

IOT with Navigation Technologies with Real Time Problem Dimensions

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Abstract

The advent of the Internet of Things has witnessed tremendous success in the application of wireless sensor networks and ubiquitous computing for diverse smart-based applications. The developed systems operate under different technologies using different methods to achieve their targeted goals. In this treatise, we carried out an inclusive survey on key indoor technologies and techniques, with a view to explore their various benefits, limitations, and areas for improvement. The mathematical formulation for simple localisation problems is also presented. In addition, an empirical evaluation of the performance of these indoor technologies is carried out using a common generic metric of scalability, accuracy, complexity, robustness, energy-efficiency, cost and reliability. Furthermore, the findings of the survey could be useful in the selection of appropriate indoor technologies for the development of reliable real-time IoT-based indoor applications. The study could also be used as a reliable source for literature referencing indoor location identification. The numerous breakthroughs in the Internet of Things (IoT), have invariably enabled the requirement for accurate real-time location information by most applications for tracking of people and objects. Location identification involves the determination of the spatial position of targets using different possible methods with key parameters including precision, accuracy, cost, reliability, scalability, energy efficiency and robustness. The range of pervasive applications using real-time location-based information is diverse, with many applications regardless of the environment are required to operate independently and intelligently. Thus, these key parameters become some prime design requirements. The progress achieved in the research of outdoor applications is remarkable in recent times. With the Global Positioning System (GPS), reliable and accurate location identification is possible for diverse outdoor applications whenever there is a direct line of sight (LOS) between the satellites and its receiver. The GPS remains a prime example of the relatively high localisation accuracy obtainable through very long distance wireless communication link with effective global coverage. However, the level of accuracy of GPS become unreliable in indoor environments, often affected by several factors including multipath from reflections of signals by walls and ceiling, NLOS (non-line-of-sight), attenuation and signal scattering, noise, and physical obstruction of signals. The unreliability of GPS indoors necessitates the search for alternative exciting, innovative methods for efficient location-based applications

Biography

Kanta Prasad Sharma has a rich experience of more than 13 years as an innovative academician. Sharma has Ph.D in Information Technology from Amity University & Mater from UPTU Lucknow, India. At present, Sharma is the Assistant Professor in University Institute of Computing, Chandigarh University Mohall, India. Sharma has

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