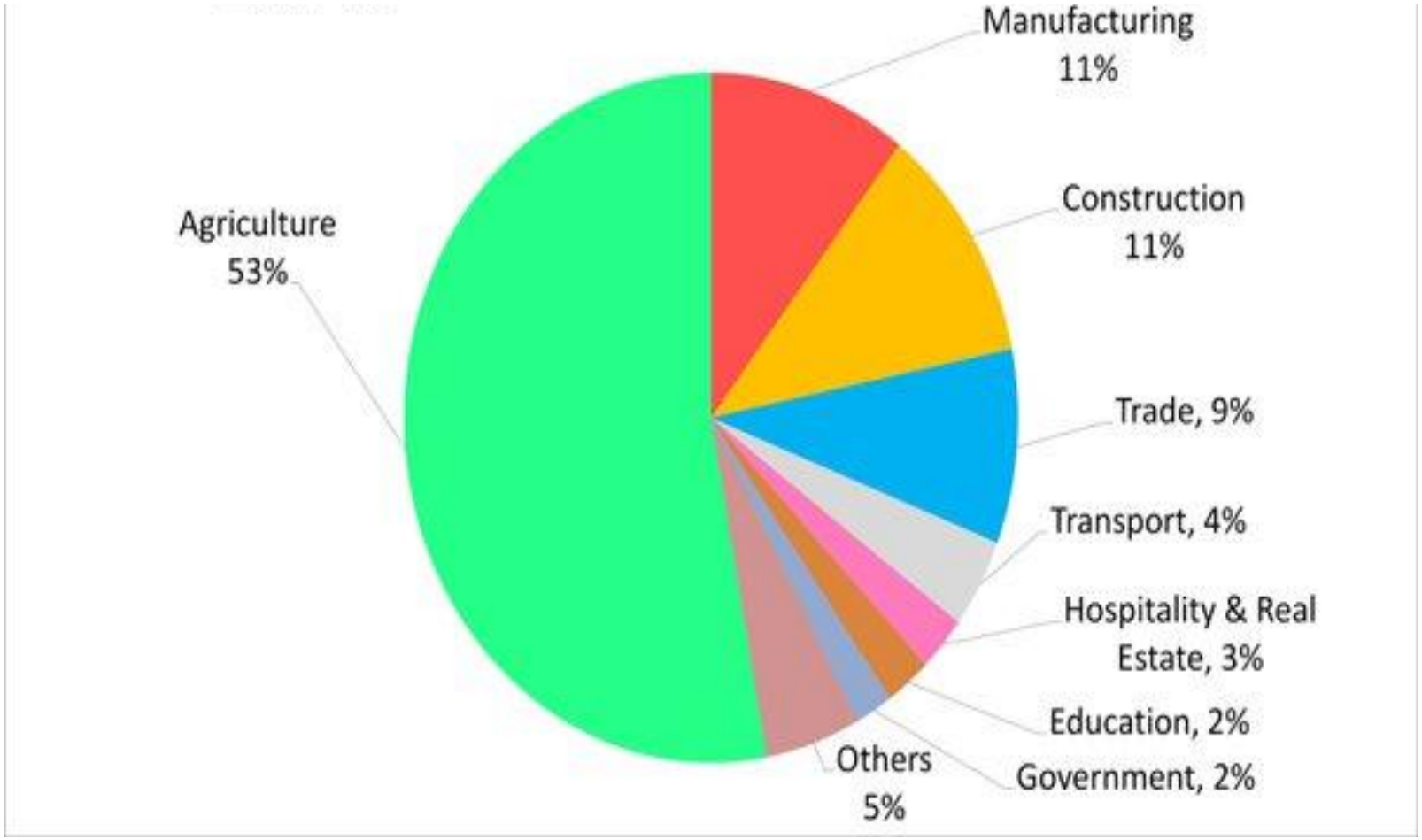
- Solution Proposed :

We will be developing an integrated system based on IOT which will be embedded with various climatic factor detecting sensors and certain actuators responsible to execute various operations on basis of inputs received from sensors , our whole system will be powered by Nodemcu ESP-32 microcontroller.

