

Roadmap Based Partitioning

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In the field of robotics, one of the most challenging aspects is the perception and mapping of the environment. While this commonly consists of obstacle detection, the robots also need a good way of categorizing and organizing the regions of the environment. The problem at hand is how to divide the environment into regions based upon the obstacles without necessarily knowing their location. The regions can be used for different purposes whether it be multi-agent systems, adaptive motion planning, or parallel graph algorithms. Roadmap Partitioning might be defined as simply splitting the roadmap into different regions for use of another algorithm. However, splitting the environment in an intelligent manner is difficult. We show how one of our methods is better than a simpler method of Kmeans Clustering by which the user specifies the number of regions, rather than finding the optimal number of regions automatically. In this paper we show the need for partitions, the uses of partitions, and a comparative analysis between two partitioning methods. Once these partitions are made from a roadmap, the motion planning of each partition can possibly be used as previously stated.