

- 688, 2021, doi: 10.1109/Confluence51648.2021.9376879.
- [2] N. N. Tuan, P. H. Hung, N. D. Nghia, N. Van Tho, T. Van Phan, and N. H. Thanh, "A DDoS attack mitigation scheme in ISP networks using machine learning based on SDN," *Electron.*, vol. 9, no. 3, pp. 1–19, 2020, doi: 10.3390/electronics9030413.
 - [3] T. Mahjabin, Y. Xiao, G. Sun, and W. Jiang, "A survey of distributed denial-of-service attack, prevention, and mitigation techniques," *Int. J. Distrib. Sens. Networks*, vol. 13, no. 12, 2017, doi: 10.1177/1550147717741463.
 - [4] Z. Shu, J. Wan, D. Li, J. Lin, A. V. Vasilakos, and M. Imran, "Security in Software-Defined Networking: Threats and Countermeasures," *Mob. Networks Appl.*, vol. 21, no. 5, pp. 764–776, 2016, doi: 10.1007/s11036-016-0676-x.
 - [5] Ö. Tonkal, H. Polat, E. Başaran, Z. Cömert, and R. Kocaoğlu, "Machine learning approach equipped with neighbourhood component analysis for ddos attack detection in software-defined networking," *Electron.*, vol. 10, no. 11, 2021, doi: 10.3390/electronics10111227.
 - [6] J. C. Correa Chica, J. C. Imbachi, and J. F. Botero Vega, "Security in SDN: A comprehensive survey," *J. Netw. Comput. Appl.*, vol. 159, no. December 2018, p. 102595, 2020, doi: 10.1016/j.jnca.2020.102595.
 - [7] S. T. Zargar, J. Joshi, and D. Tipper, "A Survey of Defense Mechanisms Against Distributed Denial of Service (DDoS) Flooding Attacks," *IEEE Comput. Electr. Eng.*, vol. 15, no. 4, pp. 2046–2069, 2013, doi: 10.1016/j.compeleceng.2018.09.001.
 - [8] S. Oshima, T. Nakashima, and T. Sueyoshi, "Early DoS/DDoS detection method using short-term statistics," *CISIS 2010 - 4th Int. Conf. Complex, Intell. Softw. Intensive Syst.*, pp. 168–173, 2010, doi: 10.1109/CISIS.2010.53.
 - [9] S. M. Mousavi and M. St-Hilaire, "Early detection of DDoS attacks against SDN controllers," in *2015 International Conference on Computing, Networking and Communications, ICNC 2015*, 2015, pp. 77–81, doi: 10.1109/ICCNC.2015.7069319.
 - [10] R. Li and B. Wu, "Early detection of DDoS based on phi-entropy in SDN networks," *Proceedings of 2020 IEEE 4th Information Technology, Networking, Electronic and Automation Control Conference, ITNEC 2020*, pp. 731–735, 2020, doi: 10.1109/ITNEC48623.2020.9084885.
 - [11] R. Braga, E. Mota, and A. Passito, "Lightweight DDoS flooding attack detection using NOX/OpenFlow," in *Proceedings - Conference on Local Computer Networks, LCN*, 2010, pp. 408–415, doi: 10.1109/LCN.2010.5735752.
 - [12] K. S. Sahoo, D. Puthal, M. Tiwary, J. J. P. C. Rodrigues, B. Sahoo, and R. Dash, "An early detection of low rate DDoS attack to SDN based data center networks using information distance metrics," *Futur. Gener. Comput. Syst.*, vol. 89, pp. 685–697, 2018, doi: 10.1016/j.future.2018.07.017.
 - [13] K. Kalkan, L. Altay, G. Gür, and F. Alagöz, "JESS: Joint Entropy-Based DDoS Defense Scheme in SDN," *IEEE J. Sel. Areas Commun.*, vol. 36, no. 10, pp. 2358–2372, 2018, doi: 10.1109/JSAC.2018.2869997.
 - [14] M. Yue, H. Wang, L. Liu, and Z. Wu, "Detecting DoS Attacks Based on Multi-Features in SDN," *IEEE Access*, vol. 8, pp. 104688–104700, 2020, doi: 10.1109/ACCESS.2020.2999668.
 - [15] D. B. Rawat and S. R. Reddy, "Software Defined Networking Architecture, Security and Energy Efficiency: A Survey," *IEEE Commun. Surv. Tutorials*, vol. 19, no. 1, pp. 325–346, 2017, doi: 10.1109/COMST.2016.2618874.
