

REFERENCES

- 2017 Top 10 | OWASP [WWW Document], URL https://owasp.org/www-project-top-ten/2017/Top_10.html (accessed 5.2.21).
- Acunetix Web Application Vulnerability Report 2020 [WWW Document], . Acunetix. URL <https://www.acunetix.com/white-papers/acunetix-web-application-vulnerability-report-2020/> (accessed 6.19.21).
- Bronte, R., Shahriar, H., Haddad, H., 2016. Information Theoretic Anomaly Detection Framework for Web Application, in: 2016 IEEE 40th Annual Computer Software and Applications Conference (COMPSAC). Presented at the 2016 IEEE 40th Annual Computer Software and Applications Conference (COMPSAC), IEEE, Atlanta, GA, USA, pp. 394–399. <https://doi.org/10.1109/COMPSAC.2016.139>
- Cao, Q., Qiao, Y., Lyu, Z., 2017. Machine learning to detect anomalies in web log analysis, in: 2017 3rd IEEE International Conference on Computer and Communications (ICCC). Presented at the 2017 3rd IEEE International Conference on Computer and Communications (ICCC), IEEE, Chengdu, pp. 519–523. <https://doi.org/10.1109/CompComm.2017.8322600>
- Cybersecurity threatscape 2018: trends and forecasts [WWW Document], URL <https://www.ptsecurity.com/ww-en/analytics/cybersecurity-threatscape-2018/> (accessed 5.23.21).
- Debnath, B., Solaimani, M., Gulzar, M.A.G., Arora, N., Lumezanu, C., Xu, J., Zong, B., Zhang, H., Jiang, G., Khan, L., 2018. LogLens: A Real-Time Log Analysis System, in: 2018 IEEE 38th International Conference on Distributed Computing Systems (ICDCS). Presented at the 2018 IEEE 38th International Conference on Distributed Computing Systems (ICDCS), IEEE, Vienna, pp. 1052–1062. <https://doi.org/10.1109/ICDCS.2018.00105>
- Dong, Y., Zhang, Y., Ma, H., Wu, Q., Liu, Q., Wang, K., Wang, W., 2018. An adaptive system for detecting malicious queries in web attacks. *Sci. China Inf. Sci.* 61, 032114. <https://doi.org/10.1007/s11432-017-9288-4>
- Elia, I.A., Fonseca, J., Vieira, M., 2010. Comparing SQL Injection Detection Tools Using Attack Injection: An Experimental Study, in: 2010 IEEE 21st

International Symposium on Software Reliability Engineering. Presented at the 2010 IEEE 21st International Symposium on Software Reliability Engineering (ISSRE), IEEE, San Jose, CA, USA, pp. 289–298.
<https://doi.org/10.1109/ISSRE.2010.32>

ENISA Threat Landscape 2020 - Web application attacks [WWW Document], URL <https://www.enisa.europa.eu/publications/web-application-attacks> (accessed 6.30.21).

Evolution of HTTP - HTTP | MDN [WWW Document], URL https://developer.mozilla.org/en-US/docs/Web/HTTP/Basics_of_HTTP/Evolution_of_HTTP (accessed 4.19.21).

Gao, Y., Ma, Y., Li, D., 2017. Anomaly detection of malicious users' behaviors for web applications based on web logs, in: 2017 IEEE 17th International Conference on Communication Technology (ICCT). Presented at the 2017 IEEE 17th International Conference on Communication Technology (ICCT), IEEE, Chengdu, pp. 1352–1355. <https://doi.org/10.1109/ICCT.2017.8359854>

Gu, H., Zhang, J., Liu, T., Hu, M., Zhou, J., Wei, T., Chen, M., 2020. DIAVA: A Traffic-Based Framework for Detection of SQL Injection Attacks and Vulnerability Analysis of Leaked Data. *IEEE Trans. Rel.* 69, 188–202.
<https://doi.org/10.1109/TR.2019.2925415>

He, P., Zhu, J., He, S., Li, J., Lyu, M.R., 2016. An Evaluation Study on Log Parsing and Its Use in Log Mining, in: 2016 46th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN). Presented at the 2016 46th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), IEEE, Toulouse, France, pp. 654–661.
<https://doi.org/10.1109/DSN.2016.66>

hjp: doc: RFC 1945: Hypertext Transfer Protocol -- HTTP/1.0 [WWW Document], URL https://www.hjp.at/doc/rfc/rfc1945.html#sec_3.1 (accessed 4.19.21).

Hoang, X.D., 2021. Detecting Common Web Attacks Based on Machine Learning Using Web Log, in: Sattler, K.-U., Nguyen, D.C., Vu, N.P., Long, B.T., Puta, H. (Eds.), *Advances in Engineering Research and Application, Lecture Notes*

in Networks and Systems. Springer International Publishing, Cham, pp. 311–318. https://doi.org/10.1007/978-3-030-64719-3_35

IBM's CEO on hackers: "Cyber crime is the greatest threat to every company in the world" [WWW Document], 2015. . IBM Nordic Blog. URL <https://www.ibm.com/blogs/nordic-msp/ibms-ceo-on-hackers-cyber-crime-is-the-greatest-threat-to-every-company-in-the-world/> (accessed 6.30.21).

Iryna Deremuk, 2021. Web Application Architecture: A Guide Through the Intricate Process of Building an App | LitsLink Blog [WWW Document]. LITSLINK. URL <https://litslink.com/blog/web-application-architecture> (accessed 6.27.21).

