Implementation of an RFID-Based Virtual Signal Mechanism for Indoor Location Sensing System

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Abstract

The variety in wireless technology and mobile computing devices has caused a growing application of location sensing systems and correspondence services. The indoor location sensing system which applies radio frequency identification technology (RFID) is the most popular research topic in the area of location sensing systems, and LANDMARC is the most representative one. However, LANDMARC suffers the drawback of inaccuracy in unstable signal intensity. A Virtual Signal Location System (VSLS) is designed and developed to overcome some drawbacks of LANDMARC. The concept of VSLS is based on the additional setting of virtual signal tags as well as the normal distribution of signal strength, analysis of sampling rate and equalization to decrease signal intensity error. Comparisons were made with LANDMARC; results showed that VSLS effectively increased the sampling quality of the signal as well as the precision of positioning.

Keyword：LANDMARC, virtual signal location system (VSLS), radio frequency identification technology (RFID), location sensing, signal strength, virtual signal tag.