Recent Development of RFID Indoor Positioning Technologies

——An Review of RFID-Based Systems and Techniques

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ABSTRACT

Radio frequency identification (RFID) is an emerging technology for ubiquitous positioning and it is revolutionising the daily life of people. For many years, this technology has been predominately employed for tracking goods in supply chains. Recently, it has been also applied in a wide range of industries such as logistics, manufacturing, defence and retail. For example, RFID has been used for baggage tracking at airports, industrial supplies monitoring, as well as payment processing. The ability to track people and objects precisely is vital to modern society, and RFID has been regarded as a core technology for indoor positioning due to its great advantages and remarkable benefits. As technical standards are established, costs come down and the technology matures, extensive utilisation of RFID is rapidly spreading around the world. Eventually, more and more companies will have a demand for RFID in one way or another. However, little literature for RFID technology analysis can be found due to its fast and broad development. This paper presented an review of various state-of-the-art RFID-based systems and techniques, especially in the indoor positioning application field. Technical features including radio frequency, positioning principles, matching application cases and the pros and cons for each of the systems were further assessed, and the performances of these systems were also compared and discussed. The results could be useful for companies, organisations and researchers to identify or refine an appropriate RFID-based indoor positioning system for their particular applications.

KEYWORDS: RFID, Indoor Positioning, LBS, RFID Solution, Technology Review.