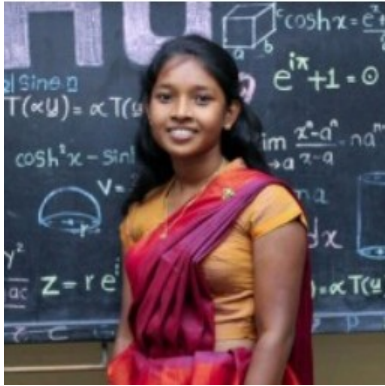


Risk-Based Maintenance Scheduling Optimisation



Srimali Gunasekara

PhD Student

Theme 3

2023-06-16

Virtual - Researchers Catch-up host online from Curtin University

Srimali presented the research she has proposed for her PhD. Srimali will study the problem of scheduling preventive maintenance activities in maintenance plans, which requires the plant for each maintenance plan to be shut down to carry out the maintenance activities. She will consider two consecutive maintenance plans separated by a long interval. Her assumptions will be the following:

- Each maintenance plan has a fixed duration and a set of components that require preventive maintenance.
- Each maintenance plan has resources and budget availability.

In this presentation, Srimali presented a case in which the maintenance of components can be postponed from the first maintenance plan to the second. Such a postponement may be required due to constraints on budget or resource availability. She focused on the risk of failure of components that comes with the postponement decision and formulate the problem as a two-stage stochastic programming problem.

The first stage decision is which component is to be moved from the first maintenance plan to the second, and the second stage decision is whether the components will undergo preventive maintenance in the second plan.

The second stage decision will depend on the failure of components between the two maintenance plans. If a failure occurs, the component undergoes corrective maintenance and is not subject to preventive maintenance in the second plan. Since the failure event is uncertain, she will consider the expected cost of corrective maintenance.

Srimali presented how to minimise the total cost of scheduled maintenance activities in both maintenance plans and the expected cost of corrective maintenance. Srimali also plans to extend the existing deterministic solution methodologies for maintenance scheduling to stochastic programming problem.