DEMONSTRATION OF AN INTEGRATED APPROACH FOR VISUALIZING INDOOR SENSOR DATA

MINKYU SHIN¹, SANG-IK LEE², JISOO KIM³, HYUNSOO LEE⁴ and JIN-KOOK LEE⁵
¹,²,³,⁴,⁵ Hanyang University, Seoul, Republic of Korea
{s m kzzanggood, kignaseel, jicoun, hyunsoolee120} @ gmail.com,
designit@hanyang.ac.kr

1. Introduction
This poster aims to represent a research and development project to demonstrate a mechanism of data visualization using a sensed data set of the indoor environment. For this research, we build a test-purposed versatile toolkit for sensors that is smaller, cheaper, and more controllable than conventional systems. By using it, we could collect a sequential numeric data set in order to use them as a means of given parameters for visualization. A test case depicted in this paper demonstrates how such a collected data set can be visualized on top of the building model using its floor plans.

2. Background
Indoor environment is one of the major factors that directly impact on the daily life of people [1, 2]. Maintaining the indoor environment in a comfort condition is important for maintaining the efficiency of work and emotional and physical health [3, 4]. In order to improve the environmental quality of an indoor space, measuring and analyzing the condition of the space should be conducted [5].

As a matter of understanding and analyzing the indoor environment data effectively, this post introduces and demonstrates a mechanism for the visualization of indoor environmental data on floor plans.

3. The Mechanism of Visualization
The mechanism for indoor environment visualization consists of three major parts: 1) building model part, 2) input data part, and 3) visualization part.
The Data from both input data part and building model part can be acquired from the actual spaces. These parts generates input data for visualization and the visualization part is in charge of integrating these input data of the former parts and creating the final visualization output.

4. Case Study

We have demonstrated the visualization of indoor temperature changes on the floor plan, and the subject space is a laboratory room located in building of College of Human Ecology, Hanyang University.

5. Summary

A sequential indoor environment dataset can be processed and visualized through the proposed mechanism. Compared to given sensed data in a numeric form, the visualization from the mechanism is much more intuitive and easier to figure out environmental aspects. We realized that there could be several feasible scenarios using this mechanism. We will continue to enhance the capability of the data visualization mechanism on a given building model, based on various kinds of available sensor modules, their network, alternative data collection and visualization methods.

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References


