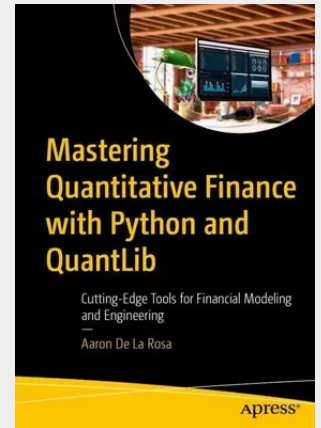


Mastering Quantitative Finance with Python and QuantLib

Cutting-Edge Tools for Financial Modeling and Engineering

Advanced Quantitative Finance with Python and QuantLib-Python is a practical, code-driven guide for quantitative analysts, financial engineers, traders, and risk professionals seeking to build modern quantitative finance solutions using Python and QuantLib-Python. Combining financial theory with hands-on implementation, the book demonstrates how to develop pricing models, risk analytics, stochastic simulations, and portfolio management workflows used in real-world financial markets. The book begins with quantitative modelling foundations and exploratory data analysis (EDA) techniques for financial datasets before introducing the Black-Scholes framework and its practical implementation. Readers then explore stochastic volatility models, advanced methods for pricing exotic derivatives, and sophisticated interest-rate lattice models. The coverage extends to fixed-income and interest-rate derivative pricing using QuantLib 1.42, including practical applications of modern term-structure and interest-rate modeling techniques. The final chapters focus on portfolio analysis and advanced stochastic models, enabling readers to evaluate risk, model market dynamics, and build data-driven investment strategies. Throughout the book, readers work with Python and QuantLib-Python examples that demonstrate how quantitative models can be implemented, tested, and applied in production environments. By the end of the book, readers will have the skills to develop robust quantitative finance applications, price complex financial instruments, analyze market data, and implement advanced models for trading, risk management, and portfolio optimization. What You Will Learn - Build quantitative finance applications in Python and QuantLib-Python for pricing and risk analysis. - Apply Black-Scholes, stochastic volatility, and exotic option pricing models to real market scenarios. - Develop interest-rate and fixed-income valuation models using advanced lattice frameworks and QuantLib. - Perform portfolio analysis, risk assessment, and stochastic modelling for investment decision-making. Who this book is for: Financial engineers in banks, quant developers, hedge funds, or proprietary trading firms. MSc and PhD quantitative finance students. FinTech CTOs and leaders of algorithmic trading teams.

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