IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 1, April 2022
Impact Factor: 6.252

A Safe Cognitive Radio Spectrum Handoff Method Using Coordinating Cognitive User

Mrs. T. G. Dhaarani1, Chandru D.[2], Harini V.G.[3], Madhumitha G. S.[4]
Assistant Professor, Department of Electronics and Communication Engineering[1]
Final Year Students, Department of Electronics and Communication Engineering[2,3,4]
Nandha Engineering College, Erode, Tamil Nadu, India

Abstract: *A new cognitive user emulation attack (CUEA) in a cognitive radio network (CRN), which could be utilized by intruders during spectrum handoffis introduced. The need for more efficient spectrum utilization in our increasingly digitalized society is becoming more important. This has given raise to the variety of new security threats. A safe handoff mechanism that could successfully counter such an attack by introducing a coordinating cognitive user that computes the level of trust of each cognitive user based on its behavioral characteristics is proposed. Malicious users could be effectively identified by the coordinating cognitive user by looking up the trust values. The activity of the proposed mechanism is validated using MATLAB simulation. The simulation executed describes the utilization of the proposed mechanism by correctly identifying the probability of false detection, detection rate, incorrect detection shown as it decreases the data transmission time or increases the transmission rates of primary user's signals.*

Keywords: Cognitive User Emulation Attack

REFERENCES

[1]. Geetanjali Rathee, Naveen Jaglan, Sahil Garg, Bong Jun Choi, Kim_Kwang Raymond Choo, "A Secure Spectrum Handoff Mechanism in Cognitive Radio Networks" IEEE transactions on cognitive Communications And Networking, Vol. 16, no. 3, 2020.

[2]. B. Zheng, M. Wen, S. Lin, W. Wu, F. Chen, S. Mumtaz, F. Ji, and H. Yu, "Design of multi-carrier lbt for laa & wifi coexistence in unlicensed spectrum," IEEE Network, 2019. doi:10.1109/MNET.2019.1900172.

[3]. B. Zheng, M. Wen, S. Lin, W. Wu, F. Chen, S. Mumtaz, F. Ji, and H. Yu, "Design of multi-carrier LBT for LAA & WiFi coexistence in unlicensed spectrum," IEEE Network, 2019. doi:10.1109/MNET.2019.1900172.

[4]. M. Kashif, Z. Ullah, M. Iqbal, L. Musavian, S. Sarwar, X. Wang, S. Mumtaz, Z. Ul-Qayyum, and H. M. Safyan, "Multiuser detection using hybrid arq with incremental redundancy in overloaded mimo systems (workshop paper)," in International Conference on Collaborative Computing: Networking, Applications and Worksharing, pp. 642–653, Springer, 2019.

[5]. P. M. Rodriguez, A. Lizeaga, M. Mendicute, and I. Val, "Spectrum handoff strategy for cognitive radiobased MAC for real-time industrial wireless sensor and actuator networks,"Comp. Netw., vol. 152, pp. 186– 198, 2019.

[6]. M. Aggarwal, T. Velmurugans, M. Karuppiah, M. M. Hassan, A. Almogren, and W. N. Ismail, "Probability-based centralized device for spectrum handoff in cognitive radio networks," IEEE Access, vol. 7, pp. 26731–26739, 2019.

[7]. Z. Zheng, T. Wang, J. Wen, S. Mumtaz, A. K. Bashir, and S. H. Chauhdary, "Differentiallyprivate highdimensional data publication in internet of things," IEEE Int. of Things Journal, 2019. doi:10.1109/JIOT.2019.2955503.

[8]. M. Patnaik, V. Kamakoti, V. Matya´s, and V. ˇ Reh ˇ ak, "PROLE- ´ Mus: A proactive learning based mac protocol against PUEA and SSDF attacks in energy constrained cognitive radio networks," IEEE Trans. on Cognitive Communication. And Network., 2019. doi:10.1109/TCCN.2019.2913397.

[9]. S. Garg, K. Kaur, N. Kumar, G. Kaddoum, A. Y. Zomaya, and R. Ranjan, "A hybrid deep learning-based model for anomaly detection in cloud datacenter networks," IEEE Trans. on Netw and Service Management, vol. 16, no. 3, pp. 924– 935, 2019.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 1, April 2022
Impact Factor: 6.252

[10]. E. Hill and H. Sun, "Double threshold spectrum sensing methods in spectrum-scarce vehicular communications," IEEE Trans. on Indus. Info., vol. 14, no. 9, pp. 4072–4080, 2018.

