An Efficient ILACS Control Algorithm for Intelligent LED Indoor Lighting System

Sung-IL Hong, Chi-Ho Lin

School of Computer, Semyung University, Jecheon-city Chung-buk Republic of Korea

megadriver@hanmail.net, ich410@semyung.ac.kr

Abstract— In this paper, we propose an efficient Indoor Light Automatic Control System (ILACS) control algorithm for intelligent LED indoor lighting systems. The proposed ILACS control algorithm includes elements such as daylight intensity measured through a PIR sensor and an illuminance sensor at lighting style by a defined schedule and occupancy detection. This algorithm controls lighting through a wireless sensor network, and was designed for energy savings. Also, the algorithm controls indoor lighting based on occupancy detection of fine movements using a PIR sensor. Unnecessary lighting intensity control of the window-side and the inside were controlled according to daylight level measurements using the light sensor. In many cases of daylight inflow, the window-side lighting automatically became darker, and in daylight inflow, this occurred less, as the system was designed to be automatically bright. The efficiency validation results confirmed an efficient ILACS control algorithm for intelligent LED indoor lighting systems. The brightness of the indoor lights were employed to maximize the energy savings by controlling the system in real time when entering, in order to utilize external lighting or daylight.

Keyword—Sensor network, PIR, Daylight, ILACS, Control algorithm

First A. Author: Sung-Il, Hong, Doctor of science, school of computer, semyung university, 65 Semyung-ro, Jecheon, Chungbuk, 27136 Korea

February 2007: Bachelor's degree, School of computer of Semyung University
August 2009: The education masters of Semyung University Graduate
February 2015: The doctor of science, at department of computer information, semyung university graduate (Computer science majors)
Interest of areas: SoC CAD, Algorithm, Embedded, Courseware, Multimedia, Lighting Control System, IoT, Hybrid Webapp

Third Author: Chi-Ho, Lin, The professor, School of Computer, Semyung University, 65 Semyung-ro, Jecheon, Chungbuk, 27136 Korea

August 1985: Bachelor of engineering, electronic engineering , an engineering collegeof Hanyang University Graduate
August 1987: Eengineering master's degree of Hanyang University Graduate(CAD major)
August 1996: Doctor of Engineering, of Hanyang University Graduate(CAD major)
August 1992 ~ Current: Professor, School of Computer, Semyung University
Interest of areas: SoC CAD, ASIC Design, CAD Algorithm, SOC Design, RTOS & Embedded System, Lighting Control System