1. Introduction(Cont...)

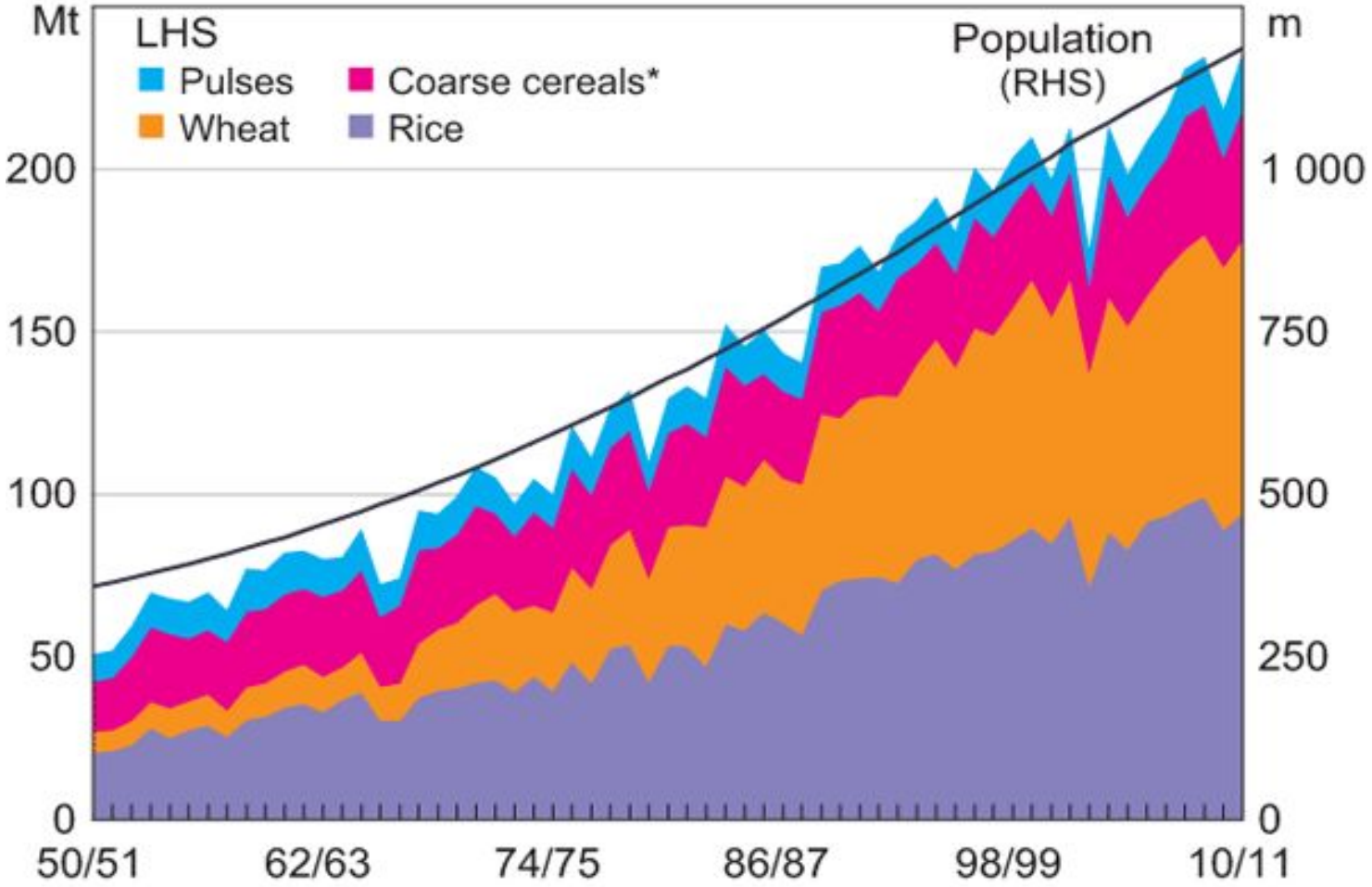


1. Introduction(Cont...)



India – Crop Production and Population

Indian financial years



* Includes barley, maize, millets and sorghum

Source: CEIC

2. Objectives:

- To manage/control the crop growth.
- To help the grower or the farmer to know better about their crop or plant.
- To help farmers to grow plants under controlled climatic conditions for optimum produce.
- To know about the factors affecting the plant growth.
- To improvise our system to meet the suitable climatic conditions needed for efficient and productive crop growth.

