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Real-time Metaheuristic-based Urban Crossroad Management with Multi-variant Planning

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Abstract

This paper presents a multi-variant planning method for the problem of multi-lane crossroad management. The method leverages a metaheuristic system which is aimed at real-time usage. Being the basis of the experiments shown, Its implementation is scalable and can efficiently use a basic multi-core hardware infrastructure. The whole system can provide a sub-optimal yet useful crossroad management plan and is perceived to be superior to the classic and competitive methods previously tested.

Keywords: urban traffic planning, multi-vatriant planning, optimization, metaheuristics

1. Introduction

Traffic management affects the quality of social life in a significant way for both drivers and pedestrians, not to mention the meaningful influence on the environmental aspects of city living. Actual traffic management (e.g., by proposing and deploying strategies of traffic-light control) may be treated as a very simple task (when one only considers the strict schedule that must be followed by drivers) or as a very complex one (when the aim is reaching an optimal

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