

Abstract Details

Title: Research Paper on Non Cooperative Spectrum Sensing in Cognitive Radio

Authors: Preeti Garg and Milan Bajaj

Abstract: Cognitive radio technology has been recently been introduced to opportunistically exploit the spectrum. Secondary users are allowed to utilize licensed spectrum bands as long as they do not cause unacceptable interference with licensed users. Such flexibility alleviates the crowding issue in particular spectrum bands and greatly enhances the efficiency of spectrum utilization. The main challenge in any cognitive radio system is to maximize secondary user's throughput while limiting interference imposed on licensed users. In this regard, finding the optimal and accurate sensing techniques are of great importance in a cognitive radio networks. This paper presents a comparative performance analysis of three broad non cooperative SS techniques i.e. energy detection, cyclostationary detection and matched filter detection. Simulation is performed for various performance parameters (Pd, Pm, Pf) as a function of SNR. Simulation is done using MATLAB 2013a. Simulation results obtained for comparative analysis shows that cyclostationary detection scheme provides better performance under low SNR and matched filter scheme maximize SNR value at any value of detection probability.

Keywords: Spectrum Sensing, Software Defined Radio, Cognitive Radio, Cooperative sensing, Non-Cooperative sensing, energy detection, cyclostationary detection, matched filter detection.