

Integrated Grey Rational Analysis-Standard Deviation Method for Handover in Heterogeneous Networks

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Abstract : The dense deployment of small cells is a promising solution to enhance the coverage and capacity of the heterogeneous networks (HetNets). However, the unplanned deployment could bring new challenges to the network ranging from interference, unnecessary handovers and handover failures. This will cause a degradation in the quality of service (QoS) delivered to the end user. In this paper, we propose an integrated Grey Rational Analysis Standard Deviation based handover method (GRA-SD) for HetNet. The proposed method integrates the Standard Deviation (SD) technique to acquire the weight of the handover metrics and the GRA method to select the best handover base station. The performance of the GRA-SD method is evaluated and compared with the traditional Multiple Attribute Decision Making (MADM) methods including Simple Additive Weighting (SAW) and VIKOR methods. Results reveal that the proposed method has outperformed the other methods in terms of minimizing the number of frequent unnecessary handovers and handover failures, in addition to improving the energy efficiency.

Keywords : energy efficiency, handover, HetNets, MADM, small cells

Conference Title : ICWMCS 2021 : International Conference on Wireless and Mobile Communication Systems

Conference Location : London, United Kingdom

Conference Dates : June 28-29, 2021