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OPTIMIZATION OF ADAPTIVE WIRELESS COMMUNICATIONS IN UNMANNED LOCATIONS

M.S.Saravanan[1], B.Varun Reddy[2]
Professor[1], Student[2]
Department of Computer Science and Engineering,
Saveetha School of Engineering, SaveethaUniversity, Chennai, India
Email: saranenadu@gmail.com

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Abstract

In Wireless communication it is very difficult to design an efficient channel access without knowledge about the nature of environment. The resources in channel state distribution sometimes partially distributed at different locations. In this paper, we propose an online learning algorithm for proper channel access of wireless communications in different unmanned environments based on theory of Multiarmed Bandits(MAB). By tuning two control parameters that is, learning rate and exploration probability our algorithm would find channel access directly. The performance in accessing the channel gets better than the previous solutions. Keeping the algorithm in practice adaptive Jamming attacks and attacking strength ranges from no-attack to the full attack of all spectrum resources. In this proposed optimized framework we introduce the efficient handling of unmanned locations to provide the better communications.

Keywords: Jamming Attack, Learning Rate, Exploration Probability, Spectrum resources.

1. Introduction

The Design of channel access has become a major problem in wireless communication. The appearance of smart wireless devices with adaptive and learning abilities, the modern wireless communications has developed a lot to its requirements and solutions. Especially incomplex environments, where accurate instant channel states can be acquired before transmission and long term channel evolution process are unknown (e.g., cognitive radio, smart vehicular and military communications). Thus, it is critical for wireless devices to learn and select the best channels to access in general unknown wireless environments. Many recent works have tackled this problem in certain type of wireless environments by online learning approaches, almost all of which are well formulated as the MAB problems.Due to its inherent capability in keeping a good balance between “exploitation” and “exploration” for the

selection of channels and the superior throughput gain with the finite-time optimality guarantee. The main goal is to find a channel access strategy that achieves the optimal expected throughput. Briefly speaking, the algorithm can be categorized into two different types of MAB models, namely, adversarial (non-stochastic) MAB and stochastic MAB. Stochastic MABassumes that the channel state follows some unknown process. As we know, one key assumption of almost all existing works is the nature of environments, as known prior, is either stochastic or adversarial. This is limited in describing general wireless environments in practice, although it largely captures the main characteristic of them. Because, in many practical wireless applications, the nature of the environment is not restricted to either the stochastic or the adversarial type, and it usually cannot be known in advance. Consider a wireless network deployed in A potentially hostile environment. The number and locations of attackers are often unrevealed to the wireless networks. In this scenario, most likely, some portions of partially -dispersed channels may suffer from service attackers that are adversarial, while others are stochastic distributed. The use of the adversarial MAB model on all channels will lead to large values of regret, since a great portion of channels can still be stochastically distributed. Thus, it is hard to decide the type of MAB models to be used.Our main contributions are summarized as follows they are the features of the general wireless communication environments mainly into four typical regimes: the adversarial regime, the stochastic regime, the mixed adversarial and stochastic regime, and the contaminated stochastic regime. We provide solid theoretical Results for them, each of which achieves the almost optimal regret bounds and the proposed algorithm considers the statistical information sharing of a channel that belongs to different transmission strategies.

2. Related work

The first adaptive multichannel access algorithm for wireless communications without the knowledge about the nature of environments. We captured the feature of the general wireless environments and divided them into four regimes and provided solid. The critical analysis for each of them are extensive simulations were conducted to verify the learning performance of our algorithm in different regimes and see advantages over classic approaches. In this article one new proposed algorithm could be implemented efficiently in large-scale wireless communication systems [1]. The low-complexity precoding and detection scheme to solve the ICI problem resulted from Mobility in OFDM system. The frequency channel responds would be transferred into each Group. Compared with other precoding approaches, the proposed scheme has much higher Coding efficiency by adopting appropriate parameters. In this article new proposed scheme could be implemented for high speed communications[2]. The Random noise model is a

reflection of reality. The results from this article indicate that added layer of complexity does not come with a costly price. The wireless communication is done by accessing the channel directly without any problem. This article ensures that communication in unmanned locations can be done very securely[3]. The focus takes places mainly on information during the wireless communication in unmanned locations. The time taking to travel the information is observed. There will be no data loss during the wireless communication[4].EAER (Environmental Adaptive Error Recovery) was developed to reduce the errors during the communications. It also plays a major role in finding out the time needed for recovery in industrial works. The communication error generally occurs due to environmental problems[5]. This article provides complete information about data collection in wireless communications. Data will not be lost during the communication, but due to some communication errors data will not be received. So various steps were taken to collect the data and secure the data[6]. In wireless communication it is difficult to find amount of data being transferred, so data is divided into packets so it is very easy to receive the data during wireless communications. It is very easy process to receive the data during communication [7]. There are different communication methods and different frequencies for wireless communications. Each data will be having different frequencies. Transferring or receiving of data depends upon the frequency of the data. If the frequency is very high the data will be received very fastly and very securely [8].

