$$S_t = S_{t-\Delta t} e^{\left(r - \frac{1}{2}\sigma^2\right)\Delta t + \sigma\sqrt{\Delta t}z_t}$$

UNIVERSITY CERTIFICATE IN PYTHON FOR COMPUTATIONAL FINANCE
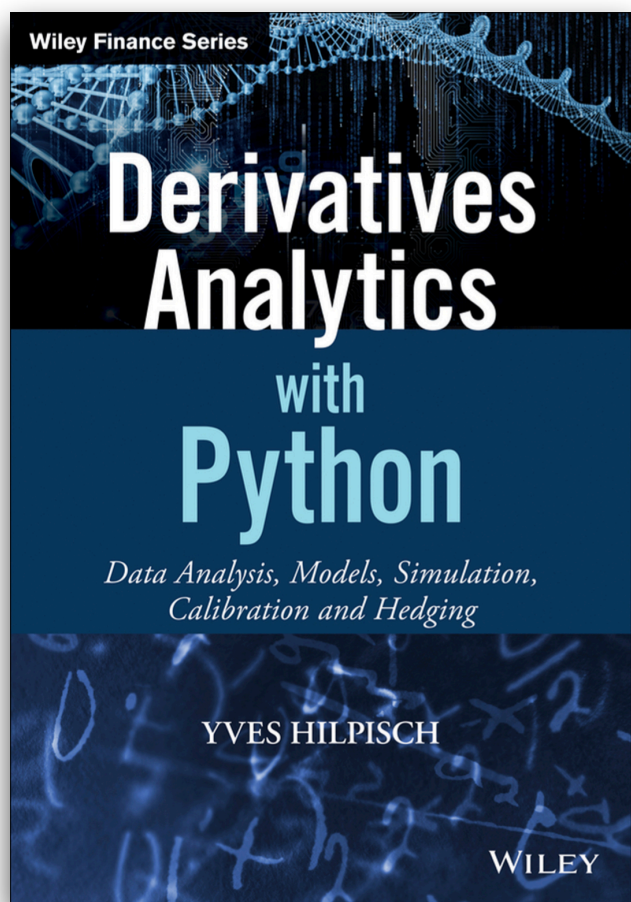
MASTERING COMPUTATION-FIRST FINANCE

$$\hat{\rho} = \frac{\sum_{n=1}^{N}\left(r_n^a - \hat{\mu}^a\right)\left(r_n^b - \hat{\mu}^b\right)}{\sqrt{\sum_{n=1}^{N}\left(r_n^a - \hat{\mu}^a\right)^2 \sum_{n=1}^{N}\left(r_n^b - \hat{\mu}^b\right)^2}}$$

The AI Machine

COMPUTATION-FIRST FINANCE

Recent years have seen tremendous advances in computing, software and data science techniques. Problems in derivatives analytics and computational finance that might have seem too demanding only a few years ago can today be tackled with even open source programming tools and packages running on easily scalable infrastructures in the cloud.

In quantitative finance, this has led to a shift to computational techniques from a theory-first approach. However, this also requires new tools and skills for those working in quantitative finance — be it in front office, middle office or back office functions.

As in many other areas, Python has become the programming language and technology platform of choice for computational finance. Some of the biggest financial institutions, such as Bank of America Merrill Lynch or JP Morgan, have implemented core trading and risk management systems in Python. Almost any job offering in the field today mentions Python as a necessary skill.

COMPREHENSIVE ONLINE PROGRAM

We at The Python Quants Group have started using Python more than 10 years ago with the specific purpose of implementing computational finance algorithms. Based on the experience from numerous online and live training classes as well as from implementing derivatives analytics algorithms and libraries, we have compiled a unique program that teaches you all the relevant Python topics, approaches and techniques to efficiently implement computational finance algorithms on your own. In this context, the program does not only teach specific Python techniques for computational finance but also general tools and skills helpful in building scalable applications.

