

Abstract

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A simple and high accurate indoor vlp system: regression and interpolation-based approaches

The accuracy of the visible light positioning (VLP) system is improved by using regression-based and interpolation-based approaches. These approaches are mixed with the received signal strength in both linear and nonlinear least squares techniques. The simplicity of the model is the key point, where a highly accurate VLP system with only one equation "interpolation" is used instead of many complex equations. Gaussian noise and reflections up to three bounces with high reflectivity are the source of noise. In addition, the strength of the methods is studied by changing some affecting parameters. In a previous work, we introduced the regression-based approach in VLP-based systems with one reflection. Here, we extend the work with three reflections, leading to an increase in noise to examine system robustness. The approaches are compared to the traditional ones, and show a remarkable enhancement, e.g., the average error has been improved by 67%.