LITERATURE SURVEY

PRESENTED BY:
SHIVASHANKAR S
N NITHIN SRIVATSAV
PONNANNA M B
SWATHI N SHAYANA

No	Source	Problem Defined	Approach Used	Results	Implications
1	IJAER: (Intelligent IoT Based Automated Irrigation System)	A Intelligent Iot And ML based System For smart Agriculture Using Machine to Machine Communication.	For Communicating between microcontroller's M2M method is used. The soil moisture and temperature data captured and accordingly KNN (K- Nearest Neighbour) classification machine learning algorithm deployed for analysing the sensor data.	The Proposed system can predict the Moisture of the Soil .	The proposed network does satisfy the moisture condition of the soil but it does not know the water level in the tank before irrigation and data security is not provided for M2M communication

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2	IJTAM:(Agriculture Productivity Enhancement System using IOT)	An IoT based system which To improve plant productivity and achieve efficient utilization of the pesticides	The IoT sensor like Soil Moisture Sensor, Soil pH Value Sensor used for soil and Decision tree algorithm used to train the model	The proposed System will identify the diseases depending upon environment.	This system does not analyse the Crop visually for diseases.
3	IEEE Xplore: (A Smart IoT-Based Irrigation System with Automated Plant Recognition using Deep Learning)	Implementation of IoT in Irrigation System.to recognition of the plant and supply water according to it.	Divide the yard into different functional zones depending on the plants. The controllers are designed to usually have about three pre-set programs. Thus, users can then select which program to use in different zones. This approach does increase the flexibility of the irrigation system.	The proposed system will identify the crop and water the crop according to its required water for the crop for yielding .	This system is not scalable for large area of land and the accuracy of the model is not precise.

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4	IEEE International Conference on Innovations in Green Energy and Healthcare Technologies: (INTELLIGENT IRRIGATION SYSTEM – AN IOT BASED APPROACH)	The Iot Based Sensors are implemented to get the moisture level of the soil and provide the water according to it	The Proposal of the system is to develop a smart irrigation monitoring system using Arduino. Focus area will be parameters such as temperature and soil moisture. This system will be a substitute to classical farming method.	The proposed system provides real time information on the field irrigation. Here the water is supplied based on the actual needs for the crops. This automated irrigation system is cost reduction and resource optimization	This system provides moisture level of the soil to be maintained but this is not power efficient and is not suit for large scale.

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5	IEEE Xplore: (A Low Power IoT Network for Smart Agriculture - SoumilHeble, Ajay Kumar, K.V.V Durga Prasad, SoumyaSamirana, P.Rajalakshmi, U. B. Desai)	A Low Power and a Low Cost IoT Network for Smart Agriculture.	For monitoring the soil parameters, soil moisture and soil temperature sensor is used. In the proposed network, the 'IITH mote' is used as a sink and sensor node. Spatially distributed nodes, each an IEEE 802.15.4 based wireless platform with solar based power circuit which provides low-power communication are used.	The proposed IoT network can be deployed at an affordable price with low power consumption for smart agriculture.	The proposed network does satisfy the low cost requirements, however it does not satisfy long distance communication requirements. This network solely focuses on the quality of the soil and nothing else that will help the farming process.

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6	IEEE Xplore: (IoT Based Monitoring System In Smart Agriculture - Prathibha S R, AnupamaHongal , Jyothi M P)	An IoT based system which monitors different factors required for improving the yield.	Temperature and Humidity sensor are used to get real time data. Camera is interfaced with the sensors to capture images and send pictures through MMS to farmers mobile using Wi-Fi.	This system provides real time monitoring of data to the user.	This system does not provide any analysis on the collected data.
7	IEEE Xplore:(Smart Farming – IoT in Agriculture - Rahul Dagar, SubhranilSom, Sunil Kumar Khatri)	Implementation of IoT in Agriculture for better crop management , better resource management, cost efficient agriculture, improved quality and quantity , crop monitoring and field monitoring.	The IoT sensors used in proposed model are air temperature sensor, soil pH sensor, soil moisture sensor, humidity sensor and water volume sensor.	The proposed model is a simple architecture of IoT sensors that collect information and send it over the Wi-Fi network to the server, there server can take actions depending on the information.	This system does not provide any analysis on the collected data. All the decisions must be taken by the farmers itself.

