EARIN Lab 1

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March 17, 2023

1 Intro

On this first laboratory our task is to implement the 2D maze-solving algorithm **Greedy best-first**. Our maze will be loaded from a file and defined as:

S - Starting position

E - End position

O - Empty space

X - Wall

We will provide a visualization of the working algorithm and test it for two different heuristic functions to compare results.

2 Algorithm

Maze-solving algorithms in general are going cell by cell from starting position in a specific pattern (algorithm) in order to find their way to the end position. Those algorithms determine the next step using a heuristic function.

Such function returns a value for each cell in the maze (usually the distance from the End position calculated in a specific way). Then depending on the algorithm next cell or cells are chosen and the algorithm begins anew.

In our specific case i.e. **Greedy best-first** algorithm, at each step we look for the smallest result of the heuristic function adjacent to currently analyzed cell. So basically we look for a cell that is closest to the end position regardless of the maze layout. In the next step we will look again at the ones adjacent to the cell we chose before. The process is repeat until the End cell is reached.

We will be testing two different heuristic functions and analyze their results. We will have:

- One that returns direct distance to the End position
- One that returns the sum of distance on X-axis and distance on Y-axis

3 Our program

4 Summary