

Objectives Transcript

Let us continue from where we stopped the last time, and talk a bit about the high-level objectives that you will have in this specialization.

Your first objective should be to learn the core concepts of Machine Learning, such as types of Machine Learning, notions of training and test sets, overfitting, regularization, and so on, and so forth.

Second, you want to understand how specific Machine Learning algorithms, such as logistic regression, support vector machines, decision trees and so on, work for financial problems.

Further, you want to learn more about neural networks, maybe because you've heard a lot about deep learning, and you want to find out how neural networks and deep learning are used in Finance.

Next, you want to get a practical experience with using Python Machine Learning libraries on financial problems, including in particular such libraries as scikit-learn for classical Machine Learning algorithms, and libraries such as TensorFlow for neural models.

And finally, you want to know how you would be able to expand your knowledge and learn more after you will complete this specialization.

All of the above will be our objectives here, and we will pursue them both in sequence and in parallel by progressing through courses in this specialization. Let me explain what we will do in each one of them.

Our first course is an introductory course that I call "A Guided Tour of Machine Learning in Finance".

This course will help you to grasp basic concepts of Machine Learning, and understand how in general Machine Learning in Finance differs from Machine Learning in the tech industry.

You will learn some simple Machine Learning algorithms that we will use to analyse stock returns, companies fundamentals, bank reports, and other financial data, all with examples that present problems of practical interest.

I will show you Jupyter notebooks that implement these simple algorithms, and then you will extend them using different data and different algorithms. In this first course, we will be mostly using scikit-learn and a few other packages to implement our Machine Learning solutions. Simultaneously, we will gently introduce TensorFlow, a very powerful Python package for Machine Learning, open-sourced by Google about 2 years ago.

Though our main interest in TensorFlow is due to its powerful functionality for neural networks, we will start with most simple examples of using TensorFlow, such as linear regression or logistic regression.

In what comes to using neural networks themselves, we will get a glimpse of how they work in the first course, and build our first simple neural networks for analyses of company earnings and bank statements.

During this course, you will have weekly home assignments that will include quizzes, programming assignments, and optional mathematical-type problems.

The final course project will be to apply several Supervised Learning algorithms to bank reports data.

Don't worry now if you don't know what the term Supervised Learning means - we will learn it soon.

Your final score for the course will be computed as a cumulative score of your weekly homework assignments and your final course project.

Once you complete the first course, the rest of the specialization can be taken either sequentially, or separately, whichever way you prefer.

Each one of the follow-up courses focuses on one of the main types of Machine Learning algorithms.

For now, let me just name them for you.

There are called Supervised Learning, Unsupervised Learning, Sequence Learning, and Reinforcement Learning.

Respectively, I decided to name each one of the follow-up courses by simply adding the ending "in Finance" to each one of these names.

Each one of them will expand our first course in both the depth and the applications considered.

In these courses, we will be dealing with many kinds of financial data, and many types of financial problems.

In particular, we will be looking at stock returns, corporate filings, news, macro-economic data, banking reports, consumer loan data, and so on.

On the financial side, we will be looking at many classical problems of finance such as market and regime forecasts, predictions of stock returns or consumer credit risk, portfolio optimization, et cetera, and show how Machine Learning is applied for this tasks.

If you have particular interest in, say, financial applications of Supervised Learning only, or Unsupervised Learning only, you will be able to take only one such course independently from other courses.

My personal view though is that the most fascinating applications of Machine Learning in Finance come from Reinforcement Learning.

We will touch upon Reinforcement Learning in our first course, and we will fully devote the last course of this Specialization to Reinforcement Learning and its financial applications.

So, I strongly recommend you stay till the end, because the coolest things will come then!

Finally, the last thing I need to discuss before we move on with the first course in this specialization are pre-requisites to the course, textbooks, and course resources. Let's talk about it in the next video.