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A novel research to IOT based environment monitoring for Smart Agriculture

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In greenhouses, cost due to consumption of water and electricity or gasoline for generating cooling/heating energy are one of the major limitation to their competitiveness. This project automates greenhouse farming by regulating climatic conditions in the greenhouse according to the plant specified from the database. Most greenhouse systems use manual systems for monitoring the temperature and humidity which can cause discomfort to the worker as they are bound to visit the greenhouse every day and manually control them. Also, This paper proposes a design for greenhouse automation system using ready-to-use, cost effective and energy efficient devices including raspberry pi, Arduino microcontrollers and different kinds of sensors which are used to measure greenhouses' temperature, humidity and soil moisture. Measurement data have been shared with the help of IOT. With this system farmer can control their greenhouse from their mobile phones or computers which have internet connection. The commands from the user are processed at raspberry pi using python programming language. We place temperature, humidity and soil moisture sensor inside the smart greenhouse to measure humidity, temperature and soil moisture. A conceptual view of the system is presented in Fig. 2. The data of the greenhouse readings are transmitted to a central monitoring system. Model B of Raspberry is used in this paper.

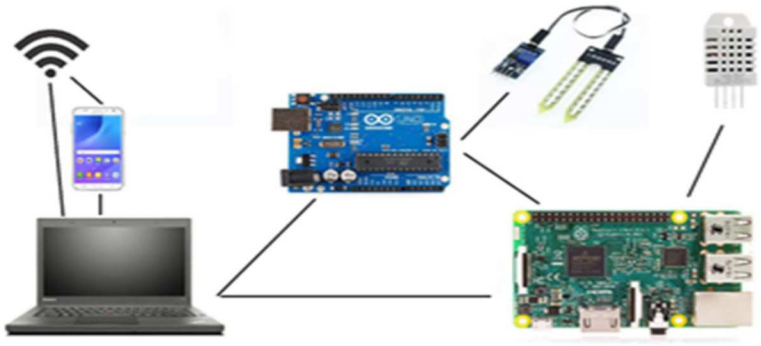

Figure 1. CIGS Monitoring system

In this paper we have presented the results of an IOT based experimental study from the area of agriculture. The potential assessments can contribute to investigate the suitable location and proper size. This have significant role for grid connected PV system The designed system allows precise position real time measurements and data transmission from the greenhouse to the interested farmer. This smart system proves to be a useful system as it designed for significantly improve the annual crop productivity of a greenhouse without additional use of water and energy. All collected data can also be stored on a computer and day/time based reports are accessible for analysis at any time. Furthermore, the long term collected data can be used by agriculture specialists to create more specific timetables and directions for growing specific crops. From the communication point of view, the suggested system provides a one-way flow of information – from the greenhouse to the end user. In our future work we plan to extend the system to include actuators as well, thus providing not only monitoring and data analysis but also precise control for greenhouse farming

References

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