Special issue on the 13th international conference on computational management science

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The papers in this volume cover a wide range of topics presented during the CMS2016 Computational Management Science Conference, held in Salamanca (Spain) May 31–June 2, 2016. The CMS conference is an annual meeting associated with the journal *Computational Management Science*. The aim of this conference is to provide a forum for theoreticians and practitioners from academia and industry to exchange knowledge, ideas and results in a broad range of topics relevant to the theory and practice of computational methods, models and empirical analysis for decision making in economics, engineering, finance and management.

The conference has been organized by the Universidad Rey Juan Carlos, Móstoles (Madrid) and by the Universidad de Salamanca, Spain. The Universidad de Salamanca was created in 1218 by King Alfonso IX and is one of the first European institutions to use the title University, being awarded by King Alfonso X, el Sabio, on November 9, 1252 and whose *licentia ubique docendi* was given by the Pope Alejandro IV in 1255.

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CMS2016 is the thirteenth in the series of successful CMS events. The CMS meetings are held once a year nicely combining scientific work and the exchange of new ideas with an exciting atmosphere, as in Neuchatel 2004, Eindhoven 2006, London

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2007, Geneva 2009, Vienna 2010, Neuchatel 2011, London 2012, Montreal 2013, Lisbon, 2014, Prague 2015, Salamanca 2016 and Bergamo 2017.

This series of events has become a good tradition for disseminating research results of this community. The scientific sessions of CMS2016 drew 47 contributions distributed in 4 plenary sessions and 43 contributed papers in 32 parallel sessions in practically all domains of computational management science, with a great focus on Stochastic Optimization and its applications to management. The number of delegates was 62 from 19 different countries. Among the 43 contributions, six papers were selected to be included in this volume.

Victor Gatón Bustillo was awarded with the best student paper for his contribution “Chebyshev Reduced Basis Function applied to Option Valuation”, co-authored by Javier de Frutos Baraja. The authors propose a method to mitigate the impact of the curse of dimensionality that appears in pricing financial derivatives, that usually depends on multiple assets which follow different stochastic processes. The method is based on the construction of a polynomial basis to interpolate the value function of the problem by means of a hierarchical orthogonalization process that allows to reduce the number of degrees of freedom needed to have an accurate representation of the value function. The method is easily generalizable to be used with other models or problems.

Krivulin presents an application of tropical optimization to the problem to locate a new point (a facility center) on the plane to minimize the maximum of rectilinear (or Manhattan) distances to the set of demand centers, each of which can be modified by adding a constant called the addend (that can represent an additional cost or distance required to reach each demand point, such as vertical distance). The author represents this location problem in terms of tropical mathematics, and then, using direct solution methods, proposes a explicit solution for the problem. The results are successfully applied to a real-world problem that arises in the deployment of CCTV video surveillance systems in the indoor environment.

Öz Bakan presents a discretization procedure for an optimal harvesting problem based on finite-differences for the space variable discretization and a symplectic partitioned Runge–Kutta (SPRK) method for time variable discretization, being the first time that the a SPRK scheme is employed for the optimal control of stochastic partial differential equations. The proposed procedure can be extended and applied to a broader family of optimal control problems, as, for example, from fisheries, agriculture and forestry as well as from commodity markets.

Ortobelli, Kouaissah and Tichý examine the impact of conditional expectation estimators in portfolio theory. In particular, they propose a new conditional expectation estimator within large-scale portfolio selection problems and two alternative financial applications based on the conditional expectation. In the context of large-scale portfolio selection problems they propose a new consistent multivariate kernel estimator to approximate the conditional expectation. Secondly, the authors deal with the portfolio selection problem from the point of view of risk-averse and risk-seeker investors identifying different definitions of returns based on the investors’ preferences. Numerical results based on the US stock market allows to evaluate the impact of the conditional expectation estimators in portfolio theory.

Kopa, Vitali, Tichý and Hendrych propose an analysis of the estimation of the implied volatility (IV) and of the state price density (SPD) of options quoted in the market. They analyse the behavior of IV and SPD using option data on DAX index, with respect to different choices of bandwidth parameter, time to maturity and kernel function. Moreover, they propose a new measure of arbitrage highlighting the impact of the bandwidth parameter considering the options on a German stock index. An extension of the IV and SPD estimation for the case of options on a dividend-paying stock is finally presented.

Zhen and den Hertog derive convex representations for united and tolerable solution sets for a system of uncertain linear equations where the uncertainties are column-wise and reside in general convex sets. Secondly, to obtain centered solutions for uncertain linear equations, they develop a new method based on adjustable robust optimization (ARO) techniques. The method is compared both theoretically and numerically with an existing method that minimizes the worst-case violation. The advantages of the proposed method are shown on applications to the input–output model, Colleys Matrix Rankings and Article Influence Scores.