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Artificial Inteligence In Farming- It's Uses And Future

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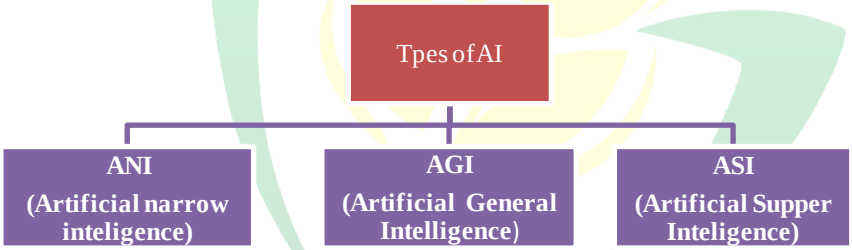
Introduction

Artificial intelligence (AI), today our eardrums are not left untouched by this word. AI defines its meaning by itself i.e., man-made intelligence. AI refers to ingraining of intelligence in machines which enables them to learn, think, behave and mimic like humans. In 1956 AI got recognition as an academic field and from then it has been growing and touching every sector of the economy. Machine learning, robotics, deep learning are some sub set of AI.



- ANI- Also known as "weak AI", and its performance is limited to a single task.
  Example- Alexa by Amazon, Chat boats
- AGI- It represents general human ability in software. Scientists are still working on it
- ASI- More advance AI which perform better than human. It is a hypothetical AI

AI in farming

A. Why is there a need of AI?

About 55% of cultivable land in India depends upon rainfall. Sowing is delicate relation between water and soil where time management and accuracy decide the yield. Just a week delay in rainfall can affect the profit of the farmer. The farmer brings all his past experience

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and knowledge from previous generation into play and predict the right time for sowing. In every field operation, farmer apply these three steps i.e., "Sense, Think, Act". In the first step farmer sense the problem, in the second he thinks of the right combination of the solution, and in third, he acts upon it and this imprecise manual forecasting becomes a reason for their low return to some extent

While on other hand, population of India is assumed to be nearly 1.63 billion by 2050 and will shove farmers in trouble where it will become impossible for them to make a balance between both increasing population and food demand without the adoption of new technology and automation which is always a concern for Indian farmers. Agriculture and farming both play an important role in the Indian economy. Agriculture contributes more than 15% to GDP and employs 49% of the workforce. Upgradation in agriculture would definitely positively contribute to the well-being of the agriculture-dependent population. AI can make this positive progress in Indian agriculture by minimizing post-harvest losses, increasing productivity, strengthening the supply chain, correct prediction of weather etc. It would increase productivity by introducing precision farming and work as a catalyst in doubling the farmer income.

B. Use of AI in agriculture

Following are the main areas where AI can bring the next big revolution in the agriculture sector

1. Yield improvement- The data collected by drones, satellite and in-ground sensors are analysed by machine learning and artificial intelligence to give farmer accurate information and creating farming decision handy. Even scientist can predict the potential yield of a given crop by analysing 3D mapping and soil colour data. In many villages of Telangana, Madhya Pradesh and Maharashtra, farmers are receiving this automated information by an AI application developed by Microsoft which is powered by Microsoft Cortana Intelligence Suite including Machine Learning and Power BI.

2. Pest Infestation- By using infrared data and on-field sensor data, now experts can predict infestation before they occur. Microsoft collaborated with UPL to build a pest prediction application based on AI technology.

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3. Automated machinery- Lots of farm labours are shifting to urban areas for their livelihood. During the COVID pandemic due to migrant labours, harvesting gets delayed due to which farmers bear a huge loss. But with the help of AI technology robotics machinery can be used for various agricultural operations and it could also cut down the cost of cultivation results in a better profit for the farmer.

4. Irrigation- As the water level is going down day by day it is now coming in the list of scary resources. A sustainable approach is required for efficient utilisation of resources. Machine learning algorithm and linear programming could be used to ensure that the crop gets enough water to get a satisfactory yield.

Apart from this AI and machine learning can be used for soil testing, the right combination of Agri input, price prediction, strengthen supply chain etc. The government of India is using AI in PMFBY (Pradhan Mantri Fasal Bima Yojana) in carrying out pilot projects for crop cutting, yield estimation and to reduce the time for claim settlement.

Future of AI In Farming

Although today Indian farmers are laggards inadopting AI and other modern technology on a large scale but many Agri tech start-ups are blooming with their technological solutions based on AI, strengthening and encouraging farmers to do smart farming by making them techno-friendly. The Government of India introduced AGRI-UDAN program with the aim to attract more entrepreneurs in Agri-tech sector. As new agriculture reforms increase the chances of investment in AI and other technology for better yield under contract farming. The diversity of India in soil type, climate and topography will open the gate for AI experts and data scientists for new developments in AI. So, there are many opportunities for AI in Indian farming.

Conclusion:

AI has the potential to boost the agriculture sector, but still, it is not used at its full potential in Indian farming. But newly growing Agri-tech start-ups are coming up with a new ray of hope. On the other hand, new agriculture reforms and government investment in AI would also work as a catalyst in bringing a boom in the Agri-tech revolution. Diversity of India is

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also standing with Indian agriculture to attract more researchers and AI experts for bringing new developments in this sector.