

Department of Electrical and Computer Engineering

Title: «Shortest Path Routing in Transportation Networks with Time-Dependent Road Speeds»

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Room XOD 02 – 013, New Campus - University of Cyprus

Abstract:

This presentation deals with the subject of shortest (in terms of travelling time) path routing in transportation networks, where the speed in the network's roads is a function of the time interval. These networks are encountered in practice when the roads' speed has been measured for several time instants during a large period of time (e.g., an entire year). In this way, time-dependent speed patterns can be derived for the network's roads, that constitute an estimation of the network's future behavior. For shortest path routing in these networks, the travelling time on the network's roads must be calculated according to the time instant of departure. Conventional approaches perform this calculation under the assumption that the road's speed has a constant (possibly distinct) value inside each time interval. In the work presented here, the assumption that the road's speed is linear (possibly distinct) function of time inside each time interval, is considered. Under this assumption, a procedure is proposed that derives the travelling time on the network's roads according to the time instant of departure. It is combined with Dijkstra's algorithm, resulting in a practically applicable algorithm for optimal shortest path routing in the investigated networks.

Biography:

Dr. Costas K. Constantinou holds a Bachelor in Physics from the Aristotelian University of Thessaloniki and a PhD in Electrical Engineering from the University of Cyprus. He is a Research Fellow in KIOS Research Center for Intelligent Systems and Networks, University of Cyprus. His research interests lie in the areas of optical networks, transportation networks, routing algorithms and graph theory.