

An Indian-Australian research partnership

Project Title: Generalised Crane Scheduling Problem for Container Movement in shipyards and docks

Project number: IMURA0153

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Research Academy theme/s

Advanced computational engineering, simulation , Operational Research

The research problem

This project shall involve the design and development of an algorithm to handle scheduling of cranes for containers within dockyards. A specified number of containers need to be moved from their current locations to new locations within the dockyard, such that the number, initial location and desired final location of containers is known in advance and this movement is to be handled with a fixed number of cranes.

Other constraints would be further present and these need to be handled : The research problem is to develop a framework, whereby a generic constraint can be added and can be handled without change in the inherent logic.

Project aims

The project aims to generate the most optimal work schedule for every individual crane so that the containers are moved from their initial locations to final locations with minimum possible crane movement cost and while meeting other constraints.

Expected outcomes

1. Development of a generic algorithm which can be adapted to handle various different constraints.
2. Validation of the algorithm for standard vehicle scheduling problem
3. Benchmarking of the algorithm and its efficacy against established solutions

Which of the above Theme does this project address?

Advanced computational engineering, simulation , Operational Research.

How will the project address the Goals of the above Themes?

The project addresses a typical problem in operational research whereby it finds optimal or near optimal solutions to a complex real-life problem and allows adaptability to manage different practical constraints.