

Cooperative Spectrum Sensing Using Hybrid IWO/PSO Algorithm in Cognitive Radio Networks

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Abstract : Cognitive Radio (CR) is an emerging technology to combat the spectrum scarcity issues. This is achieved by consistently sensing the spectrum, and detecting the under-utilized frequency bands without causing undue interference to the primary user (PU). In soft decision fusion (SDF) based cooperative spectrum sensing, various evolutionary algorithms have been discussed, which optimize the weight coefficient vector for maximizing the detection performance. In this paper, we propose the hybrid invasive weed optimization and particle swarm optimization (IWO/PSO) algorithm as a fast and global optimization method, which improves the detection probability with a lesser sensing time. Then, the efficiency of this algorithm is compared with the standard invasive weed optimization (IWO), particle swarm optimization (PSO), genetic algorithm (GA) and other conventional SDF based methods on the basis of convergence and detection probability.

Keywords : cognitive radio, spectrum sensing, soft decision fusion, GA, PSO, IWO, hybrid IWO/PSO

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