

EOptimization and Artificial Intelligence in the World of Big Data



Jacob Zahavi

Optimization and artificial intelligence are two separate but complementary technologies. Optimization enables organizations to obtain optimal decisions which are subject to many constraints, sometimes conflicting. Artificial intelligence allows us to predict the parameters required for the optimization models and provides innovative tools to solve optimization models in the world of big data which, due to their size, cannot be solved using conventional analytical methods. In this article, we demonstrate the relations between optimization and artificial intelligence by means of a harvesting optimization model for oranges, which we solve using AI-based heuristic methods involving genetic algorithms, comparing it to the analytical linear programming-based solution. The results indicate that the genetic process yields results which not only outperform those of the analytical solution but provides solutions which are very close to the ideal unconstrained optimization problem.