3. Scope:

- Can be used for the purpose of farming assistance.
- Can be used to control and monitor various types of plant's growth.
- Can be used to evaluate the patterns on the basis of received outputs through various sensors used in our system.

4. Literature Survey:

Sr.no	Title	Author(s)	Year	Algorithms	Limitations	Result
1.	Agro Farming Using Machine Learning	Suwarna Gothane	2021	-Linear Regression -Decision Tree	Operation of actuator were based on manual interference.	Pre-process the data and apply the algorithm and produce the predicted crop for us. Knowing the fertilizers required for the crop that is displayed.
2.	Smart plant monitoring system	Sreeram Sadashiva m, Vishwnath Vadhari, Supradha Ramesh	2019	-Cloud Based server. -Monitoring hardware: .Net Gadgeteer	System accuracy is not being improved over time	Primarily the interaction between the monitoring device and the user enabled mobile device happens as a publisher-subscriber system.

4. Literature Survey(to be contd..)

Sr.no	Title	Author(s)	Year	Algorithms	Limitations	Result
3.	IOT based plant monitoring system.	Likesh Kolhe, Prachi Kamble, Sudhanshu Bagwat	2018	Hardware components: -Sensors(Moisture ,DHT22, Ultrasonic) -ESP8266 Wi-Fi module -Arduino Uno -Water pump.	Patterns are not being visualized from data which is extracted.	The proposed system uses IOT which enable farmers to remotely monitor the status of motor by approximate information from sensor, making the farmers' work much easier.

5. Proposed System:

Following are the Features of the system proposed:

1. **Algorithm Used:**

- Linear Regression Algorithm: Linear regression analysis is used to predict the value of a variable based on the value of another variable.
- To control the actuations of various actuators resulting in control of climatic conditions.

2. **Data Sensing/ Extraction:**

- These sensors can collect data of factors such as soil moisture, temperature, humidity that affect plant growth .

3. **Monitoring** :

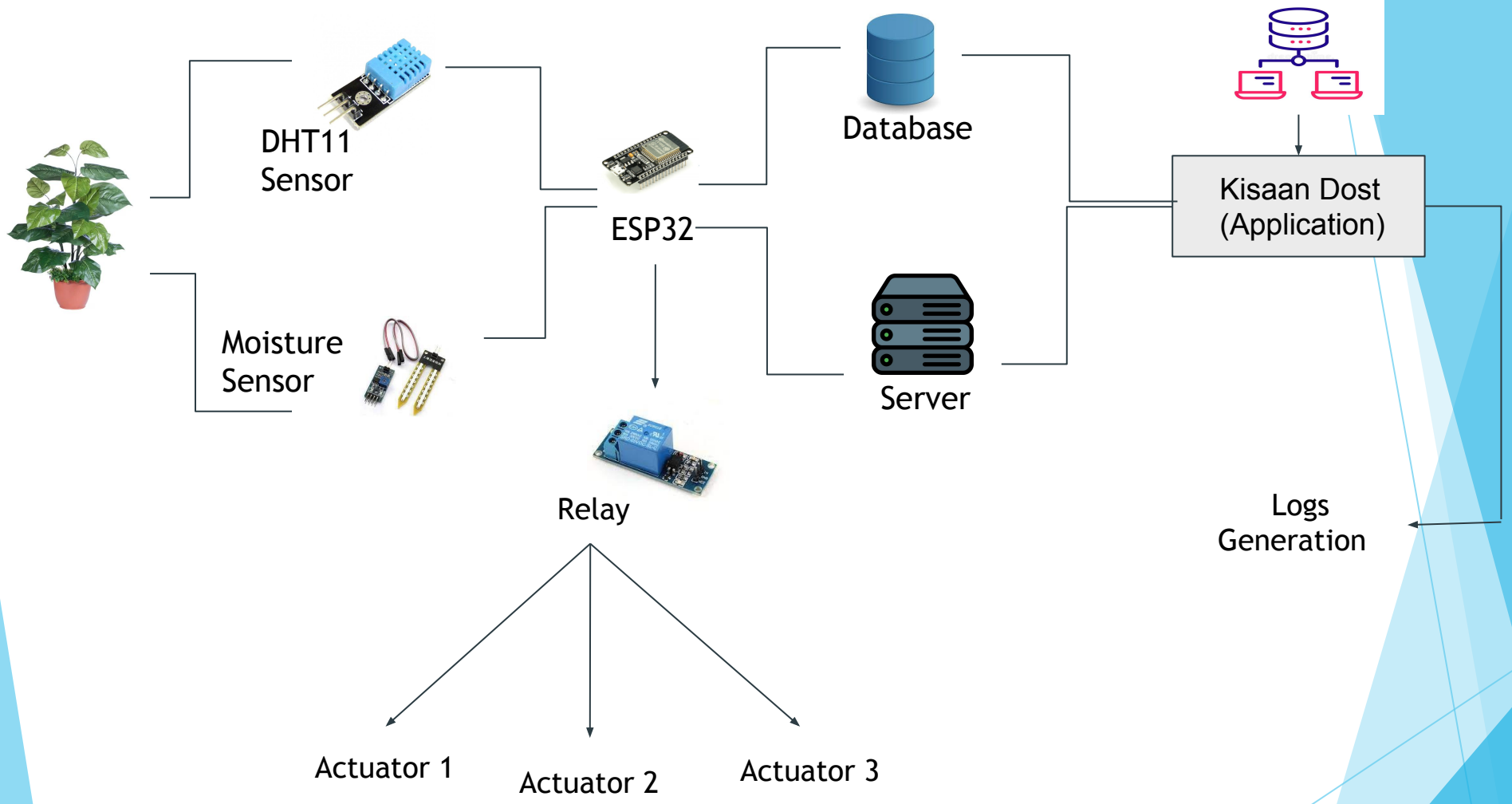
- Agro systems may involve the use of sensors and other technologies to collect data on soil moisture and other factors that affect crop growth.

