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Room Level Indoor Localization Using Relevant Channel Impulse Response Parameters

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Abstract : This paper proposes a room level indoor localization algorithm based on the use Multi-Layer Neural Network (MLNN) classifiers and one versus one strategy. Seven parameters of the Channel Impulse Response (CIR) were used and Gram-Shmidt Orthogonalization was performed to study the relevance of the extracted parameters. Simulation results show that when relevant CIR parameters are used as position fingerprint and when optimal MLNN architecture is selected good room level localization score can be achieved. The current study showed also that some of the CIR parameters are not correlated to the location and can decrease the localization performance of the system.

Keywords : mobile indoor localization, multi-layer neural network (MLNN), channel impulse response (CIR), Gram-Shmidt orthogonalization
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