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8	International Research Journal of Engineering and Technology (IRJET): (Smart Management of Crop Cultivation using IOT and Machine Learning T Raghav Kumar, BhagavatulaAiswarya, Aashish Suresh, Drishti Jain, NateshBalaji, VarshiniSankaran)	A Smart IoT based Agriculture system that can assist farmers in crop management, hence help increase their overall yield and quality of products.	A variety of sensors such as temperature and humidity sensor and soil moisture sensors are used to get real time data. KNN algorithm is used to predict the type of crop which is best suited for the soil and other parameters. A simple and easy to use user interface is implemented.	The proposed system provides a simple user interface for the farmers to view the data from the sensors as well as the prediction.	KNN is a lazy learner; it does not learn anything from the training dataset. It simply uses the training data for classification. Thus this system cannot be implemented globally.
9	IEEE Xplore: (Affordable Smart Farming Using IoT and Machine Learning - Reuben Varghese, Smarita Sharma)	A system which gives an insight into the real time condition of the crop. The system leverages IoT and Machine learning to produce an affordable smart farming module.	The IoT sensors used in proposed model are air temperature sensor, soil moisture sensor, humidity sensor, air quality.	IoT is used to connect the ground module which includes the sensors to the cloud infrastructure. In the cloud, machine learning based real-time analytics is performed to predict the future condition of the crops based on its past data.	The proposed system does not provide any information about type of seed to be used. And it does not use fabricate PCB to ensure that it is safe inside the soil.

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10	(Agricultural practices Improvement Using IoT Enabled SMART Sensors - Pankaj Mohan Gupta, Moreshwar Salpekar, Pravesh Kumar Tejan)	A system that help in transforming the agriculture and provide farmers with timely and accurate information about alerts regarding crop yields, rainfall, pest infestation, and soil nutrition which can help improve yield.	This system uses LoRaWAN for the Communication purpose. The Smart Nodes are used for periodic sensing of soil quality parameters such as CO_2 concentration, Photosynthetically Active Radiation (PAR) at soil surface, temperature, humidity, soil conductivity and soil composition.	In the proposed system how IoT can be used in various Agriculture processes is shown. It also describes how cloud based data analytics acting as backend to IoT sensor ecosystem helps in optimising the resource usage and yet at same time improve in yield size.	The proposed system used high-end devices which is not cost effective.

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11	The 21st International Symposium on Wireless Personal Multimedia Communications (WPMC- 2018) – (Effective Utilization of IoT for Low-cost Crop Monitoring and Automation - Petcharat Suriyachai, Jakkapong Pansit)	An IoT cloud-based platform and open APIs to utilize many services available via the Internet.	The IoT sensors used in proposed model are air temperature sensor and humidity sensor. Node MicroController Unit boards are used as the base of sensor nodes in the monitoring and automation system. Cloud storage called Firebase is used in the system to store sensed data and node's location.	The proposed model sends the data that are shown through a web application for both real-time and historical data displays. The system provides real-time monitoring of temperature and humidity and control water valves.	This system does not use pH sensor for water or soil, to measure and monitor the environment.
12	IEEE Xplore: (IoT based smart crop-field monitoring and automation irrigation system - R. Nageswara Rao, B.Sridhar)	The proposed method aims at making agriculture smart using automation and IoT technologies. IoT enables various applications such as crop growth monitoring and selection, irrigation decision support, etc.	A variety of sensors such as temperature, soil moisture sensor and humidity sensor are used to get real time data. A RASPBERRY PI 3 model is used.	The proposed system is developed based on the information sent from the sensors and estimate the quantity of water needed.	The status of the system can be checked at remote place but there are no machine learning algorithms implemented to process the data that is collected.

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13	IEEE Xplore: (Agriculture Analysis Using Data Mining And Machine Learning Techniques)	Analysis of different techniques that help in agriculture.	1. SVM 2. Bayesian Network 3. KNN algorithm 4. KMeans Clustering	All algorithms are analyzed on an eagle-view level to see how different machine learning techniques can help agriculture industry.	This paper gives a head start to knowing what algorithms can be used for our project.
14	IEEE Xplore: (Model of neural networks for fertilizer recommendation and amendments in pasture crops)	Fertilizer recommendation using different parameters of the soil.	MLP ANN algorithm with k fold value 3.	The NN was able to predict the fertilizer with a decent accuracy and r^2 scores.	Neural Networks always have an upper hand on simple classification algorithms.
15	IEEE Conference: (A Scalable Machine Learning System for Pre-Season Agriculture Yield Forecast)	Forecasting Yield using DNN models.	DNN are used to forecast of yields that maybe produced.(LSTM)	The was able to accurately predict the yield that would be produced.	LSTMs have a higher accuracy if better dataset and parameters are provided.

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16	IEEE: (Unleashing the Potential of Machine Learning and IoT in Cyber Physical Farming. (2017) - Dasari, Mallesham, Sergey Madaminov, Sagnik Das and Santiago Vargas.)	This paper proposes a machine learning based framework for cyber physical farming.	Farmers deploy sensors, cameras and drones on Farm land. Sensors generate Farm data periodically and transmit to IoT gateway over WiFi. ML gateway processes data coming from IoT gateway to predict and recommend the crop, soil and other Farming information. ML gateway should be able to decide if the data requires different ML models for different data and react autonomously.	This paper proposes an Android application which provides an interface for Farmer in understanding the Farm data and reacting accordingly. Secondly, they developed a prototype for illiterate Farmers using Alexa AWS micro services to provide interactive experience with Farmland.	The proposed solution is too costly and difficult to implement.

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