Abstract

The use of Cognitive Radio Network (CRN) for spectrum utilization is very beneficial to address scarcity of frequency spectrum. It can solve the problem of spectrum scarcity. The one of the areas of concern in spectrum sensing is the amount of energy that is consumed in spectrum sensing performed by unlicensed/secondary users. There are many frame structures which are being used for spectrum sensing and they are very capable of performing spectrum efficient and energy efficient spectrum sensing individually, but it does not fulfill the need of modern era where we need a combined spectrum and energy efficient spectrum sensing technique. The proposed time division based frame structure for multiuser CRN is spectrum and energy efficient, it also provides time diversity gain for secondary users by allowing collection of sensing results at different point of time. The simulation result shows that the spectrum utility also increases because of the use of optimal decision threshold for final decision at fusion center. The results also shows that all the secondary users can’t be used for spectrum sensing because it degrades energy efficiency. So it is also optimized that how many secondary users will perform energy efficient spectrum sensing.
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Index Terms

Computer Science  Networks

Keywords

Utility maximization, multi-minislot, spectrum sensing, cooperative spectrum sensing, Utility function