Universidade do Minho
Escola de Engenharia
Departamento de Informática

Introdução à Inteligência Artificial

Licenciatura em Engenharia Informática

Synthetic Intelligence Lab

- AI – solving problems:

    • Search algorithms;

- Graphs:

    • Representing graphs;

- Search in Graphs:

    • Uninformed search;

        – Depth first Search (DFS)

- Python:

    • Graphs representation;

    • Algorithms.

ISLab

Synthetic Intelligence
Lab

- Representing problems using graphs;

- States as nodes (vertices);

- Arcs (edges) as actions;

- Solution: path from initial state to goal state;

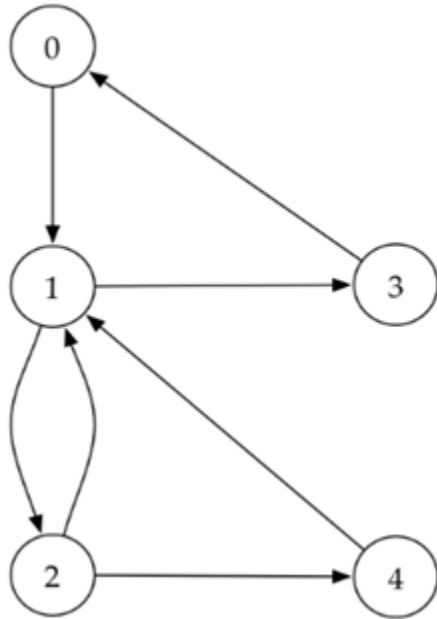- Cost of the solution: sum of the paths arcs cost.

Graph Representation

- Adjacency matrices;

- Adjacency lists;

- Lists of edges.

	0	1	2	3	4
0		1			
1			1	1	
2		1			1
3	1				
4		1			

Adjacency lists
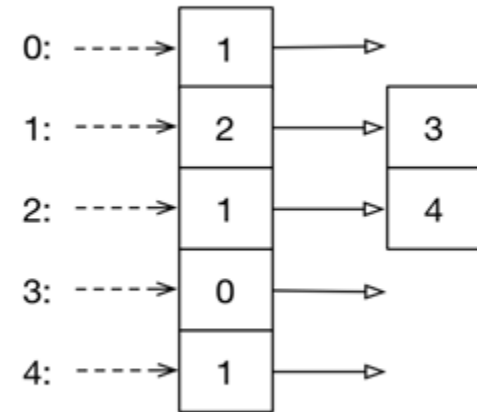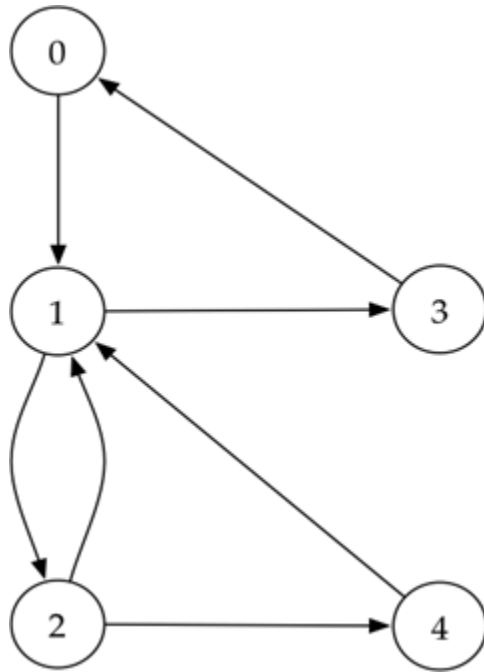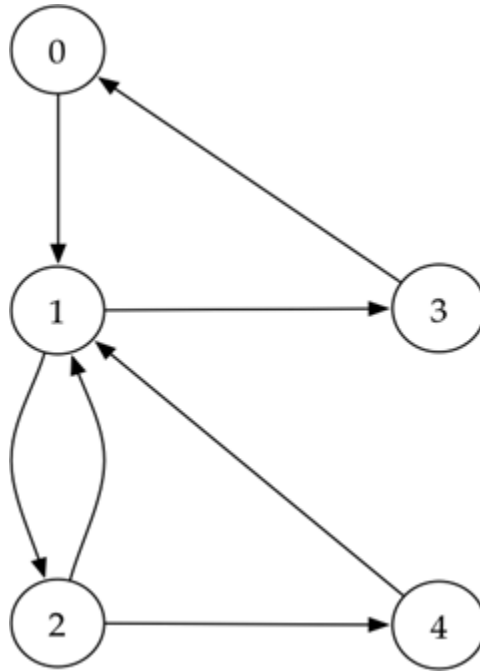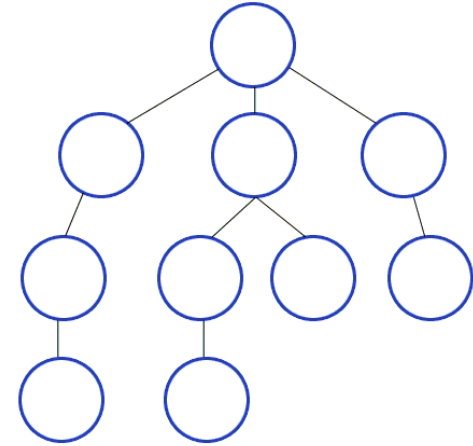
Lists of edges

0 , 1
1 , 2
1 , 3
2 , 1
2 , 4
3 , 0
4 , 1

Uninformed Search - DFS

- Uninformed search algortithms have no aditional information about the goal state;
- They do not use any aditional knowledge about the problem;
- "Brute force" to find solution
- Depth First Search (DFS) – goes as deep as possible until no more adjacent nodes exist;
- Backtrack and repeat the process;

Fonte wikimedia commons

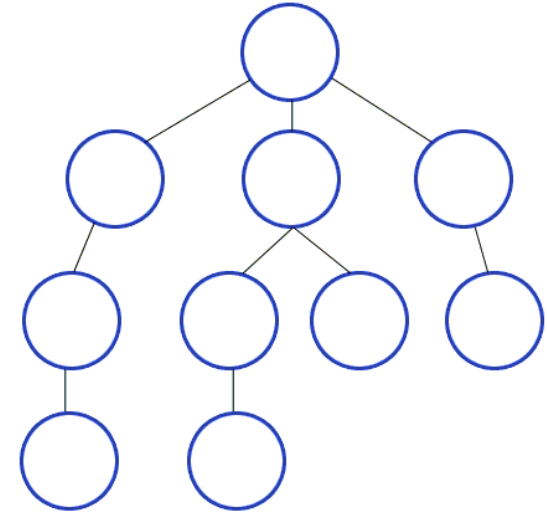# Uninformed Search - BFS

ISLab

Synthetic Intelligence Lab

- Uninformed search algortithms have no aditional information about the goal state;

- They do not use any aditional knowledge about the problem;

- "Brute force" to find solution.

- Breadth First Search (BFS) – search level by level.

Fonte wikimedia commons

Universidade do Minho
Escola de Engenharia
Departamento de Informática

Introdução à Inteligência Artificial

Licenciatura em Engenharia Informática