Reliability Factors Based Fuzzy Logic Scheme for Spectrum Sensing

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Abstract : The accurate spectrum sensing is a fundamental requirement of dynamic spectrum access for deployment of Cognitive Radio Network (CRN). To achieve this requirement a Reliability factors based Fuzzy Logic (RFL) Scheme for Spectrum Sensing has been proposed in this paper. Cognitive Radio User (CRU) predicts the presence or absence of Primary User (PU) using energy detector and calculates the reliability factors which are SNR of sensing node, threshold of energy detector and decision difference of each node with other nodes in a cooperative spectrum sensing environment. Then the decision of energy detector is combined with reliability factors of sensing node using Fuzzy Logic. These reliability factors used in RFL Scheme describes the reliability of decision made by a CRU to improve the local spectrum sensing. This novel Fuzzy combining scheme provides the accuracy of decision made by sensor node. The simulation results have shown that the proposed technique provides better PU detection probability than existing Spectrum Sensing Techniques.

Keywords : cognitive radio, spectrum sensing, energy detector, reliability factors, fuzzy logic
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