Real-time Indoor Map Generation to Identify Spatial Environment Changes

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Abstract

While there are many well-established techniques for outdoor contexts using technologies such as GPS, GSM and GNSS, they cannot be applied to an indoor environment. Thus, Indoor navigation remains a challenge as the state of an indoor environment is always unpredictable. Geographical co-ordinates can be applied for indoor localization, but they are not useful inside a building with multiple floors. In most of the approaches, a blueprint of the building is needed for mapping purposes. Hence, there is a need for an improved approach for indoor localization and mapping to overcome the drawbacks stated above. This paper presents an approach to generate a real-time indoor map in-order to identify the changes in the spatial environment. In this approach, authors consider an approach where the information is gathered from users’ mobile devices. The position of the user is obtained using iBeacons. Furthermore, this paper discusses how to obtain the sensor data and position of the user by using iBeacons, transferring the data to the database via an API, detecting objects present in the indoor environment and generating the real-time map.
References

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Index Terms

Computer Science  Information Systems

Keywords

Components; indoor navigation, localization, iBeacons, API, SLAM