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Agro Analysis System for Precision Agriculture

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Abstract: ***Huge amount of data is collected by the sensors from the end. Subsequently, this considerably big amount of data must be processed, analyzed and stored in a cost effective way. In this manner, an enormous pool of computing resources and storage must be provided to compute this vast amount of data. We focused on introducing the latest technologies such as sensors, WSN to radically revise approaches to agriculture by collecting the data about the various parameters of soil, analyzing the data and performing the computations, giving the best optimal solutions for the farming. The application of computing in the agricultural economy will open up a vast range of prospects, such as the vast storage of agriculture information, the cloud management of agricultural production process, the storage of agricultural economy information, early-warning and policy-making based on the agricultural products market, the tracing management of agricultural products quality.***
Keywords: Sensors, Computing Resources, WSN Tracing management, Policy-making.

I. INTRODUCTION

The main contextual data elements of the Arduino sensor based feedback advisory system include many different types of sensors, such as temperature, humidity, soil moisture, canopy temperature, canopy humidity and wind velocity, placed on the field with data loggers to communicate the observations to the server. Apart from sensor information the farmer uploads information about climatic conditions, soil conditions, rain and fertilization history, and the pesticide and insecticide history. By presenting all this information in the context of the farmer query, the expert can diagnose the problem and promptly provide advice to the farmer in his native language and maybe even using feedback suggestions. The classification and modeling of agricultural events, modeling of the agricultural experiences, and a method to browse through the history of agriculture experiences soil type, crop, crop variety, season, target, and if available fertility status. The challenges involved in the Developments of decision support system to be used by farmers as end users are presented, however, aims to bridge the gap between farmers, agricultural experts, financial institutions, soil testing labs, agriculture market and other agriculture related institutions. We propose a novel experiential computing approach which aims to provide more insights to an expert by capturing, detecting, storing and analyzing the history of various events in agriculture. Each weather station possesses atmospheric, soil and plant parameters monitoring sensors; data logger and modem for data storage and transmission; battery to energize all blocks of the weather station and a solar panel based battery charging unit. The sensors that are available with the weather station include temperature, relative humidity, soil moisture, soil temperature, grass temperature, wind direction, wind speed, solar radiation, rain gauge, leaf temperature and leaf wetness, and virtual dew point sensor. The data logger on the weather station collects the data from sensors and transmits. Each farmer, seeking the service, is initially required to perform registration by providing the details of the field location, crop, crop type, soil type, petiole analysis reports, and history of irrigation, fertilizer and pesticide application on the field.

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II. LITERATURE SURVEY

The late blight disease forecasting protocol, by integrating sensor based mathematical disease forecasting models, with human participatory diagnosis using mobile phone application overlay mKRISHI system. In Smart grid there are four categories of technologies to mention them; sensors and actuators, communication, owner low control and Supervisory Control and Data Acquisition systems (SCADA). The prediction and analysis of the agricultural products market involves vast data, factors and complex computing. State machine replication behavior, virtual synchrony, or other strong, formally specified consistency models, up to some limited number of server failures. At the extreme of this spectrum one finds Byzantine Fault Tolerance services, which can even tolerate compromise. Monitoring the agricultural environment for various factors such as temperature and carbon monoxide along with other factors can be of significance. The work objective is optimal usage of water in irrigation, proper nutrient management to plant and avoid crop losses due to diseases and pests with proper scheduling of sprays. In this context, we have proposed an agro advisory system for the pomegranate field.

Pests of Fruits (Banana, Mango and Pomegranate) dynamics of groundnut crop sprays and application of fertilizers from pruning till harvesting for diseases and pests management. monitor climate, soil, pasture and animals and to form a closed loop control system and pesticides helps to increase the crop quality, minimizes farming cost and maintain nature balance. Practical implementation and testing of proposed systems shows the improvement Climate impacts on agriculture in case of productivity, agriculture practices, environmental and rural climate change is precisely identifying climate change. Thrust tackle the problem of uneven climate change smartly causes to monitor climate, soil, pasture and animals and to form a closed loop control system over traditionally followed methods of irrigation, nutrition and spray scheduling management. improving crop production," As future direction for research is to develop a simplified, low cost and scalable system specifically for developing countries farming markets. Also incorporating the latest technologies. Due to proper expert's advice and timely application of pesticides the pest attack on the crop was successfully avoided. event is assumed to be spots on the leaves, then the information will be the picture of the leaves, and the experiential attribute will be the farmer's insight. sprays and application of fertilizers from pruning till harvesting for diseases and pests management. advisory system.

