



ARTIFICIAL INTELLIGENCE - MACHINE LEARNING FOR MANAGERS

1. ABOUT THE COURSE

This "AI for Managers" course is exclusively for managers (project managers, CXO's, directors, VP's, product managers, senior managers, team leads, etc.) with our unique cloud lab access. The self-paced course teaches the managers the artificial intelligence (AI) and machine learning (ML) needed to manage any AI/ML projects/innovations.

This course is designed exclusively for managers and doesn't require any programming knowledge.

Also, AI projects are complex and as a manager, you must know how to set the strategic technical direction for the entire team and the organization.

The general perception is that we should know a lot of maths to learn AI. But after training for 1,000+ hours and solving many business problems using AI, we believe that anybody can learn AI and apply the learnings at work or, even in our day-to-day life.

By the time you finish the course, you will be ready to apply the newly acquired skills to drive better business and strategic decisions for your business using AI.

2. COURSE DESIGN

High-quality videos, slides, hands-on examples, quizzes, automated assessments, case studies, and real-world projects. The course is designed in such a way that it will be having a case study based learning.

COURSE MATERIAL

Lifetime access to cutting-edge self-paced learning content.

LAB

180 Days of [CloudxLab](#) access for hands-on practice.

SUPPORT

Email support to answer your queries and we've also launched [Discussions](#) - a Q&A site for Artificial Intelligence, Machine Learning, Deep Learning, Big Data & Data Science professionals.

CERTIFICATE

Earn certificate in AI/ML for Managers by which you can highlight your new skills on your resume or LinkedIn.



3. COURSE SYLLABUS

INTRODUCTION

- As part of the introduction, we will learn what is AI, Various Components of AI, Machine Learning and Big Data. We will also learn the various use cases with very humane examples.
- You will also become familiar with various common terms used in AI, Machine Learning and computing.

MACHINE LEARNING PROCESS

In this chapter, we will learn the process of Machine Learning and various important concepts using life-related examples. We will start with the basics of Machine learning and by the end, we will be ready to build Machine Learning projects.

- Approach - First, We will understand the difference between the Machine Learning based approach and traditional approach. We will take a case study of a spam filter for email.
- Types - Afterwards, we will learn to identify the type of Machine Learning problem. We will understand the various types of Machine Learning problems. To make the process easier to understand we will take four case studies to identify the type of machine learning to use. Afterward, there will be 5 exercises to make the concepts sink in.
- Basics - Then, we will learn the process of a typical Machine Learning project. There are two phases of training and predicting - we will learn these details by the way of visualizations and examples.
- Train and Test - Further, we will learn that during the development there are two parts - training and test. We will learn about various challenges in splitting the data - various biases. It would include a very basic premiere on statistics.
We will learn how to trust a machine learning model by the way of learning various performance measures. This will be based on multiple case studies.
- Representing your data - The main role of any manager is to know the data and be able to represent it. Learning how to represent the data for the consumption of an algorithm is the key to solving the business problems with data. We will learn how to identify features, instances and labels etc based on four different projects.



Afterward, there will be case studies to help understand the identification of features, instances, labels, performance measures etc.

- Overfitting and Underfitting - The most important concept in Machine Learning and human behavior is to identify not-learning and too much learning - both extremes are bad. As part of this session, we will learn the difference between bias and variance or underfitting and overfitting with very real-life examples.
This will not involve any mathematical, coding or technical details. Instead, it will be based on very humane examples. We will also learn how to detect if our Machine Learning model is not-learning at all and rote-learning or memorizing.

ANALYTICS AND DATA SCIENCES

- We will learn about cleaning, wrangling, visualizing the data. This chapter will revolve around understanding of Analytics, Statistics and probability. We will also touch upon the statistical inference.

END-TO-END PROJECT

- We will build an end to end Machine Learning project while learning the concepts whenever needed. We will start with a project such as predicting the housing prices in California. We will go through various steps such as: Framing the problem, identifying the type of problem, splitting the data, selecting the performance criteria etc.
- We have built a very simple tool called BootML which makes it possible to do the end-to-end projects without any know-how of programming language or frameworks. BootML takes input from you in a very user-friendly interface and then generates the entire project.
- This will be followed by seven case studies which you can build using BootML.

