

Agent-Based Modeling of Pedestrian Corridor Congestion on the Characteristics of Physical Space Form

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Abstract : The pedestrian corridor is the most crowded area in the public space. The crowded severity has been focused on the field of evacuation strategies of the entrance in large public spaces. The aim of this paper is to analyze the walking efficiency in different spaces of pedestrian corridor with the variation of spatial parameters. The congestion condition caused by the variation of walking efficiency is modeled as well. This study established the space model of the walking corridor by setting the width, slope, turning form and turning angle of the pedestrian corridor. The pedestrian preference of walking mode varied with the difference of the crowded severity, walking speed, field of vision, sight direction and the expected destination, which is influenced by the characters of physical space form. Swarm software is applied to build Agent model. According to the output of the Agent model, the relationship between the pedestrian corridor width, ground slope, turning forms, turning angle and the walking efficiency, crowded severity is acquired. The results of the simulation can be applied to pedestrian corridor design in order to reduce the crowded severity and the potential safety risks caused by crowded people.

Keywords : crowded severity, multi-agent, pedestrian preference, urban space design

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