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CSCI 4511W

Dr. Amy Larson

1. **Write a sentence that describes the general intent of the paper.**

   To demonstrate how their Multipath Generalized Adaptive A* (MPGAA*) algorithm can utilize more paths, previously found by an A* search, to generally outperform the D*Lite algorithm.

2. **What is the application or niche they are trying to address? In other words, what are the specific qualities of the problem (environment) that make this research applicable?**

   The paper attempts to address path-planning in dynamic terrain (where the environment may change while the agent is moving) in the context of robotics. The sequence of cost functions is unknown to the agent; however, the search graph is not.

3. **List the different criteria (i.e. basis of comparison) the authors used to compare approaches. Notice that there are several.**

   The paper compares the mean runtimes over three settings: random maps, room maps from N. Sturtevant's repository, and Warcraft III maps from N. Sturtevant's repository. It also compared the memory usage across these algorithms.

4. **Write two of the conclusions of the paper. This should be something the author's presented not as raw data, but as a general principle derived from the results of the experiments or theoretical work.**

   Multipath Generalized Adaptive A* (MPGAA*) typically outperforms D*Lite under a realistic goal-directed navigation setting. MPGAA* is also superior to D*/D*Lite in terms of implementation and accessibility.

5. **The authors present theoretical work on the performance of the proposed algorithms. If the authors can prove performance bounds, why would they run experiments? In other words, what value does implementation give to the paper?**

   By running experiments, they can better assess and observe the runtimes for these algorithms. They can also compare the differences between certain algorithms (such as MPGAA* and D*Lite) under various conditions and settings.