

# Comprehensive Machine Learning: From Fundamentals to AI

IT & IT Engineering  
Toronto (Canada)  
21 - 25 Jul 2025

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## Comprehensive Machine Learning: From Fundamentals to AI

**Ref:** 321786\_146762 **Date:** 21 - 25 Jul 2025 **Location:** Toronto (Canada) **Fees:** 4700 **Euro**

### Course Description

This intensive 5-day course provides a comprehensive introduction to machine learning, covering fundamental concepts, popular algorithms, and practical applications. Participants will gain hands-on experience with Python-based tools and frameworks, learning to build, evaluate, and deploy machine learning models for real-world problems.

### Learning Objectives

- Understand core machine learning concepts and algorithms
- Gain proficiency in using Python for data analysis and model development
- Learn to build and evaluate supervised and unsupervised learning models
- Explore neural networks and deep learning techniques
- Develop skills to implement end-to-end machine learning projects

### Course Modules

#### Day 1: Introduction to Machine Learning and Python

- Overview of machine learning and its applications
- Python fundamentals for data science
- Data preprocessing and exploratory data analysis
- Introduction to scikit-learn library

#### Day 2: Supervised Learning - Classification and Regression

- Linear and logistic regression
- Decision trees and random forests
- Support Vector Machines SVM
- Model evaluation and validation techniques

#### Day 3: Unsupervised Learning and Dimensionality Reduction

- Clustering algorithms K-means, hierarchical clustering
- Principal Component Analysis PCA
- Feature selection and engineering
- Anomaly detection techniques

#### Day 4: Neural Networks and Deep Learning

A graphic of a chessboard with several chess pieces (a king, a queen, a rook, and a pawn) positioned on it. The board is white and black, and the pieces are gold and silver. The text 'UK Training PARTNER' is overlaid on the right side of the board.

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- Artificial Neural Networks ANN fundamentals
- Deep learning architectures
- Convolutional Neural Networks CNN for image processing
- Recurrent Neural Networks RNN for sequence data

## Day 5: Advanced Topics and Project Implementation

- Ensemble methods and boosting algorithms
- Natural Language Processing NLP basics
- Introduction to reinforcement learning
- End-to-end machine learning project implementation

## Practical Wins for Participants

- Build a predictive model for customer churn analysis
- Develop an image classification system using deep learning
- Create a recommendation engine using collaborative filtering
- Implement a sentiment analysis tool for social media data

A graphic of a chessboard with several chess pieces. A large gold king piece is prominent in the foreground, with a silver pawn and a silver knight behind it. The board has a checkered pattern, and there are concentric circles in the background.

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