

4th INTERNATIONAL CONFERENCE ON
AI ML, DATA SCIENCE AND
ROBOTICS

NOVEMBER 28-29 | PORTO, PORTUGAL



Steven Prestwich

School of Computer Science and Information Technology, University
College Cork, Ireland.

Solving Complex Optimisation Problems by Machine Learning

Abstract: Most optimisation research focuses on relatively simple cases: one decision-maker, one objective, and possibly a set of constraints. However, real-world optimisation problems often come with complications: they might be multi-objective, multi-agent, multi-stage or multi-level, and they might have uncertainty, partial knowledge or nonlinear objectives. Each has led to research areas with dedicated solution methods. However, when new hybrid problems are encountered there is typically no solver available. This talk summarises a recent journal paper in which a combination of multi-agent multi-objective reinforcement learning with sampling is used to solve complex problems from multiple areas: constraint programming, Bayesian networks, stochastic programming, influence diagrams (standard, limited memory and multi-objective) and game theory (multi-level programming, Bayesian games and level-k reasoning). More recent results will also be presented.

Keywords: Optimisation, Machine Learning, Multi-Agent, Multi-Objective.

Biography: A research student focusing on the use of machine learning and machine learning explainability in treatment and management of ARDS. R&D engineer at VentDx, developed data processing and calibration algorithms and contributed to the overall design of InspiWave, a device designed to monitor a multitude of facets around respiratory system health.