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AUDIO SECURED COMMUNICATION USING SMART PHONE

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Abstract--**We consider QoS -aware band sharing in cognitive wireless networks where secondary users are allowed to access the band owned by a primary network provider. The intrusion from secondary users to primary users is forced to be below the tolerable limit. We explore a common audio-fingerprinting approach and account for the noise in the derived fingerprints by employing error correcting codes. This fuzzy-cryptography scheme enables the adaptation of a specific value for the tolerated noise among fingerprints based on environmental conditions by altering the parameters of the error correction and the length of the audio samples utilized. We experimentally verify the feasibility of the protocol in four different realistic settings and a laboratory experiment. The case studies include an office setting, a scenario where an attacker is capable of reproducing parts of the audio context, a setting near a traffic loaded road, and a crowded canteen environment. We show how to change it into a convex optimization problem so that its globally most favourable solution can be obtained. Numerical grades show that the proposed admission control algorithm achieves performance very close to the optimal solution.**

Keywords –cognitive radio, Admission control algorithm, fuzzy-cryptography scheme.

I. INTRODUCTION

Wireless access in vehicular environments (WAVE) is distinct to carry applications for intelligent transportation systems (ITSs), with security and disaster services, automatic toll collection, traffic management, and commercial trans-actions among vehicles. It specifies the architecture and management functions to allow protected vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) wireless announcement. In order to ease ITS applications, local area networks are recognized to consist two types of major archi-tectural mechanism, i.e., the onboard units (OBUs) in vehicles and the roadside units (RSUs) install in road infrastructure, which are denoted as stations in this paper. Specifically, the IEEE1609.4 criterion is intended to improve the IEEE802:11p medium access control (MAC) protocol for multi-channel operations. The WAVE system is intended to work on the75 MHz band in the licensed ITS5:9GHz band. The operating band is divided into seven channels, including one control channel (CCH) and six service channels (SCHs), each with10MHz bandwidth. Execution of increasing high-speed wireless applications requires exponential growth in spectrum demand. How-ever, it has been reported that current use of owed spectrum can be as low as 15%. Thus, there is an increas-ing interest in initial well planned method for spectrum administration and sharing which is encouraged by both industry and FCC authority. This motivate to exploit the spectrum opportunities in space, time, frequency while protecting users of the primary network holder from extreme interference due to opportunistic spectrum access. In fact, it is required that an intrusion limit corresponding to an intrusion tempera-ture level be maintained at the receiving points of the primary network. The input challenge in cognitive radio networks is how to construct band access/sharing schemes such that users of the primary network (will be called primary users in the sequel) are protected from excessive intrusion due to secondary band access and QoS performance of secondary users are guar-anteed. In this paper, we present a band sharing frame for cognitive CDMA wireless networks with explicit interference protection for primary users and QoS constraint for secondary users. Secondary users have minimum transmission rates with required QoS performance and highest power constraints. When the network load is lofty, an admission control algorithm is proposed to guarantee QoS constraint for secondary users and intrusion constraints for primary users. When all the secondary user can be support, we present a joint rate and power allocation solution with QoS and intrusion constraint.Prioritized optimal channel allocation (POCA) protocol to improve the system throughput of non-safety data delivery with definite transmission reliability of safety-related messages. By adopting the concepts in CR network [14], [15], the primary provider (PP) and secondary provider (SP) are defined to represent the stations that are delivering safety messages and non-safety information, respectively.On the other hand, the primary user (PU) and secondary user (SU) are defined to indicate the stations that are receiving messages from PP and SP, respectively. In order to provide privilege for safety information, PPs are designed to possess smaller contention window (CW) size compared to that of SPs.More opportunity for channel entrée will be available to PPs in order to effectively deliver their safety messages. PPs are more disposed to change to both CHs 172 and 184 in the SCH interval to deliver their safety-related messages; while SPs will have relatively more opportunity to use the other four SCHs.

