Department of Computer Science

COMP338 (AI) Search Project

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There are a lot of algorithms that for find shortest path, in this project I select A* algorithm and Breadth First Search (BFS) algorithm. I make interface that have function to find shortest path by pass source, destination and graph. And it will return Node that have structure to be able to get all data about shortest path.

I have two classes (A Star and BFS) that implements this interface and override shortest path method. Each one will apply its algorithm and return the Node that have structure as:

1. City city: have name, latitude and longitude of the city.
2. Double f: have f(n) value.
3. Double g: have g(n) value.
4. Node parent: have the Node of the parent instance (last city visited).

Heuristic Class is a singleton class that based on create just one instance of Class and use it for all classes by getInstance() method. This class is read air distance of cities file and set it in HashMap to get air distance for any source, destination.

Files Format:

1. air distance.csv: **city one, city two (all others), air distance.**
2. Cities.csv: **city, latitude, longitude.**
3. Roads.csv: **city one, city two (adjacent), real distance.**