ZONE-BASED SENSING SCHEDULING APPROACH IN COGNITIVE RADIO SPECTRUM SENSING

by

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# ABSTRACT

Project Name : Zone-Based Sensing Scheduling Approach in Cognitive Radio Spectrum Sensing

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Summary :

**Cognitive radio (CR)** improves spectrum efficiency by enabling CR users to opportunistically reuse the idle spectrum bands of licensed users, i.e., primary users. To avoid causing interference to the primary users, spectrum sensing, which detects idle licensed bands, is one of the most important issues.

**Spectrum Sensing**: detecting the unused spectrum and sharing it without harmful interference with other users. It is an important requirement of the Cognitive Radio network to sense spectrum holes. Detecting primary users is the most efficient way to detect spectrum holes. Spectrum sensing techniques can be classified into three categories:

* *Transmitter detection*: cognitive radios must have the capability to determine if a signal from a primary transmitter is locally present in a certain spectrum. There are several approaches proposed:
  + matched filter detection
  + energy detection
  + cyclostationary feature detection
* *Cooperative detection*: refers to spectrum sensing methods where information from multiple Cognitive radio users is incorporated for primary user detection.
* *Interference based detection*.

In this project we will implement a simulator to analyze and optimize the efficiency of ***Zone-Based Sensing Scheduling in Cognitive Radio***. The project will construct a CR cell and zones in this cell. Then it will generate primary and secondary users both trying to communicate in the cell. It will measure the performance of the system with respect to various parameter sets. Here we assume that the secondary users use energy detection method for spectrum sensing.

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