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AI -Based Automated Smart Agricultural System

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Abstract: - **Artificial Intelligence (AI) can play an important role in boosting agriculture thus helping agricultural-based economies grow. Agriculture can take advantage of emerging technologies such as AI-based Automated Smart Systems to increase irrigation, crop monitoring, farming, automatic spraying and improve pesticide use and weed control. Many mobile applications can be created that use the power of AI to assist farmers by providing a variety of services ranging from better commercial opportunities in managing and growing field yields.**

I. INTRODUCTION

Agriculture is a major industry that plays a key role in sustaining the country's economy. The growth of the current population, demand for food quality, and other natural resources requires more technology than fertilizer. Artificial intelligence (AI) is an excellent technological solution to deal with population growth and global climate change[1]. AI will extend its key effects to the world's most important sector called Agriculture**. Automated Smart Agricultural Systems** that work with AI can prove to be the cutting edge technology in obtaining high yields and better crop yields.

Artificial intelligence will go a long way in controlling pests, compiling agricultural data, producing healthy crops, reducing workload and much more[2].

II. BENEFITS

Below are the list of application that we can obtain by using the **AI-based Automated Smart Agricultural Systems**.

A. Agriculture Robotics

AI can help us to develop robots differently from performing multiple tasks in real time. They can be trained to control weeds and harvest crops in the fields. Robots can work faster than humans. In addition, robots can be used to pick and pack plants.

In particular, farmers want robots to control weeds as it is an effective way to spray weeds. It is an absolute need to combat these weeds that are spreading by providing the necessary nutrients for food.

Robots as they come with computer detection systems that can detect weeds well and spray chemicals on them. This can help to reduce weed strength to increase weed resistance.

Using robots in agriculture can help meet demand in that way, this technology helps to earn more money every year and strengthens the country's economy.

Figure – Weeding Robots

B. Drones, Satellites, and Air Planes

Drones and planes can help collect aerial data that helps such as ground data in analyzing the state of the farm. The technology uses computer-based algorithms and image annotations that favor farmers in identifying potential problems and solutions. Drones, planes, and satellites can do the job of analyzing and collecting data faster than humans.

Graphic Information for Crops and Soil Health:

Drone technology will be instrumental in providing high quality images and improving the plant monitoring process. It can analyze, scan, and collect field data in real time and help identify crop progress phase. For example, it can tell us about their health, any disease, insect attacks, and when they are ready. Alternatively, these technologies may include general field management and methods in which plants need water, fertilizer, pesticides or soil. Machine learning in this process will help ensure plant and soil health (strengths and weaknesses). It will only allow healthy plants to grow in the garden while eliminating the bad ones.

In addition, it is a challenging time for food producing countries to improve soil quality despite deforestation.

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Figure – Agricultural Drones

Smart Phone App's

Mobile applications can be specially designed for farmers to analyze collected data, compile data, predict climate change, and much more. Apps will come with computer viewing algorithms for translating images; therefore, it reveals details about diseased leaves, soil color, and shapes. They will assist farmers to detect disturbances and suggest better treatment options to protect the entire crop.

App's can help us analyze billions of data points with the help of satellite imagery technology. It will enable farmers to improve productivity by analyzing the weather conditions and their impact on the crop. Also, it can measure a particular crop product in other parts of the world and help its user determine the response rate.

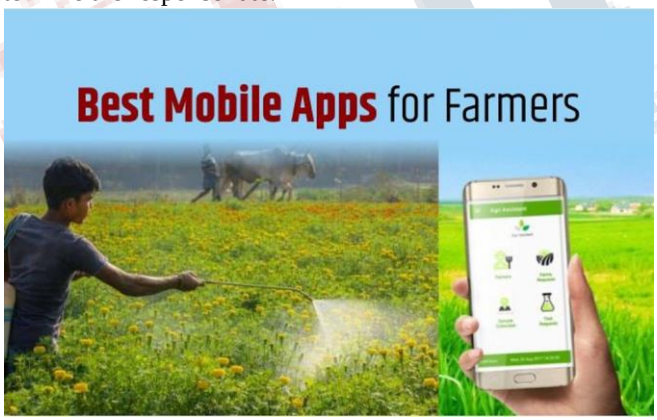

Figure – Smart phone App's for Agriculture

III. CONCLUSION

There is always an increase in the demand for reliable and high quality food suppliers; **AI-based automated Smart Agricultural Systems** is the only solution. It can play an important role in meeting needs with advanced options such as robotics, smartphone applications, and photographic technology. The traditional methods used by farmers are not sufficient to meet the needs and provision. AI can provide a wide range of agricultural equipment that helps farmers monitor their yields even when they are not in the field.

AI Automated Smart Agricultural Systems that will be supported by AI will also provide more job opportunities for more people. AI redefined traditional methods to improve efficiency and quality of crop production in advanced ways. **AI-based Automated Smart Agricultural Systems** comes with software for harvesting and harvesting, weed control and pest control, climate analysis and soil conditions. Investing in this smart field means increasing opportunities for high productivity and balancing food quality needs. AI-enabled technology helps to compete with industry challenges, and in the future, there will be continued adoption of AI in the agricultural sector.

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