6. Project Outcomes

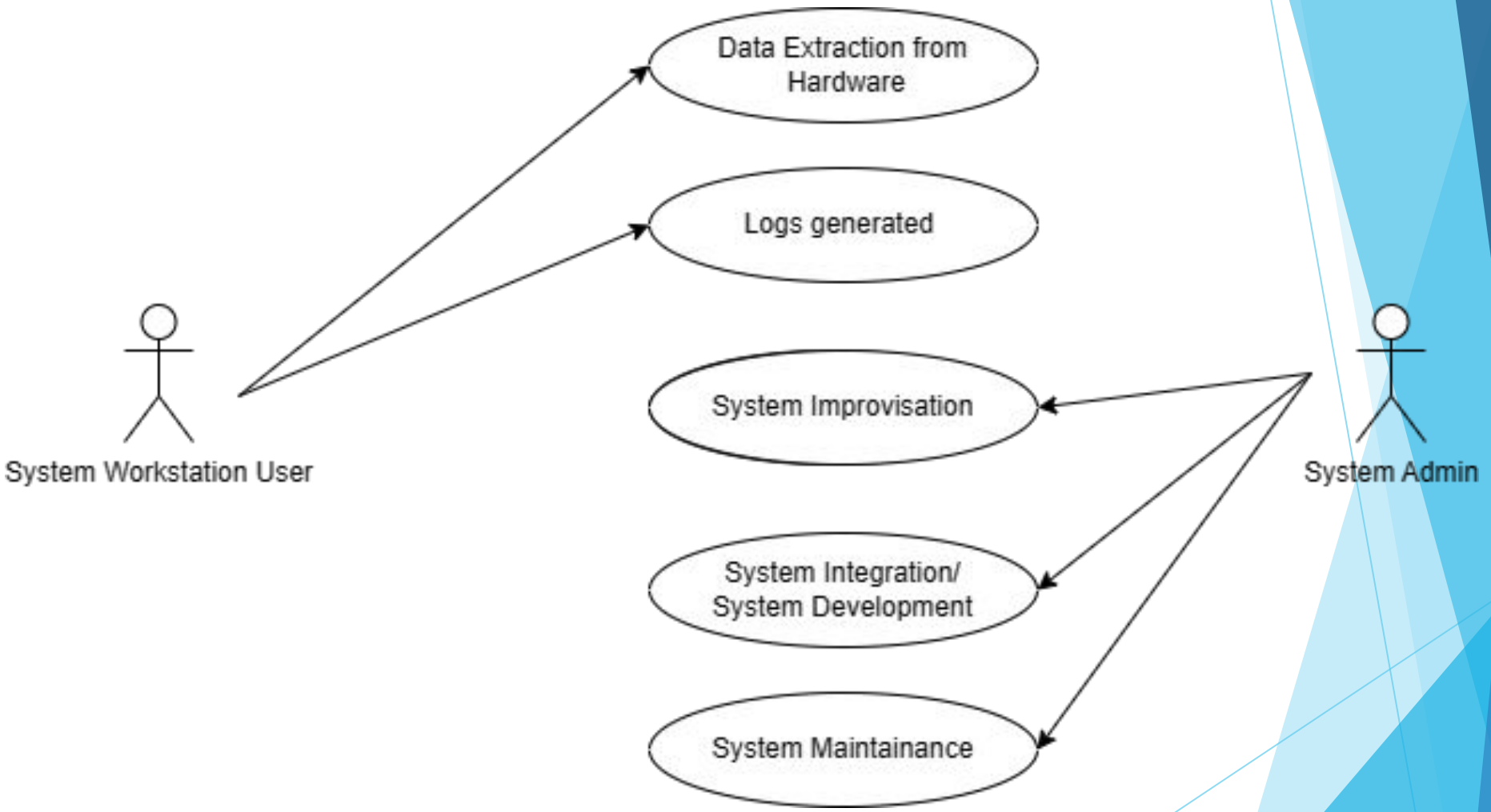
Proposed system will be able:

