

# Crowd Guidance for Emergency Fire Evacuation Based on Wireless Sensor Networks

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## Abstract

Emergency building evacuation is important for public safety, and good crowd guidance is key for improved occupant survival. In this study, both multiple streaming crowd guidance (MSCG) based on wireless sensor networks and RFID technology were developed. Unlike classical navigation algorithms, the proposed algorithm considers not only how fire propagation affects crowds in stressful conditions but also addresses crowd streaming in/during the evacuation process. In addition, crowd streaming, unexpected accidents, and environment illumination were also considered as factors in developing the algorithm. Moreover, the prediction of potential blockings was conducted by using sensing data from the wireless sensor network.

Keyword : Emergency services, Radiofrequency identification, Wireless sensor networks, Zigbee