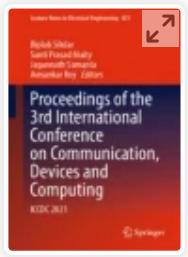

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Proceedings of the 3rd International Conference on Communication, Devices and Computing

ICCDC 2021

Editors: Biplab Sikdar, Santi Prasad Maity, Jagannath Samanta, Avisankar Roy

Provides insights into the 3rd International Conference on Communication, Devices and Computing (ICCDC 2021)

Includes original contributions in the areas of communication, devices, and computing

Presents research papers written by research engineers, scientists, industrialists, and scholars

Part of the book series: Lecture Notes in Electrical Engineering (LNEE, volume 851)

Sections

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About this book

This book provides insights into the 3rd International Conference on Communication, Devices and Computing (ICCDC 2021), which was held in Haldia, India, on August 16–18, 2021. It covers new ideas, applications, and the experiences of research engineers, scientists, industrialists, scholars, and students from around the globe. The proceedings highlight cutting-edge research on communication, electronic devices, and computing and address diverse areas such as 5G communication, spread spectrum systems, wireless sensor networks, and signal processing for secure communication, error control coding, printed antennas, analysis of wireless

networks, antenna array systems, analog and digital signal processing for communication systems, frequency selective surfaces, radar communication, and substrate integrated waveguide and microwave passive components, which are key to state-of-the-art innovations in communication technologies.

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Keywords

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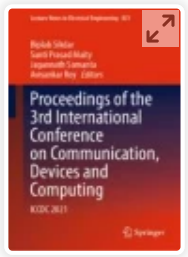

Proceedings of the 3rd International Conference on Communication, Devices and Computing, pp 213–223

Issues of Knowledge Management in Deep Web and Its Graph-Based Analysis

Subrata Paul, Chandan Koner, Robiul Islam Kabir & Anirban Mitra

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Abstract

There has been an enormous evolution of the Internet and network technologies since the past few decades, alongside the increase in the count of users and their ever increasing demand for preservation of identity and privacy. In order to meet the demand of the users, scientists have come up with the novel thoughts, thereby leading to the evolution of the large portion of the Internet, i.e., the deep Web. Although the demand of the privacy preservation has been solved by the deep Web for some gentle users, but alongside, it has opened up the arena for the accommodation of several

unlawful activities, leading to the generation of dark Web. This necessitates in the search of automatic solutions in support of the law and parallel assisting the security agencies for collection of information from dark Web in order to disclose similar activities. In this paper, the authors will present a brief overview of the deep Web and present its features. The main point of focus shall be the issue of knowledge management and how it will be utilized for making a graph-based analysis. The paper concludes with an example of a proposed system for extraction of knowledge.

Keywords

Identity **Privacy** **Deep Web** **Dark Web**

Knowledge management **Graph analysis**

References

1. Zulkarnine, A.T., Frank, R., Monk, B., Mitchell, J., Davies, G.: Surfacing collaborated networks in dark web to find illicit and criminal content. In: 2016 IEEE Conference on Intelligence and Security Informatics (ISI), pp. 109–114 (2016)

2. Baravalle, A., Lopez, M.S., Lee, S.W.: Mining the dark web: drugs and fake Ids. In: 2016 IEEE 16th International Conference on Data Mining Workshops (ICDMW), pp. 350–356 (2016)

3. Chang W., Chung P.: Knowledge management in cybercrime investigation—a case study of identifying cybercrime investigation knowledge in Taiwan. In: Chau, M., Chen, H., Wang G.A., Wang, J.H. (eds.) Intelligence and Security Informatics. PAISI 2014. Lecture Notes in Computer Science, vol. 8440. Springer, Cham, 8–17 (2014)

4. E4J university module series: cybercrime: cybercrime module 5 key issues: knowledge management. https://www.unodc.org/e4j/en/cybercrime/module-5/key-issues/knowledge-management.html (2019). Accessed 17 May 2021

5. Alkhatib, B., Basheer, R.: Crawling the dark web:

a conceptual perspective, challenges and implementation. J. Digital Inf. Manag. **17**(2), 51–60 (2019)

6. Paul, S., Mitra, A., Dey, S.: Implementation and application of Bio inspired computing techniques based web crawlers for data retrieval and information extractions, bio-inspired computing for information retrieval applications. IGI-Global, USA, ISBN: 9781522523758 (2017)

7. Gupta, A., Maynard, S.B., Ahmad, A.: The dark web phenomenon: a review and research agenda, arXiv e-prints (2021)

8. The Tor Project. Tor Project. https://www.torproject.org/. (2018)

9. Broadhurst, R., Woodford-Smith, H., Maxim, D., Sabol, B., Orlando, S., Chapman-Schmidt, B., Alazab, M.: Cyber terrorism: research review: research report of the Australian National University Cybercrime Observatory for the Korean Institute of Criminology (2017)

