Proposal for exercise 6 from group C
Comparing a Neural Network and Knowledge-Based Approach for Crowd Dynamics

Due date: 2024-02-08
Last compiled: 2024–03–02

Task 1, Introduction of Approach and Dataset (15%)

- Introduce a neural network and knowledge-based approach.

- Define the datasets from paper [2] (`https://zenodo.org/records/1054017`).

Task 2, Implementation of the neural network (40%)

- Implement neural network from paper (and potentially more complex model).

- Tests on corridor and bottleneck experiment.

Task 3, Implementation of knowledge-based model (20%)

- Implementation of a knowledge-based model (Weidmann Fundamental Diagram).

- Tests on corridor and bottleneck experiment.

Task 4, Comparison of the approaches (20%)

- Compare the test results.

- Discussion of the approaches and architectures (benefits, drawbacks, challenges).

Task 5, Discussion of future work and other approaches (5%)

- Introduce approach separate from paper [1].

- Discuss hybrid approaches.

References

[1] Raphael Korbmacher and Antoine Tordeux. Review of pedestrian trajectory prediction methods: Comparing deep learning and knowledge-based approaches. *IEEE Transactions on Intelligent Transportation Systems*, 2022.

[2] Antoine Tordeux, Mohcine Chraibi, Armin Seyfried, and Andreas Schadschneider. Prediction of pedestrian dynamics in complex architectures with artificial neural networks. *Journal of intelligent transportation systems*, 24(6):556–568, 2020.