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Finding the Optimal Meeting Point Based on Travel Plans in Road Networks

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Abstract : Given a set of source locations for a group of friends, and a set of trip plans for each group member as a sequence of Categories-of-Interests (COIs) (e.g., restaurant), and finally a specific COI as a common destination that all group members will gather together, in Meeting Point Based on Trip Plans (MPTPs) queries our goal is to find a Point-of-Interest (POI) from different COIs, such that the aggregate travel distance for the group is minimized. In this work, we considered two cases for aggregate function as Sum and Max. For solving this query, we propose an efficient pruning technique for shrinking the search space. Our approach contains three steps. In the first step, it prunes the search space around the source locations. In the second step, it prunes the search space around the centroid of source locations. Finally, we compute the intersection of all pruned areas as the final refined search space. We prove that the POIs beyond the refined area cannot be part of optimal answer set. The paper also covers an extensive performance study of the proposed technique.

Keywords : meeting point, trip plans, road networks, spatial databases
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