

도시 재해 영향 감소를 위한 IoT 스마트 센서를 이용한 모니터링 시스템 연구

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A Research on Monitoring System Using IoT Smart Sensors for Reducing Urban Disaster Effect

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Abstract

People are more engaged in the dense city where has brunch of facilities and convenience life. Many studies have been proposed to improve the quality of people in urban such as the smart city. This research studies on the urban disaster. Mainly, we focus on intelligent indoor/outdoor fire control with an integrated management system and monitoring system using IoT smart sensors. Throughout the study, we show that by using the control and monitoring system users can detect and be noticed if an area occurs a fire, which could make their life more convenience in the sophisticated city.

1. Introduction

National disasters [1] often come with a little prior warning and therefore, do not give much time to prepare an emergency response that naturally involves emergency relief measures. On the other hand, long-term strategies such as resettlement, livelihood development, social infrastructure provision and psycho-social support for affected persons and communities require careful planning of interventions in an integrated fashion with the full participation of affected communities. The authors [2] demonstrated the need to adopt a holistic or integrated approach to the assessment of the process of disaster recovery, and to develop a multidimensional assessment framework. As a result, their approach adopted is new to post-disaster

recovery assessments and is useful for monitoring and evaluation of recovery processes. Similarly, in this paper, we research on intelligent indoor/outdoor fire control with an integrated management system and monitoring system using IoT (Internet of Things) smart sensors.

2. System Overview

The research goal focuses on an intelligent indoor/outdoor fire control with an integrated system management and monitoring system using IoT smart sensors with the following items. First, we build the system using IoT smart sensors. In the system, the server gets fire data in real-time, and we manage

fire/weather through a web application. It also predicts and monitors the spread of fire direction based on current weather location such as wind direction, humidity, etc. Secondly, We employ the system for risk detection and notification/alert based on current location data getting from IoT devices. Functionally, it shows location by using real-time sensor data detection and analysis methods. It can also alert fire to users based on existing disaster occurrence points and real-time risk detection as shown in Figure 1.

Finally, we prevent disaster by early warning and notifying the occurrence of the urban disaster to protect facilities. As such, data analysis and classification for risk areas using real-time sensor data mining method will be employed. Besides, we also develop an early warning and notification system at risk zone using user's location information.

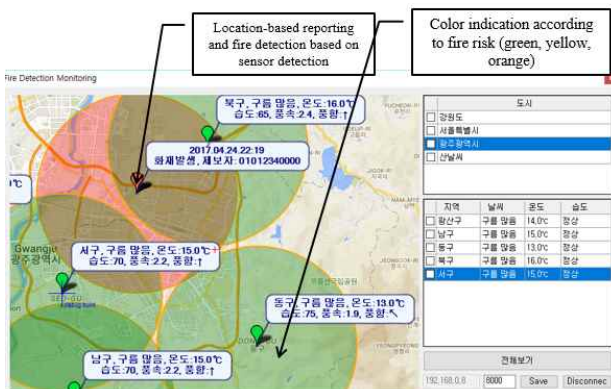


Figure 1: Real-time monitoring and forecasting server.

In the system, we use weather measurement information which was provided by government website (Korea meteorological administration) on the system servers. Also, we build an android application which connects to the servers where information is processed before emitting to users.

3. Conclusion

This article carried out research on the urban disaster. Primarily, we focused on intelligent indoor/outdoor fire control with an integrated management system and monitoring system using IoT smart sensors. It showed that by using the control and monitoring system users can detect and be noticed if an area occurs a fire. In the future, we intend to investigate the system in network virtualization environment.

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