Optimising Maintenance Teams

Ponpot Jartnillaphand

PhD Student

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Managing a remote workforce on alternating shifts with specific schedules requires efficient worker utilisation. Each worker's ability to handle one task at a time underscores the importance of optimal assignments for timely project completion. Moreover, forming effective teams becomes essential when considering tasks requiring multiple workers.

The motivation behind Ponpot's research lies in recognising the expense and fluctuating availability of human resources, especially in remote positions. With limited resources, efficient utilisation becomes paramount, driving our exploration into resource allocation strategies that ensure optimal outcomes. This presentation tackles a challenging problem related to forming teams, assignments, and job schedules in each shift.

Ponpot considers a given number of limited flexible workers capable of performing any job, who are distributed among different teams in different shifts to undertake various tasks. He aims to minimise the overall schedule completion time while adhering to constraints. His solution provides a manager with the number of human resources required in each shift. He provides information essential for planning and scheduling resources.

About the presenter
Ponpot Jartnillaphand is a PhD student in Mathematical Science at Curtin University, supervised by Dr Elham Mardaneh and Dr Hoa Bui. He has a background in mathematics, operational research, and skills in data visualisation.
Ponpot's PhD project title is Decomposition Method Approaches for Personnel Scheduling Problem in Maintenance Operation.

He is passionate about developing optimisation models and applying mathematical techniques to address the challenges inherent in solving practical problems. Using a logic-based decomposition approach Ponpot is working to tackle crew rostering optimisation for maintenance shutdowns.