1) Constraints responsible for crop growth are analyzed.
2) Feasible climatic condition gets maintained.
3) Irrigation system is controlled.
4) The Logs are generated on basis of inputs received from various on-field sensors.

7. Block Diagram



8. Use Case


Data Extraction from Hardware
Logs generated
System Improvisation
System Integration/ System Development
System Maintainance
System Workstation User
System Admin

9. Technology Stack

1. Software:

a) Frontend: HTML, CSS, JavaScript,Bootstrap

b) Backend: Php

c) Database: MySQL,Php

d) Server: XAMPP

e) Microcontroller Board: Arduino IDE

2. Hardware:

a) Microcontroller: ESP32

b) Sensors: DHT11 (temperature and humidity sensor), Soil Moisture Sensor

c) 4 Channel Relay

d) 3 Actuators

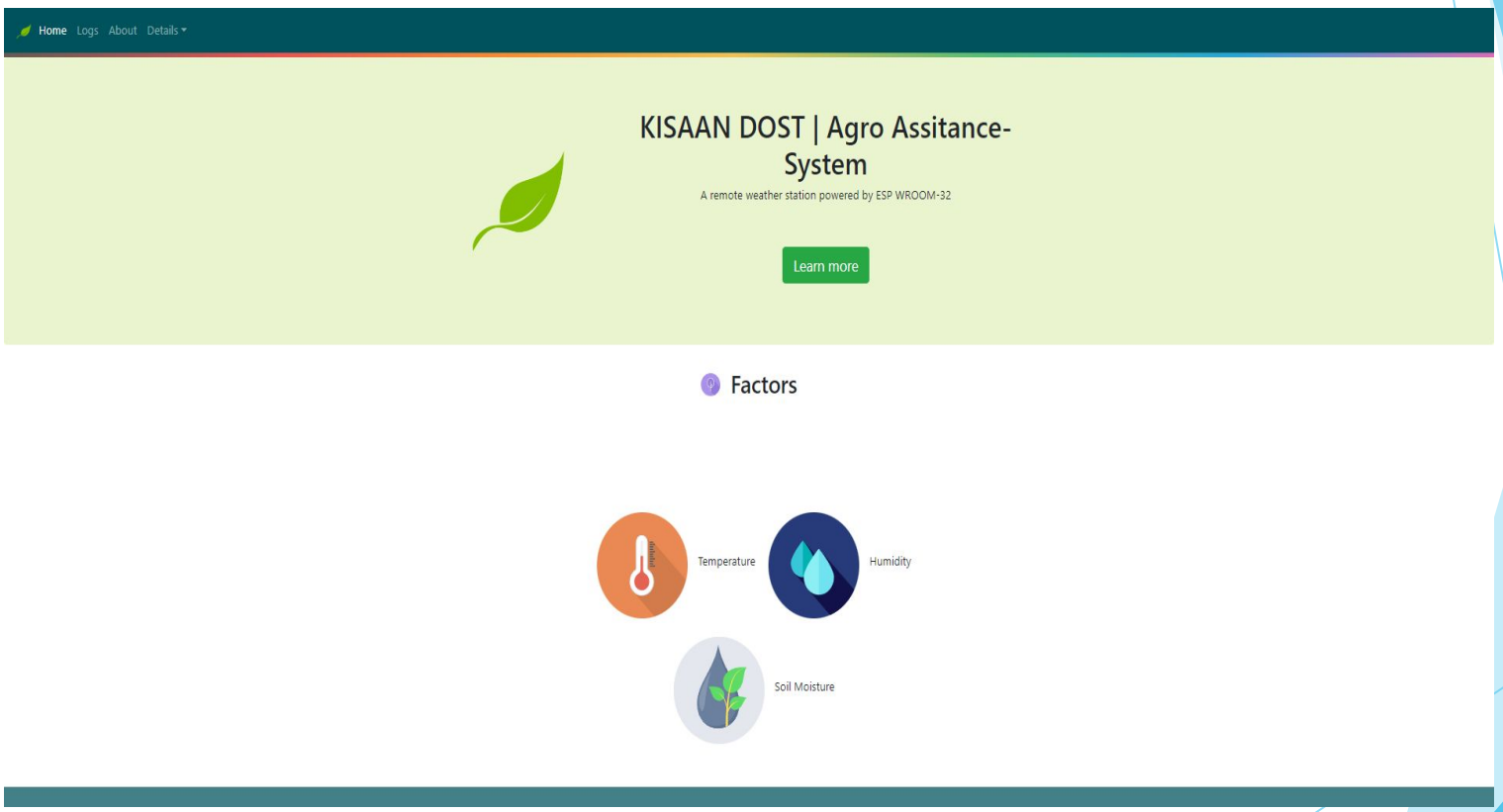
10. Suggestions in Review-1

1. Algorithm Used
2. Ip used in Backend Connectivity

11. Result and Discussion

Software:

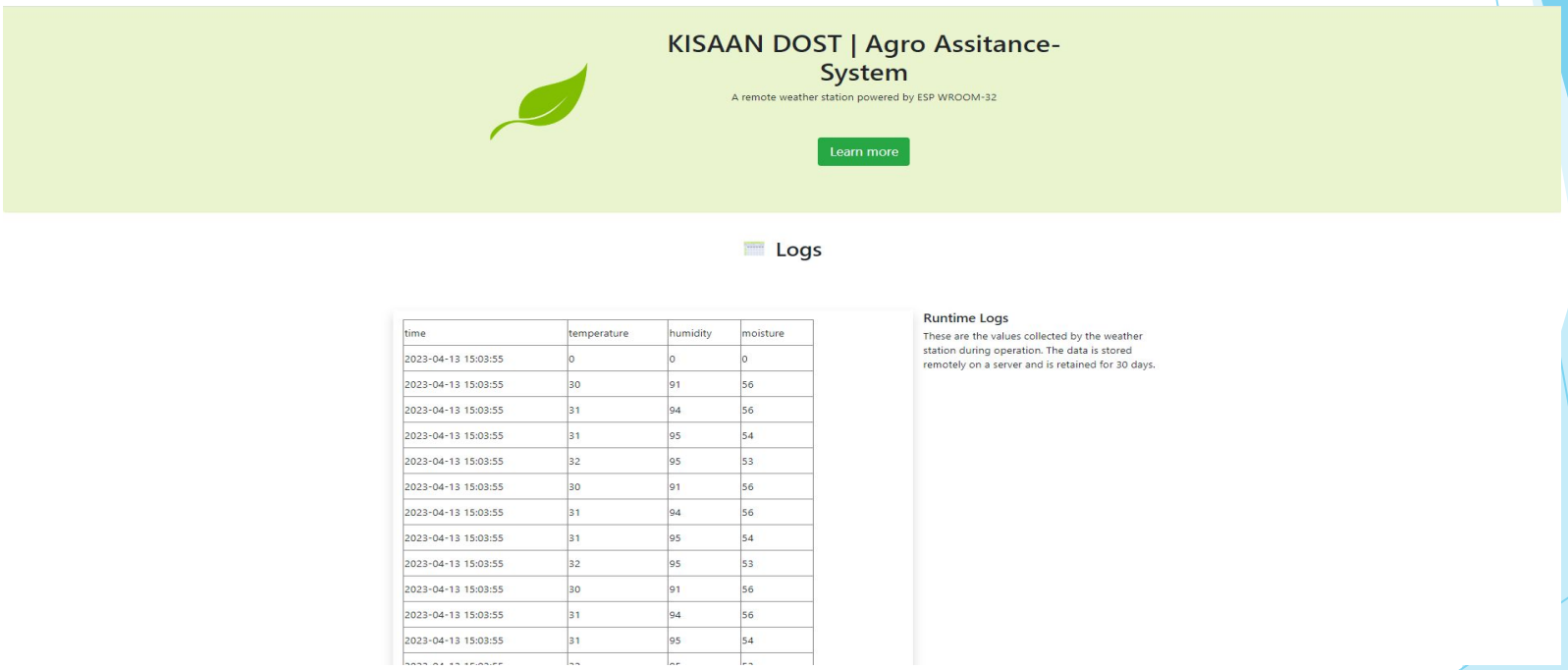
Home Page:



