



# Licensing opportunity

## Smartphone-based Indoor Localization using Fuzzy Path Loss Models

### Field of use

Guiding people through  
museums, airports

### Current state of technology

Laboratory tested/Prototype

### Intellectual Property

Copyright

### Publication

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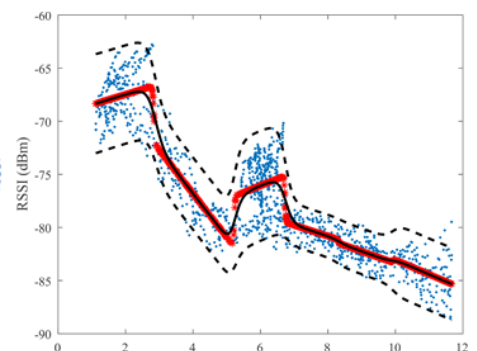
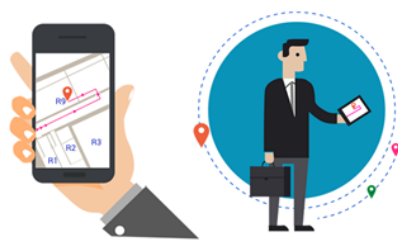
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### Background

In recent years, the rapid developments in mobile and communication technologies have encouraged many studies in the field of localization and navigation in indoor environments. Smartphones are becoming almost indispensable accessories of people, not least because of the possibility to use them as a personal navigation system (PNS). An accurate indoor localization system has a lot of practical value, since it can be built into a personal navigation system for guiding people through shopping malls, museums, airports, public institutions, etc.

### Description of the Invention

We developed an efficient indoor localization algorithm based on confidence-interval fuzzy models. The platform of the localization system is constructed on the basis of Bluetooth beacons and a smartphone. Localization algorithm is computationally efficient, which enables real-time processing and low energy consumption on a smartphone. The developed localization system outperforms the existing low-cost localization systems since we obtained an average error that is smaller than 0.5 m.

### Main Advantages

The developed indoor localization system combines the advantages of relative and global localization approaches and therefore shows great performance. It has many potential uses and benefits and guiding the blind is just one of them.



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