# PREPOSTSEO

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to develop an android application for smartphones which helps the user to navigate through an unfamiliar indoor environment using augmented reality as an interface. augmented reality based indoor navigation system arin augmented reality based indoor navigation system is a product which is aimed at making indoor navigation in an unfamiliar indoor environment easier and more interactive with the use of ar. this system can navigate a user without continuous network connectivity. augmented reality is a technology that superimposes a computer generated image on a user s view of the real world thus providing a composite through mobile devices it enhances experiences by adding virtual components such as digital images graphics or sensations as a new layer of interaction with the real world. ar studies in maintenance show promising results in enhancing human performance in carrying out technical maintenance tasks. by using this trending technology we aim to develop an interactive indoor navigation system. indoor positioning has gained popularity recently due to its potential to be used in the increasing complexity of indoor environment and because gps signals are the main objective of this work is to design a new method to develop indoor positioning navigation system through image processing. the idea of this work can be broadly applied to mobile devices such as mobile phones or tablets which is easily available for a common user. ocr stands for optical character recognition. it is a widespread technology to recognize text inside images such as scanned documents and photos. ocr technology is used to convert virtually any kind of images containing written text typed handwritten or printed into machine readable text data. 6 probably the most well known use case for ocr is converting printed paper documents into machine readable once a scanned paper document went through ocr processing the text of the document can be edited with word processors like microsoft word or google docs. fig 1.1 optical character recognition the origin of the word augmented is augment which means to add or enhance something. in the case of augmented reality also called ar graphics sounds and touch feedback are added into our natural world to create an enhanced user experience. 1 in ar we increase the usability of an interface by adding sensory information like computer generated images sounds and in some cases touch feedback over user s view of this enhances user s current perception of reality. fig 1.2 reality virtuality continuum marker based augmented reality also called image recognition is one of the easiest type of ar for implementation. based on image recognition marker based ar works by recognising a visual marker in the environment and generating a digital image only when a known marker is sensed. the markers are simple and unique such as the qr codes. 7 it finds its applications in the manufacturing and construction industry. in markerless augmented reality sensors in devices are used to detect the real world environment. with the emergence of smart devices elements such as gps accelerometers velocity meter digital compass are pre included in the device which make the existence of a strong force behind markerless augmented reality technology is the wide availability of smartphones and location detection features they provide. it is most commonly used for mapping directions finding nearby businesses and other location centric mobile applications. 7 this is a relatively newer trend in ar which works on the principle of advance projection technology that forecasts light onto real world surfaces and senses human interaction with the light. this process is carried out by distinguishing between the expected and altered projection. 7 this type of ar is usually used in manufacturing companies to assist in manufacturing assembly sequencing and training operations. superimposition based augmented reality works with object detection and recognition. it recognises an object and then replaces it by superimposing a digital image over it. 7 some consumer facing examples of superimposition based augmented reality can be organising furniture in a room or virtual trial rooms for clothing. fig 1.6 superimposition based ar our motivation for this project stems from the fact that people are increasingly relying upon their smartphones to solve some of one such problem that smartphones have not yet completely solved is indoor navigation. navigation systems have been widely used in outdoor environments but indoor navigation systems are still in early development stages. an indoor navigation app would certainly benefit users who are unfamiliar with a place. tourists for instance would have a better experience if they could navigate confidently inside a tourist attraction without any assistance. in places such as museums and art galleries the application could be extended to plan for the most optimal or popular routes. furthermore even though augmented reality is a topic having research more than 20 years in timeline it started trending recently when google announced their work on google glasses or when ar applications photo filters and games went a hit. this void in research in this area along with interest in developing user friendly applications further motivated us to take up this project. the aim of the project is to develop an ar based indoor navigation system for handheld devices like smartphones tablets etc. using image comparison to identify location with an intuitive user interface. to make indoor navigation seamless and interactive through a hand held mobile device using ar technology. to detect of current user location relative to nearby landmarks by vision based feature extraction or visual positioning. to determine of shortest path from current location to desired destination and navigate user by augmenting directions in user s real world view captured. to explore the intuitive depiction of information as observed in augmented reality systems.