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SMART FARMING SYSTEM ANDROID APP

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Abstract - Internet of Things (IOT) is a technology used for communicate with each other. This will take a Drastic Change in patterns and process of both farming and industrial. That will go towards higher efficiency. Agriculture is an important source of Indian Economy. So we proposed Smart Farming System (SF) to increase the Production of plants. SF focuses on three main parts i.e. Sensors, Microcontroller and a system. In this pa- per we focus on control part i.e. watering capturing the images based on statistical data sensed from sensor system (including temperature, humidity moisture, and light intensity sensors). The sensed data would not be correct every time due to some external interruptions, so we apply Kalman filtleering to take more précised data before using an input in our decision Making process. For decision making we does not consider only the sensed data but also the weather information. A decision tree model is generate to predict weather condition. Then set of decision based data on both sensed data and weather condition is developed automatically to make a decision on whether watering and light system should be on or off. We also provide function to manually control the watering and light system through mobile application **.**

Key Words: *Hardware, Control Structure and Micro program,*

1. INTRODUCTION

The Agriculture is one of the important business the normally affected the mankind life. From the ancient to the agricultural revolution in India, farming is the way that human used to harvest plants and consumed them in their daily life. Farming has been improved by many technologies supporting cropping system and high yield harvesting technology. In addition to the agricultural revolution era, there have been many technologies that have impacts on agriculture. Internet has involved in people's daily activities. Internet has been normally used to connect people together, people with devices, or devices with devices. In an electronics device, it is embedded by software and sensors for using to commutate and to exchange data with other devices and people. They are millions of devices are connected together through the Internet, this is called Internet of Things (loT). loT encompasses many new intelligent concepts for using in the near future such as smart home, smart city, smart transportation, and smart farming. Recently, there are few research works on smart farming a wireless sensor network is used in flowering plants and horticulture plant fields in Egypt. The proposed system is used to monitor the flowering plant and horticultural fields such as looking for diseases and harmful fungal and record useful information for improving future planting and managing resources such as water and soil and also temperature. In Indian, agriculture is also massively important for Indian economy. Particularly, the agriculture section has contributed percent to Indian GDP. Then to increase the crop yield, the smart farming. Technology in use to help. In this paper, we have proposed an intelligent farming ElF) system. IF is the technology that uses the concepts of loT and smart farming to help farmers to monitor and sense useful information from their farms in order to help in the quality improvement and product quantity. Our Intelligent farming system consists of two main parts. The first one is a sensor system, including temperature sensor, humidity sensor, moisture sensor and light intensity sensor. The second part is a control system. In this paper, we focus on the control system. Our control system has two main subsystems which are watering and farming subsystems. The system uses the statistical data collected from the sensor system and the weather information to make a decision to control the farms environment. Particularly, the statistical data is collected from sensors.

1.1 Related Work

We are started to explore the recent trends in implementation of IOT in smart farming techniques. In the meantime, we did a brief literary survey on the published works of eminent scholars in this field. In a novel approach for Digital Agriculture was proposed describing Relationships between Precision Agriculture and Digital Earth, Information Agriculture, Virtual Agriculture, and Digital Agriculture. The requirement to put forward the concept of Digital Agriculture, was discussed. In sensor data collection and irrigation control was put forward on vegetable crop using Smartphone and wireless sensor networks for smart farming. The environmental data can

be collected and the irrigation system can be controlled using Smartphone. A novel cloud-computing-based smart farming system was proposed for early detection of borer insects in Flower. This problem is solved using Cloud computing and IOT. And the real time monitoring of GPS-tracking was suggested for multifunctional vehicle path control and data acquisition based in Zig-Bee wireless network. It summarizes portion that is related to path planning for a multifunctional vehicle. The vehicle-tracking system uses the global positioning system (GPS) and Zig-Bee wireless network based on to make the system communicate. The web of Things case study for agriculture was put forward, which focuses on an experimental smart farm that uses a range of environmental sensors and microcontroller A system that specifies the alert was tested in a farming area and the results were analyzed. The linked cube was used which allows longer term analysis and data sharing to a larger scale. From the above literary survey, we have found a novel approach using a smart sensing system that keeps track of the external environmental factors and does communication with the smart system to perform necessary tasks that are required for farming. In this system, we are resolution for the problems faced by the farmers. The main problems faced by them are electricity shortage, manual work, lack of mechanization, knowledge deficit about farming, and not knowing about the adequate usage of macro mineral contents (N, P, and K). Our system does the job of sensing and also habituates to the surroundings.