Kotenko, I., Kuleshov, A., Ushakov, I., 2017. Aggregation of elastic stack instruments for collecting, storing and processing of security information and events, in: 2017 IEEE SmartWorld, Ubiquitous Intelligence & Computing, Advanced & Trusted Computed, Scalable Computing & Communications, Cloud & Big Data Computing, Internet of People and Smart City Innovation (SmartWorld/SCALCOM/UIC/ATC/CBDCOM/IOP/SCI). Presented at the 2017 IEEE SmartWorld, Ubiquitous Intelligence & Computing, Advanced & Trusted Computed, Scalable Computing & Communications, Cloud & Big Data Computing, Internet of People and Smart City Innovation (SmartWorld/SCALCOM/UIC/ATC/CBDCOM/IOP/SCI), IEEE, San Francisco, CA, pp. 1–8. <https://doi.org/10.1109/UIC-ATC.2017.8397627>

LAPORAN HASIL MONITORING KEAMANAN SIBER TAHUN 2020.pdf

[WWW Document], . cloud.bssn.go.id. URL

<https://cloud.bssn.go.id/s/ZSdfbRTKW7p8nW> (accessed 7.15.21).

Ma, K., Jiang, R., Dong, M., Jia, Y., Li, A., 2017. Neural Network Based Web Log Analysis for Web Intrusion Detection, in: Wang, G., Atiquzzaman, M., Yan, Z., Choo, K.-K.R. (Eds.), Security, Privacy, and Anonymity in Computation, Communication, and Storage, Lecture Notes in Computer Science. Springer International Publishing, Cham, pp. 194–204. https://doi.org/10.1007/978-3-319-72395-2_19

Moh, M., Pininti, S., Doddapaneni, S., Moh, T.-S., 2016. Detecting Web Attacks Using Multi-stage Log Analysis, in: 2016 IEEE 6th International Conference on Advanced Computing (IACC). Presented at the 2016 IEEE 6th

- International Conference on Advanced Computing (IACC), IEEE, Bhimavaram, India, pp. 733–738. <https://doi.org/10.1109/IACC.2016.141>
- Purnachandra Rao, B., Nagamalleswara Rao, N., 2019. HDFS Logfile Analysis Using ElasticSearch, LogStash and Kibana, in: Krishna, A.N., Srikantiah, K.C., Naveena, C. (Eds.), *Integrated Intelligent Computing, Communication and Security, Studies in Computational Intelligence*. Springer Singapore, Singapore, pp. 185–191. https://doi.org/10.1007/978-981-10-8797-4_20
- Rekap Serangan Siber (Januari – April 2020) | bssn.go.id, URL <https://bssn.go.id/rekap-serangan-siber-januari-april-2020/> (accessed 6.30.21).
- rfc2818 [WWW Document], URL <https://datatracker.ietf.org/doc/html/rfc2818.html> (accessed 6.20.21).
- Shah, N., Willick, D., Mago, V., 2018. A framework for social media data analytics using Elasticsearch and Kibana. *Wireless Netw.* <https://doi.org/10.1007/s11276-018-01896-2>
- Singh, Y.K., 2006. *Fundamental of research methodology and statistics*. New Age International Pvt. Ltd., Publishers, New Delhi.
- SQL Injection Bypassing WAF Software Attack | OWASP Foundation [WWW Document], URL https://owasp.org/www-community/attacks/SQL_Injection_Bypassing_WAF (accessed 6.26.21).
- Tekerek, A., Gemci, C., Bay, O.F., 2014. Development of a hybrid web application firewall to prevent web based attacks, in: *2014 IEEE 8th International Conference on Application of Information and Communication Technologies (AICT)*. Presented at the 2014 IEEE 8th International Conference on Application of Information and Communication Technologies (AICT), IEEE, Astana, Kazakhstan, pp. 1–4. <https://doi.org/10.1109/ICAICT.2014.7035910>
- VAD3R, 2019. VAD3R-95/Malicious-Url-Detection.
- Web Application Firewall | OWASP [WWW Document], URL https://owasp.org/www-community/Web_Application_Firewall (accessed 5.9.21).
- Web Attack Visualization | Akamai [WWW Document], URL <https://www.akamai.com/us/en/resources/our-thinking/state-of-the-internet-report/web-attack-visualization.jsp> (accessed 5.18.21).

- Yoo, S., Jo, J., Kim, B., Seo, J., 2020. Hyperion: A Visual Analytics Tool for an Intrusion Detection and Prevention System. *IEEE Access* 8, 133865–133881. <https://doi.org/10.1109/ACCESS.2020.3010789>
- Yuan, H., Zheng, L., Dong, L., Peng, X., Zhuang, Y., Deng, G., 2019. Research and Implementation of WEB Application Firewall Based on Feature Matching, in: Sugumaran, V., Xu, Z., P., S., Zhou, H. (Eds.), *Application of Intelligent Systems in Multi-Modal Information Analytics, Advances in Intelligent Systems and Computing*. Springer International Publishing, Cham, pp. 1223–1231. https://doi.org/10.1007/978-3-030-15740-1_154
- Zolotukhin, M., Hamalainen, T., Kokkonen, T., Siltanen, J., 2014. Analysis of HTTP Requests for Anomaly Detection of Web Attacks, in: 2014 IEEE 12th International Conference on Dependable, Autonomic and Secure Computing. Presented at the 2014 IEEE 12th International Conference on Dependable, Autonomic and Secure Computing (DASC), IEEE, Dalian, China, pp. 406–411. <https://doi.org/10.1109/DASC.2014.79>



SWISS GERMAN UNIVERSITY