Abstract

WiFi-Based Indoor Navigatioin System using AR

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1. Introduction

1.1 Background

In recent years, a variety of navigation systems using AR have emerged. AR is an abbreviation for Augmented Reality, a technology that visualizes the real world by adding digital information such as voice, images, and text. An example of its application is Google Maps. It has a function called "Live View" that visualizes the direction to the destination by superimposing guide arrows on images of the surroundings taken with a smartphone camera. However, many of these applications use GPS to track location information and cannot be used indoors. This is because GPS signals are not well received inside buildings, making it difficult to track locations indoors.

　On the other hand, past research papers have proposed various methods for indoor location tracking. For example, there is a method that combines two methods: RSSI positioning from APs and a map-matching algorithm that identifies walking routes based on location data. AP is an abbreviation for Access Point, which is a device that transmits and receives Wi-Fi signals and bridges the gap between the device and the router.　We focused on this method and thought that we could develop a navigation application that could be used indoors without relying on GPS. We focused on this method and thought it might be possible to develop a navigation application that could be used indoors without relying on GPS.

**1.2 The goal of the thesis**

The objective of this research is to develop a practical indoor navigation application for smartphones using these methods introduced above. In addition, we aim to provide more intuitive and understandable guidance than general navigation applications by using AR methods to provide visual support for route guidance.

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