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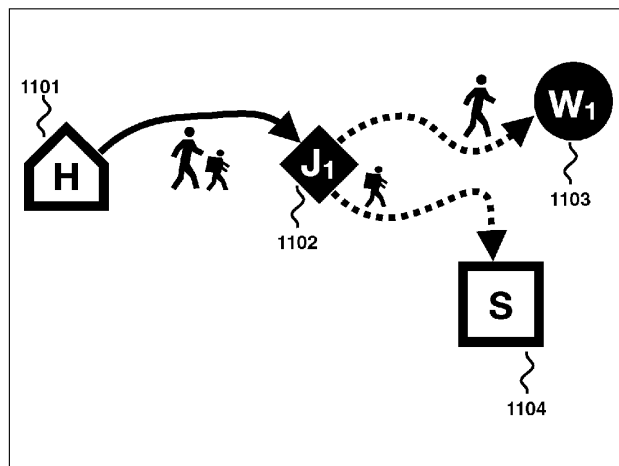
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(54) **Title:** METHODS FOR SEARCHING OR COMPARING POINTS USING TRAVEL OF ENTITIES

FIG. 11



(57) **Abstract:** The invention concerns searching or comparing points, based on travel of entities among some of the points within a transportation system. Embodiments include a real estate search engine, where a family can search or compare homes and schools, based on commute durations, considering that an adult wants to walk a child to a stop of a school bus. Embodiments also include approaches for solving an underlying optimization problem based on: an enumeration search, a tree search, a gradient descent search, and a branch-and-bound search. An embodiment scales a solution, by decomposing the optimization problem into independent subproblems, using a combinatorial optimization algorithm, that is applied to a certain travel graph. Scaling is also facilitated by a sparsification approach, that generalizes a routing method prevalent in prior art. Some of the approaches are part of a live real estate search engine available to users in South Korea and Japan.

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