

Indoor Navigation Guidance for Mobile Device

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Abstract

Navigation is capable of showing the position and direction at the specified location. In this paper, we proposed an indoor navigation based on the user location to its desired destination. Indoors navigation first needs to determine the route that can be accessed inside the building. This guidance is made by cultivating the indoor trajectory route that utilizes the sensor technologies in mobile devices. The sensors to be used are pedometer and magnetometer. The experiment shows that the guidance gave the instructions to navigate from the start to the destination by following compass direction and footstep to take. The guidance instruction affected by three factors, there is user height, step calculation, and sensor threshold value. These three factors have different effects but interconnected with the application system and that which causes differences in the accuracy values obtained in the experiment.

Keywords : indoor navigation, guidance, sensor, mobile device.

1. Introduction

Since a long ago, navigation is used to help determine position and direction. As technology develops, the navigation technology continues to change and become more sophisticated. Many activities are also currently utilizing the ability of navigation systems both on land, sea, and air. On land, people use the navigation to determine the route from their location to the location they want to go. However, navigation on land can be divided into two categories, outdoor navigation and indoor navigation. Outdoor navigation usually relied on one of the technology devices that is Global Positioning System (GPS). Devices that have a GPS system will capture the data signal transmitted from the satellite and be captured by the GPS signal receiver[14]. By using this GPS technology, we can be directed to a predetermined location. The direction shown on the navigation system is formed into the trajectory data that has been established as a usable path. One of the example of the GPS technology is Google Map, as showed in Figure 1.

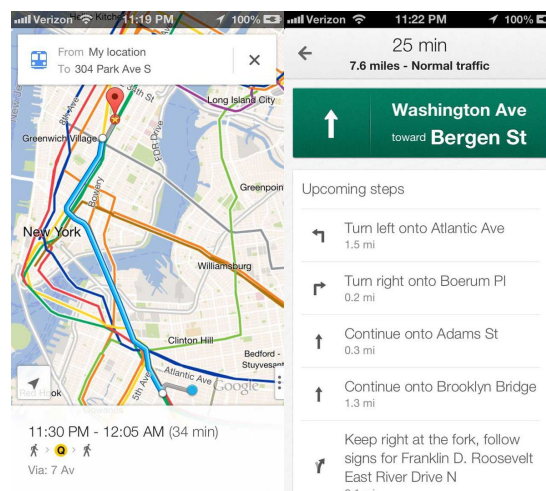


Figure 1. Outdoor Navigation and Guidance Example

Most of people spend more times inside a building. Since people spend most of their time in indoor environments, indoor navigation service is in great public demand[17]. Unfortunately, indoor navigation cannot use GPS