10. Tanenbaum, A.S., Van Steen, M.: Distributed systems: principles and paradigms. Prentice-Hall (2007)

11. Owen, G., Savage, N.: Empirical analysis of Tor

hidden services. IET Inf. Secur. **10**(3), 113–118 (2016)

12. Hotspot Shield: Tor vs VPN. https://www.hotspotshield.com/resources/tor-vs-vpn/ (2018). Accessed 20 May 2018

13. Finklea, K.: Dark Web. Congressional Research Service, Washington DC, pp. 1–19 (2017)

14. Jardine, E.: The dark web dilemma: tor, anonymity and online policing. Centre for International Governance Innovation and Chatham House, **20**, 1–24 (2015)

15. Yang, L., Liu, F., Kizza, J., Ege, R.: Discovering topics from dark websites. In: Proceedings of the IEEE Symposium on Computational Intelligence in Cyber Security, Nashville, pp. 1–5 (2009)

16. Zhang, Y., Zeng, S., Huang, C.N., Fan, L., Yu, X., Dang, Y., Larson, C., Denning, D., Roberts, N., Chen, H.: Developing a dark web collection and infrastructure for computational and social sciences. In: Proceedings of the IEEE International Conference on Intelligence and Security Informatics, Vancouver, pp. 1–6 (2010)

17. Beshiri, A.S., Susuri, A.: Dark web and its impact

in online anonymity and privacy: a critical analysis and review. J. Comput. Commun. **7**(3), 30–43 (2019)

18. Bloomenthal, A.: Dark Web. Laws & Regulations: Cyber security. https://www.investopedia.com/terms/d/dark-web.asp (2021). Accessed 16 Mar 2021

19. Acharyulu, G.V.R.K.: Information management in a health care system: knowledge management perspective. Int. J. Innov. Manag. Technol. **2**(6), 534–537 (2011)

20. Hunton, P.: Managing the technical resource capability of cybercrime investigation: a UK law enforcement perspective. Public Money Manag. **32**(3), 225–232 (2011)

21. Dixon, N.M.: Common knowledge. Harvard Business School Press, How companies thrive by sharing what they know (2000)

22. Press release Europol: crime on the dark web: law enforcement coordination is the only cure. https://www.europol.europa.eu/newsroom/news/crime-dark-web-law-enforcement-coordination-only-cure (2018). Accessed 17 May 2021

23. Dean, G., Cathrine, F., Petter, G.: Knowledge

sharing in criminal investigations: an empirical study of Norwegian police as value shop. Crim. Justice Stud. **19**(4), 423–437 (2006)

24. Global Cyber Security Capacity Centre.: Cybersecurity capacity review: republic of Lithuania (2017)

25. Woodie, A.: The graph that knows the World. Datanami. https://www.datanami.com/2018/10/02/the-graph-that-knows-the-world/ (2018). Accessed 2 Oct 2018

26. Chowdhury, S.: Knowledge graph: the perfect complement to machine learning, towards data science. https://towardsdatascience.com/knowledge-graph-bb78055a7884 (2019). Accessed 18 July 2019

27. Fluit, C., Sabou, M., van Harmelen F.: Ontology-based information visualization: toward semantic web applications. In: Geroimenko, V., Chen, C. (eds.) Visualizing the Semantic Web. Springer, London (2001)

28. Frasincar, F., Telea, A., Houben, G-Jan.: Adapting graph visualization techniques for the visualization of RDF data. Visualizing the Semantic Web, 2nd edn. Springer (2005)

29. Wei, F., Zhiming, C.: Research on knowledge management visualization of deep web. Key Eng Mater **439–440** Online: 2010–06–07. Trans Tech Publications, Switzerland, pp. 189–194 (2010)

30. Griffith, V., Xu, Y., Ratti, C.: Graph Theoretic Properties of the Darkweb, arXiv, (2017)

31. Borgatti, S.P, Jones, C., Everett, M.G.: Network measures of social capital. Connections **21**, 27–36 (1998)

32. Wu, P, Wen, J.R, Liu, H, Ma, W.Y.: Query selection techniques for efficient crawling of structured web sources. In: Proceedings of the 22nd international conference on data engineering, IEEE (2006)

33. Yang, D., Yang, H-M., Wang, P, Li, S-J.: Design and implement of large-scale social network analysis platform based on Hadoop. J Inf Hiding Multimedia Signal Process ISSN 2073–4212, Ubiquitous International Volume **8**(2), 300–309 (2017)

34. Yang, Y et al.: Hadoop-based dark web threat intelligence analysis framework. In: 2019 IEEE 3rd Advanced Information Management, Communicates, Electronic and Automation

Control Conference (IMCEC), Chongqing, China, 1088–1091 (2019)

35. Paul, S., Mitra, A., Koner, C.: A review on graph database and its representation. In: 2019 International Conference on Recent Advances in Energy-efficient Computing and Communication (ICRAECC), pp. 1–5 (2019)

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