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Volume XXXIX-B2

EVALUATING THREE INTERFACE TECHNOLOGIES IN ASSISTING PEDESTRIANS' SPATIAL KNOWLEDGE ACQUISITION

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Abstract. Recent years have seen raising interests in mobile pedestrian navigation systems. Different interface technologies can be used to communicate/convey route directions to pedestrians, such as mobile maps, voices, and augmented reality (AR). Many field experiments have been conducted to study the effectiveness of different interface technologies in guiding pedestrians to their destinations. In contrast to other field studies, this article aims at investigating the influence of different interface technologies on spatial knowledge acquisition (spatial learning). With sufficient spatial knowledge about an environment, people can still find their way when navigation systems fail (e.g. out of battery).

The goal of this article is to empirically evaluate three GPS-based navigation prototypes (implementing mobile map-based, AR-based, and voice-based guidance respectively) in supporting spatial knowledge acquisition. The field test showed that in terms of spatial knowledge acquisition, the three interface technologies led to comparable poor results, which were also not significantly different from each other. This article concludes with some implications for designing mobile pedestrian navigation systems.

Conference Paper (PDF, 657 KB)

Citation: Huang, H., Schmidt, M., and Gartner, G.: EVALUATING THREE INTERFACE TECHNOLOGIES IN ASSISTING PEDESTRIANS' SPATIAL KNOWLEDGE ACQUISITION, Int. Arch. Photogramm. Remote Sens. Spatial Inf. Sci., XXXIX-B2, 119-121, doi:10.5194/isprsarchives-XXXIX-B2-119-2012, 2012.

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