

6-Course Bundle In

ALGORITHMIC TRADING STRATEGIES IN PYTHON

Learn to use 15+ trading strategies including Statistical Arbitrage, Machine Learning, Quantitative techniques, Forex valuation methods, Options pricing models and more.

This bundle of courses is perfect for traders and quants who want to learn and use Python in trading.

A blend of various videos, PDFs, IPython notebooks and Interactive coding exercises makes you understand the concepts in a practical way.

Programme Content

Course 1: Getting Started With Algorithmic Trading

Course 2: Python For Trading

Course 3: Quantitative Trading Strategies and Models

Course 4: Statistical Arbitrage Trading

Course 5: Trading with Machine Learning: Regression

Course 6: Trading with Machine Learning: Classification and SVM

Getting Started With Algorithmic Trading

(Level: Beginner, Duration: 2 hours)

Course Objectives

This course will enable you to:

- Learn about what is Algorithmic Trading and its advantages over traditional trading techniques.
- Learn about different strategy paradigms & modeling ideas used for algorithmic trading and back-testing techniques.
- Learn about requirements for setting up an algorithmic trading platform.
- Get a downloadable e-book with this course.
- Lifetime access to the course.
- Take an assessment at the end of course and get certified by MCX - Leading commodities exchange in South-East Asia and QuantInsti - Asia's pioneer Algorithmic Trading Research and Training Institute.

Course Details

Section 1: Introduction

Understand what is algorithmic trading. A brief history of algorithmic trading

Section 2: Why algorithmic trading?

Understand different factors why algorithmic trading is preferred over traditional Trading techniques

Section 3: Available platforms and languages

Understand different programming languages available for trading algorithmically. Available platforms to use for automating the trading strategy

Section 4: Strategy paradigms

Understand different strategy paradigms that can be used for trading automatically Such as market making, statistical arbitrage, momentum, machine learning based And machine readable news based

Section 5: Algorithmic trading platform

Understand various components of the system architecture of an algorithmic Trading platform and how these components work together to execute the trades

Section 6: Regulations and compliance

Understand regulatory and compliance requirements related to algorithmic trading In india

Section 7: Downloadable resources

Summary of course in an ebook and understand requirements for setting up an Algorithmic trading desk

Python For Trading

(Level: Intermediate, Duration: 6 hours)

Course Objectives

This course will enable you to:

- Identify your trading problems and start coding strategies in Python
- Deal with time-series data and manipulate them using Python
- Code trading strategies using technical indicators such as moving averages, relative strength index etc.
- Use Python to generate trading signals in commodities
- Build your own trading strategies and backtest their performance on historical data
- Predict the upcoming trends in commodity prices
- Code momentum trading strategy using TA-Lib library
- Analyze the trading strategies using various performance metrics

Course Details

Section 1: Introduction to Python!

Variables, Loops, Conditional statements, Functions, Objects, Containers, Namespaces, Classes

Section 2: Python Data Structure

Lists, Dictionaries, Tuples, Sets

Section 3: Data Analysis and Trading

Pandas: Series and DataFrame, NumPy

Code in Python: Moving Average Crossover trading strategy, Relative Strength Index (RSI) trading Strategy

Section 4: Dealing with financial Data

Duplicate data, Missing values, Incomplete data, Mixed-up data

Section 5: Backtesting

Important things to consider during backtesting: Slippages, transaction costs

Code in Python: Momentum trading strategy

Section 6: Performance Metrics

Analyze the performance of the strategy using different performance metrics

Quantitative Trading Strategies And Models

(Level: Intermediate, Duration: 4 hours)

Course Objectives

This course will enable you to:

- Solve real-world trading problems with the help of quantitative models and technical indicators
- Create quantitative trading strategies using technical indicators which can adapt to live market conditions
- Predict the upcoming market trends and volatility and backtest them on historical data
- Understand quantitative modelling to build your own quant models
- Build a delta-neutral portfolio and trade using Greeks
- Understand how a delta-neutral portfolio turns profitable when the market goes either up or down
- Code your trading strategies in Python

Course Details

Section 1: Introduction to Quant Trading

Learn about quant trading, steps involved in quant analysis and trading.

Section 2: Technical Trading Strategies

Learn about support and resistance, volume reversal strategy, trend and momentum trading with moving averages, parabolic SAR, stochastic oscillator. Learn about trading with volatility using the Bollinger bands.

Section 3: Econometric Models

Learn about linear regression, heteroskedasticity & autocorrelation and various models such as ARIMA and GARCH.

Section 4: Quantitative Trading Strategies: Options

Learn the options Greeks and a full fledged options quant trading strategy: gamma scalping.

