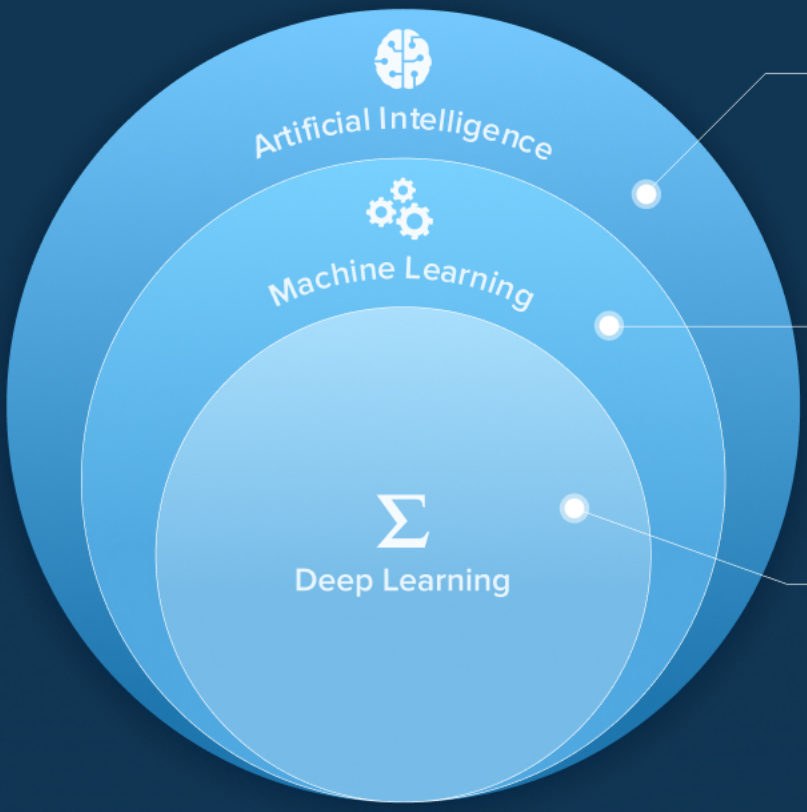
TOP MACHINE LEARNING USE CASES IN AGRICULTURE IN 2023

InData Labs

Big Technology Overview



ARTIFICIAL INTELLIGENCE

An umbrella term that refers to mimicking human intelligence processes by computer systems.

