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# LEVENBERG MARQUARDT ALGORTHIM BASED MAXIMIZATION OF COGNITIVE RADIO NETWORKS

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**Abstract:**

A CR network opportunistically shares the radio resources with a licensed network . In this work, the spectral-energy efficiency trade-off for CR networks is analyzed at both link and system levels against varying signal-to-noise ratio values. At the link level, we analyze the required energy to achieve a specific spectral efficiency for a CR channel under two different types of power constraint in different fading environments. We characterize the impact of the multi-user diversity gain of both kinds of users on the spectral and energy efficiency of the CR network. Our analysis also proves that the interference channel.

Keywords – CR, Trade-off, Fading.

## 1. INTRODUCTION

ZigBee also supports WPAN applications. Wi-Fi PANs are becoming commonplace as equipment designers start to integrate Wi-Fi into a variety of consumer electronic devices. Intel "My WiFi" and Windows 7 "virtual Wi-Fi" capabilities have made Wi-Fi PANs simpler and easier to set up and configure. Products using the IEEE 802.11 WLAN standards are marketed under the Wi-Fi brand name. Fixed wireless technology implements point-to-point links between computers or networks at two distant locations, often using dedicated microwave or modulated laser light beams over line of sight paths. It is often used in cities to connect networks in two or more buildings without installing a wired link. Wireless Wide Area Networks are wireless networks that typically cover large areas, such as between neighboring towns and cities, or city and suburb. These networks can be used to connect branch offices of business or as a public internet access system.

## 2. PROPOSED SYSTEM

Another routing protocol that addresses real-time are called SPEED. This protocol uses feedback control to guarantee that each node maintains an average delay for packets transiting a node. Given this delay and the distance to travel (in hops), it can be determined if a packet meets its deadline (in steady state).However, transient behavior, message losses, congestion, noise and other problems cause these guarantees to be limited. To date, the limited results that have appeared for WSN regarding real-time issues has been in routing. Many other functions must also meet real-time constraints including: data fusion, data transmission, target and event detection and classification, query processing, and security. New results are needed to guarantee soft realtime requirements and that deal with the realities of WSN such as lost messages, noise and congestion. Using feedback control to address both steady state and transient behavior seems to hold promise. Dealing with real-time usually identifies the need for differentiated services, e.g., routing solutions need to support different classes of traffic; guarantees for the important traffic and less support for unimportant traffic. It is important not only to develop real-time protocols for WSN, but associated analysis techniques must also be developed .

## 3. OBJECTIVE OF THE STUDY

In an ideal scenario a spectrum aware cognitive radio is able to sense the local spectrum usage and adapt its own radio parameters accordingly. As an example, consider a personal Wi-Fi network in a crowded New York apartment complex. The number of co-located networks present can easily fill the 2.4 GHz band, in which personal Wi-Fi devices are designed to operate.

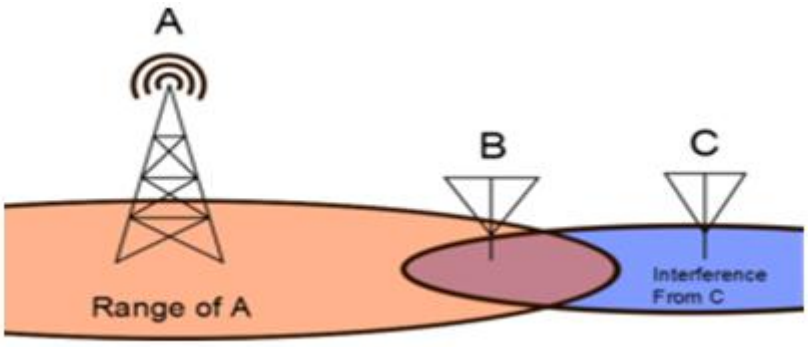


**Fig.1. out-of-range secondary user C can interfere with primary spectrum users A and B**

Instead of adding an additional device to an over-used band, a cognitive radio would be able to sense the over-use of the allocated Wi-Fi spectrum and the underutilization of other nearby spectrum blocks. Once so determined the cognitive radio would operate in the free spectrum, thus more efficiently utilizing the total available spectrum. Although C is far away from A, the primary receiver B may be near enough to A to receive its signal. However, once C begins to transmit interference may obstruct those transmissions preventing the licensed spectrum usage between A and B.

