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Smart Agricultural Land Monitoring and Controlling System

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Abstract— Agriculture in India is still c arrived out in conventional way and lags behind in integrating modern technologies. For many decades, plants have been grown in controlled environments, especially in countries where the climate is harsh, either extremely cold or extremely hot. Greenhouses, often called hothouses in cold countries, provide the controlled environment to grow crops which otherwise would not have been possible in the natural environment. This paper includes smart irrigation with smart control and intelligent decision making based on accurate real time field data. Which includes soil moisture sensor, water level sensor, ultrasonic sensor and PIR sensor. Controlling of all these operations will be through computer connected to Internet and the operations will be performed by interfacing sensors. The data can be completely updated faster when compared to other wireless computing. We present the implementation of an open architecture that instantiates such an approach, based on a set of domain independent software tools called ‘‘generic enablers’’ that have been developed in the context of the FI-WARE project. The implementation is used to validate a number of innovative concepts for the agricultural sector such as the notion of a services’ market place and the system’s adaptation to network failures. During the design and implementation phase, the system has been evaluated by end users, offering us valuable feedback. The results of the evaluation process validate the acceptance of such a system and the need of farmers to have access to sophisticated services at affordable prices.

Keywords— Agriculture in India, natural environment, FI-WARE project, network failures etc.

I. INTRODUCTION

Agriculture is considered as the basis of life for the human species as it is the main source of food grains and other raw materials. It plays vital role in the growth of country’s economy. It also provides large ample employment opportunities to the people.

Growth in agricultural sector is necessary for the development of economic condition of the country. Unfortunately, many farmers still use the traditional methods of farming which results in low yielding of crops and fruits. But wherever automation had been implemented and human beings had been replaced by automatic machineries, the yield has been improved. Hence there is need to implement modern science and technology in the agriculture sector for increasing the yield. Most of the papers signifies the use of wireless sensor network which collects the data from different types of sensors and then send it to main server using wireless protocol.

The collected data provides the information about different environmental factors which in turns helps to monitor the system. Monitoring environmental factors is not enough and complete solution to improve the yield of the crops. There are number of other factors that affect the productivity to great extent. These factors include attack of insects and pests which can be controlled by spraying the crop with proper insecticide and pesticides. Secondly, attack of wild animals and birds when the crop grows up.

There is also possibility of thefts when crop is at the stage of harvesting. Even after harvesting, farmers also face problems in storage of harvested crop. So, in order to provide solutions to all such problems, it is necessary to develop integrated system which will take care of all factors affecting the productivity in every stages like; cultivation, harvesting and post harvesting storage.

Agriculture plays a vital role in every countries economy. Generally agriculture uses 80 % of fresh water this percentage will be dominant in water consumption because of population growth so this becomes a very important to create a system which is based on science and technology for sustainable use of water .There are so many systems are available to achieve water savings in various crops from basic ones to more technologically advanced ones.

II. EXISTING SYSTEM

In existing system, the agricultural land is controlled with few sensors and microcontroller. The following sensors are 1.Soil Moisture sensor 2.ultrasonic sensor. The soil moisture sensor will detects soil moisture content (i.e.) water contents of the soil and drive the water motor. In existing system there is no using of PIR sensor for detecting animals.

Disadvantages Of Existing System

- It's not secured system
- Everyone can enter in farmers land.

III. PROPOSED SYSTEM

Moisture sensor measures moisture content of the soil. Ultrasonic sensor is used to measure the water level in the well. PIR sensor is used to detect the animals which are

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entered in farmers land. Arduino microcontroller is used to receive input from a variety of sensors and it can control automatically.

When soil moisture sensor goes low the water motor will be on and exceeds a defined level, the water motor will off automatically. When the water level is low in the well it will automatically detected by ultrasonic sensor and the details about the water in the well are updated in a webpage. And also when PIR sensor detected means the voice module will be on automatically to send the animals outside from the farmers land.

This PIR sensor is controlled by using a toggle switch. The user can monitor and control parameters through webpage. This device is very much helpful to the farmers to monitor and control environmental parameters at their farms. The farmers need not to go their farms [1].

A. Advantages Of Proposed System

- Water irrigation automatically done
- It will intimate the status of the land automatically through internet.
- Smart Work

