



Universidad
de Alcalá



SYSTEMS AND APPLICATIONS BASED ON INDOOR POSITIONING VIA LED-LIGHTING

TECHNOLOGY OFFER

Code

TIC_UAH_35

Application areas

- Information and Communication Technologies
- Indoor positioning system
- Positioning Real Time System
- Infrared localization
- Embedded sensors

Type of collaboration

- Interested in companies or institutions to conform a consortium for a project proposal to make it the system real
- Manufacturing Agreement

Main researches

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ABSTRACT

The general objective is to obtain an indoor positioning system that is capable of estimating the position of "smart" devices or of simple detectors designed for that purpose (receivers) from the emission of codes embedded in the lighting light of a room / building. The achievement of this system shall allow the development of multiple applications for the set-up of routes and help guiding. The use of LED lamps available for lighting of different parts of a building or room in such a way as to allow the transmission of very high frequency codes non-perceptible by humans together with the illumination lights. These codes (one unique code for each LED lamp) will be decoded by light detectors included in smart-devices, or by detectors designed particularly for this purpose. From the code information, the device positioning can be determined with high precision.

ADVANTAGES AND INNOVATIONS

The accurate indoor position determination from lighting opens up a wide range of possibilities. The system could be applied in very different fields and applications such as museums, shopping centers, supermarkets, logistic warehouses, etc

- In museums, by means of the use of mobile devices, flexible routes can be traced depending on the available time to do the visit, a specific interest or even the type of user, in such a way that when the smart device captures the position it can show on the screen where the visitor is located and guide him/her to the next item to be visited. Additionally, if a picture or object is reached, the system could automatically download its information.
- In shopping malls, given the precision in the indoor location the system might provide people with routes to the desired shops.
- In supermarkets, the list of products to be searched could be introduced in the smartphone and it would guide the user, positioning itself by means of lighting, along the optimal route until all products are picked up.
- In logistic warehouses the same device used for picking&pack plus a simple detector based on photodiodes, might offer the operators the quickest route for the collection of multiple products.
- In hospitals and health centers, by means of mobile devices or simple detectors, it would be possible to know the location of medical personnel, wheel-chairs, equipment, etc.