

Hybrid Weighted Multiple Attribute Decision Making Handover Method for Heterogeneous Networks

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Abstract : Small cell deployment in 5G networks is a promising technology to enhance capacity and coverage. However, unplanned deployment may cause high interference levels and high number of unnecessary handovers, which in turn will result in an increase in the signalling overhead. To guarantee service continuity, minimize unnecessary handovers, and reduce signalling overhead in heterogeneous networks, it is essential to properly model the handover decision problem. In this paper, we model the handover decision according to Multiple Attribute Decision Making (MADM) method, specifically Technique for Order Preference by Similarity to an Ideal Solution (TOPSIS). In this paper, we propose a hybrid TOPSIS method to control the handover in heterogeneous network. The proposed method adopts a hybrid weighting, which is a combination of entropy and standard deviation. A hybrid weighting control parameter is introduced to balance the impact of the standard deviation and entropy weighting on the network selection process and the overall performance. Our proposed method shows better performance, in terms of the number of frequent handovers and the mean user throughput, compared to the existing methods.

Keywords : handover, HetNets, interference, MADM, small cells, TOPSIS, weight

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