The classes and elements of the program include the following:

Finance with Python (6h): an introduction to finance from basic principles and a gentle introduction to Python basics based on documentation with more than 170 pages as a PDF

Python for Financial Data Science (20h): with the 2nd edition of our Python for Finance (O'Reilly) book released in late 2018, this central class is based on an updated code base

Python for Computational Finance (20h): this online class is at the core of the program and is based mainly on the book *Derivatives Analytics with Python* (Wiley) and the 5,000+ lines of Python code accompanying it

DX Analytics (14h): this online class covers the DX Analytics derivatives pricing Python package (http://dx-analytics.com)

Listed Volatility & Variance Derivatives (10h): this class is based on the book with the same title (Wiley) and covers important topics around volatility and variance instruments

AI & RL in Finance (25+h): one class focuses on deep learning techniques for market prediction, building neural networks from scratch and applying packages such as Keras; another class focuses exclusively on reinforcement learning for trading

Tools & Skills (20h): this class covers important topics in setting up a Python environment, using Python and Linux development tools (IPython, VIM, Sublime Text) as well as selected best practices in coding

Tutorials (15h): exercises and test projects of different difficulty levels allow you to gain more practice and to test your skills

Add On Resources (30+h): the Python for Databases class covers SQL and NoSQL technologies; the Python for Excel class combines the analytical power of Python with Excel; the NLP class introduces techniques for language processing

Practice Modules: program delegates take part in three practice modules, one about backtesting trading strategies and two about live trading and deployment

Python for Asset Management: *Algorithmic Trading is a multi-billion dollar industry; Asset Management is a multi-trillion dollar industry; this **new class** covers the basics in Python for Asset Management (MVP, CAPM, APT), alternative approaches (BL92, Risk Parity) and recent advances (AI, Deep Learning).*

The Python Quants Group has designed a unique online training program leading to the first-ever University Certificate in Python for Computational Finance. The Certificate is awarded in conjunction with the htw saar University of Applied Sciences, Germany (http://htwsaar.de).

htw saar — Hochschule für Technik und Wirtschaft des Saarlandes — University of Applied Sciences
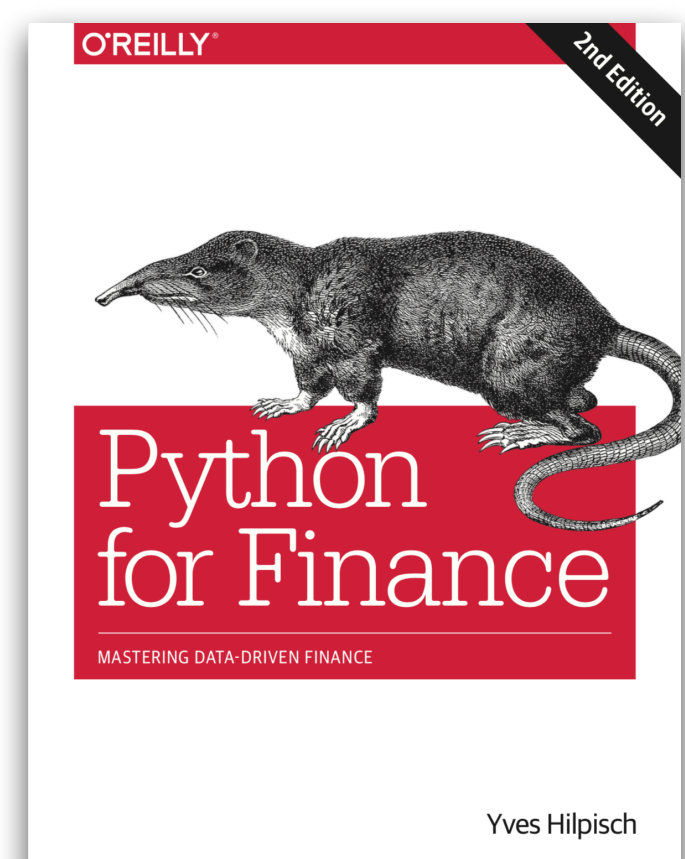
WHO IS THIS PROGRAM FOR?

Professionals: Those already working in the industry and wanting to use Python for computational finance, be it in their current role or to make their next career move. We have had delegates from leading corporate and investment banks as well as hedge funds and asset managers.

Students & Academics: Those with educational and research interests in the field and looking for a professional online training program. The University Certificate represents 5 ECTS points in Europe which can be used in the context of a Masters program in a related field.