Statistical Arbitrage Trading

(Level: Intermediate, Duration: 3 hours)

Course Objectives

This course will enable you to:

- Identify key statistical concepts and different types of statistical arbitrage strategies
- Understand how to build a pairs trading strategy in Microsoft Excel and Python
- Code and backtest a statistical arbitrage strategy in the commodities markets
- Understand the various risks involved in a statistical arbitrage and ways to minimize losses and maximize profits

Course Details

Section 1: Definition and Background

An overview of statistical arbitrage and different types of statistical arbitrage strategies. Understand different types of arbitrage strategies in commodities.

Section 2: Statistical Concepts Overview

Understand the concept behind mean reversion and different statistical concepts such as z-score, correlation, stationarity, cointegration, and linear regression. Understand the Augmented Dickey Fuller (ADF) test which checks whether the time series is stationary or not.

Section 3: Pairs Trading Strategy in Excel

Check for cointegration in excel and generate the trading signals using the Bollinger bands.

Section 4: Pairs Trading Strategy in Python

Fetch the data from quandl, check for cointegration in Python and the code the strategy learned in the previous section in Python.

Section 5: Managing risks in Stat Arb & Downloadable Resources

Learn about various risks in a stat arb strategy such as systematic risk, unsystematic risk & execution risk and learn how to overcome the risks.

Trading With Machine Learning: Regression

(Level: Intermediate, Duration: 5 hours)

Course Objectives

This course will enable you to:

- Implement concepts of machine learning regression in your trading
- Mathematical concepts behind regression function, such as gradient descent and cost function optimization
- How to build your own machine learning regression model
- How to optimize your model by troubleshooting Bias and Variance
- Forecast Gold ETF prices by pre-processing the data, adding Hyperparameters and cross validating the model

Course Details

Section 1: Intro to Data Generation

Learn about SCIKIT library and how to import it along with other libraries and data. Learn to create important indicators for the algorithm.

Section 2: Data Pre-Processing

Learn about Hyper-parameters and Cross-validation for data pre-processing. Learn to create datasets, standardization and how to handle missing data. Learn to train and test your data.

Section 3: Regression

Learn Regression in detail. Learn about errors and residuals in a regression model and how to predict them. Understand the Cost Function and Gradient Descent algorithm to minimize the cost function. Finally, learn about Multivariate Linear Regression and code w.r.t to linear regression.

Section 4: Bias and Variance

Learn the concept of Prediction error and how to identify these errors in any Machine Learning algorithm. Learn about underfitting and overfitting the data and ways to get a good fit. Understand the concept of Regularization using lambda parameter.

Section 5: Applying the Prediction

Learn how to modify the predictions made by the regression to account for market conditions. Learn how to get actual market high and low predictions from raw predictions.

Trading With Machine Learning: Classification And SVM

(Level: Intermediate, Duration: 4 hours)

Course Objectives

This course will enable you to:

- Solve real-world trading problems with the help of machine learning concepts
- Create trading algorithms which can adapt to live market conditions
- Apply data preprocessing techniques to ensure quality data is fed as input to your machine learning classifier
- Build supervised classifiers such as logistic regression classifier and support vector classifier in Python and incorporate them in trading strategies
- Understand the different hyperparameters used for optimizing algorithms
- Backtest trading strategies and evaluate their profitabilities

Course Details

Section 1: Introduction

Learn the concept of classification and how to map input into a discrete category. Learn four types of classifier algorithms, which are K-Nearest Neighbor, Random Forest, Artificial Neural Network, and Naïve Bayes Classification. Learn various indicators such as RSI, SMA, Correlation co-efficient, Parabolic SAR and Average directional index.

Section 2: Binary Classification

Learn the concept of Binary Classification to predict the market direction. Learn the mathematical functions like Sigmoid and hyperbolic tangent to construct a binary classifier. Learn how to implement binary classification in financial market to predict market movement.

Section 3: Multiclass Classification

Understand the concept of Multiclass classification. Learn to classify datasets into more than one class using 'One vs All' algorithm. Learn how to categorize the data based on numeric encoding of categories followed by an explanation on 'one hot encoding'. Learn the probability function and performance measures in ML and working of 'Softmax' function.

Section 4: Support Vector Machine

Learn the concept of Hyperplane, Support Vector, and Margin. Learn to how to choose the best hyperplane by maximizing the margin and the mathematics behind it. Learn about classification of non-linear data using kernel and understand different parameters such as C & Gamma and their effects on SVM algorithm.

Section 5: Prediction and Strategy

Learn to build your own trading strategy based on the concepts learned earlier. Learn to properly import libraries, data and create necessary indicators. Learn to compare the strategy's performance with market data. Learn to implement/modify the given strategy.

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