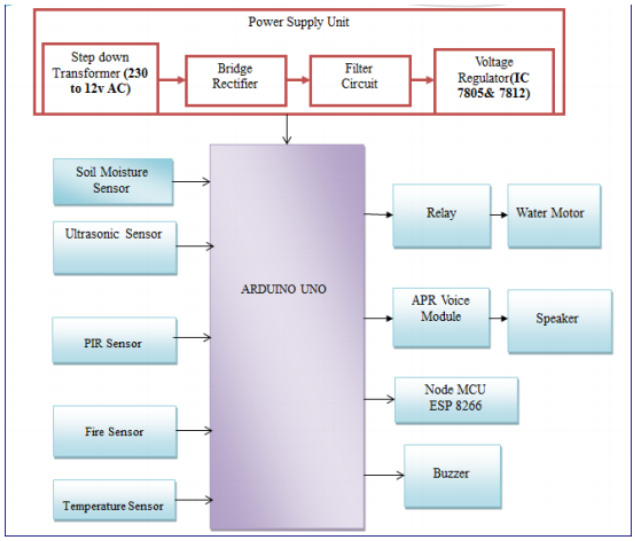

Fig 1: Block Diagram

IV. SYSTEM ARCHITECTURE

Fig 2: Monitoring Unit

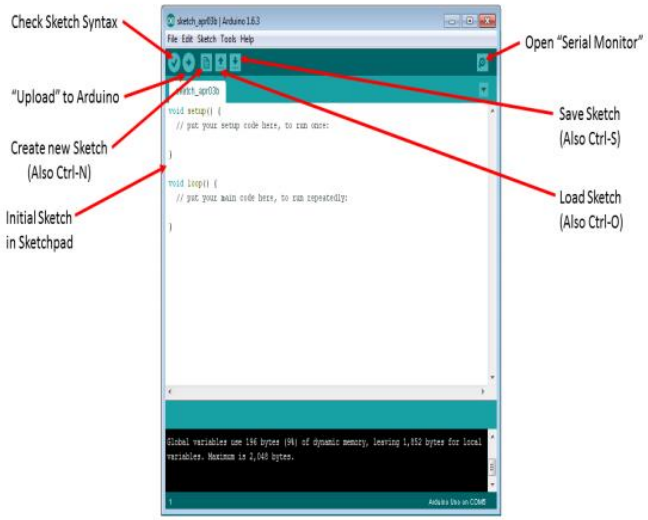

Fig 3: Software Unit

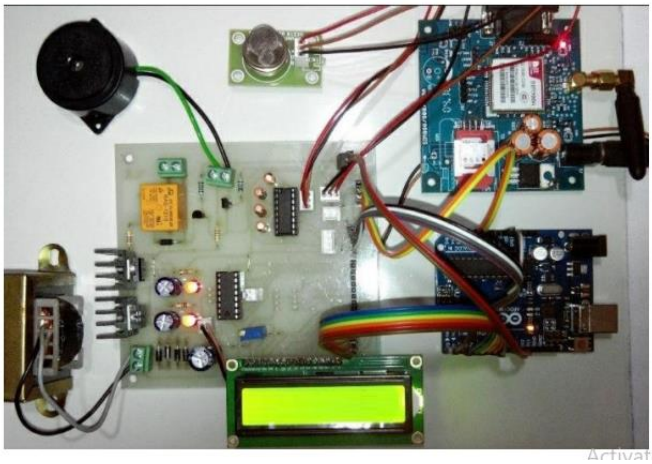

Fig 4: Experimental Setup

V.CONCLUSION

N harvest time, the methods adopted in the aeroponic system require a little hand-operated contribution, interference regarding physical presence, and expertise in domain knowledge of plants, environment control, and operations to maintain and control the growth of the plant. Therefore, the system is considered hitherto to be somewhat unsuitable for the grower, and due to the above reasons, it is not common to find an installation.

We reviewed the literature and found that implementation of advanced monitoring technology tools in aeroponics could provide an opportunity for the farmer to monitor and control several paraments without using laboratory instruments, and the farmer can control the entire system remotely.

Thus, it could reduce the concept of the usefulness of the system due to the complicated manual monitoring and controlling process. The technology offers incredible opportunities for the aeroponic system to increase the capability, reliability, and availability among the farmers and growers.

We believe that our review article will contribute to the adoption of the advanced monitoring technology in the aeroponic system. However, the technique provides a range of information which could be required by plant scientists to provide a greater understanding of how these environmental and nutrient parameters correlate with plant growth.

REFERENCES

[1] Abhishek G. V., P. Bharath, “Automation of lpg cylinder booking and leakage monitoring system,” International Journal of Combined Research and Development (IJCRD), pp. 693– 695, 2016.

[2] Ankit Sood, Babalu Sonkar, Atul Ranjan, Ameer Faisal, “Microcontroller Based LPG Gas Leakage DetectorUsinbg GSM Module, International Journal of Electrical and Electronics Research, Vol.3, Issue.2, pp: (264-269), Month: April- June 2015.

[3] Banik A., B. Aich and S. Ghosh, "Microcontroller based low cost gas leakage detector with SMS alert," 2018 Emerging Trends in Electronic Devices and Computational Techniques (EDCT),Kolkata,2018,pp.

[4] Brush, A. J., Lee, B., Mahajan, R., Agarwal, S., Saroiu, S., & Dixon, C. (2011, May). Home automation in the wild: challenges and opportunities. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 2115-2124). ACM.

[5] Chraim.F, Y. Erol, and K. Pister, “Wireless gas leak detection and localization,” IEEE Trans. Ind. Inf., pp. 1–13, 2015.

[6] International Journal of Advanced Research in Computer andCommunication Engineering, IJARCCE, 4(1), January 2015.

[7] Jolhe N. S. G. B. D. and P. A. Potdukhe, “Automatic lpg booking, leakage detection and real time gas measurement monitoring system,” International Journal of Engineering Research & Technology (IJERT), vol. 2, April-2013.

[8] Kasar.M.S.., Rupali Dhaygude, Snehal Godse and Sneha Gurgule,”Automatic LPG Gas Booking and Detection System”, International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering, ISSN 2278-8875, Vol. 5, Issue 3, pp. 1250- 1253, March 2016.

[9] Koushanfar S.,, F., Kosterev, A., Tittel, F., “LaserSPECks: Laser SPECtroscopic TraceGas Sensor Networks - Sensor Integration and Applications”, Information Processing in Sensor Networks, 2007. IPSN 2007. 6th International Symposium on, April 2007, p. 226 - 235, ISBN 978-1-59593-638-7