LEARN AI SYLABUSS AND TIMETABLE

MON	FOLDER STRUCTURE AND ORGANISATION	
TUE	BASICS OF AI AND THE SUBSETS OF AI	
WED	ALGORITHMS AND PRETRAINED MODEL	
THUR	APPLICATION IN AGRICUTURE	
FRIDAY	CODE WRITING OF THE AI MODELS CREATIONS	EXERCISE

SYLABUSS

This curriculum blends practical skills with domain-specific applications, ideal for professionals like you working at the intersection of AI, agriculture, and innovation.

Module 1: Introduction to AI in Agriculture

Objective: Build foundational understanding of AI and its relevance to agriculture.

- **Week 1–2: AI Fundamentals**
  - What is AI, ML, and Deep Learning?
  - History and evolution of AI
  - Types of AI: Narrow, General, Super AI
- **Week 3–4: Agricultural Challenges & AI Opportunities**

- Overview of agricultural systems
- Precision agriculture, smart farming, and sustainability
- Case studies: AI in crop monitoring, pest detection, and yield prediction

Module 2: Machine Learning for Agriculture

Objective: Equip learners with core ML techniques and tools.

- **Week 5–6: Data Handling**

  - Agricultural datasets: soil, weather, satellite, sensor data
  - Data cleaning, preprocessing, and annotation

- **Week 7–8: Supervised & Unsupervised Learning**
  - Regression and classification models (e.g., crop yield prediction)
  - Clustering for soil type or disease grouping
- **Week 9–10: Model Evaluation & Deployment**

- Accuracy, precision, recall, F1-score
- Model deployment in farm management systems

Module 3: Computer Vision in Agriculture

Objective: Apply image-based AI for field and crop analysis.

- **Week 11–12: Image Processing Basics**

  - OpenCV, image augmentation, segmentation

- **Week 13–14: Deep Learning for Vision**
  - CNNs for plant disease detection
  - Drone and satellite imagery analysis
- **Week 15: Project**

- Build a crop health monitoring app using vision models

Module 4: Natural Language Processing (NLP) for Agri-Intelligence

Objective: Use NLP to extract insights from agricultural texts and reports.

- **Week 16–17: Text Mining & Sentiment Analysis**
    - Farmer feedback analysis
    - Market trend prediction from news and reports
- **Week 18: Chatbots for Farmer Support**
- Building AI assistants for agricultural extension services

Module 5: Robotics & IoT Integration

Objective: Explore automation and smart devices in farming.

- **Week 19–20: Smart Sensors & IoT**
    - Soil moisture, weather, and livestock monitoring
- **Week 21: Agricultural Robotics**
- Autonomous tractors, weeding robots, harvesting bots

Module 6: Advanced Topics & Capstone

Objective: Tackle real-world problems with integrated AI solutions.

- **Week 22–23: Advanced AI Techniques**
    - Reinforcement learning for irrigation control
    - Federated learning for privacy-preserving farm data
- **Week 24: Capstone Project**
- End-to-end AI solution for a local agricultural challenge (e.g., maize disease forecasting in Kenya)

Suggested Resources

- Python, Scikit-learn, TensorFlow, OpenCV
- Datasets: PlantVillage, FAO, Kenya Meteorological Department
- Tools: QGIS, DroneDeploy, AgriTech APIs

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