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Editorial

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Since the early 1980, it was considered the necessary interface between applied stochastic modeling and data analysis and their real life applications in several fields such as Economics, Business, Finance, Insurance, Management, Production, Engineering and Health Sciences among others. Therefore, the main objective of the successive symposium on Applied Stochastic Models and Data Analysis (ASMDA) has been to emphasize the development of new methodologies for solving problems involving data by means of the derivation of a stochastic model, as well as applications in real life.

Recent advances in topics such as Markov and semi-Markov processes, decision and controlled processes, reliability and survival analysis, functional data analysis, optimization methods, graphic models, neural networks, fuzzy algorithms, support vector machine, simulation, classification and documentation, computing-aided decision supports or data and text mining are especially encouraged and welcomed.

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The three first symposium on ASMDA were celebrated in Brussels (1981, 1983 and 1985) and then in Nancy (1988), Granada (1991), Chania (1993, 2007), Dublin (1995), Anacapri (1997), Lisbon (1999), Compiègne (2001), Brest (2005), Vilnius (2009), and the last one in Rome (2011). All these symposia have given light to several high quality publications including the most relevant contributions.

This special issue consists of eleven articles presented at the Vilnius meeting. In these papers the interface between stochastic models and data analysis is pointed out.

The paper by Niglio and Vitale studies the strict and weak stationarity of TARMA models, providing conditions for the weak stationarity of the process and discussing global and local stationarity, illustrating the results with multiple examples.

Marshall and Zenga determine the best procedure for estimating the parameters of a Coxian Phase-Type distribution by means of the Quasi-Newton and Nelder-Mead methods, assessing the efficiency of these methods through three performance measures, being the analysis performed from an empirical point of view.

The paper by Molina, Mota and Ramos introduce a class of two-sex branching models where a random control on the number of progenitor couples is allowed. Some probabilistic results concerning both the probability generating functions and the stochastic monotony about the sequence of progenitor couples are established, and in order to determine highest posterior density credibility sets, a computational method is proposed.

Fernandez-Alcala, Navarro-Moreno and Ruiz-Molina present a paper that revisits the smoothing estimation problem for doubly stochastic multichannel Poisson processes being the main result of this work the design of new fixed-point and fixed-interval smoothing recursive algorithms for estimating the intensity of such processes.

Mortality forecasting is one of the most debated topics in demographic and actuarial science. The contribution given by D' Amato, Haberman and Russolillo presents a two stage simulation bootstrap model where the variance reducing technique is combined bootstrap of the Poisson Lee-Carter approach. Applications to Italian French and Belgian data are presented.

The paper of Dragut introduces a clustering algorithm which is incremental in time. More precisely an unsupervised multi-scale data stream algorithm that points out trends from evolving time series on a data driver data stream. The algorithm is applied to NYSE financial data. An extensive comparison with other algorithms is given.

The paper of Bardel and Desbouvries proposes some particular models called "Partially Pairwise Markov-switching Chains" and "Partially Pairwise Markov-switching Tree" for which exact Bayesian prediction of the hidden variable is made possible with a number of operations linear in the number of observations. This paper represents a good contribution to the literature and can be considered an advancement of previous papers on this topic.

Bertrand, Hamdouni and Khadhraoui give a survey on probabilistic, statistical and numerical aspects of fractional Brownian motion and multifractional Brownian motion and an application of these processes to the modelisation of NASDAQ series. This work shows in particular how to compute estimates of the Hurst function of multifractional Brownian motion. The authors present an economic interpretation of the result at the end of the article.

Rakonczai, Márkus and Zempléni paper refer to Autocopulas and investigate the interdependence structure of stationary time series. They present methods are capable to check whether autocopulas of an observed process can be distinguished significantly from the autocopulas of given time series model. The proposed approach is based on the Kendall's transform which reduces the multivariate problem to one dimension.

Multiphasic individual growth models in random environments are studied through stochastic differential equations by Filipe, Braumann and Roquete. They present a generalization of the proposed stochastic model to a multiphasic case, in which they consider that the growth coefficient assumes different values for different phases of the animal life.

Bouzas, Aguilera and Ruiz-Fuentes explore the functional estimation of the random rate of a Cox process. They start from a set of sample paths of the Cox process and propose a numerical method, preserving the monotone character of the mean, to estimate the intensity on the basis of the functional data analysis methods.

We thank the referees for their hard work and dedication. We also address special thanks to all the authors for contributing to this special issue. Many thanks to the Editor-in-Chief Joseph Glaz for his support in publishing the best papers of ASMDA conferences to special issues of MCAP and especially for the publication of this issue devoted to the XIII ASMDA International Conference, 30 June to 3 July, 2009 Vilnius Lithuania.