World Academy of Science, Engineering and Technology
International Journal of Computer and Information Engineering
Vol:9, No:10, 2015

MCDM Spectrum Handover Models for Cognitive Wireless Networks

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Abstract : The spectral handoff is important in cognitive wireless networks to ensure an adequate quality of service and performance for secondary user communications. This work proposes a benchmarking of performance of the three spectrum handoff models: VIKOR, SAW and MEW. Four evaluation metrics are used. These metrics are, accumulative average of failed handoffs, accumulative average of handoffs performed, accumulative average of transmission bandwidth and, accumulative average of the transmission delay. As a difference with related work, the performance of the three spectrum handoff models was validated with captured data of spectral occupancy in experiments realized at the GSM frequency band (824 MHz-849 MHz). These data represent the actual behavior of the licensed users for this wireless frequency band. The results of the comparative show that VIKOR Algorithm provides 15.8% performance improvement compared to a SAW Algorithm and, 12.1% better than the MEW Algorithm.

Keywords : cognitive radio, decision making, MEW, SAW, spectrum handoff, VIKOR
Conference Title : ICCNA 2015 : International Conference on Communication Networks and Applications
Conference Location : Osaka, Japan
Conference Dates : October 08-09, 2015