HOW LONG IS THE PROGRAM?

The main content of the program can be studied in a self-paced manner over the course of about twelve weeks. In addition, we offer participation in a one-day and one-week live trading practice modules. Once the delegate feels ready, work on the final, graded project — which is required for the Certificate — can be started. The results of the project are to be documented in the form of a Jupyter Notebook. The total duration of the mainly self-paced program is about **16 weeks**. There is **no hard time limit** to finish the program or the final project. In addition, delegates also have **indefinite access to the program resources**, which are regularly updated.

O'REILLY®

Artificial Intelligence in Finance

A Python-Based Guide

Yves Hilpisch

WHAT ARE THE COSTS?

The fee for the University Certificate in Python for Computational Finance program is 2,695 EUR (all fees net of VAT if applicable). The program starts in the week from 17. May 2021. It can be joined at any time and can be done in a completely self-paced manner. Prepare for your next strategic career move and enroll under https://compfinance.tpq.io. Or book the **Platinum Package** under http://platinum.tpq.io.
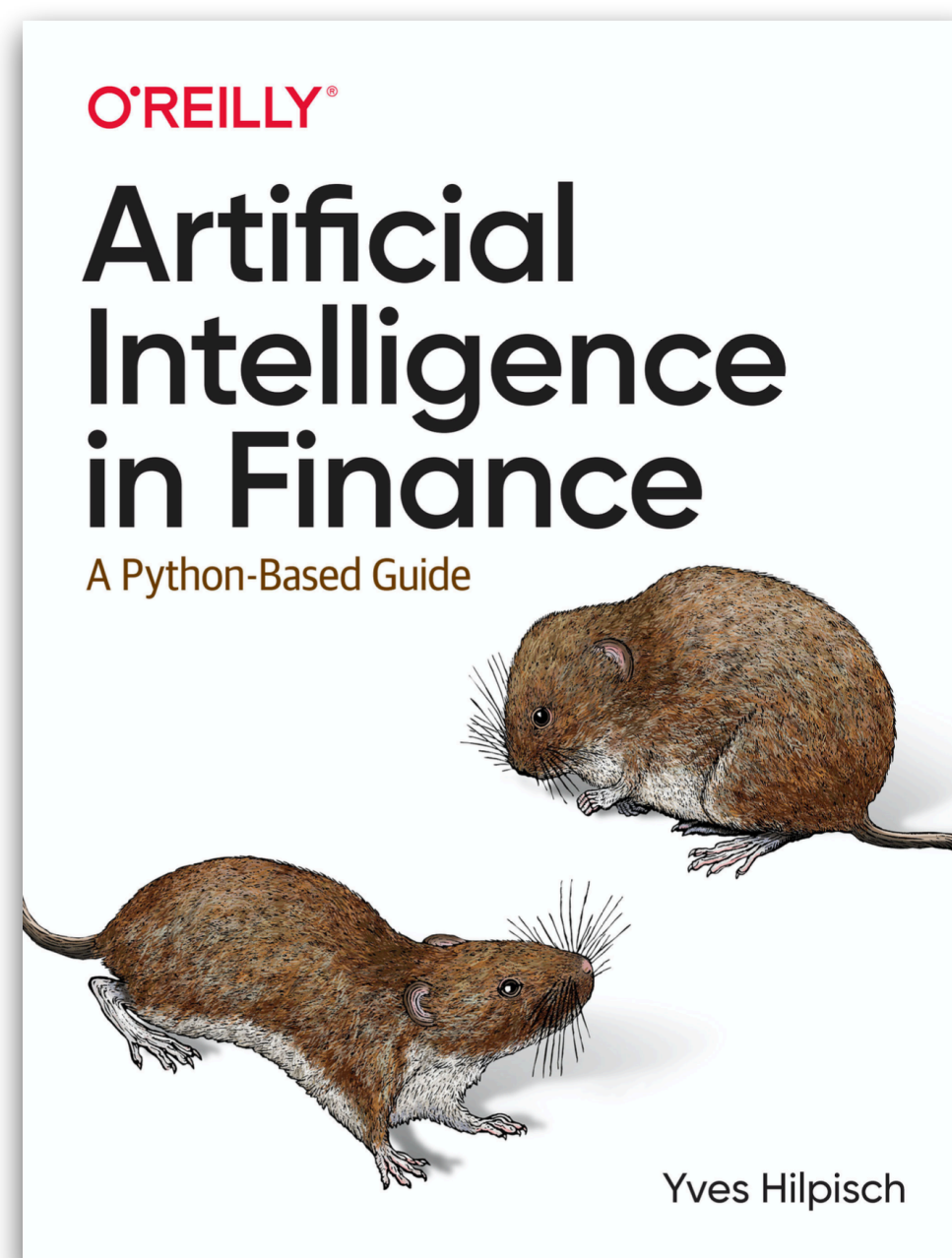
2,095 EUR
(until 10. April 2021)

