Model of Violator Detector Network Problem: A case study Sioux Falls Network

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Abstract

This paper focuses on planning detector locations in a general traffic network to maximize the expected benefit to catch the violators who are threat for public safety. We install the detectors on candidate locations where peoples or vehicles flow passing on the road. Model was then solved using two approaches: Detector Add and drop greedy heuristic and Genetics Algorithm. The results show that the Genetic Algorithm outperforms detector add and drop heuristic and solution is very close to optimum in terms of the number of detectors needed to detect expected number of violators and objective function.

Keywords

Facilities planning and design, Violator detector Network, Traffic Network, Detector add and drop Heuristic, Genetics Algorithm

Biography

Amber Shafiq is a PhD student from Industrial and Systems Engineering at Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea. Her research interest is Mathematical Modelling, Optimization Problems, Location Theory and Sensor network Problems. I have done my masters in Applied Mathematics from Department of Mathematical Science at Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea.

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