

Rural Postman Problem Approach for Waste Collection Operations in the City of Erzurum in Turkey

Mustafa Yılmaz
Industrial Engineering
Atatürk University
Erzurum, TURKEY
mustafay@atauni.edu.tr

Merve Kayacı Çodur
Industrial Engineering
Atatürk University
Erzurum, TURKEY
mkayaci@atauni.edu.tr

Abstract

Many practical arc routing problems involve finding paths or tours that traverse a set of arcs in a graph. The aim of solving such problems is to determine a least cost tour which covers all or subset of arcs in a graph with or without constraints. The Rural Postman Problem (RPP) is one of the most central problem in arc routing. In a daily life, RPP is applied many practices like delivering, road maintenance, electric meters reading, security patrols travelling and snow plowing operations to determine optimum vehicle routes. Waste collection operations also can be modeled as a RPP. The wastes are in small containers located almost continuously along streets in the centres of the cities. In this study, The RPP approach has been addressed and the mathematical formulation is used for determining optimum route of waste collection vehicle that travelling the streets for collection garbages in the city of Erzurum in Turkey. The model is conducted on the networks which have been created for different areas of the city of Erzurum and the results are given.

Keywords

Arc Routing, Rural Postman Problem, Waste Collection Operations

Biography

Mustafa Yılmaz is an Assistant Professor in Industrial Engineering Department at the Atatürk University, Erzurum, Turkey. He earned B.S. in Industrial Engineering from Selçuk University, Konya, Masters in operations research from Gazi University, PhD in Industrial Engineering from University of Gazi in Turkey. He has published journal and conference papers. His research interests include manufacturing, optimization, estimation methods, graph theory and statistic.

Merve Kayacı Çodur is a Research Assistant in Industrial Engineering Department at the Atatürk University, Erzurum, Turkey. She earned B.S. in Industrial Engineering from Sakarya University, Sakarya, Masters in operations research from Atatürk University, she is still continuing to PhD in Industrial Engineering from University of Atatürk in Turkey. She has published journal and conference papers. Her research interests include manufacturing, optimization, scheduling, graph theory.