2,395 EUR
(until 30. April 2021)

2,695 EUR
(from 01. May 2021)

What others say about our online training programs:

"Great stuff! I just purchased it. It is the Holy Grail of algo trading! All the things that someone would have spent hours and hours of research on the web and on books, they are now combined in one source. Thank you 'Prometheus' for delivering 'fire' to mankind!" **Konstantinos**

"I also take the opportunity to say that you guys have the best customer service I have ever experienced in my life. You immediately reply to all emails and inquiries, let alone the world-class quality of the training material. This is the best course I have ever done in my entire life and I am recommending it to anybody." **Vito**

"Five days into the curriculum, and the value so far is already worth more than the total cost of the program. Good stuff." **Eric**

"I'd like to take this opportunity to congratulate you on the quality of the course. It is excellently curated and presented with a clear narrative running through. It is challenging and rewarding in equal measure. I always recommend it to colleagues." **Peter**

"I would like to thank you for this amazing program. Without any doubts it is the best study program I have ever participated in!" **Artem**

"I highly recommend this class to anyone who is interested in a career in finance. The class is engaging, interesting and educational while covering advanced topics of algorithmic trading and derivative pricing. Dr. Hilpisch is a masterful instructor who demonstrates a keen interest in imparting his vast knowledge to his students." **Donald**

PROGRAM DIRECTOR

Dr. Yves J. Hilpisch is founder and CEO of The Python Quants (http://tpq.io), a group focusing on the use of open source technologies for financial data science, artificial intelligence, algorithmic trading and computational finance. He is also founder and CEO of The AI Machine (http://aimachine.io), a company focused on AI-powered algorithmic trading. He is author of the books:

- Artificial Intelligence in Finance (O'Reilly)
- Python for Algorithmic Trading (O'Reilly)
- Python for Finance, 2nd ed. (O'Reilly)
- Derivatives Analytics with Python (Wiley)
- Listed Volatility and Variance Derivatives (Wiley)

He has written the financial analytics library DX Analytics (http://dx-analytics.com) and organizes conferences, bootcamps and Meetup events about Python for finance and algorithmic trading in Frankfurt, Berlin, Paris, London and New York. He has given keynote speeches at technology conferences in the United States, Europe, India, and Asia.
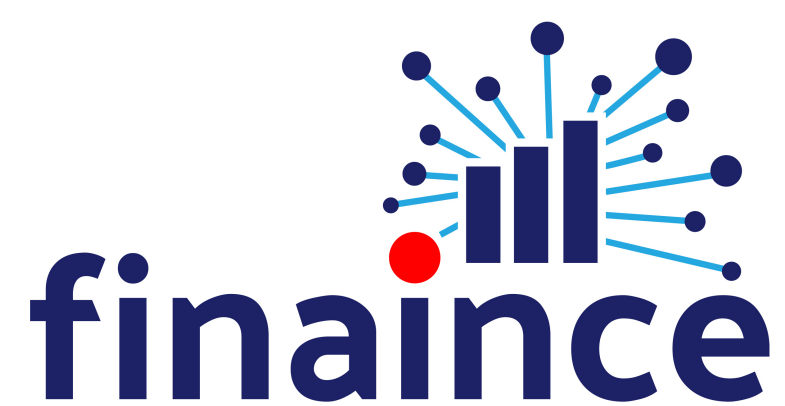
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