

PERFORMANCE OF COLLABORATIVE SPECTRUM SENSING OVER NAKAGAMI FADING CHANNELS

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Abstract:

The sensible utilization of radio spectrum has become an important challenge in the wireless communications. So, there are a lot solutions for that, however, cognitive radio networks become a potentially resolution by providing high bandwidth to mobile users via heterogeneous wireless architectures and dynamic spectrum access techniques. Cognitive radio networks is emerging as a realizable revolutionary methodology in solving vacant frequency scarcity problem while the frequency bands are closely and strictly managed by government authorization and have nearly been used up with the quick increase in the number of subscribers and wireless services recently. A question arises how to improve the efficiency of using allocated bands to avoid wasting radio resource ? In cognitive radio networks, spectrum sensing a key component of cognitive radio technology. However, detection is compromised when a user experiences shadowing or fading effects. In such cases, user cannot distinguish between an unused band and a deep fade. Thus, cooperative spectrum sensing is proposed to optimize the sensing performance. In my work, I focus on investigate the performance of cooperative spectrum sensing using energy detection on the probability of spectrum sensing over Nakagami fading channel in cognitive radio networks. Furthermore, in the Nakagami channel, I mention in finding the indispensable clients to guarantee the quality of service by estimating mathematical formula and approving the theory using software solution in the MATLAB. For most of simulated results, I am interested in the Q_d , the probability of cooperative spectrum sensing, versus different m values of Nakagami channel.

Keywords – cooperative sensing, Nakagami channel, minimum cooperative users.