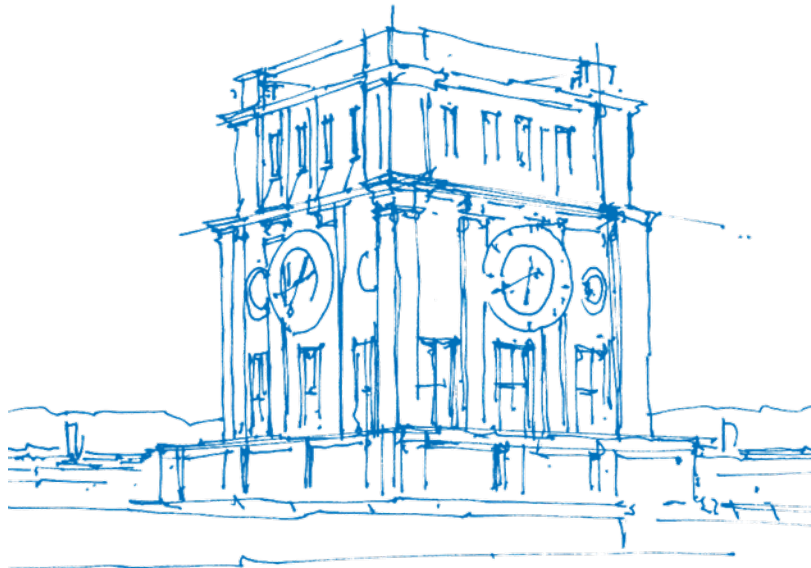


Machine Learning in Crowd Modeling & Simulation

Lecture 2 - simulation software

Dr. Felix Dietrich

This video: short introduction to crowd simulation software



TUM Uhrenturm

Simulation software

Crowd simulation for interdisciplinary work

From [Kleinmeier et al., 2019]: [Crowd] behaviors that were observed and described by empirical scientists are operationalized, then mapped to equations, algorithms, and finally computer programs. These computer programs can be executed to reenact real scenarios in a virtual world, where they can be re-observed. Therefore, [crowd simulation software is] a powerful tool to foster interdisciplinary understanding in [crowd] dynamics.

Simulation software

Crowd simulation for interdisciplinary work

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Current crowd simulation software solutions

(list from [Kleinmeier et al., 2019])

Commercial:

- PTV
- LEGION
- accu:rate

Open source:

- FDS+Evac
- JuPed-Sim
- Menge
- MomenTUMv2
- SUMO
- Vadere (next sections in this video)

Simulation software

Introduction to Vadere

Research simulation framework of
Pedestrian Dynamics research group
Head: Prof. Dr. Gerta Köster at Munich
University of Applied Sciences
Website: www.vadere.org



Released in 2010 by Dr. Dietrich, Dr. Seitz, Dr. von Sivers, and B. Zönnchen:



Active development team:



Simulation software

Introduction to Vadere - overview

Core features:

1. Cross-platform (Java based)
2. Easy-to-use GUI with ScenarioChecker
3. Command-line-interface for automation
4. JSON-based input files
5. Shipped with different locomotion models
6. Evaluation methods for simulation outputs
7. Continuous integration / deployment pipeline

Details:

