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Modeling of pedestrian dynamics – Cellular automata models

In the talk we first give a classification of the different modelling approaches that have been used to describe pedestrian flows and crowd dynamics. The merits and problems of these approaches are discussed [1, 2].

Then we focus on cellular automata models. This model class has successfully been applied to a variety of complex systems [2]. One main advantage of this approach is its computional efficiency. Large crowds can be simulated faster than real-time. The floor field model [3, 4, 5, 6] is introduced which allows to reproduce the empirically observed collective phenomena like lane formation. The interactions between the pedestrians are implemented in the form of virtual chemotaxis [6]. Several extensions of the model are discussed which improve its realism in certain situations. We also present a calibration of the model using empirical data from laboratory experiments and an application to the evacuation of a football stadium.

References

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