



Machine Learning - Classification Models in Python

Overview

This hands-on, programming-based data science course is a sequel to Cognitir's *Introduction to Data Science* course. It will provide an overview of modern machine learning algorithms that analysts, portfolio managers, traders and chief investment officers should understand given the improved ability to capture and analyze data.

This course will explore classification methods including neural networks and decision trees, which are among the most effective data science techniques. An introduction to deep learning, a technique which has significantly increased the performance of machine learning algorithms over the last years and is heavily used in the industry, is also included.

At the end of the workshop, participants will be comfortable applying the Python programming language to build common classification algorithms and evaluate & interpret their accuracies.

What This Course Offers

- An overview of core classification methods and how to use them to solve real-world problems in the finance industry
- Hands-on Python programming experience
- Course notes, certificate of completion, and post-seminar email support for 1 year
- An engaging and practical training approach with a qualified instructor with relevant technical, business, and educational experiences

Who Is This For

This course is relevant for individuals working with or needing to understand machine-learning algorithms, specifically classification methods.

Cognitir's *Introduction to Data Science* course or the equivalent is required.

Course and Contact Information

Course Prerequisites: *Introduction to Data Science* is a prerequisite. If you have not been able to take this course with us yet, please contact us.

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Course Curriculum

- **Review of Core Data Science Methods**
 - Supervised vs. Unsupervised learning, Classification, Regression, Clustering, Dimensionality Reduction, Ensemble, etc.
- **Selecting Informative Attributes**
 - Information gain, entropy, overfitting/generalization
- **Decision Trees & Random Forests**
 - What are they?
 - How to do this in Python
 - Coding Challenge
- **K-Nearest Neighbors**
 - What is it?
 - How to do this in Python
 - K-Nearest Neighbors Coding Challenge
- **Support Vector Machines**
 - What are they?
 - How to do this in Python
 - SVM Coding Challenge
- **Neural Networks**
 - What is it?
 - How to use this in Python - example
 - Neural Nets Coding Challenge
- **Deep Learning**
 - Why the hype?
 - How to get started with deep learning
- **Evaluation of Classification Methods**
 - Accuracy, confusion matrix, ROC, AUC, Precision, Recall, etc.
- **Final Project**
 - Given a dataset and a classification mandate, students have to run these different classification models and figure out which one is “best”

Course Content Developers

David Haber

David heads Cognitir's products and technology. He has led programming workshops at the undergraduate and graduate levels, at blue chip companies, and world renowned management consulting firms.

David has experience working with both startups and large corporations. Previously, he was a lead software and machine learning engineer at Soma Analytics, an investor-backed and



award-winning health-tech startup in London. David also worked on optimizing large-scale payment processing systems at Deutsche Bank in Singapore. Outside of Cognitir, he currently advises HiDoc, an early stage digital health startup in Germany.

David holds an MEng (First-Class Honours) in Computer Science from Imperial College London (UK) where he focused on statistical machine learning. He presented his work at international conferences and won several awards for his work. During his studies, he also served as a teaching assistant at Imperial College where he helped undergraduate students master fundamental computer science concepts.

Neal Kumar, CFA

At Cognitir, Neal leads strategy and business development initiatives and advises on new product development.

Outside of Cognitir, Neal consults C-level teams and senior business managers on a variety of strategic topics ranging from M&A to marketing. He also leads training seminars for Wall Street Prep and has consistently received top reviews from attendees and created two training courses that were used in seminars worldwide. Before his consulting and training careers, Neal taught secondary mathematics in St. Louis Public Schools (USA) as a Teach for America Corps Member. Prior to joining Teach For America, Neal worked in investment banking at Lazard, JPMorgan, and Houlihan Lokey.

Neal received his MBA from London Business School (UK) and BBA in Finance from the University of Notre Dame (USA). He is also a CFA Charterholder and a Member of the CFA Institute Education Advisory Committee (EAC) Working Body where he helps shape CFA Program Content.

Derek Sasthav

At Cognitir, Derek leads courses worldwide and helps develop new course materials.

Outside of Cognitir, Derek works at AMEND where he is focused on building analytics capabilities for clients in the middle market. At AMEND, he has worked on impactful data science projects including price volume mix analysis, production scheduling optimization, and operational KPI reporting. Previously, he worked at the IBM North American Analytics Center working on predictive modeling for crime rates in urban areas. Derek studied Industrial Engineering at Ohio State University, where he was president of the Big Data and Analytics Association, a student group focused on teaching data science to students.