

Bayesian Quantile Regression with Adaptive Elastic Net Penalty for Longitudinal Data

*Aghamohammadi A., Mohammadi S.;

Department of Statistics, University of Zanjan, Zanjan, Iran

Abstract

Longitudinal studies include the important parts of epidemiological surveys, clinical trials and social studies. In longitudinal studies, measurement of the responses is conducted repeatedly through time. Often, the main goal is to characterize the change in responses over time and the factors that influence the change. Recently, to analyze this kind of data, quantile regression has been taken into consideration. In this paper, quantile regression model, by adding an adaptive elastic net penalty term to the random effects, is proposed and analyzed from a Bayesian point of view. Since, in this model posterior distribution of the parameters are not in explicit form, the full conditional posterior distributions of the parameters are calculated and the Gibbs sampling algorithm is used for deduction. To compare the performance of the proposed method with the conventional methods, a simulation study was conducted and at the end, applications to a real data set are illustrated.

Keyword: Adaptive elastic net penalty, Bayesian inference, Longitudinal data, Quantile regression, Random effects.

*Corresponding author: Aghamohammadi.ali@znu.ac.ir

Composition Operators and Multiplication Operators on Orlicz Spaces

*Estaremi Y., Shams S.; Payame Noor University, Iran

Abstract

In this paper we consider composition operator C_φ generated by the non-singular measurable transformation $\varphi: \Omega \rightarrow \Omega$ and multiplication operator M_u generated by measurable function $u: \Omega \rightarrow \mathbb{C}$ between two different Orlicz spaces $L^{\Phi_1}(\Omega)$ and $L^{\Phi_2}(\Omega)$, then we investigate boundedness, compactness and essential norm of multiplication and composition operators in term of properties of the mapping φ , the function u and the measure space (Ω, Σ, μ) . In fact we extend some results of [8], [9], [22].

Keyword: Composition operator, Multiplication operator, Compact operators, Orlicz spaces, Essential norm

*Corresponding author: yestaremi@pnu.ac.ir

Nvestigation of a Boundary Layer Problem for Perturbed Cauchy-Riemann Equation with Non-local Boundary Condition

Ashrafi S., *Jahanshah M., Aliof N.; Azarbayegan University

Abstract

Boundary layer problems (Singular perturbation problems) more have been applied for ordinary differential equations. While this theory for partial differential equations have many applications in several fields of physics and engineering. Because of complexity of limit and boundary behavior of the solutions of partial differential equations these problems considered less than ordinary case. In this paper, a boundary layer problem including perturbed Cauchy-Riemann equation is considered with a non local boundary condition. For the given problem , some sufficient conditions will be presented so that the problem be well posed and without any boundary layer. In this case, the approximate solutions of the problem can be written same as boundary layer problems for ordinary differential equations.

Keyword: Fundamental solution, Necessary conditions, Boundary layer problem, Perturbed Cauchy-Riemann equation

*Corresponding author: jahanshahi@azaruniv.edu

The new generalized inverse Weibull distribution

*Dostmoradi A., Zadkarami M.;

Department of Statistics, Shahid Chamran University of Ahvaz

Bahrami V.; Allameh Tabataba'i University, Tehran

Abstract

Failure rate is one of the important concepts in reliability theory. In this paper, we introduce a new distribution function containing four parameters based on inverse Weibull distribution. This new distribution has a more general form of failure rate function. It is able to model five ageing classes of life distributions with appropriate choice of parameter values so that it is displayed decreasing, increasing, bathtub shaped, unimodal and increasing-decreasing increasing failure rates and the new distribution has also a bimodal density function. The moments, the order statistics, reliability parameters are obtained. The method of maximum likelihood is used to estimate the model parameters. Also, the observed information matrix is obtained. Two applications are presented to illustrate the advantage of the proposed distribution.

Keywords: Inverse Weibull distribution, Generalized modified Weibull distribution , Failure rate, moments, Maximum likelihood estimates.

Corresponding author: ali.doostmoradi@gmail.com

The Application of Numerical Analysis Techniques to Pattern Recognition of Helicopters by Area Method

*Shahrezaee M., Alamdari M.S.;

Department of Mathematic, Imam Hossein Comprehensive University

Abstract

In this paper, a new method to selecting different viewing angles feature vector is introduced to recognition different types of Helicopters. Feature vector 32 components based on characteristics of the shape, Area and a length to describe a binary two-dimensional image was created, shape feature and length feature not only effective but area features effective and were used. New features vector based on the number of components (parameter nf) and the grouping frame (parameter ns) at 13 various manners were examined and the results showed that $nf=400$ and $ns=5$ best mode for the feature vector area marks.

Keyword: Feature extraction, Pattern recognition, Categories helicopter, Feature vector

*Corresponding author: mshahrezaee@iust.ac.ir

Spatial Modeling of Censored Survival Data

Motarjem K., *Mohammadzadeh M., Abyar A.;
Department of Statistics, Tarbiat Modares University

Abstract

An important issue in survival data analysis is the identification of risk factors. Some of these factors are identifiable and explainable by presence of some covariates in the Cox proportional hazard model, while the others are unidentifiable or even immeasurable. Spatial correlation of censored survival data is one of these sources that are rarely considered in the literatures. In this paper, a spatial survival model is introduced to analyze such kinds of data. Then a simulation method is introduced to study the performance of Cox, frailty and spatial survival models for modeling spatially correlated survival data. Next, the proposed spatial survival model is used to model the time disease of Cercosporiose in olive trees. Finally, results and discussion are presented.

Keywords: Cox proportional hazards model, Unknown risk factors, Spatial random effect, Spatial Survival model.

*Corresponding author: mohsen_m@modares.ac.ir

Introducing a New Lifetime Distribution of Power Series Distribution of the Family Gampertz

*Yaghoubzadeh Shahrestani Sh.;

Department of Statistics, Payame Noor University, Soomehsara, Iran,
Shadrokh A., Yarmohammadi M.;

Department of Statistics, Payame Noor University, Tehransharg, Iran

Abstract

In this Paper, We propose a new three-parameter lifetime of Power Series distributions of the Family Gampertz with decreasing, increasing, increasing-decreasing and unimodal Shape failure rate. The distribution is a Compound version of of the Gampertz and Zero-truncated Possion distributions, called the Gampertz-Possion distribution (GPD). The density function, the hazard rate function, a general expansion for moments, the density of the order statistic, and the maen and median deviations of the GPD are derived and studied in detail. The maximum likelihood estimation procedure is discussed and an algorithm EM is provided for estimating the parameters. The asymptotic confidence Intervals for the parameters are also obtained based on asymptotic variance covariance matrix.

Keywords: Gampertz distribution, Possion distribution, Gampertz-Possion distribution, The Power Series, Maximum Likelihood estimation.

Corresponding author: yagoubzade@gmail.com