

1. Record Nr.	UNINA9910785918803321
Autore	Horova Ivanka
Titolo	Kernel smoothing in MATLAB [[electronic resource]] : theory and practice of kernel smoothing / / Ivanka Horova, Jan Kolacek, Jiri Zelinka
Pubbl/distr/stampa	Singapore ; ; Hackensack, NJ, : World Scientific, 2012
ISBN	1-283-63596-8 981-4405-49-3
Descrizione fisica	1 online resource (242 p.)
Altri autori (Persone)	KolacekJan ZelinkaJiri
Disciplina	519.5
Soggetti	Smoothing (Statistics) Kernel functions
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references (p. 213-223) and index.
Nota di contenuto	Preface; Contents; 1. Introduction; 1.1 Kernels and their properties; 1.2 Use of MATLAB toolbox; 1.3 Complements; 2. Univariate kernel density estimation; 2.1 Basic definition; 2.2 Statistical properties of the estimate; 2.3 Choosing the shape of the kernel; 2.4 Choosing the bandwidth; 2.4.1 Reference rule; 2.4.2 Maximal smoothing principle; 2.4.3 Cross-validation methods; 2.4.4 Plug-in method; 2.4.5 Iterative method; 2.5 Density derivative estimation; 2.5.1 Choosing the bandwidth; 2.6 Automatic procedure for simultaneous choice of the kernel, the bandwidth and the kernel order 2.7 Boundary effects2.7.1 Generalized reflection method; 2.8 Simulations; 2.9 Application to real data; 2.9.1 Buffalo snowfall data; 2.9.2 Concentration of cholesterol; 2.10 Use of MATLAB toolbox; 2.10.1 Running the program; 2.10.2 Main figure; 2.10.3 Setting the parameters; 2.10.4 Eye-control method; 2.10.5 The final estimation; 2.11 Complements; 3. Kernel estimation of a distribution function; 3.1 Basic definition; 3.2 Statistical properties of the estimate; 3.3 Choosing the bandwidth; 3.3.1 Cross-validation methods; 3.3.2 Maximal smoothing principle; 3.3.3 Plug-in methods 3.3.4 Iterative method3.4 Boundary effects; 3.4.1 Generalized reflection method; 3.5 Application to data; 3.6 Simulations; 3.7 Application to real data; 3.7.1 Trout PCB data; 3.8 Use of MATLAB toolbox; 3.8.1

Running the program; 3.8.2 Main figure; 3.8.3 Setting the parameters; 3.8.4 Eye-control method; 3.8.5 The final estimation; 3.9 Complements; 4. Kernel estimation and reliability assessment; 4.1 Basic Definition; 4.2 Estimation of ROC curves; 4.2.1 Binormal model; 4.2.2 Nonparametric estimates; 4.3 Summary indices based on the ROC curve; 4.3.1 Area under the ROC curve
4.3.2 Maximum improvement of sensitivity over chance diagonal (MIS)
4.4 Other indices of reliability assessment; 4.4.1 Cumulative Lift; 4.4.2 Lift Ratio; 4.4.3 Integrated Relative Lift; 4.4.4 Information Value; 4.4.5 KR index; 4.5 Application to real data; 4.5.1 Head trauma data; 4.5.2 Pancreatic cancer data; 4.5.3 Consumer loans data; 4.6 Use of MATLAB toolbox; 4.6.1 Running the program; 4.6.2 Start menu; 4.6.3 Simulation menu; 4.6.4 The final estimation; 5. Kernel estimation of a hazard function; 5.1 Basic definition; 5.2 Statistical properties of the estimate; 5.3 Choosing the bandwidth
5.3.1 Cross-validation method
5.3.2 Maximum likelihood method; 5.3.3 Iterative method; 5.3.4 Acceptable bandwidths; 5.3.5 Points of the most rapid change; 5.4 Description of algorithm; 5.5 Application to real data; 5.5.1 Breast carcinoma data; 5.5.2 Cervix carcinoma data; 5.5.3 Chronic lymphocytic leukaemia; 5.5.4 Bone marrow transplant; 5.6 Use of MATLAB toolbox; 5.6.1 Running the program; 5.6.2 Main figure; 5.6.3 Setting the parameters; 5.6.4 Eye-control method; 5.6.5 The final estimation; 5.7 Complements; Simulation of lifetimes; Simulation of censoring times
6. Kernel estimation of a regression function

Sommario/riassunto

Methods of kernel estimates represent one of the most effective nonparametric smoothing techniques. These methods are simple to understand and they possess very good statistical properties. This book provides a concise and comprehensive overview of statistical theory and in addition, emphasis is given to the implementation of presented methods in Matlab. All created programs are included in a special toolbox which is an integral part of the book. This toolbox contains many Matlab scripts useful for kernel smoothing of density, cumulative distribution function, regression function, hazard funct
