CS354

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- Let's do an example...

Evaluating Planning Algorithms

- We prefer algorithms that are
  - Complete - Guaranteed to find a path if one exists
  - Optimal - Guaranteed to find the lowest-cost path
  - Efficient
  - Easy to implement

RRT Evaluation

- Efficiently "covers" the search space:
  - Argument based on Voronoi diagrams
- Asymptotically Complete - Guaranteed to find a path given infinite time
- Easy to implement
- not optimal - May never find the optimal path

RRT Alternatives

- A* and variants (Too slow for high-dimensional problems)
- RRT variants
  - e.g. RRT* is *asymptotically optimal*
- Probabalistic Roadmap and variants
  - Creates a randomized graph that can be used for multiple queries
  - Less convenient for non-holonomic problems

Planning in ROS

- **MoveIt!** - ROS system for mobile manipulation
- **Open Motion Planning Library (OMPL)** - Usedby MoveIt! for planning
- OMPL provides *many* planning algorithms