الإنتاج العلمي لمركز بحوث علوم الحاسب والمعلومات

عمادة البحث العلمي
Deanship of Academic Research

VISION 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

A Systematic Literature Review of the IoT in Agriculture—Global Adoption, Innovations, Security, and Privacy Challenges

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Abstract: Over the past decade, an abundance of research has been conducted in the area of agricultural technology and innovations. The Internet of Things (IoT) has demonstrated its ability to connect numerous agricultural equipment, sensors, and specialists, boosting agricultural procedures in off-the-grid regions. Agriculture has experienced considerable improvements in production, cost reductions, service accessibility, and operational efficiency. With an emphasis on security, developments and trends in the sector, and technological implementation, this research paper offers an up-to-date analysis of existing and projected IoT applications in agriculture. In this article, enabling technologies, agricultural applications based on cutting-edge machine learning models, and services are all examined in relation to the development of IoT deployment in tackling diverse agricultural concerns. In the IoT-based agriculture system, potential challenges and limitations are also addressed. In its conclusion, this research provides an extensive review of the various aspects of IoT in agriculture, with the goal of empowering future researchers enthusiastic to make contributions to and advancement in their quest for a more in-depth comprehension of this field of study. A total of 96 papers were chosen for the selection from 2018 to 2023, and each was categorized using predetermined standards. The research's results have been thoroughly examined, providing an overview of IoT in agriculture.