# Indoor Navigation System Using AR

## Abstract

With a Smartphone in hand, it is pretty easy for us to find our way to the destination using outdoor GPS navigation mobile apps, even when we are in an unfamiliar city. However, it is possible to get lost indoors, with GPS satellite signals not being accurately traceable in case of navigation apps. Indoor navigation deals with navigation within buildings. Because GPS reception is normally non-existent inside buildings, Wi-Fi or Bluetooth Beacons can be used for indoor navigation. But these have an accuracy of 5 – 15 meters and require costly hardware installation. It’s easier to navigate indoors when you can see your surroundings.

We intend to develop an augmented reality application which will show the directions to the destination in the user’s camera. It consists of 3 modules which have to be factored in; and these include: **Mapping**, **Positioning**, and **Rendering**. With a map and coordinates, we make the required route. So, the map for the required route is captured and stored in cloud. Rendering module manages the design of AR content and its work is to draw a route in 3D map already captured. Then we determine the precise location of users indoors by the streaming data fed by the user’s camera and the directions are shown in their camera.

The application is developed in **Unity** from scratch to the end using some essential plugins like **Google ARCore** to embed the animations as augmented reality, **MapBox** for maps, **Placenote** to store the captured route map, etc. We aim at developing the front end in the simplest way possible so that the users can easily reach their destination by just opening the camera where the directions are shown as animations in their surroundings.

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