SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE
(Approved by AICTE, New Delhi & Affiliated to Pondicherry University)
(Accredited by NBA-AICTE, New Delhi, ISO 9001:2000 Certified Institution & Accredited by NAAC with "A" Grade)
(An Autonomous Institution)
Madagadipet, Puducherry - 605 107

AASTRA TECH FARM

SMART IRRIGATION WITH AGRICULTURAL PLANT GROWTH SURVEILLANCE AND STOCK MARKETING SYSTEM

Sasidharan J, (Team Lead), Dept. of Computer Science and Engineering, sasijaya2112@gmail.com
Daivik Mathi, Dept. of Computer Science and Engineering, mpdaivikmathi@gmail.com
Jayasurya, Dept. of Computer Science and Engineering, mpjayasurya0@gmail.com
Ravi Shankar, Dept. of Computer Science and Engineering, mpravishankar0@gmail.com
C Panneer Selvam, Dept. of Computer Science and Engineering, mppanneerselvam0@gmail.com
Dr.J.Madhusudanan, Professor, Dept. of Computer Science and Engineering, contactmadhu@gmail.com
M.Ganesan, Associate Professor, Dept. of Computer Science and Engineering, cadganesh@yahoo.com
Sri Manakula Vinayagar Engineering College, Madagadipet, Puducherry – 605107.

ABSTRACT

Technology has developed almost in all the fields. This is widely observed in the current scenario. Agriculture is the main source for Nation's economy and also for human beings' survival. Farmers are the backbone who struggles and do hard work for the nation's development. The theme of this project is to provide farmers all the details of the plant growth process and controlling of irrigation, spraying of fertilizers and pesticides in the detected areas of deficiency of plants using AI prediction can be done with low cost investment with our own Indian made microprocessor. This project also introduces stock marketing and rental technique for the ease of farmers. Data of plant growth process and maintenance can be retrieved from the cloud service. Information such as Water level, temperature, and humidity, defects in plants, growth rate, gross profit and loss, need of pesticides and fertilizers will be notified to the farmer with custom build application using IOT platform.

INTRODUCTION

Nowadays development in all the fields are increasing its progression day by day. In agriculture also its propagating its way towards technological development. But in India, it has not become popular mainly because it is not affordable by the Indian Farmers. Most of the developed countries use AI technology in their field to predict the water needed, defects of plants, pest detection, fertilization and so on. They get each and every detail of the crop growth but in turn they invest a lot of money to setup those device and technique.

The main theme of the project is to provide farmers all the details of the plant growth process and irrigation technique using AI prediction with low cost investment with our own Indian made microprocessor.

The project makes use of AI and IoT platform for the automatic real time plant simulation and data collection respectively.

The project introduces rental technique in our project. In the sense, a farmer can't afford the amount to set up this project in their field. So, to overcome their circumstances, we have introduced a technique of renting our system to them.

AASTRA TECH TEAM will be the supplier of all devices, and they are the beneficiaries. This project provides them the setup in their field and they will be given a separate login ID and password. Using that they can retrieve the information from the cloud service provided by the team. Information such as Water level, temperature, humidity, defects in plants, growth rate, gross profit, loss, whether pesticide needed, fertilizer needed and more can be notified to the farmer.

Presently, farmers are so much affected due to less profit from the selling of their crops and cereals to the retailers.

For example, a farmer grows a rice crop in his field. After the harvesting, he has to go to the wholesale retailer to sell his crop. In this case, the wholesale retailer or the mediator between the farmer and the wholesale seller is the one who fixes the rate of the crop, cereal or vegetables. But the farmer does not get what the wholesale retailer or the end marketer sells. So, the only way by the farmers to earn more and recent amount is through stock marketing.