II. EXISTING SYSTEM

Existing research works have been proposed based on the IEEE 802:11p/1609 standards a self-organizing time division multiple access (STDMA) scheme was proposed into ensure successful transmission of time critical traffic between the vehicles. In, a carrier sense multiple access (CSMA) based protocol for multi channel network is proposed. A separate control channel is utilized to eliminate interference between the control and data messages. All RTS and CTS packets are transmitted on the control channel, and the optimal channel for each user is selected based on the signal to interference plus noise ratio (SINR) to exchange data messages. However, without the consideration of different priorities among stations in the delivery of safety-related messages cannot be protected and guaranteed. In POCA-D, distributed CR network, SPs are not allowed to negotiate with each other. In POCA-C, centralized CR network, SPs can negotiate with each other by sending control messages at the beginning of SCH interval drawback of existing system 1)Throughput is low 2)Delay is high 3)Quality of service is low.

Considering either distributed or centralized networks, the proposed POCA schemes can be distinguished into distributed POCA (POCA-D) and centralized POCA (POCAC) protocols. Distributed network system is considered in POCA-D scheme with the knowledge of PPs' distribution probability. Optimal channel-hopping sequence can be obtained based on dynamic programming (DP) in order to achieve maximum aggregate throughput for SPs under the quality-of-service (QoS) constraint of PPs. On the other hand, the POCA-C scheme is proposed for centralized networks, where an optimal channel allocation for SPs is derived by means of linear programming based on the number of PPs of each channel in every SCH interval. With the adoption of proposed POCA schemes, optimal load balance can be achieved between the probability of channel availability and channel utilization; while the transmission opportunities for safety-related messages can also be preserved. Note that the proposed POCA-D and POCA-C schemes can be utilized to investigate the effects from different network scenarios. Performance validation and comparison of both protocols will be evaluated via simulations.

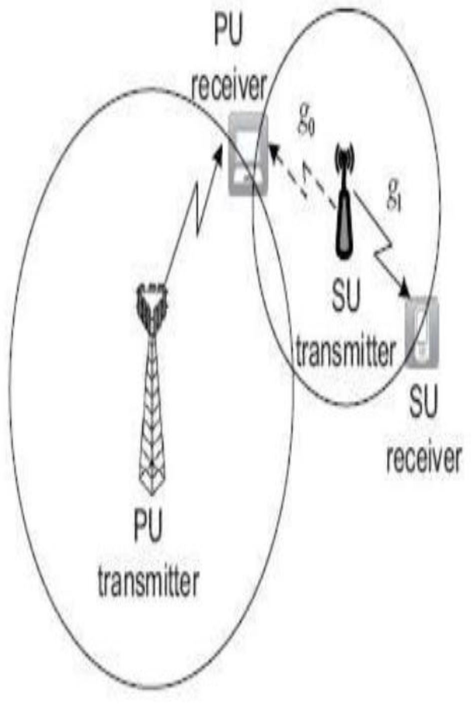
Multi-Channel Operation

The coordinated universal time (UTC) is adopt for all stations the synchronization scheme for sync intervals. As the stations will toggle to the CCH in every CCH interval to either listen or transmit advertising messages, and potentially switch into one of the SCHs during the SCH interval for data spread. During the CCH interval, the safety-related messages can be broadcast on the CCH by the providers and these messages are expected to be received by all stations. On the other hand, if a provider intends to deliver non-safety information to some of the users, the provider will broadcast the WAVE services advertisement (WSA) edge on the CCH. The WSA frame nmainly contains two fields including the SCH that the provider plans to switch into and the planned MAC address of user for data transmission. In order to facilitate two-way handshaking process, the WSA response (WSAR) casing is defined in this paper and will be issued by the corresponding user to acknowledge the reception of WSA frame if the user agrees to receive data from the provider. After the provider has received the WSAR frame, both the provider and user will switch to the consequent SCH that is recorded in the WSA frame in the following SCH interval. During the SCH interval, the channel access method for provider is based on the carrier sense multiple access with smash evading (CSMA/CA) scheme. A data transmission is completed by means of the RTS/CTS/DATA/ACK four-way handshaking mechanism. Furthermore, there can be multiple providers that intend to compete for both the announcement on the CCH during CCH interval and the utilization of six SCHs during SCH interval. The random backoff plan is adopted to improve potential smash between the WSA frames on CCH as well as collision between the the RTS frames on SCHs. Note that even with successful data delivery, each provider can further conduct multiple channel contentions within an SCH interval if it has additional data to be transmited.

