

Dr. Fabricio Oliveira

Multi-stage decision problems under uncertainty can be represented as influence diagrams that are converted into decision trees. These trees can then be solved using dynamic programming if the optimal strategy within a given branch does not depend on the decisions in other non-overlapping branches. To address these shortfalls, we propose Decision Programming, a framework which can efficiently address this 'no forgetting' assumption and retain outcome distribution information. In this, we convert decision problems into equivalent mixed-integer linear programs that can be efficiently solved, including in the presence of multiple objectives, endogenous uncertainty, and other dependency conditions.

Bio: Fabricio Oliveira is an Associate Professor of Operations Research in the School of Science at Aalto University (Finland). He is also the leader of the Group of Applied Mathematical Modelling and Optimization (Gamma-opt). He holds a B.Sc. (2008) and a DSc (2012) in Production Engineering from PUC-Rio (Brazil). Before his current appointment, he has worked as a visiting researcher at the Centre of Advanced Process Decision-making (CAPD) at Carnegie Mellon University (USA), as a Postdoctoral Research Fellow in the Mathematical Sciences Department at RMIT University (Australia), and as an Assistant Professor in the Industrial Engineering Department at PUC-Rio. His main research interests are practical and computational challenges of applying optimization under uncertainty for solving production planning and supply chain management problems.