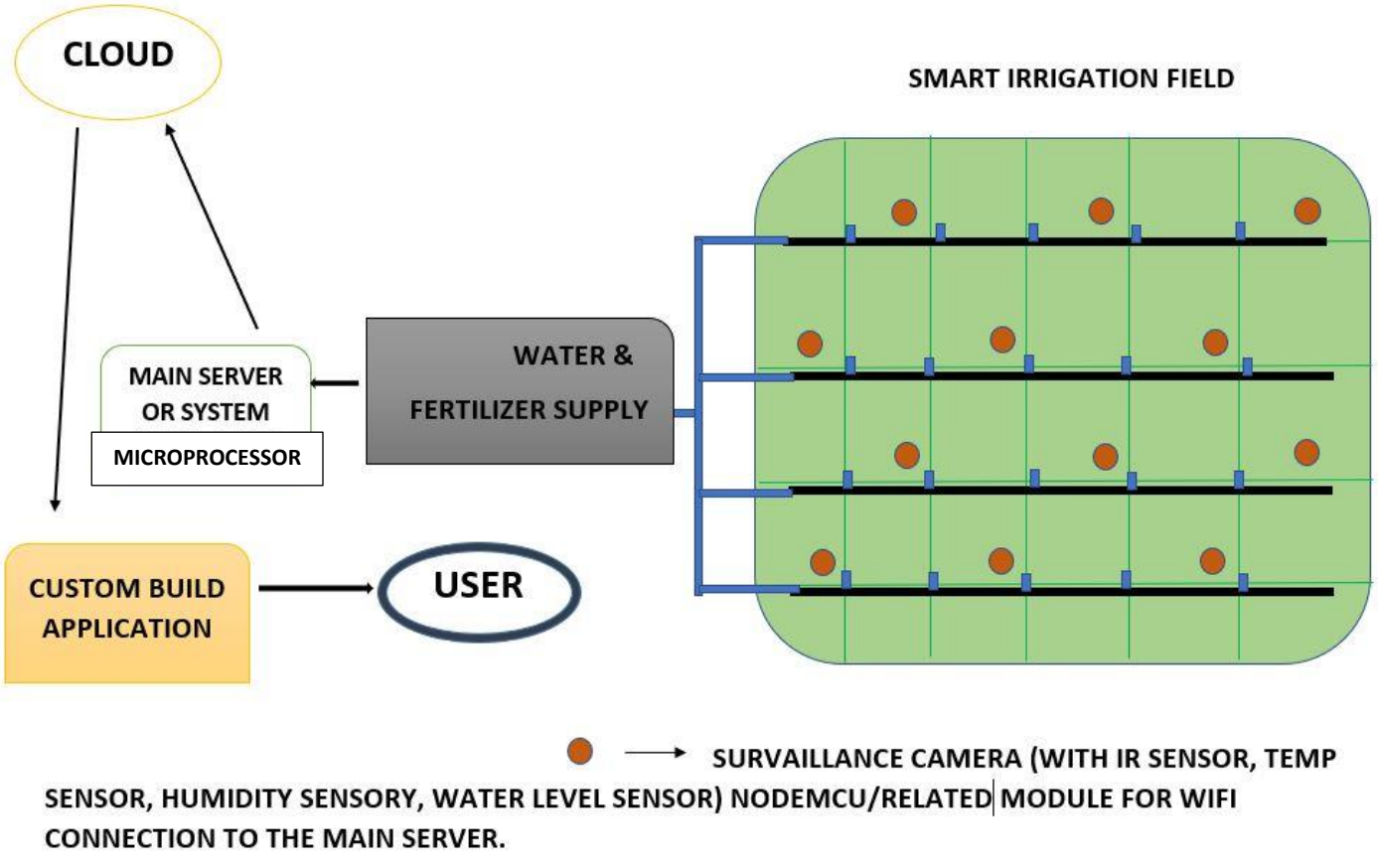
Stock market can be termed as an electronic market place where the farmer fixes the price of the crop or vegetable what he wants to sell according to the daily marketing rate which can be calculated from the present-day Sensex and economic rate and also these share prices are set by the demand of that particular crop or vegetable in the market. All these are satisfied by our application as it is in-built in it.

After harvesting, a particular percentage of amount to be paid by farmer from their profit for the setup and rental of the devices and services given by us for their farm.

THE SET OF OBJECTIVES THAT ARE APPLIED IN OUR PROJECTS:

- **Cost less** investment by farmers and to get profit out of our AASTRA TECH FARM services using stock market.
- **AI** surveillance camera and IR thermal camera for unauthorized entry can be notified, both in day and night.
- **AI** to predict the no. of fruits/ growth of a plant and to calculate the approximate **production profit** cost.
- Also, to find the **disease of the plant** and to notify the user by scanning the picture fed into the system
- Pest control with sprinkler on that particular area using **AI prediction technique**

- **IoT** for the wireless communication of this system. All data stored in cloud which can be retrieved by the user using separate login ID and password provided by AASTRA TECH TEAM.
- To control the whole agricultural watering and fertilization with **one touch in phone**.
- **Solar panel** for individual surveillance post for **eco-friendly and costs free** technique.
- **Pest attracter** with UV light during night time if any pest was founded by the AI system using IR camera.
- Monitoring of the plant growth process and provide the **Gross profit and loss** with clear detail of growth time.
- **Stock Marketing** allows farmers to earn the recent and profitable amount which can be fixed by himself according to the economic rate of that particular crop or cereal.



DATA FLOW DIAGRAM

Advantages:

1) Eco-Friendly – as we are using solar for powering up all the system, the complete setup is ecofriendly.
2) Humans do not get affected by the spraying of pesticides or fertilizers, because of the use of automated spraying system.
3) Farmers are more benefited by the stock market system provided by the project- they are the fixing authority of selling price which is based on current economic rate.
4) Any farmer can easily access the data from the cloud service provided, and all details are easy to understand and what is the next step and what are the areas to improve fertilization and pesticide spraying.
5) Drip irrigation helps to reduce the wastage of water.
6) From watering to data analysis, everything can be done in a single touch from our custom build app.

BASIC ARCHITECTURE OF CUSTOM BUILD APPLICATION: