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OPTIMA SEMINAR SERIES

PROBLEM REDUCTION BASED ON MACHINE LEARNING FOR COMBINATORIAL OPTIMISATION

In the big data era, the size of many real-world combinatorial optimisation problems has increased significantly over the years, making the problems very hard to solve. The traditional problem reduction methods are designed entirely manually, relying on the intuition or insights of an expert. In this talk, I will introduce innovative machine learning models to automate the process of problem reduction. These machine learning models are trained on easy problem instances for which the optimal solution is known and predict for an unseen problem instance which decision variables can be eliminated without significantly impacting solution quality. I show that this approach is effective across a range of combinatorial optimisation problems.

Yuan Sun is a Research Fellow in the School of Mathematics, Monash University. He received his PhD degree in Computer Science from The University of Melbourne and a bachelor's degree in Applied Mathematics from Peking University. He has extensive experience in black-box optimisation, discrete optimisation, operations research and machine learning. His recent work is focused on developing effective machine learning techniques for solving combinatorial optimisation problems.

WED 28 JUL 4PM - 5PM AEST

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