sh14820 CAND number:17080
og14775 CAND number: 14461

AILP Coursework - sh14820 & og14775

Outline

This report will outline the benefits of our chosen approach to Part 3 and Part 4. As Part 3 is built on Part 2, Part 2 is not discussed explicitly.

Disclaimer

We used swi-prologs in-built rbtrees.pl and heaps.pl in this coursework.

Effort has been put in to ensure that the code is highly structured, neat and elegant.

Benefits of our approach

1. In part 3, when the map is static, when searching for oracles or charging stations, we cache the location of discoveries using dynamic predicates. (`assertz`). We then use these cached discoveries, such that they are searched before unknown locations.
2. Our agenda is a heap, with the key being our F-score, which allows for efficient retrieval of the path with smallest F score.
3. Locations which have previously been visited are stored in a red black tree, rendering the search space far smaller, as we do not consider longer paths.
4. Before visiting an oracle, we check that we can visit a charging station after querying the oracle, thus guaranteeing we do not run out of energy.
5. We only search for a charging station where necessary, minimising total search time.
6. If we happen to move past a charging station, we top up our energy.

Benefits of our approach to part 4

1. We no longer cache oracles and stations, due to the cache potentially being invalid.
2. If an obstacle is encountered along a path, we re-search for the same target, starting at the current location.
3. If we arrive at our target and the target has moved, we re search for it. If we can no longer query an oracle, we search for a new one.