

**DEVELOPMENT OF TSCLab: A TOOL FOR EVALUATION OF THE  
EFFECTIVENESS OF ADAPTIVE TRAFFIC CONTROL SYSTEMS**

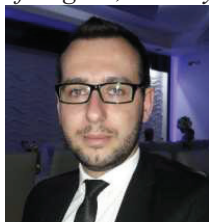
**RAZVOJ TSCLab-a: ALAT ZA EVALUACIJU UČINKOVITOSTI ADAPTIVNIH  
SUSTAVA UPRAVLJANJA PROMETOM**

**Daniel Pavleski<sup>1</sup>, Daniela Koltovska Nechoska<sup>2</sup>, Edouard Ivanjko<sup>3</sup>**

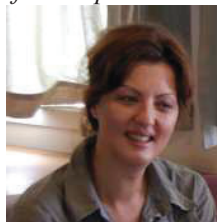
<sup>1</sup>Traffic Department of the City of Skopje, Skopje, Macedonia

<sup>2</sup>Sv. Kliment Ohridski University, Faculty of Technical Sciences, Bitola, Macedonia

<sup>3</sup>University of Zagreb, Faculty of Transport and Traffic Sciences, Zagreb, Croatia



Daniel Pavleski



Daniela Koltovska  
Nechoska



Edouard Ivanjko

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**ABSTRACT:**

Adaptive Traffic Control Systems (ATCS) have been widely implemented for urban traffic control due to their capability to alleviate traffic congestion. Evaluation of the effectiveness of ATCS is challenging and presents an open problem. Different measures of effectiveness with in-depth insights into the traffic situations of the controlled signalized intersection are required. In this paper, development of TSCLab (Traffic Signal Control Laboratory), a MATLAB based tool for evaluation of ATCS is presented. It can gather and visualize relevant data, which describe the performance of ATCS in real time, in a VISSIM based simulation environment. To proof the capabilities of TSCLab, the ATCS UTOPIA/SPOT has been evaluated using an isolated intersection as the use case.

**Key words:** intelligent transport systems, adaptive traffic control system, isolated signalized urban intersection, evaluation of effectiveness.

**SAŽETAK:**

Adaptivni sustavi upravljanja prometom se primjenjuju zbog njihove mogućnosti smanjivanja zagušenja prometa. Ocjene kvalitete rada takvih sustava je izazovna i predstavlja otvoren problem. Potrebne su različite mjere kvalitete semaforiziranih raskrižja s mogućnošću dobivanja dubinske slike o prometnoj situaciji. U ovom članku je predstavljen razvoj alata TSCLab (engl. Traffic Signal Control Laboratory) koji omogućava navedenu ocjenu kvalitete rada adaptivnih sustava upravljanja prometom. Implementiran je u MATLAB-u i omogućuje prikupljanje te grafički prikaz bitnih podataka, koji opisuju ponašanje adaptivnih sustava upravljanja prometom, u simulacijskom okruženju zasnovanom na simulatoru VISSIM. Radi prikaza mogućnosti TSCLab je primijenjen za ocjenu kvalitete rada sustava UTOPIA/SPOT korištenjem izoliranog raskrižja kao testnog scenarija.

**Ključne riječi:** inteligentni transportni sustavi, adaptivni sustavi upravljanja prometom, izolirano semaforizirano urbano raskrižje, evaluacija učinkovitosti

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