1.2 Mathematical Model

Let S is the system,
S= {I, O, F, M, N, DD, NDD, CPUcount, H/w, S/w, Success, Failure}
Where;
I is Input from the Sensors.
I ={ soil moisture, Light, Temperature, Image Capturing}
O is Output of system
O = {Display Soil moisture Sensor, Display Temprature, Display Image Of Farm}
F represents set results displayed and devices controlled automatically.
F = {Image, Location, Input/output Condition, Result}
M represents the set of commands send using android and web application.
M = {Temperature, Light Sensing, Water On/O}
N represents the set of devices controlled using android and web application.
N = {Light Sensor, Temperature Sensor, soil moisture Sensor, Pump, Microcontroller}
DD is Deterministic Data.
DD = {All the elements of I and O}
NDD is Non Deterministic Data.
NDD= {Empty set}
CPUCount = {f4 core}
H/w is Hardware Requirement
H/w = {Smart Phone, Bluetooth, Mobile-Camera, Server, Sensors, Microcontroller}
S/w is Software Requirment
S/w = {Operating System: Windows and above, Platform: Android
Success: successfully send and receive data properly, Hardware send validate data or
working properly}
Failure: {If sensor is faulty and does not display image content}

2. ARCHITECTURE DESIGN

In Fig, shows proposed system architecture. In that firstly user can login with mobile App if user has exist otherwise user will do registration and login into mobile App After that App use mobile camera through capture the image on business card. The data from the camera is given to the text detection module and translate the original image. Which uses methods are discussed in and to detect regions of interest in an image

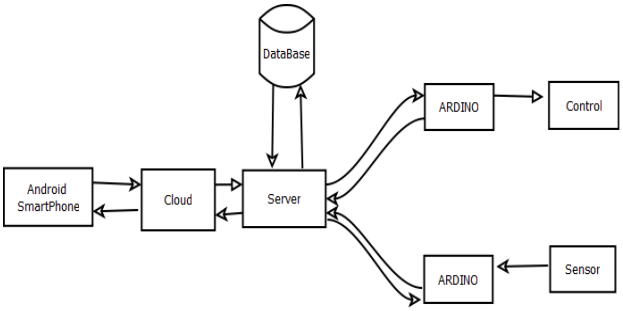

Fig -1: Architectural Design

The needed plant image can be captured by a Camera. Then that image can be transfers to the Microcontroller. Microcontroller can be these image are transfer to the SERVER or SYSTEM. Then Server can transferred these image on to the cloud via Internet Of Things. If that capture image of the plant are having any problem then

these Notification can be sends to the Farmer or a User. Farmer or a user that can be the problem occurs it can be handled. In our system Addition to the capturing image we also Add Temperature Sensing, Soil moisture Sensor, Water pump ON or OFF. The user of our system, gives a command through the mobile App that request goes to the server and server sends that information to the microcontroller and required operation are performed

3. CONCLUSIONS

We have planned a bearing system for AN intelligent farming for an out of doors farming, called IF. to form a choice, the model needs 2 necessary data items that square measure the detected knowledge from the sensors within the plot and also the weather Condition. To swish the detected knowledge, we've got applied Kalman filter to get rid of noises. Also, we've got generated a choice tree model to predict the atmospheric condition. supported this information, we've got created rules for creating a choice in our control system on whether or not watering and roofing system ought to be on or off what is more, we've got conjointly provided functions for users to manually management the watering and roofing systems via our mobile application.

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