



FAST AND ACCURATE RESIDENTIAL FIRE DETECTION USING WIRELESS SENSOR NETWORKS

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Abstract

Prompt and accurate residential fire detection is important for on-time fire extinguishing and consequently reducing damages and life losses. To detect fire sensors are needed to measure the environmental parameters and algorithms are required to decide about occurrence of fire. Recently, wireless sensor networks (WSNs) have been used for environmental monitoring and real-time event detection because of their low implementation costs and their capability of distributed sensing and processing. Although there are several works on fire detection using WSNs, they have rarely paid sufficient attention to investigate the optimal sensor sets and usage of suitable artificial intelligence (AI) methods. Therefore, by aiming at residential fire detection, this paper investigates proper sensor sets and proposes AI-based techniques for fire detection in WSNs. The proposed methods are evaluated in terms of detection accuracy rate and computational complexity.

Key words: artificial intelligence, residential fire detection, Wireless Sensor Networks (WSN)

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