Interference Mitigation in Cognitive Radio using Genetic Algorithm

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Abstract

In order to improve the spectrum utilization, cognitive networks have been proposed. A cognitive network can reuses the spectrum of licensed user in a way such that the services of the licensed users are not disrupted harmfully. This paper presents the optimization of interference generated by a secondary network to a primary network for a cognitive radio (CR) networks using genetic algorithm (GA). The interference model used for optimization, in cognitive radio networks, is presented employing power control. A power control scheme is studied to govern the transmission power of a CR node. The probability density functions (PDFs) of the interference received at a primary receiver from a CR network are first studied numerically and then under the control scheme the interference distributions are fitted by log-normal distributions with reduced complexity. In GA optimization, the chromosome’s genes correspond to the adjustable parameters in a given radio, and the chromosomes are genetically manipulated so that GA can find a set of parameters that optimize the radio according to the user’s current needs.

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References

4198–4207.

**Index Terms**

Computer Science       Mobile Communication

**Keywords**

Cognitive radio  Shadowing  Hidden node  Probability distribution function (PDF)