Cognitive Radio New Dimension in Wireless Communication – State of Art

Abstract

In today’s wireless communication environment, the Radio Frequency spectrum is occupied for different purposes like cellular, Television, military, emergency or satellite communication. The frequency spectrum used for cellular communication is getting over crowded with increasing number of subscribers and demand for high data rate text or video transmission, but the frequency spectrum in other wireless broadcast and communication is not utilized efficiently, example in Television broadcast band, some of frequency spectrum is vacant at some instant or for particular time. The vacant spectrum could be used in cellular communication, means the spectrum is borrowed from Television Broadcast band to be used for cellular communication. A borrow/use of spectrum from other licensed frequency bands will improve the efficiency of spectrum use. In this paper, aspects of Cognitive Radio and comparison of different sensing techniques and methods are discussed. Secondly, the layer architecture of Cognitive Radio is presented. Thirdly, hardware and software platforms are discussed for Cognitive Radio testing.
References

- Analog Radio invention, online: www. niksun. com.
- Cognitive Radio Technology by Bruce A. Fette, 2006, Elsevier Inc.
- Cognitive radio: An intelligent wireless communication system, Marja Matinmikko editor, RESEARCH REPORT VTT-R-02219-08.
- LO Leakage Based Approach for interference based sensing, www. eecs. berkeley. edu/~dtse/3r_ben_dyspan05. pdf [online].
- Cognitive Radio, Software Defined Radio, and Adaptive Wireless Systems by HÜSEYIN ARSLAN, University of South Florida, Tampa, FL, USA.
- Multitaper Based Spectrum Sensing for Cognitive Radio: Design and Performance by Q. T. Zhang, Department of Electronic Engineering, City University of Hong Kong in IEEE-2011.
- Cognitive Radio Networks by Kwang-Cheng Chen and Ramjee Prasad © 2009 John Wiley & Sons Ltd.
- C. Chang, J. Wawrzynek, and R. W. Brodersen, "BEE2: A high-end

- KUAR Control Processor, online: www.research.microsoft.com/enus/um/redmond/events/.../evans.ppt.
- Small Form Factor (SFF) Software-Defined Radio (SDR) Development Platform, online: www.dsp-fpga.com/rsc
- Universal software radio peripheral (USRP) and USRP2 provided by Ettus Research, online: www.ettus.com
- Design Of Warp: A Wireless Open-Access Research Platform, Patrick Murphy, Ashu Sabharwal and Behnaam Aazhang, Rice University, Department of Electrical and Computer Engineering, 6100 Main St., Houston.
- Spectrum Engineering Advanced Monte Carlo Analysis Tool, online: http://www.ero.dk/seamcat.

Index Terms

Computer Science Wireless
Keywords
Cognitive Radio  Software Defined Radio  Spectrum Sensing  Primary User  Secondary User

Transmit Power Control and Dynamic Spectrum Management