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**IOT and Artificial Intelligence in Smart Farming in Pakistan**

**Abstract**

1. **Introduction**

Demand for food production also rises as a result of the growing population. Agriculture is still a primary source of likelihood and plays an important role in Pakistan’s economy Pakistan’s agricultural contribution to Gross Domestic Product (GDP) is 21% with an annual growth of 2.7% [1]. Farmers in Pakistan use traditional methods which are are outdated and time consuming. Conventional farming practices lead to erratic production, overutilization of resources, poor quality of the final product and wastage of resources. To increase the standard of farming in Pakistan at par to the developed countries, smart farming can be used for more effective farming.

Smart agriculture can address various issues related to crop production. The Internet of Things (IoT) technology is able to link various remote sensors such as robots, ground sensors, and drones [2]. The Internet of Things (IoT) is an intelligent and promising technology that offers unconventional and practical solutions in many areas including agriculture. Since IoT devices can be used to monitor temperature, humidity, and other variables, they can be a big help in increasing production and yield in the agricultural industry [3]. IoT sensors are capable of providing farmers with information about crop yields, pest infestation, disease detection and qualitative classification of crops which will rise up the quality of farming techniques in Pakistan.

In this research, we will integrate IoT with Artificial Intelligence (AI), computer vision, and machine learning to develop a smart agricultural model that will help Pakistani farmers become more productive and expedite their job. We hypothesize that there is a positive association between the use of smart farming methods and increase in the yield and quality of the crops. Both quantitative and qualitative methods will be used in this study to check our hypothesis. With some drawbacks of the 4G technology, discussed later in the research, we will investigate the use and potential of 5G in our smart farming model, and how Computer Vision and Machine Learning Algorithms will be used to find the best and fastest method for its use in smart farming.

**References**

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