An Introduction to Discrete-Valued Time Series
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📖 DESCRIPTION

A much-needed introduction to the field of discrete-valued time series, with a focus on count-data time series

Time series analysis is an essential tool in a wide array of fields, including business, economics, computer science, epidemiology, finance, manufacturing and meteorology, to name just a few. Despite growing interest in discrete-valued time series—especially those arising from counting specific objects or events at specified times—most books on time series give short shrift to that increasingly important subject area. This book seeks to rectify that state of affairs by providing a much needed introduction to discrete-valued time series, with particular focus on count-data time series.

The main focus of this book is on modeling. Throughout numerous examples are provided illustrating models currently used in discrete-valued time series applications. Statistical process control, including various control charts (such as cumulative sum control charts), and performance evaluation are treated at length. Classic approaches like ARMA models and the Box-Jenkins program are also featured with the basics of these approaches summarized in an Appendix. In addition, data examples, with all relevant R code, are available on a companion website.

• Provides a balanced presentation of theory and practice, exploring both categorical and integer-valued series

• Covers common models for time series of counts as well as for categorical time series,

• and works out their most important stochastic properties

• Addresses statistical approaches for analyzing discrete-valued time series and illustrates their implementation with numerous data examples

• Covers classical approaches such as ARMA models, Box-Jenkins program and how to generate functions

• Includes dataset examples with all necessary R code provided on a companion website

An Introduction to Discrete-Valued Time Series is a valuable working resource for researchers and practitioners in a broad range of fields, including statistics, data science, machine learning, and engineering. It will also be of interest to postgraduate students in statistics, mathematics and economics.

⬛ ABOUT THE AUTHOR

CHRISTIAN H. WEISS is a professor in the Department of Mathematics and Statistics, Helmut Schmidt University, Hamburg, Germany. His main area of research is discrete-valued time series. He has published numerous articles in this area and given lectures about time series analysis and discrete-valued time series. He has also written five lecture books in German.

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