THE UNDERPINNINGS OF ML

- This chapter will go a little deeper into Machine Learning. We will learn how algorithms work. We will explore the important algorithms and their internal working in simple words using real-life examples without any maths or coding.

- We will learn Linear Regression, Decision Trees, Neural Networks, Different types of neural networks such as CNN and RNN. We will also learn a great technique called ensemble learning.

CHALLENGES IN MACHINE LEARNING PROJECT

In a typical Machine Learning project, there are various challenges. This chapter covers these difficulties and how to overcome these difficulties.

- Regularization - When machine starts memorizing too much, we need to do regularization. We will learn about various regularizing techniques such as dropout.
- Dimensionality Reduction - If there are too many features of every object we need to remove certain features because it would overflow the memory or could take up a long time. This is known as dimensionality reduction - we will learn about various ways of dimensionality reduction in a humane way. Do you know that when we take a photo we are actually converting a 3D object into 2D? That's exactly is dimensionality reduction - taking a photo such that most important information is still retained.
- Data Augmentation - If sometimes we have very few datasets but we generate more data from existing ones. For example, we can tweak existing photos to make them more. This lies under Data Augmentation. We will learn the data augmentation techniques and also understand when to use and not to use data augmentation.
- Transfer Learning - Machine learning models typical require a lot of data, processing and time. If we have neither of three, then what we do? This is where the transfer learning comes into play where we download an existing brain (neural network) and tweak it to fit the need.
- Distributed ML - We will also learn how to distribute if the process is too slow or taking too much of resources.

UNSUPERVISED MACHINE LEARNING

In many machine learning examples, we do not have labeled data. Instead, we try to figure out the patterns in the given data.

A typical machine learning project would involve both supervised and unsupervised approaches. We will learn the following topics as part of this chapter. We will learn about the various unsupervised machine learning problem and also we will learn which algorithms to use in which kind of problems. This will be followed up by various case studies and examples.

- Natural Language Processing (NLP) - Natural language processing or NLP is the ability to understand human language. There have been remarkable inventions in NLP in the last few years. In NLP, we will learn about the various forms of natural language processing such as Named Entity Extraction (NER), TFIDF and word embedding.
- Clustering - Charles Darwin created a hierarchy of species based on the features of all the species. This is exactly an example of hierarchical clustering. In this chapter, we will cover the use-cases, types, and algorithms of clustering. We will be using various case studies as examples.
- Recommendation Engine - Recommendations has been on the forefront of Machine Learning. The Netflix competition and Amazon's product recommendations are the most obvious examples of Machine Learning. In most cases, the Machine Learning in an organization starts with a recommendation engine.

Recommendation generation is also known as collaborative filtering. We will learn various algorithms, strategies, and tools to create successful recommendations.

We will learn how to measure the performance of recommendation engine, address the cold start problem and also deal with a humongous dataset. We will also address where not to use the recommendation engine.

GENERALIZED AI AND REAL LIFE LARGE PROJECTS

- As part of this chapter we will learn how to compose larger applications using the building blocks from the previous chapters.
- We learn how large systems like Alexa, Self Driving Cars, E-Commerce Recommendations (Amazon), Data Center Power Consumption Optimizations, AutoDraw, Google Docs - Insert Symbol features and Google Translate.



FRAMEWORKS AND LIBRARIES

We will learn about frameworks, libraries and programming languages and their differences.

- As part of this chapter, we will just get to know the names of various libraries and their functions. In programming languages, we will get to know about Python, C, C++ and Java overview. We will learn about the frameworks such as Keras, Tensorflow, Spark MLLIB, Scikit Learn.
- We will also learn about various open source frameworks, pre-trained models and datasets to use. An exhaustive list of further reading will also be provided.

HOW TO BUILD DATA SCIENCE TEAM

We will learn about how to build and retain the data science team and how to manage larger projects.

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Please feel free to email your queries to reachus@cloudxlab.com