

Editorial

Papers covering a wide range of operations research related topics are published in ORiON and this issue is no exception.

The first paper is authored by Carel van der Merwe and Willie Conradie and is titled “Calculation aspects of the European rebalanced basket option using Monte Carlo methods: Valuation.” This paper considers different Monte Carlo methods to determine a fair price for a European put option with an underlying rebalanced portfolio. A refined Monte Carlo approach is implemented to improve the solution times of the simple Monte Carlo method. In an attempt to improve both solution quality and solution times, the authors introduced variance reduction techniques and Quasi-Monte Carlo methods. The best results were obtained by means of the Quasi-Monte Carlo methods.

The second paper, titled “Modelling soft error probability in firmware: A case study” by Derrick Kourie, determines a bound on the probability of a malfunction in firmware that controls the detonation of mining explosives. A malfunction could occur if an external event (such as an electro-magnetic interference) drives the firmware into a state which results in an unintended detonation of the explosives. It can be deduced from the model that even under very conservative assumptions the system conforms to the IEC 61508 Safety Integrity Levels.

The final paper by Babul Hassan is titled “Managing uncertainty in fishing and processing of an integrated fishery.” In this paper Babul investigates a deterministic model to optimise a fishery that includes both trawler scheduling and the work scheduling at the processing plant. A method to determine the level of safety stock is introduced to handle the end-of-planning-horizon-effects. Moreover, experimental results are presented that indicate that the problem may be modelled by means of a deterministic approach rather than by more sophisticated stochastic programming methods. It is concluded that the variance in the mean catch rate, as well as the variance introduced by human scheduling of trawlers, do not significantly influence the profit of a New Zealand based fishery.

I wish to thank all the authors who contributed to this issue by submitting their work for publication in ORiON. Refereeing is often without rewards and therefore I would like to convey my sincere appreciation to the referees who contributed selflessly to this issue. Scholarly journals, such as ORiON, cannot exist without the substantial efforts of both these parties.

I would also like to convey my sincerest thanks to Martin Kidd, the journal manager, and Anton de Villiers, the typesetting assistant. Both of them are performing an excellent and professional job in respectively handling the management and typesetting of ORiON. Without their help and dedication this publication would be virtually impossible.

As always I hope that the range of papers included in this issue will contain something of interest to all ORiON’s readers. Readers are welcome to contact the editor-in-chief with any recommendations or suggestions regarding this publication.

Stephan Visagie
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