

Modified mathematical formula of MSE for live evaluation of a positioning system

ABBAS ALBAIDHANI¹

¹ministry of transport

August 27, 2020

Abstract

In wireless sensor network (WSN), It is an important matter to have a convenient evaluation metric for assessing created positioning systems. Mean square error (MSE) is one of very important evaluation metrics used for such matter. The typical mathematical formula of MSE such as the built in MSE function in matlab is used only when the true and estimated values are available, which means using the MSE is useful only after creating the system not while creating it. In this paper, we present a mathematical derivation to derive an MSE formula based on least square (LS) algorithm for three dimensional positioning system without using the true and estimated position . The created MSE could evaluate a positioning system online, and then the user can modify his system until having the system able to match the requested positioning accuracy. The created MSE has accuracy 100 % equals to the typical mathematical formula such as the built in matlab MSE function.

Hosted file

MSEF.pdf available at <https://authorea.com/users/354328/articles/477917-modified-mathematical-formula-of-mse-for-live-evaluation-of-a-positioning-system>