III. METHODOLOGY

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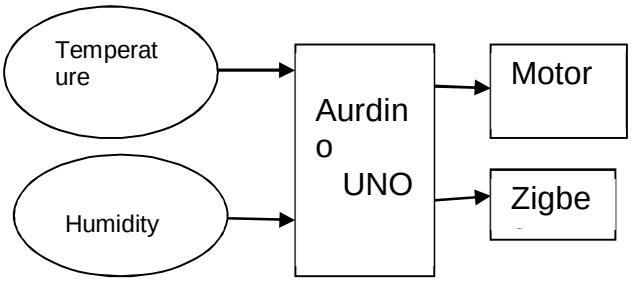

Fig.1. Transmitter Circuit

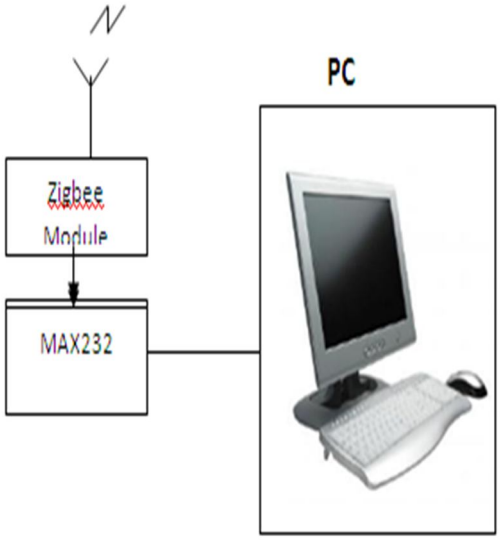

Fig. 2. Receiver Circuit

IV. EXPERIMENTAL RESULTS

Conservation for the server. The communication between the sensor nodes and the network system as an example to introduce the flow of communication between the ZigBee transceiver modules. The ZigBee transceiver module needs to be effective. When the server receives weather data from the sensor , the server will check the weather data With notification value by using decision techniques. If it matches with the previous conditions, to notify the system administrator and record the warning and automatically store data to the database. The communication between sensor and server, and exchange between server and Networks coordination are the same . Software design mainly programmed with C# language combining for the collected data display, analysis and storage etc.

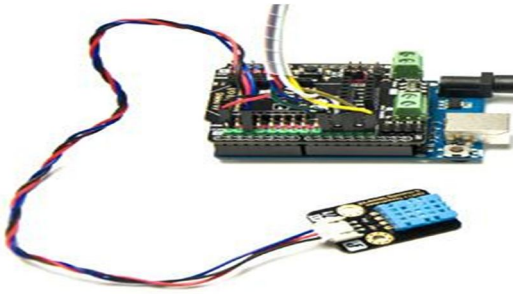

Fig. 3. Sensor Circuit

Fig4. Server Output

When the server receives data from sensors, the server will check the weather data with notification value by using decision techniques. If it matches with the previous conditions, it will notify the administrator and record the notification and automatically store data to the database. Atmospheric, soil and plant parameters monitoring sensors; data logger and modem for data storage and transmission; battery to energize all blocks of the weather station and a battery charging unit. The sensors that are available with the weather station include temperature, relative humidity.. The data logger on the weather station collects the data from sensors and transmits. Each farmer, seeking the service, is required to perform registration by providing the details of the field location, crop, analysis reports, and history of irrigation, fertilizer and pesticide application.