- paper by [Kleinmeier et al., 2019]
- www.vadere.org

Simulation software

Introduction to Vadere - GUI

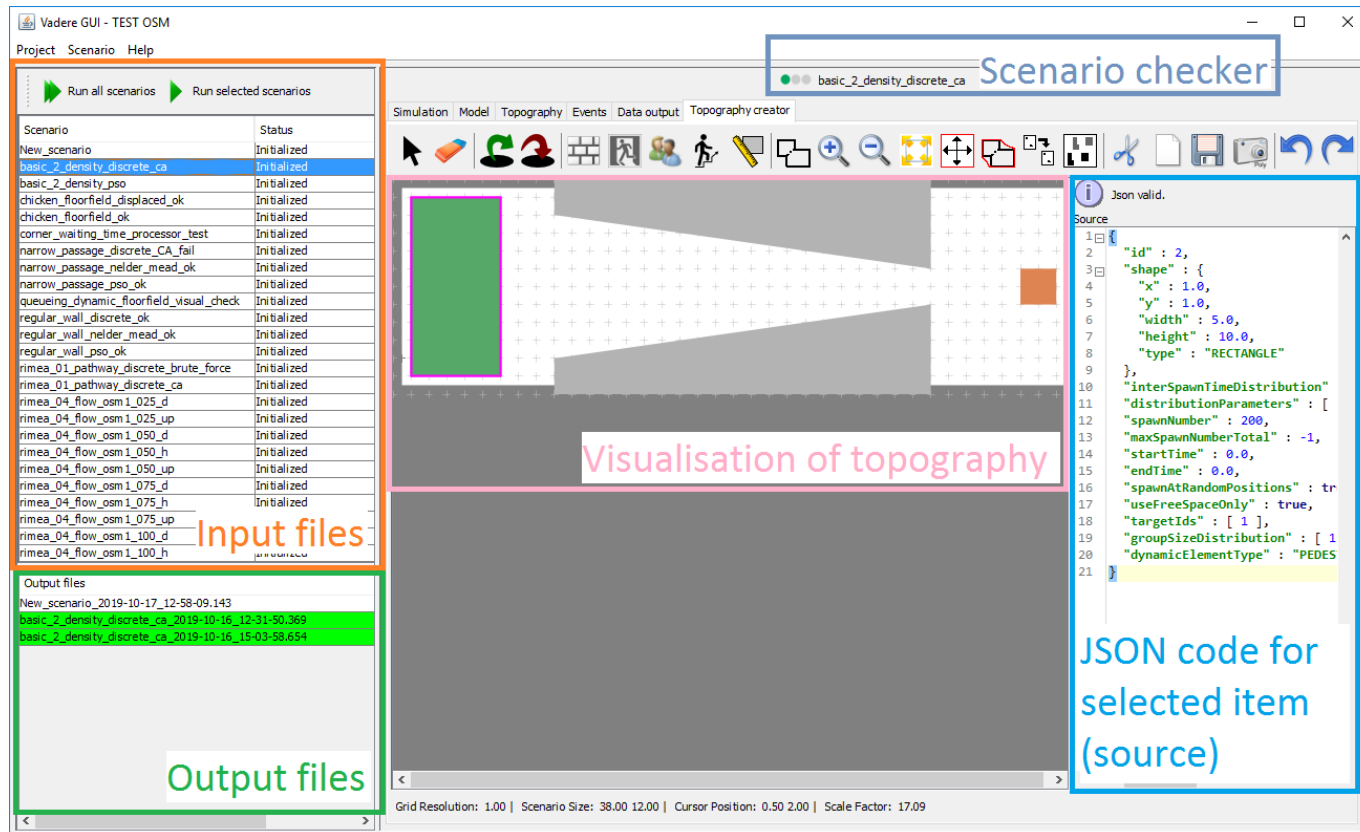


Figure: Graphical user interface of the Vadere software.

Simulation software

Introduction to Vadere

Video “Run your first simulation”

<http://www.vadere.org/video-tutorials/>

Simulation software

Introduction to Vadere

Video “Get familiar with Vadere’s toolbar”
<http://www.vadere.org/video-tutorials/>

Simulation software

Introduction to Vadere

Video “Analyze a simulation run with Vadere’s post visualization”

<http://www.vadere.org/video-tutorials/>

Simulation software

Summary

Vadere is a powerful tool for crowd simulation.
It is open source with an active development team.
Try it out at www.vadere.org!

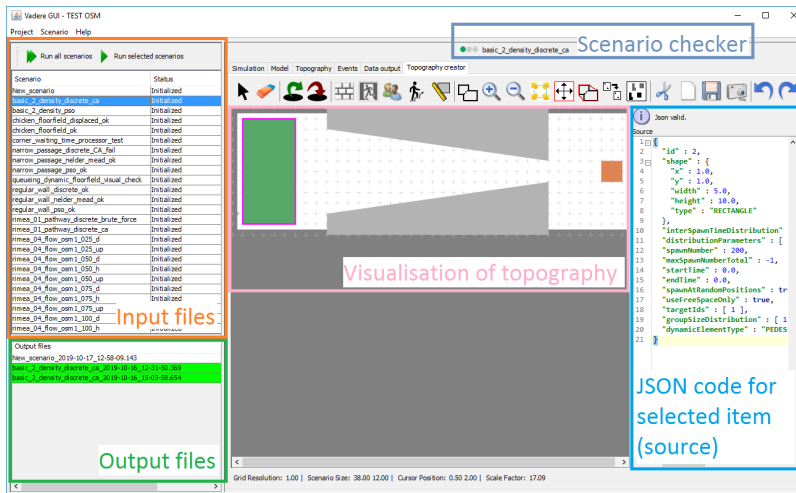


Figure: Graphical user interface of Vadere.

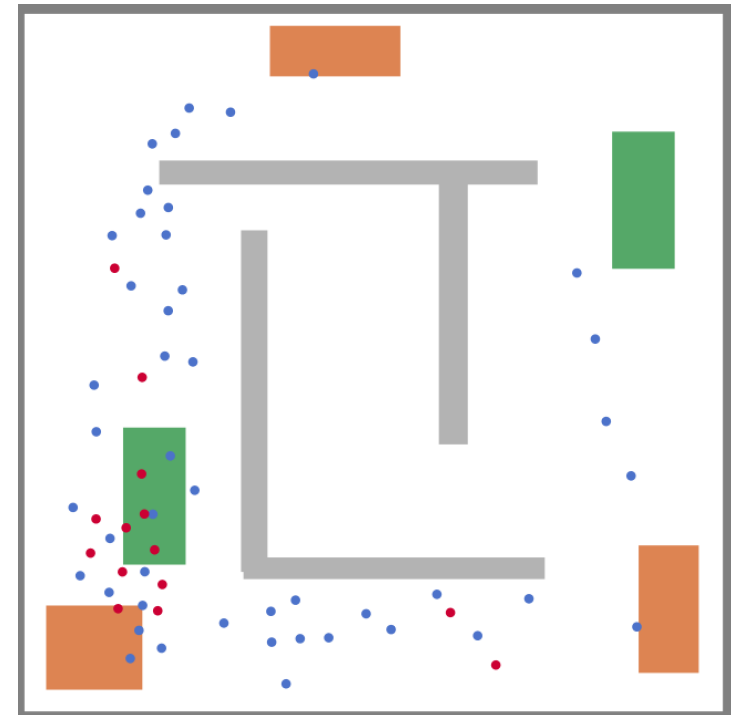


Figure: Snapshot of a simulation.

Literature I



Kleinmeier, B., Zönnchen, B., Gödel, M., and Köster, G. (2019).

Vadere: An open-source simulation framework to promote interdisciplinary understanding.

[arXiv](#).