

第三屆智慧生活科技研討會, 國立勤益科技大學, 2008 年 6 月 6 日

## 感測器結合 ZigBee 技術應用於路燈照明監控系統之研究

魏忠必;周照凱;鄧舜文

### 摘要

本文提出一種結合感測器與 ZigBee 無線感測傳輸技術的路燈故障自動回報的監控方法，且可運用於未來發展性極高的 LED 路燈。首先針對國內需要路燈且危險性高的路段建立無線感測系統，透過感測器來偵測路燈照度資訊，再藉由 Zigbee 無線傳輸模組，將資料即時傳送至監控端。因此，當路燈發生異常狀況時，可迅速且精確透過佈建之 ZigBee 節點向監控端提出警示，監控管理中心接收回報訊息後，可在第一時間調度人員前往勘查及修復，省去以往需要依賴人力通報的程序。為了驗證路燈照度量測的方法，本文並經由光學軟體(Light Tools)模擬，再配合實際電路測試結果互相驗證。

關鍵字：自動回報系統;無線感測網路;LED 路燈

# **The Application of Sensors-Based Zigbee Technology in the Monitoring System of Street Light**

魏忠必;周照凱;鄧舜文

## **Abstract**

The goal of this study is to establish a wireless detection system, in which street light sensing subsystems are linked to the main system through Zigbee Wireless Transmission Technology such that real-time environmental data can be transmitted to the backend servers. As soon as abnormality of the led street light is detected, a corresponding alarm will be transmitted by a local Zigbee node to the backend server so that countermeasures can be undertaken immediately. This proposed approach has been tested through simulations and real signals. Test results confirmed the feasibility of the method for the application considered.

Key words : Automatic reporting system;Wireless sensor network;

LED street light;ZigBee