11. Result and Discussion (to be contd…)

Software:

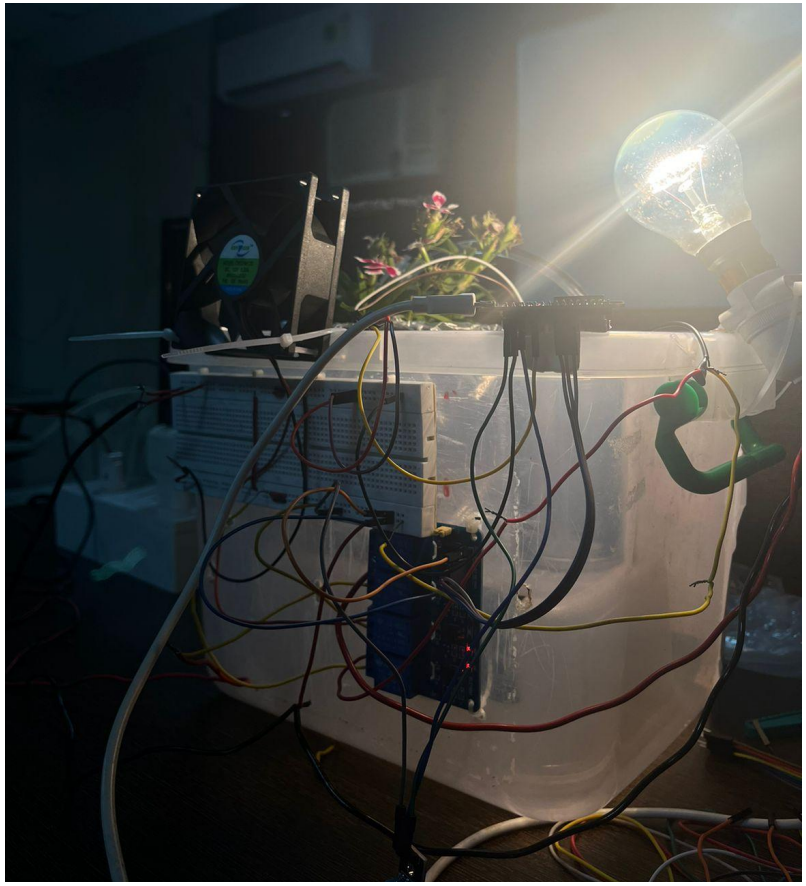
Logs Page:

