Ideation Phase
LITERATURE SURVEY
IBM-Project-21204-1659775126

Team ID:PNT2022TMID42568

Title: Smart Farmer -IOT Enabled Smart Farming Application

Team Members:

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REVIEW-1:

Title of the paper: DIGITAL TECHNOLOGIES IN AGRICULTURE AND RURAL AREAS

Name of the author: Nikola M. Trendov, Samuel Varas, and Meng Zeng

Published on: 17 October 2021.

Problem Description: The agriculture and food sector is facing multiple challenges. With the global population projected to grow from 7.6 billion in 2018 (UN DESA, 2019) to over 9.6 billion in 2050 there will be a significant increase in the demand for food (UN DESA, 2017). At the same time, the availability of natural resources such as fresh water and productive arable land is becoming increasingly constrained.

Production is not the only concern; although agricultural output is currently enough to feed the world, 821 million people still suffer from hunger (FAO, 2018). Processes such as the rapid rate of urbanization are also having important implications for patterns of food production and consumption.

The agri-food sector remains critical for livelihoods and employment. There are more than 570 million smallholder farms worldwide (Louder et al., 2016) and agriculture and food production accounts for 28% of the entire global workforce (ILOSTAT, 2019). Achieving the UN Sustainable Development Goal of a 'world with zero hunger' by 2030 will require more productive, efficient, sustainable, inclusive, transparent and resilient food systems (FAO, 2017b p. 140). This will require an urgent transformation of the current agri-food system.

REVIEW-2:

Title of the paper: Agriculture 4.0: Broadening Responsible Innovation in an Era of Smart Farming

Name of the author: Rose, David Christian; Chilvers, Jason

Published on: 2018

Problem Description: Agriculture is undergoing a new technology revolution supported by policy-makers around the world. While smart technologies, such as Artificial Intelligence, robotics, and the Internet of Things, could play an important role in achieving enhanced productivity and greater eco-efficiency, critics have suggested that the consideration of social implications is being side-lined. Research illustrates that some agricultural practitioners are concerned about using certain smart technologies. Indeed, some studies argue that agricultural societies may be changed, or "re-scripted," in undesirable ways, and there is precedent to suggest that wider society may be concerned about radical new agricultural technologies. We therefore encourage policy-makers, funders, technology companies, and researchers to consider the views of both farming communities and wider society. In agriculture, the concept of responsible innovation has not been widely considered, although two recent papers have made useful suggestions. We build on these interventions by arguing that key dimensions of responsible innovation—anticipation, inclusion, reflexivity, and responsiveness—should be applied to this fourth agricultural revolution. We argue, however, that ideas of responsible innovation should be further developed in order to make them relevant and robust for emergent agri-tech, and that frameworks should be tested in practice to see if they can actively shape innovation trajectories. In making suggestions on how to construct a more comprehensive framework for responsible innovation in sustainable agriculture, we call for a more

systemic approach that maps and attends to the wider ecology of innovations associated with this fourth agricultural revolution;a broadening of notions of "inclusion" in responsible innovation to account better for diverse and already existing spaces of participation in agri-tech.

REVIEW-3:

Title of the paper: Smart Agriculture System using IoT Technology

Name of the author: Adithya Vadapalli

Published on: September 2020

Problem Description: The farming of agriculture has started past 12000 years back, Neolithic age gave birth of civilization, Farming and later being continued as traditional farming practices. India being an agrarian's country, Mostly Indian farming are dependent on rains, soil, dampness and environment challenges. Our farmers upgraded to modern state of art technology in cultivation. Globally the IoT systems has contributed its application in many fields and proven to be successful. It is the time that Indian farmer need to introduce the Smart Agricultural systems for higher crop yield. The productivity with compilation of data from sensors, actuators and modern electronic gadgets the farmer can monitor agricultural fields. Smart Agriculture can forecast weather data, switching ON the pump motor acknowledging the dampness of soil terms of moisture levels with help of sensors which are interfaced to process module Arduino-UNO. The Smart agriculture system can be operated from anywhere with help of networking technology. On joining process in research and development in Smart Agriculture& Artificial Intelligence can be cutting edge technology in data compiling and resource optimization. The pest & insect's controls that protects damaging the crop and also optimisation resources utilisation can be breakthrough.

REVIEW-4:

Title of the paper: Smart Farming: IoT Based Smart Sensors Agriculture Stick for Live Temperature and Moisture Monitoring using Arduino, Cloud Computing & Solar Technology

Name of the author: Er. Vikram Puri

Problem Description: Internet of Things (IoT) technology has brought revolution to each and every field of common man's life by making everything smart and intelligent. IoT refers to a network of things which make a self-configuring network. The development of Intelligent Smart Farming IoT based devices is day by day turning the face of agriculture production by not only enhancing it but also making it cost-effective and reducing wastage. The aim / objective of this paper is to propose a Novel Smart IoT based Agriculture Stick assisting farmers in getting Live Data (Temperature, Soil Moisture) for efficient environment monitoring which will enable them to do smart farming and increase their overall yield and quality of products. The Agriculture stick being proposed via this paper is integrated with Arduino Technology, Breadboard mixed with various sensors and live data feed can be obtained online from Thingsspeak.com. The product being proposed is tested on Live Agriculture Fields giving inaccuracy over 98% in data feeds.

REVIEW-5:

Title of the paper: A RESEARCH PAPER ON SMART AGRICULTURE USING IOT

Name of the author: Ritika Srivastava, Vandana Sharma, Vishal Jaiswal, Sumit Raj

Problem Description: Smart agriculture is an emerging concept, because IOT sensors are capable of providing information about agriculture fields and then act upon based on the user input. The feature of this paper includes development of a system which can monitor temperature, level of water, moisture and even the movement if any happens in the field which may destroy the crops in agricultural field through sensors using Arduino UNO board. Smart agriculture is an emerging concept, because IOT sensors are capable of providing information about agriculture fields and then act upon based on the user input. The project aims at making use of evolving technology i.e. IOT and smart agriculture using automation. Once hardware has been developed depending on the change in requirements and technology the software needs the updating. The updated hardware is called new version of the software. This new version is required to be tested in order to ensure changes that are made in the old version work correctly and it will not bring bugs in other part of the software. This is necessary because updating in one part of the hardware may bring some undesirable effects in other part of the hardware.