Visualization of Traffic Bottlenecks: Combining Traffic Congestion with Complicated Crossings

Abstract:
Daily mobility patterns in highly populated urban environments rely on a well-functioning effective road network. Nevertheless, traffic bottlenecks are typical for urban environments with periodic traffic congestion. In this paper, we focus on the investigation of how traffic congestion is related with complicated crossings. First, we select an approach for the classification of the complexity of road partitions and the derivation of complicated crossings based on geodata from OpenStreetMap (OSM). Second, we calculate traffic congestions using Floating Taxi Data (FTD) from Shanghai in 2007. Then, we develop a matching technique to link the congestion and complicated crossings, and subsequently define the concept of traffic bottlenecks represented by polygons. The bottlenecks indicate locations where the transportation infrastructure is complex and traffic congestion appears periodically. Finally, we select suitable cartographic representations of traffic bottlenecks in potential thematic vehicle traffic maps.

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