COURSE SYLLABUS

# Python Machine Learning Advanced (Self-Paced)

Take your machine learning expertise to the next level in this comprehensive, hands-on course designed to transform foundational ML knowledge into practical, real-world applications. Move beyond standard Jupyter notebooks and explore how professional ML engineers build and deploy machine learning systems across diverse domains.

For more information, visit
https://www.creativelive.com/classes/advanced-machine-learning-online



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## Course Outline

### 1. NLP & Sentiment Analysis

**Environment Setup & NLP Fundamentals**

- VS Code environment configuration, NLP libraries installation
- Tokenization, stopword removal, stemming, lemmatization
- Text representation with Bag of Words and TF-IDF

**Sentiment Analysis Project**

- Logistic Regression for sentiment classification
- Data splitting, model evaluation metrics (accuracy, precision, recall, confusion matrix)

### 2. Recommendation Systems

**Collaborative Filtering**

- User-based and item-based filtering
- Cosine similarity for personalized recommendations

**Content-Based Movie Recommender**

- Vectorizing text using TF-IDF
- Implementing content similarity algorithms

### 3. Flask App for Recommendations

**Building an ML-Powered Web App**

- Flask basics and web serving
- Developing a recommendation system Flask app

## 4. Forecasting & Deep Learning

### Time Series with Facebook Prophet

Trend forecasting and visualization (e.g., market prices)

### Deep Learning with PyTorch

- CNN basics, image classification using the CIFAR-10 dataset
- Model training, accuracy assessment, and confusion matrix interpretation

## 5. Object Detection

### Real-Time Object Detection with YOLO

- Image detection and labeling with pretrained models
- Adapting YOLO models to video streams and real-time webcam input