Abstract

(Sample)

(Times New Roman Bold 16 Point)
(Max 250 words)

This thesis explores evolutionary algorithm and PSO optimization techniques used by cognitive radios to make operating parameter decisions. Cognitive radios take advantage of intelligent control schemes by using sensed information to determine the optimal set of transmission parameters for a given situation. This thesis has chosen to explore and compare three control methods. A biologically inspired genetic algorithm (Base-10 GA), a Particle Swarm Optimizations (PSO) and hybrid of Base-10 GA and PSO are proposed, analyzed and tested using simulations. We define a common set of six parameters used by cognitive radios, and develop a set of fitness functions that include the relationships between a small set of these input and output parameters. Four key communication objectives are also defined and used in combination with the fitness functions to direct the cognitive radio to a solution. It is observed, through simulations, that several trade offs exist between both the accuracy and speed of the final decision and the size of the parameter sets used to determine the decision. This thesis also explored the Spectrum mobility by use of DNA-inspired algorithm and security aspects of cognitive radio, which is most challenging issue in research of cognitive radio paradigm. DNA-inspired algorithm deals with a sequence alignment of two DNA sequences that realized the goal give by Hykins. For the security in cognitive radio, a Fingerprint-based Defense against Primary User Emulation Attacks has been explored using SIMULINK modal.

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