INDOOR LOCATION POSITIONING SYSTEM WITH WIFI TECHNOLOGY

Hacer Danacı
Ege University Electrical and
Electronic Engineering Izmir,Turkey
hacer.danacı.muh@gmail.com

Yaprak Topçu
Ege University Electrical and
Electronic Engineering Izmir,Turkey
yaprak.topcu.22@hotmail.com

ABSTRACT

In this short paper, we introduce our ongoing work MaWi, a hybrid indoor localization scheme based on magnetic field and WiFi Fingerprints.

Keywords

WiFi fingerprinting,Magnetic Field,RSS

INTRODUCTION

Nowdays indoor localization is an often considered topic and desipe numerous proposals research is still going on. At present with the spreading use of the Internet, Wi-Fi is no longer without a place.A group of possible localization methods are based on WiFi. They are economical,adaptation is easy,there is no need of any insfrastructural hardware, the covarege zone,is quite high,and the moment of signal translation being better than other methods suggested.. We will create a hybrid model using various algorithms. And also we decided to take advantage of the earth's magnetic field.The proposed is based on the socalled fingerprinting method.

DETAİLS OF THE METHOD

There are two states of the fingerprinting method.These are “offline training phase” and “online determination phase”.During the offline training phase in the step reference points are selected. WiFi received signal strength (RSS) values that taken in a certain period are recorded into the database. The RSS values are taken from the Access Points (APs). During the Online Determination Phase,RSS information of the mobile user to an unknown place. And we compare with the information stored in the database before. Later to define the user's location we use the embedded algorithm in the hardware.In addition to that, we will record database with the values of RSS and values coming from magnometer.

DEPLOYMENT REQUİREMENTS

In the experiment we will use Ardunio uno as mobile clients.We will use existing WiFi network in the buildings as infrastructure. And we will benefit from the earth's magnetic field. No extra hardware deployment is needed.

REFERENCES

[1] Hui Liu,Pat Banerjee,Jing Liu,”IEEE Transactions on Systems,man, and Cybernetics-Part C Applications and Reviews,*Vol.37. No.6”,November 2007*

[2] Kamol Kaemarundsi and Prashant Krishnamurthy,”Modeling of Indoor Position Systems Based on Location Fingerprinting”,Pennsylvania,2004

[3] Kamol Kaemarundsi and Prashant Krishnamurthy,”Properties of Indoor Received Signal Strength for WLAN Location Fingerprinting”,Proceeding of the First Annual International Conference on Mobile and Ubiquitous Systems:Networking and Services, 2004

[4] Microsoft indoor localization competition – IPSN 2014, 2014.

[5] Da Zhang, Feng Xia, Zhuo Yang, Lin Yao, Wenhong Zhao “Localization Technologies for Indoor Human Tracking” Future Information Technology (FutureTech), 2010 5th International Conference, 2010