POCKET MALL NAVIGATOR

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Abstract - Large retail malls frequently include a list of available shops, however these directories are usually static and do not provide any interactivity to visitors. We provide a mobile shopping mall navigator in this work. QR CODE is used in the system to store product information. The bill can be paid by debit/credit card or online. The produced application is realistic and viable; smart phones are becoming increasingly popular these days, so we merged the notion. In an alienated mall, a smart phone application assists the user. The concept centers around smart phones and the mall's "WI-FI." The Internet of Things (IoT) is transforming people's lives by connecting common objects. For example, at a grocery store, all items can be linked to build a smart shopping system. An affordable radio frequency identification (QR CODE) tag can be applied to each product in such an IoT system, and when placed in a smart shopping cart, it can be instantly scanned by a cart equipped with an QR CODE reader. As a result, billing can be done directly from the shopping cart, saving customers from having to wait in a long line at the checkout. In addition, smart shelving with QR CODE readers can be added to this system to monitor stock and possibly update a central server. Another advantage of this type of system is that inventory management is simplified because all goods may be automatically read by an QR CODE reader rather than manually scanned by a laborer. We assess the design requirements of a smart shopping system in this study, create a prototype system to test functionality, and suggest a secure communication protocol to make the system practical. To the best of our knowledge, this is the first time a smart purchasing system has been proposed with security in mind.

INDEX TERM: Indoor navigation, Wi-Fi router.

INTRODUCTION:

In the conventional method of shopping, customers select their desired purchase and carry it with them. Customers must then wait in large lines at the cash register. This takes a significant amount of time and energy from both the shopper and the cashier. To circumvent this law, an QR CODE tag is attached to the merchandise, and an QR CODE reader is connected to the trolley. When a customer places a product tag near a reader during a purchase, the system retrieves the essential details of all products from the shop's database and generates a bill. This bill can be sent to the customer's mobile phone via internet banking, allowing the user to make a rapid payment and leave the shop sooner. By using the proposed mobile application, the consumer reads the QR CODE tag of the goods and adds it to their wish list if they are interested in the item. To create an Android application that employs an QR CODE reader to purchase and navigate things for a store that will be selfchecking and accepting automatic payments. This is when the terms indoor navigation and QR CODE tag come into play. Because satellite-based approaches do not work adequately within buildings, indoor positioning remains a difficult subject. QR CODE is a technology that employs electromagnetic fields to automatically identify and track tags attached to things. The tags contain data that has been electronically saved.. Passive tags absorb energy from interrogating radio waves emitted by a nearby QR CODE reader. Active tags are powered locally (through a battery) and can operate hundreds of meters away from the QR CODE eider. The tag does not have to be visible to the reader, therefore it can be embedded in the tracked object. QR CODE is one type of automatic identification and data capture technology (AIDC). When the user is through purchasing, he or she can pay the charge with a credit card or online. Users can pay their bills using a credit card or a debit card. The user will enter card information such as the name of the bank, the card number, the CVV number, and the expiration date. Include the amount to be paid as well. When a user selects online payment, he or she must provide bank information such as the name of the bank, the account number, and the amount.

LITERATURE SURVEY

Gennady Berkovich," Accurate and reliable realtime indoor positioning on commercial smartphones" [1] This article describes SPIRIT Navigation's software navigation engine for indoor location on commercial smartphones. The utilization of numerous technologies for indoor positioning at the same time is a distinguishing aspect of our method. Measurements from smartphone sensors such as IMU (3D accelerometer, gyroscope), a magnetic field sensor (magnetometer), WiFi and BLE modules, as well as the floor plan, are employed in the navigation engine for hybrid indoor positioning. PDR, Wi-Fi fingerprinting, geomagnetic fingerprinting, and map matching are some of the technologies used in indoor navigation software. Dissimilar measures, when blended in the particle filter, enable the solution of a number of key tasks. First, the navigation engine can start automatically in any location of a building if the user turns on his or her smartphone. There is no need to manually enter the first position or to begin outside where the initial position can be obtained by a GPS/GNSS receiver. The navigation system then provides real-time indoor navigation in tracking mode, displaying current user position on the floor plan or on Google Indoor Map if the latter is accessible for the building. Finally, the navigation engine can recover tracking from particle filter failures, which occur when all particles are unintentionally rejected. In this situation, automated tracking recovery allows for continued monitoring and increased availability of interior navigation. The navigation engine is available in the form of an SDK, which can be used to create mobile applications for both Android and iOS. Positioning results for several interior environments in a shopping mall and a large exposition hall show quick TTFF indoors as well as accurate and dependable real-time indoor positioning with an accuracy of roughly 1-2 m. Suk-Hoon Jung; Gunwoo Lee; Dongsoo Han "Methods and Tools to Construct a Global Indoor Positioning System" [2] Many buildings across the world, including towns and cities, use a technology called a global indoor positioning system (GIPS). Using WLAN and fingerprint-based location algorithms, it is possible to pinpoint a user's location in a somewhat accurate manner. WLAN-based location fingerprinting has received a lot of interest among the many indoor positioning techniques. This paper describes strategies and tools for building a GIPS utilizing WLAN fingerprinting. To create radio maps with crowdsourced fingerprints, an unsupervised learning-based method is used, and a probabilistic indoor location algorithm is built for the radio maps created with the crowdsourced fingerprints. Collecting indoor and radio maps of buildings in villages and towns, in addition to these techniques, is critical for a GIPS. If you are a volunteer who wants to set up indoor positioning systems in your facility, this guide is for you. Building an indoor positioning system inside the wider GIPS also includes discussion of volunteer tactics and tools. An experimental GIPS based on these principles and technologies was built at KAIST (KAILOS).The interior navigation systems for a university campus and a large- scale inside retail mall were then built utilizing KAILOS, demonstrating KAILOS's effectiveness in building indoor positioning systems. The more people that offer to help with development, the better. Siti Fatimah Abdul Razak; Choon Lin Liew; Chin Poo Lee; Kian Ming Lim," Interactive android-based indoor parking lot vehicle locator using QR- code"[3] QR codes have been used in a variety of ways, including marketing products, locating promotional things on shelves, identifying stores, and so on. In this study, we report on the creation of an Androidbased application intended at providing navigation services to identify parked automobiles in an indoor parking lot of a shopping mall. We make use of the motion sensor, bar code scanner, and camera functions built into cellphones. Based on an indoor map of the parking area kept in a database, this programmed can indicate the route from the user's current location to his parked vehicle. Furthermore, it is capable of automatically detecting users' present movement based on steps computation. To evaluate the application's performance, a field test was done in an indoor parking area at a shopping mall. Overall, the application has yielded promising outcomes.

