Shortest path problem for mobile devices in urban area

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Résumé

The shortest path problem is a well-known routing problem which received a considerable amount of attention for several decades. Furthermore, there has been a renaissance of interest in the shortest path problem in recent year for use in various transportation engineering applications. Without any doubt it could be directly attributed to the recent developments in Intelligent Transportation Systems (ITS), particularly in the field of Route Guidance System (RGS) and real time Automated Vehicle Dispatching System (AVDS). In both cases, there is a definite need to find the shortest paths from an origin to a destination in a quick and accurate manner. This presentation address to the first step in definition of efficient routing algorithms tuned for mobility. More precisely, it is targeted to the field of pedestrian mobility in an urban environment. As we know, specific constraints could be taken into account to define an efficient system in the mobile environment: for example, the treatment of wireless network traffic disturbances that could require conception of a mobile solution where a graph is saved into the mobile device allowing computation of a shortest path with the mobile processor. The proposed algorithm is implemented as a web service and tested using a mobile client in the real life situation. Using of such architecture offres a new approach in spreading operational research algorithms and our contribution stands at the crossroads of optimization research community and the web service community expectations. This work pushes us into accepting the mobility as a new promising research area and that could permit to address new advances in operational research.

Mots-Clés: Shortest Path, Mobile Device, Web Services, Java EE, Android

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