CARTO TALKS

Invitation

3D indoor “door-to-door” navigation approach to support first responders in emergency response

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Indoor navigation is a fast developing area, but researchers are facing various challenges. One of them is the real-time navigation in 3D complex environments. Liu's research attempts to develop a new approach for 3D indoor navigation, which is named “door-to-door”, to support the first responders in emergencies in complex buildings. In this research, three main problems will be addressed: (1) automatic 3D network generation from 3D semantic-rich models of complex buildings (i.e. irregular shape & interior space subdivided by columns, counters etc.); (2) navigating indoor pedestrians by natural movement (i.e. “door to door” routes); (3) a dynamic routing, which considers prediction of hazards development and pedestrian behaviors.

At the moment, we have developed a new algorithm to derive the shortest route between two openings in a single room (without obstacles). Besides, we propose a two-level approach for indoor navigation: the first level takes care about the room sequence to be traversed; the second level concentrates on navigation in a single room. According to experiments, the approach can be applied on complex floor plans and provide the 'door-to-door' style route in any kind of (concave) spaces.

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