Abstract

The explosive growth of mobile devices and the rapid increase in wireless services necessitate an improvement in communication techniques. This technology can boost spectrum utilization as well as meet the massive connectivity requirement to draw attention from academia and industry. Cognitive Radio Network (CRN) is an evident optimal solution in alleviating the challenges of spectrum unused potentially in wireless networks. The Secondary Users are allowed intelligently to access the sections of spectrum unused (spectrum holes) by the authorized Primary Users (PUs). The objective of this paper is to analyze channel throughput, delay, carrier aggregations, energy efficiency, and security challenges and provide research ideas to enhance the overall performance of the CRN. This review paper completely investigated the potential management of spectrum techniques, essentially in spectrum sensing, spectrum allocation, spectrum sharing, and spectrum handoff in CRN. In addition, we study the energy efficient routing techniques like network optimization frameworks in cooperative networks, protocols and different types of attack issues, approaches for handling the secure
communication in CRNs. The state of art review, which deeply examines the Cognitive Radio Network providing an idea of important technology and challenges are addressed. The open research challenges related to spectrum management, energy efficient routing and security are discussed.

References


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**Index Terms**

Computer Science Communications
Keywords