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10 years of pedestrian research on FNSPE

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The presented contribution aims to illustrate the pedestrian research history on our faculty. Initial aim was to improve the microscopic properties of cellular models of pedestrian movement, focusing mainly on (experimentally) observed behavior.

A custom variant of the Floor Field model was implemented with incorporated original elements that brought the model closer to the reality. In order to calibrate the model and describe the standard behavior of pedestrians, author designed and performed four evacuation experiments; analysis of data extracted from cameras and other detectors pointed to several undescribed phenomena - their detailed study become rather independent research matter.

To be more specific, the observed heterogeneity in speed, aggressiveness and path selection was projected into the custom model resulting in a better fit of the observed quantities distribution, especially the evacuation time. In the mathematical description of experimental observations, the author dealt with the creation of a general concept of density covering various calculation methods. The properties of these methods has been further investigated by team members in detail and illustrated on experimental data.

In addition to evaluating calibration experiments, team members also participated in the organization and evaluation of two train unit egress experiments and he organized two merging pedestrian streams experiments focusing on more complex infrastructure. Using such complex geometry, the custom model was validated on in-house measured data as well as the data measured by a foreign research group.

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