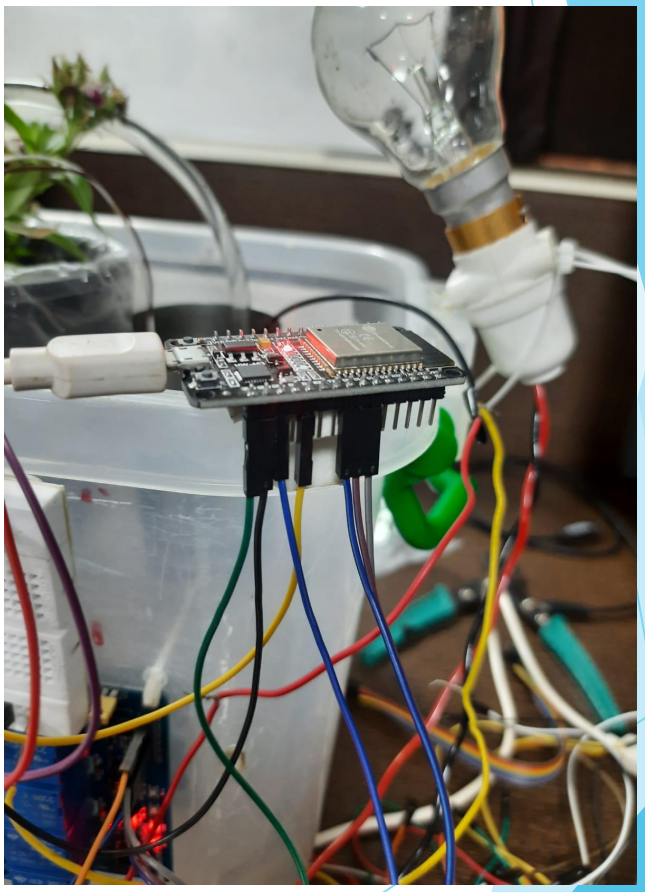


time	temperature	humidity	moisture
2023-04-13 15:03:55	0	0	0
2023-04-13 15:03:55	30	91	56
2023-04-13 15:03:55	31	94	56
2023-04-13 15:03:55	31	95	54
2023-04-13 15:03:55	32	95	53
2023-04-13 15:03:55	30	91	56
2023-04-13 15:03:55	31	94	56
2023-04-13 15:03:55	31	95	54
2023-04-13 15:03:55	32	95	53
2023-04-13 15:03:55	30	91	56
2023-04-13 15:03:55	31	94	56
2023-04-13 15:03:55	31	95	54

11. Result and Discussion (to be contd…)

Hardware:





12. Conclusion and Future Scope

Conclusion:

- A system designed to monitor temperature, humidity, moisture levels in the soil.
- The proposed system is used to switch the motor of water (on/off) depending on soil moisture level , the Light bulb and Exhaust fan will switch (on/off) depending on the inputs from the sensors.
- The Logs generated is displayed on the web application (GUI).

Future Scope:

- The future of agro systems is likely to involve continued integration of technology and data-driven approaches to optimize crop yields and reduce environmental impact.
- The system will include the prediction of crop depending on the favorable climatic conditions.

13. References

1. Huang, W., Lu, W., & Chen, H. , “Smart agriculture monitoring system based on the Internet of things” *3rd International Conference on Control Science and Systems Engineering (ICCSSE),* (pp. 496-499) , 2019

2. Manoharan, R., Saravanan, R., & Subramanian, S. , “An intelligent IoT based plant monitoring and watering system using Arduino and Android applications” , *International Journal of Advanced Science and Technology*, 28(15), 136-146. , 2019

3. Patil, R. A., Khadke, P. V., Chavan, P. G., & Bhavsar, K. S. , Plant monitoring system using Internet of things (IoT), *2nd International Conference on Inventive Systems and Control (ICISC), (pp. 726-731)* 2018

4. Saharan, M., & Jain, R. , “IoT based plant monitoring system using Raspberry Pi” , *International Conference on Automation, Computational and Technology Management (ICACTM),* (pp. 332-335), 2019

5. Singh, S. K., Rana, S., & Pandey, S. , “Automated plant monitoring system using Internet of Things”, *3rd International Conference on Computing Methodologies and Communication (ICCMC)* , (pp. 151-154) , 2018

Thank You...!!