A switching estimated receiver position scheme for visible light based indoor positioning system

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Abstract: Indoor positioning system based on visible light communication (VLC) identifier (ID) and 6-axes sensor (geomagnetic sensor and gravity acceleration sensor) has higher accuracy than simple VLC-ID based positioning system 1. In this paper, we propose a switching estimated receiver position (SERP) scheme for the VLC-ID and 6-axes sensor based positioning system. The SERP improve the positioning accuracy by optimizing estimated error distance, which is varied in proportion to the receiver's tilt angle. We performed an experiment to confirm the improvement of SERP with three types of field of view (FOV) receivers. As a result, more than 30% improvement of accuracy is achieved comparing with the conventional position estimation scheme.

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