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Use of Artificial Intelligence Based Models to Estimate the Use of a Spectral Band in Cognitive Radio

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Abstract : Currently, one of the major challenges in wireless networks is the optimal use of radio spectrum, which is managed inefficiently. One of the solutions to existing problem converges in the use of Cognitive Radio (CR), as an essential parameter so that the use of the available licensed spectrum is possible (by secondary users), well above the usage values that are currently detected; thus allowing the opportunistic use of the channel in the absence of primary users (PU). This article presents the results found when estimating or predicting the future use of a spectral transmission band (from the perspective of the PU) for a chaotic type channel arrival behavior. The time series prediction method (which the PU represents) used is ANFIS (Adaptive Neuro Fuzzy Inference System). The results obtained were compared to those delivered by the RNA (Artificial Neural Network) algorithm. The results show better performance in the characterization (modeling and prediction) with the ANFIS methodology.

Keywords : ANFIS, cognitive radio, prediction primary user, RNA
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