T R A D I N G

Optimization Methods in Finance

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Modern finance has become increasingly technical, requiring the use of sophisticated mathematical tools in both research and practice. Many find the roots of this trend in the portfolio-selection models and methods described by Harry Markowitz in the 1950s and the option-pricing formulas developed by Fischer Black, Myron Scholes and Robert Merton in the late 1960s and early 1970s.

In particular, optimization models play an increasingly important role in financial decisions. This textbook seeks to explain how recent advances in optimization models, methods and software can be applied to solve problems in computational finance more efficiently and accurately.

The book guides readers through topics such as volatility estimation, portfolio optimization problems and constructing an index fund, using techniques such as nonlinear optimization models, quadratic programming formulations and integer programming models, respectively.

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