Da Su; Zhenhui Situ; Ivan Wang-Hei Ha "Mitigating the antenna orientation effect on indoor Wi-Fi positioning of mobile phones" [4] Because of the limitations of GPS in the indoor environment, as well as the rapid proliferation of Wi-Fi hotspots and mobile devices, indoor Wi-Fi-based positioning has gained popularity. In this research, we construct a realistic and convenient indoor positioning system on Android mobile devices using the fingerprint approach and the Kalman filter. This work not only analyses location algorithms, but it also addresses many practical application issues, such as the effect of antenna orientation and signal fluctuation. To account for the substantial fluctuation caused by orientation change, an enhanced mapping technique based on k-nearest neighbors (K-NN) is presented, and an orientation-based fingerprint database is built by investigating the received signal intensity patterns in different directions. Finally, our experiments demonstrate that the proposed indoor positioning system can achieve 1.2 meter precision in 90% of the time, which is sufficient for supporting various navigation and infotainment applications in largescale indoor environments (e.g., shopping malls).

Thomas Willemsen; Friedrich Keller; Harald Sternberg ,"Concept for building a MEMS based indoor localization system" [5] Smartphone navigation using Global Navigation Satellite Systems (GNSS) is very popular. However, in situations where no GNSS signal is available, navigation may be useful. Navigation in shopping malls, large offices, train stations, and museums are some examples. The purpose is to estimate the position in GNSS darkened zones in order to allow navigation. The MEMS sensors (Micro Electro Mechanical System) in today's smartphones, including as the accelerometer, gyroscope, magnetic field sensor, and barometer, now allow navigation in GNSS darkened locations. However, due to the low quality of these sensors, help for the location estimate is required. In this paper, an idea for building an interior navigation system based on lowcost smartphone sensors is described.

The location estimate based on the available sensor data serves as the foundation for the position determination. As a result, position estimate is always achievable regardless of location. The first results with the Kalman filter and the particle filter are displayed. The offered concept serves as the foundation for the development of an indoor smartphone navigation system. As a result, the available MEMS sensors should be used as position estimators, and a wide range of supporting data can be handled. As an example, a first approach for smartphone implementation is provided.

ALGORITHM:

KNN Algorithm:

The Supervised Learning approach is used in the KNearest Neighbor Machine Learning method. In the K-NN method, the new case is compared to the previous cases and assigned to the category that is most similar to the existing categories. To classify new data, the K-NN algorithm leverages past data to keep track of similarities. To put it another way: as fresh data is generated, the K-NN approach can quickly classify it. Regression and classification issues can both benefit from the K-NN approach, however it is more commonly utilized for classification tasks. There are no assumptions about the underlying data while using K-NN because it is a non-parametric approach. Due to its inability to learn from the training data right away, it is also known as a lazy learner algorithm. Instead, it saves the information and only uses it when doing classification. The KNN technique simply saves the dataset throughout the training phase and classifies new data into a category that is close to the new data. So, for example, let's say we have an image of a creature that, from the side, appears to be some sort of feline or canine hybrid. Because the KNN approach is based on a similarity metric, we may use it to identify this person. If there are any similarities between the new data and the images of cats and dogs in our KNN model, we'll use that information to classify it.

CONCLUSIONS:

In order to promote purchasing methods and make people's lives easier, we are going to create this smartphone application, which might play a significant part in Indian society as a whole. The use of Pocket PC mall navigator as a shopping mall navigator was able to promote awareness in using smart mobile devices for flexibility in practically every task related to shopping, in addition to assisting consumers in finding products efficiently and effectively.

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