



Wrocław University
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DEPARTMENT OF ELECTRONICS
ELECTRONIC AND COMPUTER ENGINEERING

Artificial Intelligence - task 2 report

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1 Graph Library

I have used Networkx library on python3. It is powerful library which allows for creating graphs, searching and managing them.

2 Graph representation

Library store graph's nodes and edges in two separate tables.

Example of saved node:

`graph.node[0] → {'name': 'Gdansk', 'pos': (8090.1855, -5056.6772)}`

Every node has it's own index in table, but I added two more attributes: "name" and "pos" (position).

Example of saved edge:

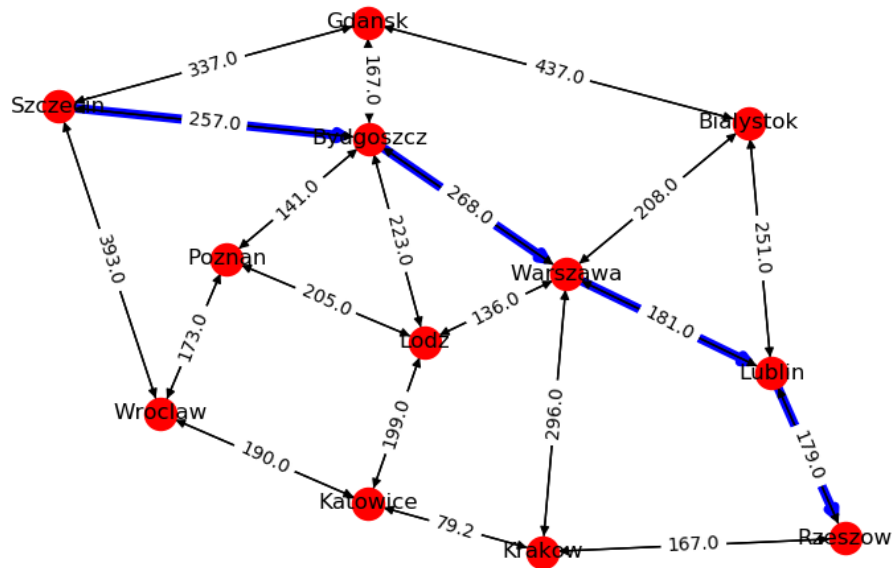
`[(0, 2), (0, 1), (0, 6), (1, 0) ...]`

It is just a list of pairs of numbers which represents connected nodes, every pair has also attribute "weight". I have used directed graph so if I want two way connection I need to add two edges, each for one direction.

In my own class I have 'mygraph' object, which contains directed graph.

3 Solved example

I have used graph representing map of Poland which I have made in previous task. Below example was solved using A* algorithm which used heuristics defined by geometric distance.



I have implemented also Dijkstra, DFS and Bellman Ford algorithms.

4 Limitation and problems

My program doesn't allow modification of existing graph using UI it only allows for reading graphs generated by java program which we have used previously (from AISpace). Another problem is that I didn't implemented different heuristics, only geometric distance.

Problems during implementation:

- displaying path on the graph
- reading data and validating them