

Agent-Based Simulation of Network Evacuation Problem With Dynamic Shelter Allocation

Personal profile : Idoudi Hassan received his Ph.D. degree in civil engineering at the University Paris-est, IFSTTAR, and the University of Lyon in 2019. He is currently an assistant professor at the University Gustave Eiffel Paris. His research interest lies at the intersection of operations research and computer science.

Key Words : Network evacuation, disaster management, shelter allocation, dynamic traffic assignment

Abstract : This study solves the evacuation problem dynamically, we solve the problem in multiple departure time intervals by considering the system optimum principle for the shelter allocation problem and the user equilibrium principle for the dynamic traffic assignment problem. For calculation of the vehicle evacuation time, we consider an agent-based dynamic simulator that provides us the travel information every second. Our methodology reduces 30% network clearance time in the Luxembourg network.