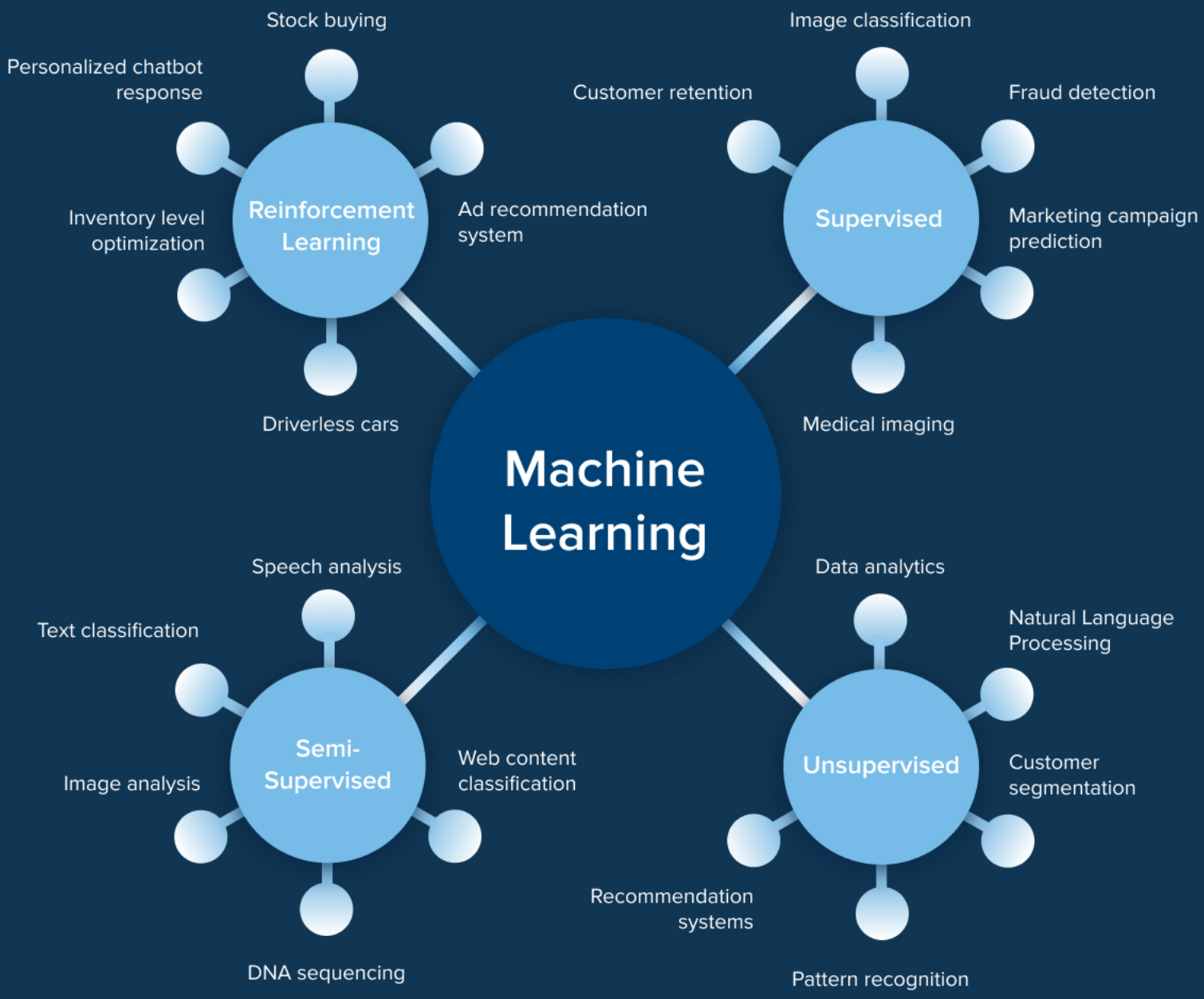
MACHINE LEARNING

A subset of AI that allows for designing and developing algorithms that can learn from data and make predictions.

