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SDSU
presents
MS Computer Science
THESIS DEFENSE

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An Indoor Navigation Aid for Visually Impaired

Abstract

Indoor navigation for visually impaired is a highly challenging area due to the nature of limitations such as absence of GPS, inaccuracies with distance estimation with available technologies such as Bluetooth, Wi-Fi, etc. and particularly with mapping places visited for the first time or places that have been rebuilt to change from original layout. This thesis presents an indoor navigation system using Gimbal proximity beacons. The study aims to develop an easily deployable navigation aid to detect the user's approximate distance from beacons and inform them of their proximity to known locations.

Gimbal proximity utilizes Bluetooth smart beacons to provide a granular level of location awareness enabling application to determine with a high degree of accuracy their relative proximity to the beacon. A study has been performed to capture the signal strength variation of the beacons at different distances and different orientations of the beacon. Using this data a smartphone application has been developed that will help with the deployment and scanning of beacons to estimate user's approximate distance to each of the beacons. The user heading is obtained from the compass on the smartphone. Using the proximity and heading information user is informed of his surroundings with his proximity information of these known locations so that the user can navigate himself in the indoors with little to no help.

Thesis Committee

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