Resource Allocation and Outage Analysis for An Adaptive Cognitive Two-Way Relay Network

ABSTRACT

In this paper, an adaptive two-way relay cooperation scheme is studied for multiple-relay cognitive radio networks to improve the performance of secondary transmissions.

The power allocation and relay selection schemes are derived to minimize the secondary outage probability where only statistical channel information is needed. Exact closed-form expressions for secondary outage probability are derived under a constraint on the quality of service of primary transmissions in terms of the required primary outage probability.

CONT…

➢ To better understand the impact of primary user interference on secondary transmissions, we further investigate the asymptotic behaviors of the secondary relay network including power allocation and outage probability, when the primary signal-to-noise ratio goes to infinity.

➢ Simulation results are provided to illustrate the performance of the proposed schemes.

EXISTING SYSTEM

➤ So far, the literature that studies outage performance and resource allocation in cognitive two-way relaying networks with CCI is relatively scarce. Interference was considered only during the second transmission phase, where exact outage probability was obtained while ignoring the noise at the receivers. In the exact outage probability was derived under a cognitive two-way relay network setting.

➤ However, the system outage event was defined as having either one of the two STs in outage, which simplifies the derivation but does not represent system outage correctly. In a max-min strategy over instantaneous achievable channel rates was employed to address relay selection and power allocation for cognitive two-way AF relaying networks.

PROPOSED SYSTEM

➢ In this paper, we investigate an adaptive cooperative diversity scheme in cognitive two-way relay networks using the DF protocol, where mutual interference between PUs and SUs is considered. The STs broadcast their signals to the relays and to each other through the direct link during the first phase.

➢ During the second phase, if the relays can decode the signals received during the first phase, the best relay is chosen to forward the signals to the STs; otherwise, the STs adaptively repeat the same transmission to each other through the direct link as during the first phase.

HARDWARE REQUIREMENTS

- Processor - Pentium-IV
- Speed - 1.1 Ghz
- RAM - 256MB(min)
- Hard Disk - 20 GB
- Key Board - Standard Windows Keyboard
- Mouse - Two or Three Button Mouse
- Monitor - SVGA

SOFTWARE REQUIREMENTS

- Tool   -   Network Simulator-2
- Operating system   -   LINUX
- Front end   -   OTCL (Object Oriented Tool
                                        Command Language)

REFERENCES

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