III. PROPOSED SYSTEM

When the network weight is lofty, an admission control algorithm is proposed to guarantee QoS constraint for secondary users and intrusion constraints for primary users. When all secondary users can be supported, we present a joint rate and power allocation solution with QoS and intrusion constraints. In this paper, consider the spectrum sharing problem among unlicensed users (secondary users) and licensed users (primary users). The entities we will work with are communication associates each of which is a pair of users communicating with each other. We will refer to communication links belonging to secondary networks as secondary associates. We will also deem the interference constraints at the receiving nodes of chief network which will be referred to as primary receiving points in the sequel. We assume that each primary receiving point can accept a maximum interference level.Admission control problem when the network load is high and all secondary links transmit with their minimum rate.advantages of proposed system 1)High Quality of Service 2)Interference Avoided 3)High network performance 4)Separate power allocation for channels

Figure:Architecture



IV. ALGORITHM USED

Admission Control Algorithm

An admission control algorithm which is perform together with power control such that QoS requirements of all admitted secondary users are contented while keeping the intrusion to primary users below the tolerable limit. When all secondary users can be supported at least rates, we permit them to increase their transmission rates and share the spectrum in a fair manner. Admission control algorithms to be used during high network load conditions which are performed mutually with power control so that QoS desires of all admitted secondary users are satisfied while keeping the intrusion to primary users below the passable limit. If all secondary users can be supported at minimum rates, we allow them to enlarge their broadcast rates and share the band in a fair manner. The secondary links requesting access to the band approved to the primary network have QoS requirements.

V. EXPERIMENTAL RESULT

When the network load is small, all secondary associates can be admitted into the network and they would increase their broadcast rates over the least values. In core, we wish to solve the optimization problem. The decision variables are transmission rates and powers P. Transform this problem into a convex optimization problem where globally optimal solution can be obtained. We would like to note that the joint rate and power allocation for cellular CDMA networks has been an active research topics over the last several years. We refer the readers to and references therein for existing fiction on the trouble. However, the work is one of the first papers which adapt the problem to the ad hoc network setting. Here, the objective is to minimize the maximum service time on different transmission links. In this paper, we proceed one step further by solving the joint rate and power allocation problem in the spectrum sharing context where total interference at the primary receiving point should be smaller the tolerable limit. We will assume that transmission rate of secondary link can be adjusted in an allowable range with minimum and maximum values are minimum and maximum , respectively. Also, power of secondary link is constrained to be smaller than the maximum limit. When the network weight is small, all requesting secondary links with minimum transmission rates can be supported while fulfilling both QoS and intrusion constraints. If it is the case, secondary links would increase their broadcast rates above the least values and split the spectrum in a fair manner. For fairness issue, we adopt the max-min standard which aims to maximize the broadcast rate of the secondary link with a minimum broadcast rate.

VI. CONCLUSION

In this paper presented a solution approach to the spectrum sharing problem in cognitive wireless networks. In particular, an admission control algorithm has been proposed which aims to remove the least number of secondary links so that both QoS constraints in terms of desired SINR for accepted links and interference constraints for primary links are satisfied. We have also formulated the joint rate and power allocation problem for the secondary links as an optimization problem with both QoS and interference constraints. Also, several interesting impacts of system, QoS and interference constraint parameters on network performance is high.

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