

Abstract:

To meet rapidly growing traffic demands and accommodate large number of devices, more radio spectrum is needed for future wireless communications. Considering the scarcity of radio spectrum, it is needed to enhance the utilization of radio spectrum licensed exclusively to specific users. In cognitive radio, an unlicensed user, called a secondary user, is permitted to access the spectrum allocated to a licensed user, called a primary user. When the primary and secondary users transmit their signals simultaneously, interference occurs at both users which degrades their performance. Interference at the primary user can be avoided by spectrum sensing technique which prohibits a secondary user from transmitting its signal when it detects a primary user's signal. Also, interference level at the primary user can be limited below a certain threshold by spectrum sharing technique in which the secondary user adjusts its transmit power accordingly. Some recent results on cognitive radio are introduced, and its applications and future research subjects are shown.