## 4. COGNITIVE RADIO NETWORKS

This advanced technology enables radio devices to use spectrum (i.e., radio frequencies) in entirely new and sophisticated ways. Cognitive radios have the ability to monitor, sense, and detect the conditions of their operating environment, and dynamically reconfigure their own characteristics to best match those conditions. By contrast, xMax cognitive radios have been engineered from the ground up to function in challenging conditions. Unlike their traditional counterparts, they can view their environment in great detail to identify spectrum that is not being used, and quickly tune to that frequency to transmit and/or receive signals. They also have the ability to instantly find other spectrum if interference is detected on the frequencies being used. In the case of xMax, it samples, detects and determines if interference has reached unacceptable levels up to 33 times a second.

## 5. RESULT ANALYSIS

Each device actual position will be taken into an array. This array will be used to identify the neighbors within its range. An artificial neural network (ANN) is an effective data modeling scheme used to model and learn both linear and non-linear input/output interactions by training. The propagation is typically tempered by a constant or bias value, b. This bias value is controlled by the user, so that a

known input vector may produce the desired output value. This process is called learning or training. Learning can be categorized as supervised and unsupervised learning. In supervised learning, the NN is fed with teaching patterns and trained by allowing it to change its weights according to some learning rule. In unsupervised learning the NN discovers features of the input data in a statistical manner by developing its own ways of classifying the input irritants.

## CONCLUSION

To guarantee a high system throughput in CRNs, the channel state of Pus needs to be accurately detected to reduce conflict. Sensing optimal idle channel for future transmission is the hot research topic in CRN environment. Probability of available free channel will be less when arrival rate of primary user to their allocated licensed band is high. So the effective channel selection and switching strategy needed to overcome this issue and increasing throughput of the data transmission over cognitive radio network.CR combines sensing, learning, and optimization algorithms to control and adapt the radio system from the physical layer and up the communication stack. To this effect, many different learning techniques are available and can be used by a CR, ranging from pure lookup tables to arbitrary combinations of soft computing techniques, which include among others: Artificial Neural Networks, evolutionary/Genetic Algorithms, reinforcement learning, fuzzy systems, Hidden Markov Models (HMMs) etc.

## REFERENCES

[1] X. Ge et al., "Spectrum and energy efficiency evaluation of two-tier femtocell networks with partially open channels," IEEE Trans. Veh. Technol., vol. 63, no. 3, pp. 1306–1319, Mar. 2014.

[2] X. Hong, J. Wang, C.-X. Wang, and J. Shi, "Cognitive radio in 5G: A perspective on energy-spectral efficiency trade-off," IEEE Commun. Mag., vol. 52, no. 7, pp. 46–53, Jul. 2014.

[3]X. Hong, Y. Jie, C.-X. Wang, J. Shi, and X. Ge, "Energy-spectral efficiency trade-off in virtual MIMO cellular systems," IEEE J. Sel. Areas Commun., vol. 31, no. 10, pp. 2128–2140, Oct. 2013

[4] I.Ku,C.-X.Wang,andJ.S.Thompson,"Spectral-energyefficiencytradeoff in relay-aided cellular networks," IEEE Trans. Wireless Commun., vol. 12, no. 10, pp. 4970–4982, Oct. 2013

[5] Y.Pei,Y.C.Liang,K.C.Teh,K.H.Li,"Sensing-throughput tradeoff for cognitive radio networks: A multiple channel scenario", Personal ,Indoor and Mobile Radio Communications , 2009 IEEE 20th International Symposium ,sept,2009.