

Dynamic Reroute Modeling for Emergency Evacuation: Case Study of Brunswick City, Germany

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Abstract : The human behaviors during evacuations are quite complex. One of the critical behaviors which affect the efficiency of evacuation is route choice. Therefore, the respective simulation modeling work needs to function properly. In this paper, Simulation of Urban Mobility's (SUMO) current dynamic route modeling during evacuation, i.e. the rerouting functions, is examined with a real case study. The result consistency of the simulation and the reality is checked as well. Four influence factors (1) time to get information, (2) probability to cancel a trip, (3) probability to use navigation equipment, and (4) rerouting and information updating period are considered to analyze possible traffic impacts during the evacuation and to examine the rerouting functions in SUMO. Furthermore, some behavioral characters of the case study are analyzed with use of the corresponding detector data and applied in the simulation. The experiment results show that the dynamic route modeling in SUMO can deal with the proposed scenarios properly. Some issues and function needs related to route choice are discussed and further improvements are suggested.

Keywords : evacuation, microscopic traffic simulation, rerouting, SUMO

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