

Artificial Intelligence Project 1
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Programming Language: Python

Project Description:

This is the Project 1 implementation of the Berkley University: "Introduction to Artificial Intelligence" (<https://inst.eecs.berkeley.edu/~cs188/sp20/project1/>). The goal is to create multiple search algorithms for a Pacman agent to find food.

The files that were written by me in this project are:

1. search.py
2. searchAgents.py

File Description:

search.py functions:

- depthFirstSearch: Implements depth-first search using a stack data structure from util.py.
- breadthFirstSearch: Implements breadth-first search using a queue data structure from util.py.
- uniformCostSearch: Implements uniform-cost search using a priority queue data structure from util.py.
- astarSearch: Implements A* search using a priority queue data structure from util.py.

searchagents.py functions:

- Firstly, for the cornersProblem function I implemented using the following small functions:
 - getStartState
 - isGoalState (checks if every corner instead of just one)
 - get_Successors
- CornersHeuristic: Implemented a heuristic solving the cornersProblem using the manhattanDistance from util.py. It returns the distance from the furthest target position.
- foodHeuristic: Same logic with CornersHeuristic.
- findPathtoClosestDot: Finds the path of the closest food using the uniformCostSearch
- isGoalState of AnyFoodSearchProblem: Termination check, return if there is food in current check.

Project Execution:

python autograder.py (use python 3.6)