LITERATURE REVIEW

[1] Muhammad Shoaib Farooq, Shamyla Riaz, Adnan Abid, Kamran Abid and Muhammad Azhar Naeem (2019) have proposed a paper titled "A survey on the Role of IoT in Agriculture for the Implementation of Smart Farming". This paper includes a discussion on network topologies used in IoT based agriculture which involves network architecture and layers, network topologies used and protocols. Furthermore, the connection of IoT based agriculture system with technologies like cloud computing, big data storage and analytics has also been included. The security issues in IoT agriculture have also been discussed. A list of smart phone and sensor based applications developed for various aspects of farm management have also been included. In the end, some open research issues and challenges in IoT agriculture have been presented.

[2] Anand Nayyar, Er. Vikram Puri (2016) have proposed a paper titled "IoT Based Smart Sensors Agriculture Stick For Live Temperature and Moisture Monitoring using Arduino, Cloud Computing and Solar Technology". The main objective of this paper is to provide a Novel Smart IoT based Agriculture Stick which would help the farmers in getting Live Data (Temperature, Soil and Moisture) for efficient environment monitoring enabling the farmers to do smart farming and increase their overall yield and quality of products. The agriculture stick proposed in this paper is integrated with Arduino technology. Breadboard mixed with various sensors and live data feed can be obtained online from Thinngsspeak.com. This method of designing agriculture stick provides an accuracy of over 98% in data feeds.

[3] Gaia Codeluppi, Antonio Cilfone, Luca Davoli and Gianluigi Ferrari (2020) have proposed a paper titled "LoRaFarM: A LoRaWAN Based Smart Farming Modular IoT Architecture. This method includes a low-cost, modular, and Long-Range Wide-Area Network (LoRaWAN) based IoT platform denoted as LoRaFarM aimed at improving the management of generic farms in a highly customizable way. The platform is built around a core middleware and is easily extensible with ad-hoc low-level modules. This has been evaluated in a real farm in Italy, collecting environmental data like air/soil temperature and humidity related to the growth of farm products over a period of three months.

[4] Nurzaman Ahmed, Debashis De, Iftekhar Hussain have presented a paper titled "Internet of Things (IoT) for Smart Precision Agriculture and Farming in Rural Areas". This paper focuses on providing a scalable network architecture for monitoring and controlling agriculture and farms in rural areas. Compared to the existing IoT based agriculture and

farming solutions, the proposed method reduces network latency up to a certain extent. The network structure is analyzed based on coverage range, throughput and latency.

[5] Muhammad Ayaz,Mohammad Ammad-Uddin,Zubair Sharif,Ali Mansour,El-Hadi M.Aggoune(2019) have presented a paper titled “Internet of Things (IoT) -Based Smart Agriculture Towards Making the Fields Talk”.This paper discusses the benefits of wireless sensor networks and the Internet of Things (IoT) in agriculture.Throughout analysis is performed on IoT devices and communication methods related to wireless sensors used in agriculture applications.It includes a list of the sensors that are suitable for various crop monitoring, such as soil preparation, crop condition, irrigation, and insect and pest detection. It is described how this technology assists farmers in all crop-related processes, including planting, growing, harvesting, packing, and transportation. This article also takes into consideration the usage of unmanned aerial vehicles for crop surveillance and other advantageous purposes like increasing crop output.

[6] Shubo Liu,Liqing Guo,Heather Webb,Xiao Ya,Xiao Chang(2017) have presented a paper titled “Internet of Things Monitoring System of Modern Eco-Agriculture Based on Cloud Computing”.Challenges such as quality and safety of agricultural products and the pollution of the environment from agricultural operations need to be solved in order to improve the efficiency and safety of production and management of modern agriculture in China. An integrated framework system platform including the Internet of Things (IoT), cloud computing, data mining, and other technologies is analyzed based on the new generation of information technology (IT), and a new concept for its implementation in modern agriculture is proposed. The experimental framework and simulation design imply that it is possible to implement the essential features of the IoT monitoring system for agriculture. Additionally, the innovation created by merging several technologies is key to its success reducing system costs.

[7] Othmane Friha,Mohamed Amine Ferrag,Lei Shu,Leandros Maglaras,Xiaochan Wang (2021) have presented a paper titled “Internet of Things for the Future of Smart Agriculture: A Comprehensive Survey of Emerging Technologies”.These study provides a thorough analysis of splitting technologies for IoT-based smart agriculture. We start by describing the existing studies and defining innovative technologies for the agricultural IoT, such as drones, wireless technologies, open-source IoT platforms, software defined networking (SDN), network function virtualization (NFV), cloud/fog computing, and middleware platforms.

Additionally, we offer a seven-category classification of IoT applications for smart agriculture, including smart monitoring, smart water management, agrochemical applications, disease control, smart harvesting, supply chain management, and smart agricultural practices. Additionally, we offer a taxonomy and a side-by-side comparison of the most advanced approaches to supply chain management for agricultural IoTs that are based on blockchain technology.

[8] Abdul Salam,Syed Shah (2019) have presented a paper titled"Internet of Things in Smart Agriculture: Enabling Technologies".This article presents a research and innovation agenda for IoT technologies in precision agriculture (PA). The difficulties and numerous current practical trends have been emphasised. There are a few key goals for precision agriculture technology research and education highlighted. Precision agriculture difficulties are addressed with efficient IoT-based communications and sensing methods.

REFERENCES

Sl.no.	REFERENCE LINK
[1]	https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8883163
[2]	https://www.researchgate.net/profile/Anand-Nayyar/publication/313804002_Smart_farming_IoT_based_smart_sensors_agriculture_stick_for_live_temperature_and_moisture_monitoring_using_Arduino_cloud_computing_solar_technology/links/59d9f67c0f7e9b12b36d66f8/Smart-farming-IoT-based-smart-sensors-agriculture-stick-for-live-temperature-and-moisture-monitoring-using-Arduino-cloud-computing-solar-technology.pdf
[3]	https://www.mdpi.com/1424-8220/20/7/2028/htm
[4]	https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8521668
[5]	https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8784034
[6]	https://ieeexplore.ieee.org/abstract/document/8662571
[7]	https://www.ieee-jas.net/article/doi/10.1109/JAS.2021.1003925
[8]	https://ieeexplore.ieee.org/abstract/document/8767306