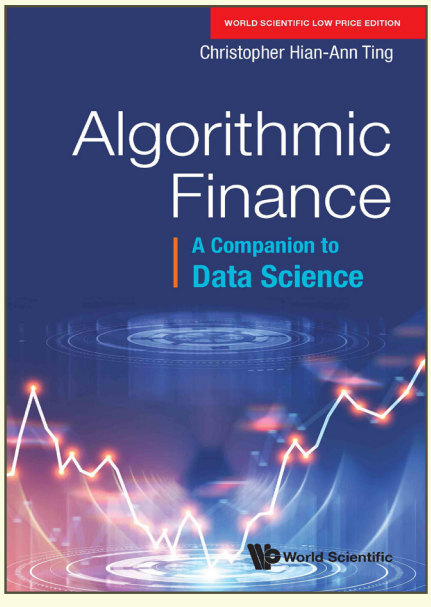
Algorithmic Finance

A Companion to Data Science



By **Christopher Hian-Ann Ting**
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ABOUT THE BOOK

Why is data science a branch of science? Is data science just a catchy rebranding of statistics?

Data science provides tools for statistical analysis and machine learning. But, as much as application problems without tools are lame, tools without application problems are vain. Through example after example, this book presents the algorithmic aspects of statistics and show how some of the tools are applied to answer questions of interest to finance.

This book champions a fundamental principle of science — objective reproducibility of evidence independently by others. From a companion web site, readers can download many easy-to-understand Python programs and real-world data. Independently, readers can draw for themselves the figures in the book. Even so, readers are encouraged to run the statistical tests described as examples to verify their own results against what the book claims.

This book covers some topics that are seldom discussed in other textbooks. They include the methods to adjust for dividend payment and stock splits, how to reproduce a stock market index such as Nikkei 225 index, and so on. By running the Python programs provided, readers can verify their results against the data published by free data resources such as Yahoo! finance. Though practical, this book provides detailed proofs of propositions such as why certain estimators are unbiased, how the ubiquitous normal distribution is derived from the first principles, and so on.

This see-for-yourself textbook is essential to anyone who intends to learn the nuts and bots of data science, especially in the application domain of finance. Advanced readers may find the book helpful in its mathematical treatment. Practitioners may find some tips from the book on how an ETF is constructed, as well as some insights on a novel algorithmic framework for pair trading to generate statistical arbitrage.

READERSHIP

Advanced undergraduate and graduate students, researchers and practitioners in the fields of finance and quantitative finance, data scientists who are learning a new application domain.

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