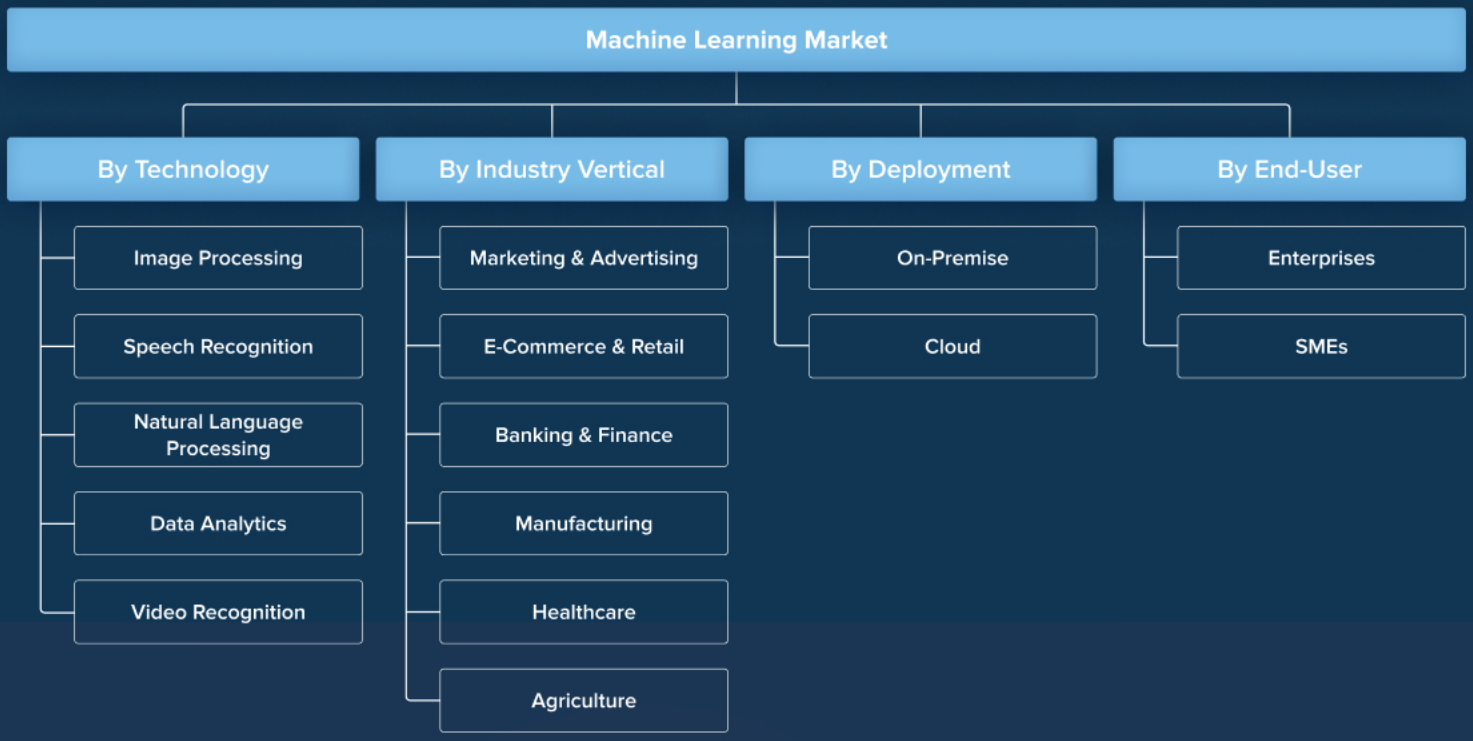
DEEP LEARNING

A branch of ML based on artificial neural networks that can emulate human-decision making capabilities.

Machine Learning Algorithms and Use Cases



Machine Learning Market



Machine Learning Market 2022 - 2030

Market Size	CAGR	Dominating Region	Forecast Period
$21.17 Billion	38.8%	North America	2022 - 2030

Machine Learning in the Agriculture Industry

2020 $1 billion

Markets and Markets

2026 $6 billion

Markets and Markets

Market growth will accelerate at a CAGR (2020-2026)

25.5%

Growth Drivers

- Growing adoption of IoT in the farming sector
- Increasing demand for high agricultural production
- Growing focus on advanced crop management

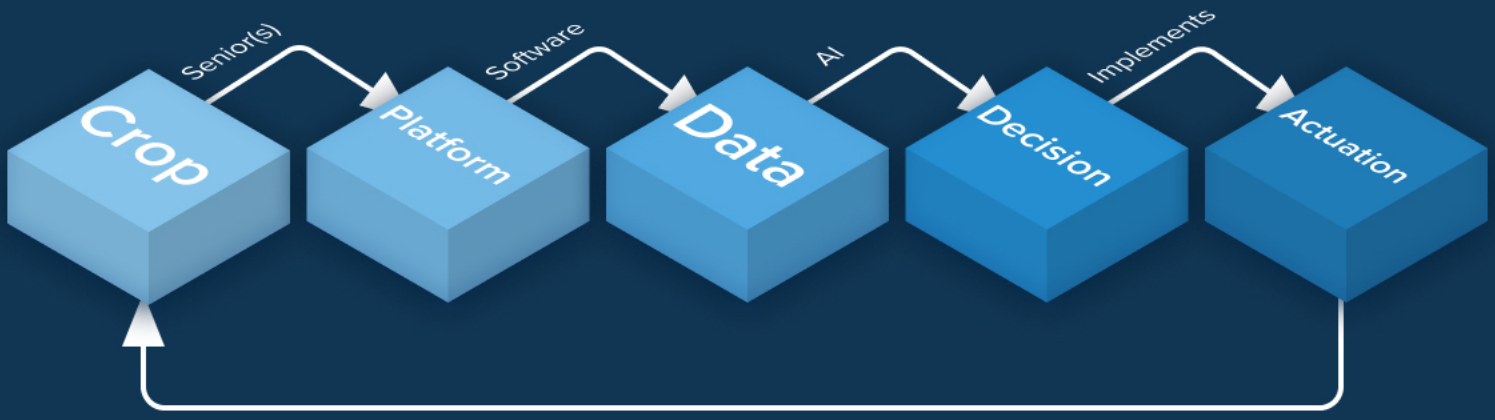
Areas of Application for Machine Learning in Farming

1. CROP, SOIL, AND LIVESTOCK MONITORING
2. WEATHER AND TEMPERATURE FORECASTING
3. AUTONOMOUS AGRICULTURAL ROBOTS AND FARM
4. DETECTION OF PESTS AND DISEASES
5. YIELD PREDICTION
6. PRECISION FARMING

Major Challenges Solved by Machine Intelligence

Challenges	How machine learning can help
Unsustainable farming practices that cause soil degradation	Predicting the presence of pests; precision spraying
High-input farming systems causing water scarcity	Optimizing water consumption based on historical irrigation data and soil conditions
Challenges in price discovery for farmers	Forecasting prices and analyzing market demand
Lack of warehouse visibility that leads to wastage	Warehouse automation, logistics optimization, document processing
Drop in farm productivity	Detecting disease in plants, improving plant resistance via genome engineering

Data-Driven Management for Advanced Farming



Case Study

Using smart algorithms for predicting soil fertility

01

DATA COLLECTION

- Data collection, dataset description (soil composition parameters)
- Data preprocessing and feature extraction

02

ANALYSIS

- Splitting data into training data and test data
- Applying the Decision Trees algorithm

03

DISEASE PREDICTION

- Identifying the status of fertility with 99% accuracy

InData Labs

info@indatalabs.com