

**Abstract: Received Signal Strength Ratio Based Indoor Localization using LED Ceiling Lamps for Ubiquitous Computing Environment**

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**Abstract**

We propose an optical wireless indoor localization using light emitting diodes (LEDs) and demonstrate it. The information of the location is one of the important contexts required to the context-aware service in ubiquitous computing. In the proposed method, four LED lamps in the ceiling are used and they radiate their light in each assigned time slot to distinguish each light signal from LED lamps. LED can switch on and off its light at high speed, and human eye cannot recognize its blink. Using the received signal strength ratio between the received light signals, the location of an object is estimated. Because the proposed localization method uses pre-installed LED ceiling lamps, no additional infrastructure for localization is required to install and therefore, inexpensive system can be realized. Moreover, the proposed method can be applied to location based services and context-aware services in ubiquitous computing environment.

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