

BUSINESS INTELLIGENT MODEL FOR MANAGING AND CONTROLLING POLICE PATROLS ENERGY

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ABSTRACT

The task of planning patrol routes for crime prevention is an important challenge. This work concentrates on the context of routes for police patrols on a road network; the presented methods are applicable to many other environments that call for the selection of surveillance and situation response routes to maximize the profit. In other words, planning patrol routes to maximize coverage of important locations (hot spots) at minimum cost (length of patrol route) subject to some constraints. We model a road network using an edge-weighted graph in which edges represent streets, vertices represent intersections, and weights represent importance of the corresponding streets. In addition to the importance of streets (edge weights), important routes are affected by the topology of the road network. This paper is considered the integrated optimization of strategic patrol routing problems while designing an efficient operating plan for the police troopers. Its formulation is a methodological contribution to the current literature. In this work, a new methodology is introduced for energy saving control problem in police patrols networks. The objective function is minimizing the variance of the power vector for the topology troopers, this means that distributing the power of the police patrols and maintaining the crime prevention with minimum effort. Inputs are given as a set of nodes in a plane, end-to-end traffic demands and delay bounds between hot spot pairs, the problem is to find an optimized routing that can meet the requirements and the variance of the power vector for the nodes is minimized. The problem is formulated as an Integer Linear Programming problem. An optimal algorithm has been proposed to solve the problem. The proposed model can be adopted for different topology with different emergency request demands.

KEYWORDS: Integer Linear Programming, Energy Saving, Police Patrols Network, Geographical Information System (GIS)