V. CONCLUSION

This research focuses on developing devices and tools to manage, display and alert the warnings using the advantages of a wireless sensor network system in mesh topology. The system can work over far distances. The system uses an arduino microcontroller and Xbee Wireless module based on the Zigbee standard. The developed system is very accurate. The developed system has core competency including Display weather information, and alert when weather conditions match using decision technique with weather information.

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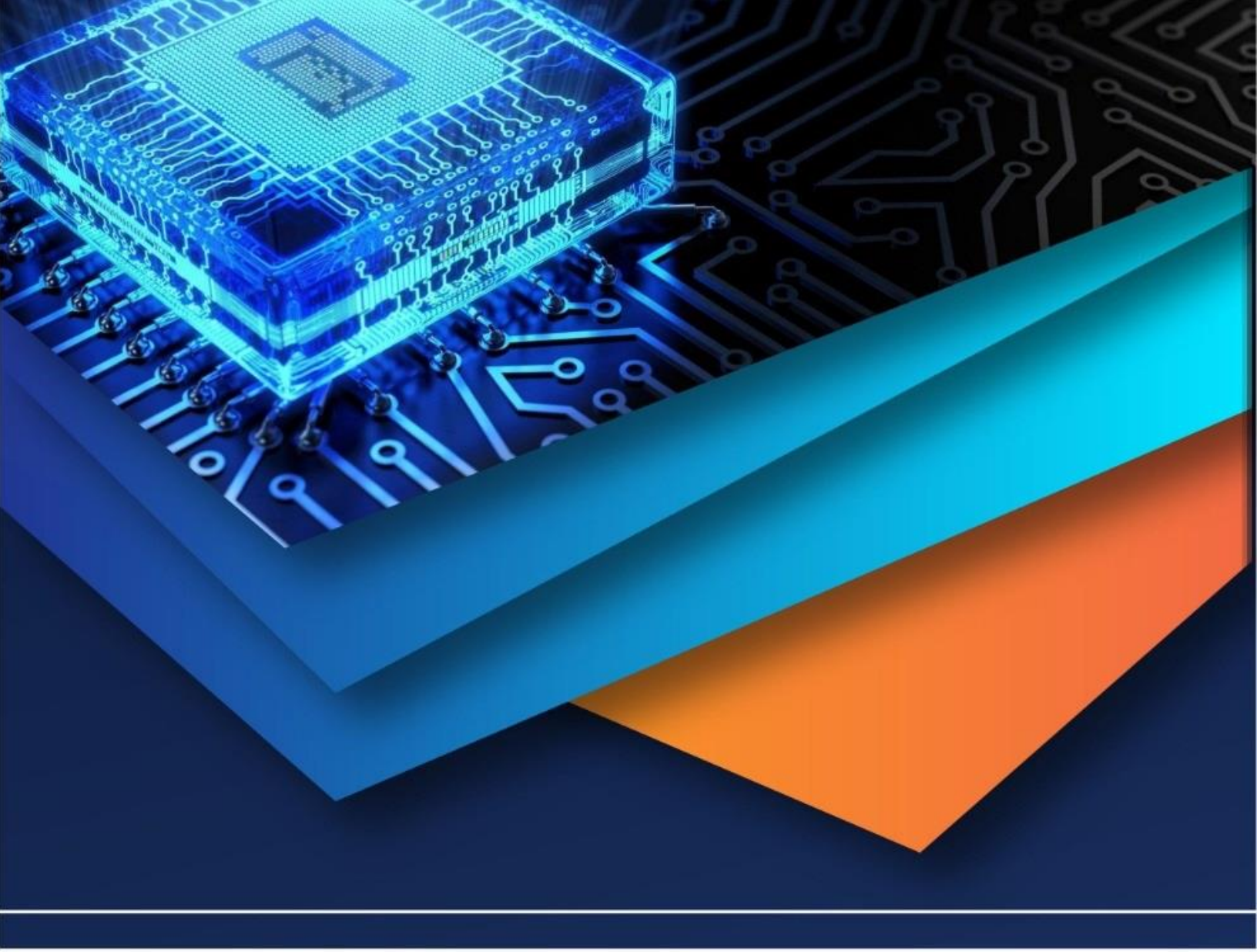

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