[11]. S. K. Haider, A. Jiang, M. A. Jamshed, H. Pervaiz, and S. Mumtaz, "Performance enhancement in P300 ERP single trial by machine learning adaptive denoising mechanism," IEEE Netw. Letters, vol. 1, no. 1, pp. 26–29, 2018.

[12]. B. Van Nguyen, H. Jung, D. Har, and K. Kim, "Performance analysis of a cognitive radio network with an energy harvesting secondary transmitter under nakagami fading," IEEE Access, vol. 6, pp. 4135–4144, 2018.

[13]. E. Meshkova, Z. Wang, K. Rerkrai, J. Ansari, J. Nasreddine, D. Denkovski, T. Farnham, J. Riihijarvi, L. Gavrilovska, and ¨ P. Mah¨ onen, "Designing a self-optimization system for cognitive ¨ wireless home networks," IEEE Trans. on Cognitive Commun. and Netw., vol. 3, no. 4, pp. 684–702, 2017.

[14]. A. Koushik, J. D. Matyjas, F. Hu, and S. Kumar, "Channel/beam handoff control in multi- beam antenna based cognitive radio networks," IEEE Trans. on Cognitive Commun. and Netw., vol. 4, no. 1, pp. 30–42, 2017.

[15]. Y. Zhao, Z. Hong, Y. Luo, G. Wang, and L. Pu, "Prediction-based spectrum management in cognitive radio networks," IEEE Sys. Journal, vol. 12, no. 4, pp. 3303–3314, 2017.

[16]. M. E. Bayrakdar and A. Calhan, "Improving spectrum handoff utilization for prioritized cognitive radio users by exploiting channel bonding with starvation mitigation," AEU-Int. Journal of Elec. and Commun., vol. 71, pp. 181–191, 2017.

[17]. K. Kumar, A. Prakash, and R. Tripathi, "Spectrum handoff in cognitive radio networks: A classification and comprehensive survey," Journal of Net. and Comp. App., vol. 61, pp. 161–188,2016.

[18]. Y. Wu, F. Hu, Y. Zhu, and S. Kumar, "Optimal spectrum handoff control for CRN based onhybrid priority queuing and multiteacher apprentice learning," IEEE Trans. on Veh. Technol., vol.66, no. 3, pp. 2630–2642, 2016.

[19]. A. F. Tayel, S. I. Rabia, and Y. Abouelseoud, "An optimized hybrid approach for spectrum handoff in cognitive radio networks with non- identical channels," IEEE Trans. on commun., vol. 64, no. 11, pp. 4487– 4496, 2016.

[20]. G. Rathee, P. Thakur, G. Singh, and H. Saini, "Aspects of secure communication during spectrum handoff in cognitive radio networks," in 2016 International Conference on Signal Processing and Communication (ICSC), pp. 64–69, IEEE, 201

[21]. J. Qi, F. Hu, X. Li, A. Koushik, L. Hu, and S. Kumar, "CR based video communication testbed with robust spectrum sensing/handoff," in Info. Technol.: New Generations, pp. 59–70, Springer, 2016.

[22]. R. K. Sharma and D. B. Rawat, "Advances on security threats and countermeasures for cognitive radio networks: A survey," IEEE Commun. Surveys & Tuts, vol. 17, no. 2, pp. 1023– 1043, 2014.

[23]. M. Elkashlan, L. Wang, T. Q. Duong, G. K. Karagiannidis, and A. Nallanathan, "On the security of cognitive radio networks," IEEE Trans. on Veh. Technol., vol. 64, no. 8, pp. 3790– 3795, 2014.

[24]. C.-W. Wang and L.-C. Wang, "Analysis of reactive spectrum handoff in cognitive radio networks," IEEE Journal on selected areas in commun., vol. 30, no. 10, pp. 2016–2028, 2012.

[25]. A. Singh, M. R. Bhatnagar, and R. K. Mallik, "Cooperative spectrum sensing in multiple antenna based cognitive radio network using an improved energy detector," IEEE Communications letters, vol. 16, no. 1, pp. 64–67, 2011.