Machine Learning for Accounting with Python

Linden Lu

https://www.coursera.org/learn/machine-learning-accounting-python#syllabus

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About this Course

- This course, Machine Learning for Accounting with Python, introduces machine learning algorithms (models) and their applications in accounting problems. It covers classification, regression, clustering, text analysis, time series analysis. It also discusses model evaluation and model optimization. This course provides an entry point for students to be able to apply proper machine learning models on business related datasets with Python to solve various problems.
- Accounting Data Analytics with Python is a prerequisite for this course. This course is running on the same platform (Jupyter Notebook) as that of the prerequisite course. While Accounting Data Analytics with Python covers data understanding and data preparation in the data analytics process, this course covers the next two steps in the process, modeling and model evaluation. Upon completion of the two courses, students should be able to complete an entire data analytics process with Python.

INTRODUCTION TO THE COURSE

- In this module, you will become familiar with the course, your instructor and your classmates, and our learning environment. This orientation will also help you obtain the technical skills required to navigate and be successful in this course.

MODULE 1: INTRODUCTION TO MACHINE LEARNING

- This module provides the basis for the rest of the course by introducing the basic concepts behind machine learning, and, specifically, how to perform machine learning by using Python and the scikit-learn machine learning module. First, you will learn about the basic types of machine learning. Next, you will learn an important step before applying machine learning algorithms, data pre-processing. Finally, you will learn how to leverage different types of machine learning algorithms in a Python script.
- Module 1 Introduction3m
- 1.1 Introduction to Machine Learning6m
- 1.2 Introduction to Data Preprocessing10m
- 1.3 Introduction to Machine Learning Algorithms3m

MODULE 2: FUNDAMENTAL ALGORITHMS I

- This module introduces three machine learning algorithms. First, you will learn how linear regression can be considered a machine learning problem with parameters that must be determined computationally by minimizing a cost function. Next, you will learn Logistic Regression. Despite its name, Logistic Regression is a classification algorithm. Lastly, you will learn Decision Tree, which is a popular machine learning algorithm that can be used for both classification and regression. This module will dive deeper into the concept of machine classification, where algorithms learn from existing, labeled data to classify new, unseen data into specific categories; and, the concept of machine regression, where algorithms learn a model from data to make predictions for new, unseen continuous data. While these algorithms all differ in their mathematical underpinnings, they are often used for classifying numerical, text, and image data or performing regression in a variety of domains.
- Module 2 Introduction2m
- 2.1 Introduction to Linear Regression12m
- 2.2 Introduction to Logistic Regression8m
- 2.3 Introduction to Decision Tree6m

MODULE 3: Fundamental Algorithms II

- This module introduces three more machine learning algorithms, k-nearest neighbors, support vector machine and random forest. All of them can be used for either classification or regression tasks.
- Module 3 Introduction 1m
- 3.1 Introduction to K-nearest Neighbors 5m
- 3.2 Introduction to Support Vector Machine 4m
- 3.3 Introduction to Bagging and Random Forest 3m

MODULE 4: MODEL EVALUATION

- Model Evaluation is an integral component of any data analytics project. It helps to find out how well the model will work on predicting future (out-of-sample) data. This module introduces basic model evaluation metrics for machine learning algorithms. First, the evaluation metrics for regression is presented. Next the metrics and technics to evaluate classification are introduced.
- Module 4 Introduction 1m
- 4.1 Regressive Evaluation Metrics 8m
- 4.2 Classification Evaluation Metrics I 13m
- 4.3 Classification Evaluation Metrics II 7m

Machine Learning for Finance in Python

https://www.datacamp.com/courses/machine-learning-for-finance-in-python

Course Description

- Time series data is all around us; some examples are the weather, human behavioral patterns as consumers and members of society, and financial data. In this course, you'll learn how to calculate technical indicators from historical stock data, and how to create features and targets out of the historical stock data. You'll understand how to prepare our features for linear models, xgboost models, and neural network models. We will then use linear models, decision trees, random forests, and neural networks to predict the future price of stocks in the US markets. You will also learn how to evaluate the performance of the various models we train in order to optimize them, so our predictions have enough accuracy to make a stock trading strategy profitable.

Preparing data and a linear model

- In this chapter, we will learn how machine learning can be used in finance. We will also explore some stock data, and prepare it for machine learning algorithms. Finally, we will fit our first machine learning model -- a linear model, in order to predict future price changes of stocks.

Machine learning tree methods

- Learn how to use tree-based machine learning models to predict future values of a stock's price, as well as how to use forest-based machine learning methods for regression and feature selection.

Neural networks and KNN

- We will learn how to normalize and scale data for use in KNN and neural network methods. Then we will learn how to use KNN and neural network regression to predict the future values of a stock's price (or any other regression problem).

Machine learning with modern portfolio theory

- In this chapter, you'll learn how to use modern portfolio theory (MPT) and the Sharpe ratio to plot and find optimal stock portfolios. You'll also use machine learning to predict the best portfolios. Finally, you'll evaluate performance of the ML-predicted portfolios.

Fundamentals of Machine Learning in Finance

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Igor Halperin

About this Course
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- The course aims at helping students to be able to solve practical ML-amenable problems that they may encounter in real life that include: (1) understanding where the problem one faces lands on a general landscape of available ML methods, (2) understanding which particular ML approach(es) would be most appropriate for resolving the problem, and (3) ability to successfully implement a solution, and assess its performance.
- A learner with some or no previous knowledge of Machine Learning (ML) will get to know main algorithms of Supervised and Unsupervised Learning, and Reinforcement Learning, and will be able to use ML open source Python packages to design, test, and implement ML algorithms in Finance. Fundamentals of Machine Learning in Finance will provide more at-depth view of supervised, unsupervised, and reinforcement learning, and end up in a project on using unsupervised learning for implementing a simple portfolio trading strategy. The course is designed for three categories of students: Practitioners working at financial institutions such as banks, asset management firms or hedge funds Individuals interested in applications of ML for personal day trading Current full-time students pursuing a degree in Finance, Statistics, Computer Science, Mathematics, Physics, Engineering or other related disciplines who want to learn about practical applications of ML in Finance Experience with Python (including numpy, pandas, and IPython/Jupyter notebooks), linear algebra, basic probability theory and basic calculus is necessary to complete assignments in this course.
- **Instructor**
- Instructor rating 3.25/5 (9 Ratings)
- Igor Halperin

Machine Learning and Reinforcement Learning in Finance Specialization

https://www.coursera.org/specializations/machine-learning-reinforcement-finance

What you will learn

- Compare ML for Finance with ML in Technology (image and speech recognition, robotics, etc.)
- Describe linear regression and classification models and methods of their evaluation
- Explain how Reinforcement Learning is used for stock trading
- Become familiar with popular approaches to modeling market frictions and feedback effects for option trading