3. Wireless Communication usage in unmanned locations

The world is witnessing tremendous innovation in wireless technologies, leading to significant changes in how humans and machines interact with one another. These new wireless technologies and the changes they support are generating exciting opportunities. Wireless communication has several advantages with the following being some of the most important, they are Cost Effectiveness, Physical Infrastructure and Maintenance. The wireless Communications does not require any rapid installations. This communication is very safe as compared to the wired communication. The amount of data which can be transferred through Wireless communication is very large as compared to the wired medium. This type of communication has very large additional capabilities. In above Figure.1 We can see Different frequencies of wireless communication. Wireless communication consists of different frequencies.

It consists of 0GHz to 100GHz.below 3GHz frequencies can be received by appliances like TV broadcast, cell phones, WLAN etc. Satellite TV receives the frequency of 10 GHz whereas satellite broadcast receives 40GHz. Satellite TV is the equipment in which frequency varies from 3GHz – 10GHz. It does not remain on the fixed

frequency all the time. Auto radar is the wave technology in which all the waves have the frequency of 20HGz.Satellite broadcast will have the separate satellite dish which transmits the signals. This transmitter have the frequency of 40GHz.

WLSN is used to connect two or more networks. It connects two or more networks without any wired connections. It has the frequency of 60GHz. ISM band is for the use of radio frequency it has the frequency same as the WLAN 60GHz. High capacity radio is very secure wireless communication which has the most frequency among all the equipment's it has frequency between 80GHz -100GHz.

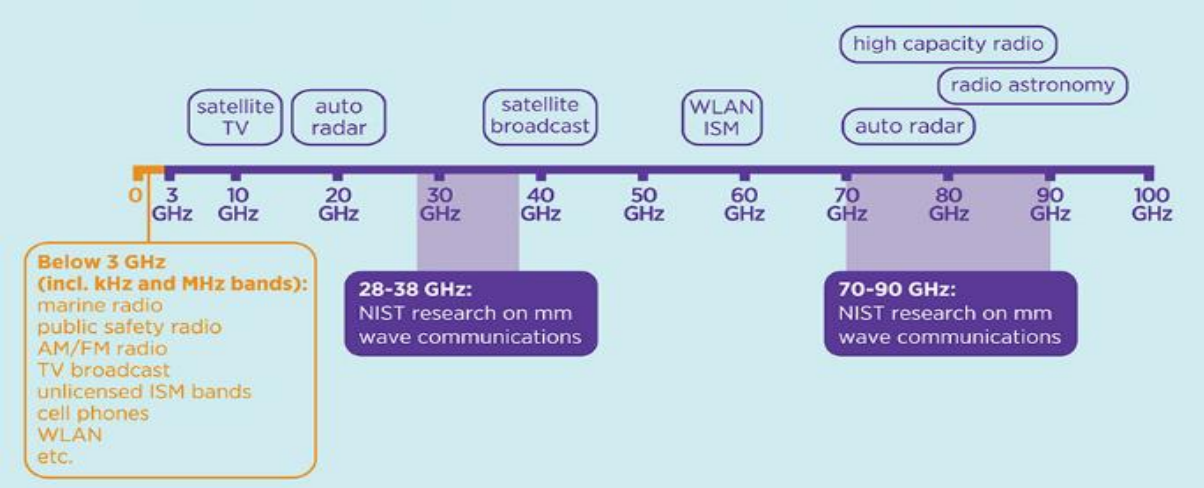

Figure 1. **Wireless Communication Frequencies.**

4. Conclusion

In this paper, we have discussed the adaptive wireless communication in unmanned locations without the character of environments. We captured the characteristic of overall Wi-Fi environments and divided them into two regimes and provided solid theoretical analysis for each and them. By applying our proposed framework the efficiency in large-scale wireless conversation will be having better communication system. The framework is of trendy fee, which is done by taking power budgets under consideration and accessing all the primary and secondary issues obtained during the wireless communications in unmanned locations. The concept of this paper also deals with the solving of problems obtained in the transport layer during wireless communications. We plan to reduce the problems occurred in wireless communications in unmanned locations by using two different models like non- stochastic and stochastic Models.

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