

# Emergency exit simulation

General project plan

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*Bachelor's program in Data Science*

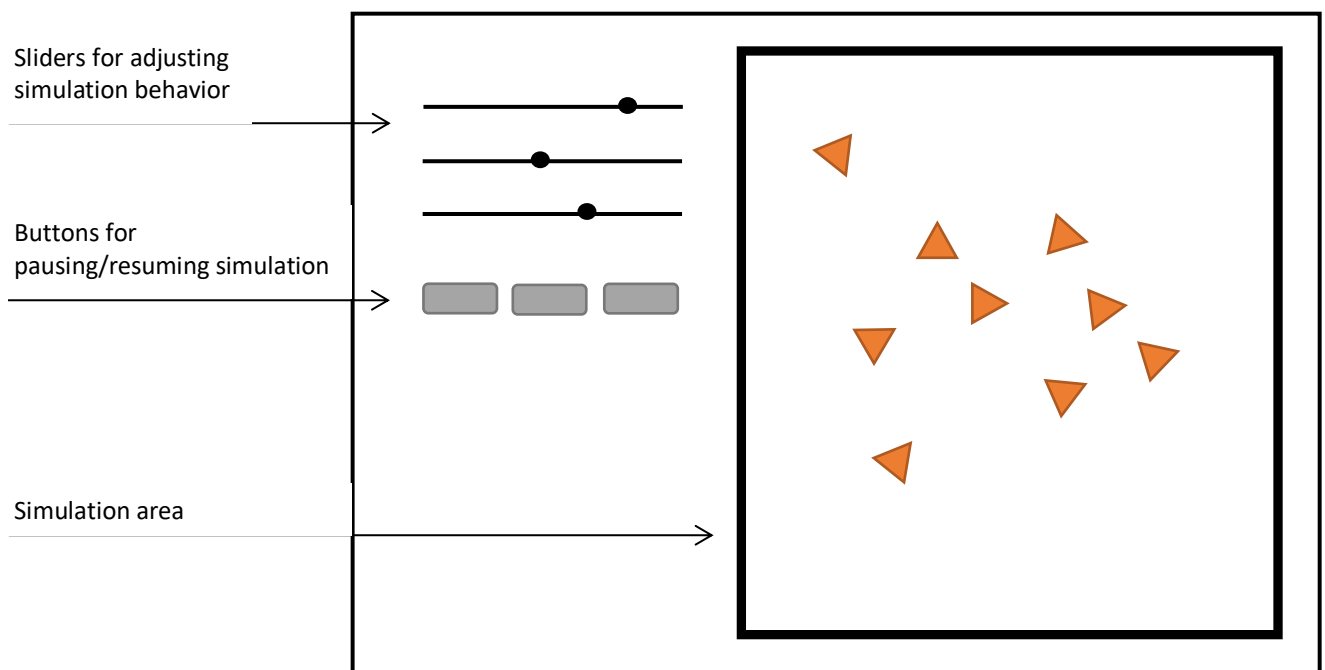
*First year*

*16.02.2020*

## Project goal

The goal of the project is to create a visual simulation of a large number of people leaving a room through a tight exit. The main idea is to achieve a life-like behavior, but user-defined (or user-altered) behavior should also be supported. The output of the program would consist of a top-down 2D representation of the room and the people inside of it. The simulated movement of the people should be depicted on the screen in real time.

## User interface sketch



## File format

The initial state of the simulation (starting positions of people, starting velocities, the size of the exit door, the dimensions of the room) is read from a CSV file. The first three floating-point numbers represent the width and height of the room, and the length of the exit door. The numbers that follow represent the positions and the initial velocity vectors of every individual person.

### Core features

- Basic UI: room walls and people are represented with pictograms and simple shapes
- The extent to which the different principles affect the movement of the people is adjustable in real time
- The initial state of the is either randomly generated or read from a CSV file

### Possible additional features

- Adjustable simulation speed
- Possibility to pause and resume the simulation
- Adjustable number of exits, as well as positions of exit doors
- Improved UI -> hovering over a person reveals their velocity and velocity components
- Saving simulation states to a file