Abstract

Cognitive Radio (CR) has been introduced and developed for wireless networks. CR is playing an important role in wireless spectrum and with the help of CR, senders can choose the best spectrum for communication. Spectrum Sharing is one of the components of CR architecture which is responsible for distributing the spectrum among users according to their needs. In addition, it is one of the key challenges to improve the wireless network performance. How to access the spectrum is an important issue in spectrum sharing. Primary Users (PUs) and Secondary Users (SUs) access the spectrum bands based on the overlay and underlay spectrum sharing techniques but SUs are limited in both overlay and underlay. After analyzing the existing mechanisms in this paper, we provide a new mechanism to improve SUs accessing the spectrum. Our mechanism works based on SUs' location and the distance between sender and receiver. The proposed mechanism in this paper shows that SUs can own the spectrum permanently without any interferences with PUs. Also, there is no need for SUs to change or leave the spectrum when PUs return. The proposed method is very useful and efficient due to
increasing the performance of CR in different wireless networks. Our proposed method can be considered as a step towards the development of IoT and support the future devices in terms of spectrum access. Our proposed mechanism requires no additional hardware, therefore, its implementation is costless and simple.

References


**Index Terms**

Computer Science  
Communications

**Keywords**

Cognitive Radio Networks; Spectrum Sharing; IoT; underlay Spectrum Sharing; Overlay Spectrum Sharing