


Chapter 7

Automated Soil Residue Levels Detecting Device With IoT Interface


Adiraju Prasanth Rao

 <https://orcid.org/0000-0002-5119-3987>
Anurag Group of Institutions, India

K. Sudheer Reddy

Anurag Group of Institutions, India

Sathiyamoorthi V.

 <https://orcid.org/0000-0002-7012-3941>
Sona College of Technology, Salem, India

ABSTRACT

Cloud computing and internet of things (IoT) are playing a crucial role in the present era of technological, social, and economic development. The novel models where cloud and IoT are integrated together are foreseen as disruptive and enable a number of application scenarios. The e-smart is an application system designed by leveraging cloud, IoT, and several other technology frameworks that are deployed on the agricultural farm to collect the data from the farm fields. The application extracts and collects the information about the residue levels of soil and crop details and the same data will be hosted in the cloud environment. The proposed e-smart application system is to analyze, integrate, and correlate data-sets and produce decision-oriented reports to the farmer by using several machine learning techniques.

INTRODUCTION

The historical backdrop of Horticulture in India goes back to Hindu Valley in development time and even before that in certain pieces of south-India. India reaches 2nd worldwide in farm outputs. In 2008, Agriculture employed 50% of India work force and contributed 17%-18% of national's GDP. However,

DOI: 10.4018/978-1-7998-2566-1.ch007

in India still farmers are facing scrupulous problems by not getting minimal price for their crop. Agriculture Sector in India is diminishing day after day resulting in not only lesser farm outputs but also fast disappearance of the traditional knowledge base of thousands of years of practical experience of farming. There is need to resolve this problem and guide the farmers in effective way by proposing smart agricultural system. The smart agriculture system should include making use of latest technology for better productivity in the agriculture field for different activities. These activities such as loosening the soil, seeding, special watering, moving plants when they grow bigger and lead to abundant growth of a crop. Pesticide buildup alludes to the pesticides that may stay on or in the food after they are applied to the food crops or to the dirt. The most extreme permitted levels of these buildups in food or soil are frequently endorsed by administrative bodies in numerous nations. By their tendency, pesticides are destructive to certain types of life. It is in this way to be expected that, at a specific degree of presentation, they might be unsafe to people. The amount of poisons in wheat can be incredibly high, and may represent a danger to human wellbeing. To the extent medical issues because of pesticide deposits in staples are concerned, a few nations have begun food tainting checking programs which assess information of pesticide buildups as per models and rules suggested by the Codex Committee on Pesticide Residues, just as by the European Union. The main steps for agricultural practices include preparation of soil, sowing, adding manure and fertilizers, irrigation, harvesting and storage. In village, farmers need information throughout the entire farming cycle for taking effective decision in time. The proposed Automated Soil Residue Levels Detecting Device (ASRLDD) with IoT interface need modern tools and technologies that can improve production efficiency, product quality, schedule and monitoring the crops, fertilizer, spraying, planting...etc and monitoring geospace time which helps the farmers choosing their best suitable crop. The ASRLDD with IoT interface model uses an IoT technology and a few kinds of sensors which are deployed in the crop field area, helps us in collecting the data from agriculture sector. The smart Agriculture System receives data from IoT devices which are configured with the system and same data will be uploaded into a cloud server. Cloud computing and Internet of Things (IoT) are two different advancement that are already part of our life. Their adoption and use are expected to be more and more pervasive, making them important components of the Future Internet. The smart Agriculture System uses different devices or smart things and these are interconnected for communication purpose. These devices collect the data and stores in cloud for analysis. The main objective of this proposal is to develop an automated embedded device for finding the pesticides residue levels in the soil or food in a given agriculture land. The proposed system integrates, analyzes, and correlates different data sets of information collected from agriculture sector and generates analysis report to the farmer using machine learning techniques. The purpose of this chapter is to introduce the various technologies as a frame of reference for effective way of analyzing agriculture data.

The main objective of this chapter is to describe crop and soil management for agriculture using low cost automated detecting device with IoT interface. This System is also useful to the farmers to know which type of crop should be cultivated and to estimate the productivity of that crop for particular season. The cropping details and data generated from the system are stored in cloud and proper machine learning technique is used for analyzing this data. It is also useful to the farmers to know which type of crop should be cultivated and to estimate the productivity of that crop for particular season. It makes a multidisciplinary research circumstance for exploring and tentatively approving profoundly inventive and progressive thoughts in the Agriculture area.

ASRLDD Objectives:

11 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/automated-soil-residue-levels-detecting-device-with-iot-interface/267243

Related Content

A Survey on Arabic Handwritten Script Recognition Systems

Soumia Djaghbellou, Abderraouf Bouziane, Abdelouahab Attiaand Zahid Akhtar (2021). *International Journal of Artificial Intelligence and Machine Learning* (pp. 1-17).

www.irma-international.org/article/a-survey-on-arabic-handwritten-script-recognition-systems/279276

Autoencoder Based Anomaly Detection for SCADA Networks

Sajid Nazir, Shushma Patel and Dilip Patel (2021). *International Journal of Artificial Intelligence and Machine Learning* (pp. 83-99).

www.irma-international.org/article/autoencoder-based-anomaly-detection-for-scada-networks/277436

Autoencoder Based Anomaly Detection for SCADA Networks

Sajid Nazir, Shushma Patel and Dilip Patel (2021). *International Journal of Artificial Intelligence and Machine Learning* (pp. 83-99).

www.irma-international.org/article/autoencoder-based-anomaly-detection-for-scada-networks/277436

Community Detection Algorithms: A Critical Review

Akib Mohi Ud Din Khanday, Syed Tanzeel Rabani, Qamar Rayees Khan and Fayaz Ahmad Khan (2023). *Advanced Applications of NLP and Deep Learning in Social Media Data* (pp. 75-91).

www.irma-international.org/chapter/community-detection-algorithms/324563

Early Warning System Framework Proposal, Based on Big Data Environment

Goran Klepac, Robert Kopal and Leo Mrcic (2019). *International Journal of Artificial Intelligence and Machine Learning* (pp. 35-66).

www.irma-international.org/article/early-warning-system-framework-proposal-based-on-big-data-environment/233889