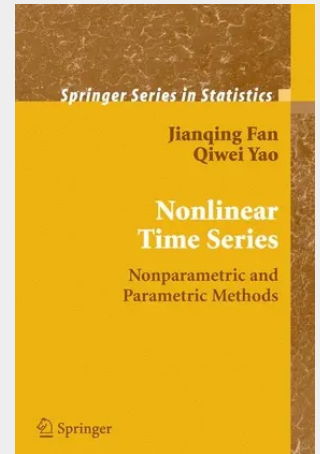


Nonlinear Time Series

Nonparametric and Parametric Methods

Among many exciting developments in statistics over the last two decades, nonlinear time series and data-analytic nonparametric methods have greatly advanced along seemingly unrelated paths. In spite of the fact that the application of nonparametric techniques in time series can be traced back to the 1940s at least, there still exists healthy and justified skepticism about the capability of nonparametric methods in time series analysis. As enthusiastic explorers of the modern nonparametric toolkit, we feel obliged to assemble together in one place the newly developed relevant techniques. The aim of this book is to advocate those modern nonparametric techniques that have proven useful for analyzing real time series data, and to provoke further research in both methodology and theory for nonparametric time series analysis. Modern computers and the information age bring us opportunities with challenges. Technological inventions have led to the explosion in data collection (e.g., daily grocery sales, stock market trading, microarray data). The Internet makes big data warehouses readily accessible. Although classical parametric models, which postulate global structures for underlying systems, are still very useful, large data sets prompt the search for more refined structures, which lead to better understanding and approximations of the real world. Beyond postulated parametric models, there are infinite other possibilities. Nonparametric techniques provide useful exploratory tools for this venture, including the suggestion of new parametric models and the validation of existing ones.

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