

# Wasin Padungwech

## **Research Activities**

### **Areas of Expertise**

Optimization

### **Current Interests and Activities**

My research interests include development of mathematical models/algorithms for solving combinatorial optimisation problems such as vehicle routing, facility location, workforce allocation, and scheduling problems. I am also interested in a dynamic version of these problems, where some information of the problems can evolve over time, and therefore the solutions may need to be updated accordingly.

Research work that I have done includes the Capacitated Arc Routing Problem (CARP), where the goal is to find a minimum-cost set of routes for vehicles that collectively need to perform a certain task along specified streets in a given area. Each route has to obey a given vehicle capacity and must start and end at a given location. This problem can be used as a model of various real-life situations such as rubbish collection, street sweeping, or other services that need to be performed along streets. I also worked on a dynamic version of the CARP, in which the knowledge of streets to be serviced is not entirely known at the beginning but is revealed over time, requiring a solution to be updated accordingly. This work involved an investigation of how the frequency of solution updates may affect the solution quality. A comparison was also made between various ways of updating solutions to find the right balance between improving the current solution and allowing for possible changes at later time lies at the heart of this research.