



Wireless Engineering Research and Education Center

Cognitive Radio Network Setup Without a Common Control Channel

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Abstract

Cognitive radio networks that allow dynamic spectrum access are considered spectrally more efficient than networks using fixed spectral allocation. These networks are characterized by dynamically changing channel sets at each node. Multi-hop cognitive radio network is a cooperative network in which cognitive users take help of their neighbors to forward data to the destination. Control signals used to enable cooperation are communicated through a common control channel (CCC). Such a usage introduces conditions like channel saturation which degrades the overall performance of the network. Thus, exchanging control information is a major challenge in cognitive radio networks. This talk focuses on the network setup problem of a cognitive radio network without the existence of a common control channel. Probabilistic and deterministic ways to start the initial communication and setup a cognitive radio network in both centralized and multi-hop scenarios will be discussed. Further, a suitable medium access protocol for multi-hop cognitive networks will be built on this idea. The proposed ideas are shown to provide better connectivity and higher throughput than common control channel based protocols, especially when the network is congested.

Bio

Yogesh Reddy Kondareddy is a doctoral student in the Department of Electrical and Computer Engineering at Auburn University, Auburn, AL. He obtained his Masters Degree from the same University in 2008 and Bachelors degree in Electrical Engineering from Mahatma Gandhi Institute of Technology in 2006. Currently, he is a Research Assistant under Dr. Prathima Agrawal. His current areas of research are Cognitive Networks and Vehicular Networks.

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