FAST PURSUIT OF MOBILE NODES USING TPR TREES

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Abstract

In this paper, we consider a set of mobile nodes, each of which moves with constant velocity. We present algorithms to determine which of these mobile nodes can be captured the soonest by a set of one or more pursuers. We use a time parameterized R-tree (TPR-tree) to index these moving points. We then develop algorithms that operate on the TPR-tree to answer three query variations: (1) a single pursuer that is faster than all of the mobile nodes, (2) a single pursuer that is slower than some of the mobile nodes and (3) multiple pursuers. Experimental results show that our algorithms are simpler and faster than other approaches to solve the problem.