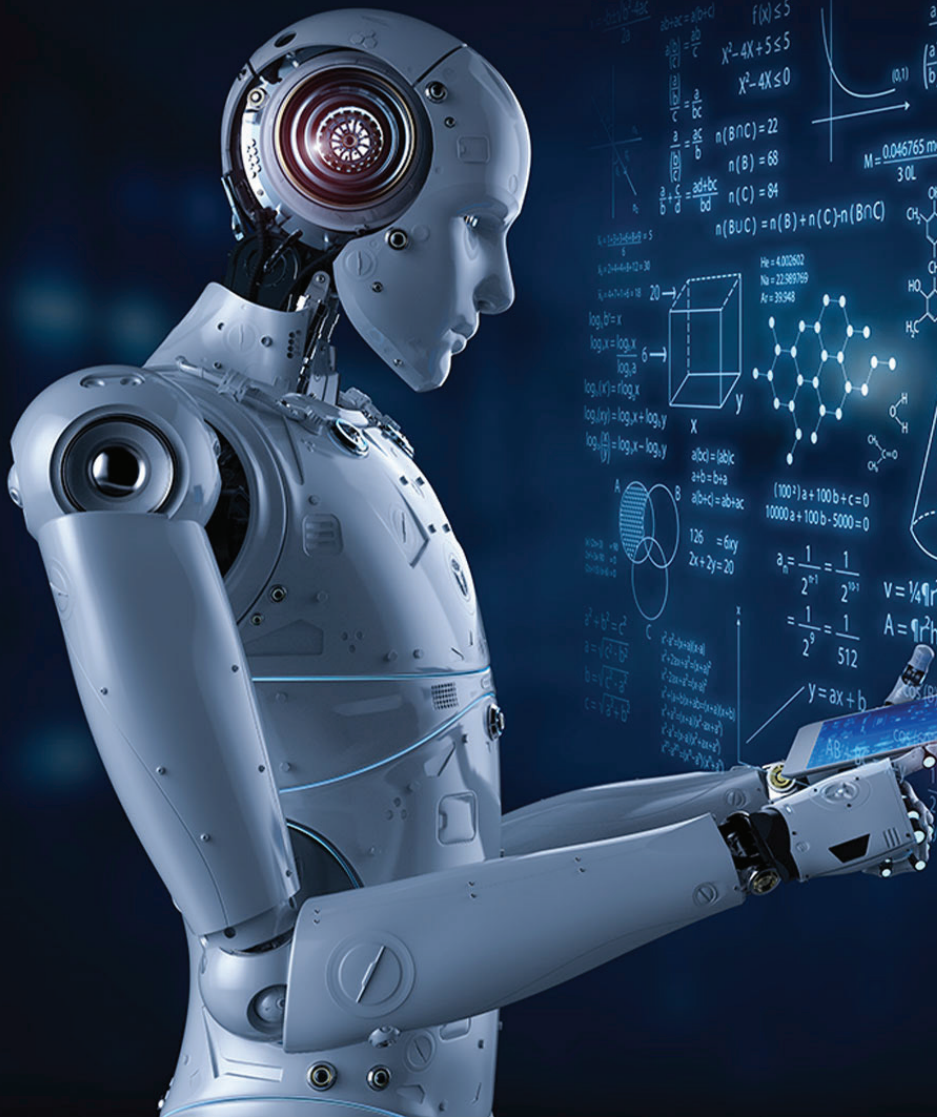




# Learning



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## Module 1: Foundations

### ➤ Introduction to Machine Learning

- What is ML? ML vs AI vs DL
- Types of ML: Supervised, Unsupervised, Reinforcement
- ML in India (health, agriculture, fintech, startups)

### ➤ Python for ML

- Basics of Python (loops, functions, OOPs basics)
- Libraries: NumPy, Pandas, Matplotlib, Scikit-learn

## Module 2: Supervised Learning

### ➤ Regression Models

- Linear Regression
- Polynomial Regression
- Regularization: Ridge, Lasso

### ➤ Model Evaluation

- Train/Test Split, Cross Validation
- Metrics: Accuracy, Precision, Recall, F1-Score, Confusion Matrix

### ➤ Classification Models

- Logistic Regression
- k-Nearest Neighbors (kNN)
- Decision Trees, Random Forest
- Support Vector Machines (SVM)

### ➤ Mini Project

- Predict house prices in India OR classify students' pass/fail outcome.

## Module 3: Unsupervised Learning

### ➤ Clustering

- K-Means Clustering
- Hierarchical Clustering

### ➤ Mini Project

- Customer segmentation for Indian retail dataset.

### ➤ Dimensionality Reduction

- PCA (Principal Component Analysis)
- t-SNE (intro)

## Module 4: Advanced ML & Tools

### ➤ Ensemble Methods

- Bagging & Boosting (AdaBoost, Gradient Boosting, XGBoost)

### ➤ Feature Engineering & Selection

- Handling missing data, scaling, encoding categorical data
- Feature importance

### ► Model Deployment Basics

- Saving models (Pickle, Joblib)
- Using Flask/Streamlit for deployment

### ► Introduction to Cloud Platforms

- Google Colab / Kaggle for training models

## Module 5: Final Project + Career Prep

### ► Capstone Project (choose one):

- Fake news detection (English/Hindi dataset)
- Student performance predictor
- Indian farmers' crop yield prediction
- E-commerce product recommendation system

### ► Career Prep

- Resume building with ML skills
- Job Assist
- FAQ & Interview Preparation

### ► Ethics in ML

- Bias & fairness in ML
- Responsible AI practices





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