 - [16] L. F. Eliyan and R. Di Pietro, "DoS and DDoS attacks in Software Defined Networks: A survey of existing solutions and research challenges," *Futur. Gener. Comput. Syst.*, vol. 122, pp. 149–171, 2021, doi: 10.1016/j.future.2021.03.011.
 - [17] M. Malik and Y. Singh, "A Review: DoS and DDoS Attacks," *Int. J. Comput. Sci. Mob. Comput.*, vol. 4, no. 6, pp. 260–265, 2015.
 - [18] N. Ahuja and G. Singal, "DDoS Attack Detection Prevention in SDN using OpenFlow Statistics," *Proc. 2019 IEEE 9th Int. Conf. Adv. Comput. IACC 2019*, pp. 147–152, 2019, doi: 10.1109/IACC48062.2019.8971596.
 - [19] N. Ahuja, G. Singal, and D. Mukhopadhyay, "DDoS attack SDN Dataset," vol. 1, no. September, p. 17632, 2020, doi: 10.17632/jxpfjc64kr.1.
 - [20] B. B. Zarpelão, R. S. Miani, C. T. Kawakani, and S. C. de Alvarenga, "A survey of intrusion detection in Internet of Things," *J. Netw. Comput. Appl.*, vol. 84, pp. 25–37, 2017, doi: 10.1016/j.jnca.2017.02.009.
 - [21] R. J. Alzahrani and A. Alzahrani, "Security analysis of ddos attacks using machine learning algorithms in networks traffic," *Electron.*, vol. 10, no. 23, 2021, doi: 10.3390/electronics10232919.
 - [22] R. Kumar, P. Kumar, R. Tripathi, G. P. Gupta, N. Kumar, and M. M. Hassan, "A Privacy-Preserving-Based Secure Framework," *IEEE Trans. Intell. Transp. Syst.*, vol. 23, no. 9, pp. 1–12, 2022.
 - [23] M. Keshk, B. Turnbull, N. Moustafa, D. Vatsalan, and K. K. R. Choo, "A Privacy-Preserving-Framework-Based Blockchain and Deep Learning for Protecting Smart Power Networks," *IEEE Trans. Ind. Informatics*, vol. 16, no. 8, pp. 5110–5118, 2020, doi: 10.1109/TII.2019.2957140.
 - [24] E. Balkanlı, A. Nur Zincir-Heywood, and M. I. Heywood, "Feature selection for robust backscatter DDoS detection," *Proc. - Conf. Local Comput. Networks, LCN*, vol. 2015-Decem, pp. 611–618, 2015, doi: 10.1109/LCNW.2015.7365905.
 - [25] L. S. Matsa, G. A. Zodi-Lusilao, and F. Bhunu-Shava, "Forward Feature Selection for DDoS Detection on Cross-Plane of Software Defined Network Using Hybrid Deep Learning," *2021 3rd Int. Multidiscip. Inf. Technol. Eng. Conf. IMITEC 2021*, 2021, doi: 10.1109/IMITEC52926.2021.9714561.
 - [26] N. Abbas, Y. Nasser, M. Shehab, and S. Sharafeddine, "Attack-Specific Feature Selection for Anomaly Detection in Software-Defined Networks," in *2021 3rd IEEE Middle East and North Africa COMMUNICATIONS Conference, MENACOMM 2021*, 2021, pp. 142–146, doi: 10.1109/MENACOMM50742.2021.9678279.
 - [27] H. Polat, O. Polat, and A. Cetin, "Detecting DDoS Attacks in Software-Defined Networks Through Feature Selection Methods and Machine Learning Models," *Sustainability*, vol. 12, p. 1035, 2020, doi: 10.3390/su12031035.
 - [28] Z. M. Hira and D. F. Gillies, "A Review of Feature Selection and Feature Extraction Methods Applied on Microarray Data," *Adv. Bioinformatics*, vol. 2015, no. 1, pp. 2–4, 2015.
 - [29] B. Venkatesh and J. Anuradha, "A review of Feature Selection and its methods," *Cybern. Inf. Technol.*, vol. 19, no. 1, pp. 3–26, 2019, doi: 10.2478/CAIT-2019-0001.
 - [30] M. De Donno, A. Giaretta, N. Dragoni, and A. Spognardi, "A taxonomy of distributed denial of service attacks," *Int. Conf. Inf. Soc. i-Society 2017*, vol. 2018-Janua, pp. 100–107, 2018, doi: 10.23919/i-Society.2017.8354681.