

Editorial

The first paper in this issue of ORiON by Bashe, Shuma-Iwisi and van Wyk, is titled “Application of stochastic programming to electricity generation planning in South Africa”. In this paper, the authors propose a two-stage stochastic programming formulation to solve the electricity generation planning problem within a South African context. Decision variables considered for the first stage of the proposed two-stage stochastic programming formulation, include new design capacity of a specific technology type. The second stage decision variables relate to the allocation of capacity to support uncertain future demand. A scenario-based approach is followed to represent uncertain future demand by considering four distinct future scenarios with equal probability. Results include a thorough cost analysis concerning the different scenario assumptions, as well as a schedule of capacity provisioning per technology type.

The second paper in this issue of ORiON is by Rakotonirainy, Durbach and Nyirenda with the title “Considering fairness in the load shedding scheduling problem”. The authors highlight the trade-off between fairness and economic cost by considering both a single and a multiple objective optimisation approach. For the single-objective problem formulation, economic cost is minimised as an objective function, and fairness allocation is treated as constraints. The proposed multi-objective programming formulation takes both economic cost and cumulative fairness into account as part of the objective function. Validation of the two proposed models is based on a hypothetical data set for the City of Cape Town. Experimental results based on a sensitivity analysis of the model parameters, clearly demonstrate the trade-off decisions that are faced between fairness and economic cost when determining a load shedding schedule.

The authors of the third paper in this issue are Smuts, Allison and Santana, and the title of their paper is “New goodness-of-fit tests for exponentiality based on a conditional moment characterisation”. In this paper, the authors propose two new tests for exponentiality which are based on a conditional second-moment characterisation. The importance of their contribution is highlighted by the fact that exponential distributions play a vital role in application areas such as reliability theory, survival analysis and queuing theory. Two Cramér-von Mises type test statistics are derived, and a Monte Carlo procedure is proposed for determining the associated critical values. Experimental tests were conducted on two real-world data sets as well as two simulated data sets in order to validate the performance of the newly proposed test statistics.

The final paper in this issue of ORiON by Hofmann and Visagie is titled “Picking location metrics for order batching on a unidirectional cyclical picking line”. In this paper, the authors introduce three picking location metrics to solve an order batching problem. The metrics measure the incompatibility of orders in terms of distance travelled by a picker around a cyclic picking line. Four greedy heuristics and six metaheuristics are introduced to combine orders in batches of two. Computational tests are based on problem instances from a real-life historical data set.

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of ORiON is the result of continued research efforts within the Operations Research community, and we, as the editorial team would like to thank all the authors for submitting their scholarly work to ORiON.

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