

DAFTAR PUSTAKA

- [1] S. Balaji, K. Nathani, and R. Santhakumar, "Iot technology, applications and challenges: A contemporary survey," *Wireless Personal Communications*, vol. 108, no. 1, pp. 363–388, September 2019.
- [2] M. Conti, D. Donadel, and F. Turrin, "A survey on industrial control system testbeds and datasets for security research," *IEEE Communications Surveys & Tutorials*, vol. 23, no. 4, pp. 2248–2294, 2021.
- [3] S.-Y. Chou, "The fourth industrial revolution: Digital fusion with internet of things," *Journal of International Affairs*, vol. 72, no. 1, pp. 107–120, 2018.
- [4] F. Tao, Y. Zuo, L. D. Xu, and L. Zhang, "Iot-based intelligent perception and access of manufacturing resource toward cloud manufacturing," *IEEE Transactions on Industrial Informatics*, vol. 10, no. 2, pp. 1547–1557, 2014.
- [5] C. Yang, W. Shen, and X. Wang, "Applications of internet of things in manufacturing," in *2016 IEEE 20th International Conference on Computer Supported Cooperative Work in Design (CSCWD)*, 2016, pp. 670–675.
- [6] T. Moraes, B. Nogueira, V. Lira, and E. Tavares, "Performance comparison of iot communication protocols," in *2019 IEEE International Conference on Systems, Man and Cybernetics (SMC)*, 2019, pp. 3249–3254.
- [7] V. Kulik and R. Kirichek, "The heterogeneous gateway in the industrial internet of things," in *2018 10th International Congress on Ultra Modern Telecommunications and Control Systems and Workshops (ICUMT)*, 2018.
- [8] S. Tamboli, M. Rawale, R. Thoraiet, and S. Agashe, "Implementation of modbus rtu and modbus tcp communication using siemens s7-1200 plc for batch process," in *2015 International Conference on Smart Technologies and Management for Computing, Communication, Controls, Energy and Materials (ICSTM)*, 2015, pp. 258–263.
- [9] Q. Wanying, W. Weimin, Z. Surong, and Z. Yan, "The study of security issues for the industrial control systems communication protocols," *Joint International Mechanical, Electronic and Information Technology Conference (JIMET 2015)*, pp. 693–698, 2015.
- [10] A. Veichtlbauer, M. Ortmayer, and T. Heistracher, "Opc ua integration for field devices," in *2017 IEEE 15th International Conference on Industrial Informatics (INDIN)*, 2017, pp. 419–424.
- [11] T. Mizuya, M. Okuda, and T. Nagao, "A case study of data acquisition from field devices using opc ua and mqtt," in *56th Annual Conference of the Society of Instrument and Control Engineers of Japan (SICE)*, 2017, pp. 611–614.
- [12] S. Cavalieri, D. D. Stefano, M. G. Salafia, and M. S. Scroppo, "A web-based platform for opc ua integration in iiot environment," in *22nd IEEE International Conference on Emerging Technologies and Factory Automation*, 2017.



- [13] C. R. M. Silva and F. A. C. M. Silva, "An iot gateway for modbus and mqtt integration," in *2019 SBMO/IEEE MTT-S International Microwave and Optoelectronics Conference, IMOC 2019*, vol. 2019-January. Institute of Electrical and Electronics Engineers Inc., November 2019.
- [14] H. Shi, L. Niu, and J. Sun, "Construction of industrial internet of things based on mqtt and opc ua protocols," in *Proceedings of 2020 IEEE International Conference on Artificial Intelligence and Computer Applications*, 2020, pp. 1263–1267.
- [15] C. Sun, K. Guo, Z. Xu, J. Ma, and D. Hu, "Design and development of modbus/mqtt gateway for industrial iot cloud applications using raspberry pi," in *Proceedings, 2019 Chinese Automation Congress (CAC2019)*, 2019, pp. 2267–2271.
- [16] H.-I. Lin and Y.-C. Hwang, "Integration of robot and iiot over the opc unified architecture," in *International Automatic Control Conference (CACS)*, 2019.
- [17] P. Peniak, E. Bubeníková, and J. Spalek, "Model of integration gateway for communications of opc/mqtt devices," in *Cybernetics & Informatics (K&I) : proceedings of the 30th International Conference*, 2020.
- [18] M. H. Miraz, M. Ali, P. S. Excell, and R. Picking, "A review on internet of things (iot), internet of everything (ioe) and internet of nano things (iont)," in *2015 Internet Technologies and Applications (ITA)*, September 2015, pp. 219–224.
- [19] Y. Lui and X. Xu, "Industry 4.0 and cloud manufacturing: A comparative analysis," *Journal of Manufacturing Science and Engineering*, vol. 139, March 2017.
- [20] P. Ferrari, A. Flammini, S. Rinaldi, E. Sisinni, D. Maffei, and M. Malara, "Impact of quality of service on cloud based industrial IoT applications with OPC UA," *Electronics*, vol. 7, no. 7, p. 109, July 2018.
- [21] I. H. Witten, E. Frank, and M. A. Hall, *Data Mining: Practical Machine Learning Tools and Techniques*, 3rd ed. Burlington, MA: Morgan Kaufmann, 2011.
- [22] J. Krishnan and S. K. Vasudevan, "An extensive survey on iot smart gateways, software architecture, related protocols and challenges," in *2019 International Conference on Vision Towards Emerging Trends in Communication and Networking (ViTECoN)*, 2019, pp. 1–6.
- [23] *Modicon M251 Logic Controller - Hardware Guide*, Schneider Electric, November 2022.
- [24] *Modicon M251 Logic Controller - Programming Guide*, Schneider Electric, May 2022.
- [25] *MODBUS Application Protocol Specification V1.1b3*, Modbus Organization, Inc, April 2012.
- [26] "Press release modbus organization replaces master-slave with client-server," Modbus Organization, Inc, July 2020. [Online]. Available: <https://modbus.org/docs/Client-ServerPR-07-2020-final.docx.pdf>



- [27] What is opc ? - opc foundation. OPC Foundation, Org. [Online]. Available: <https://opcfoundation.org/about/what-is-opc/>
- [28] Opc classic - opc foundation. OPC Foundation, Org. [Online]. Available: <https://opcfoundation.org/about/opc-technologies/opc-classic/>
- [29] *OPC UA Specification Part 1: Overview and Concept*, OPC Foundation, Org, November 2022, 1.05.02 ed.
- [30] *OPC UA Specification Part 3: Address Space Model*, OPC Foundation, Org, November 2022, 1.05.02 ed.
- [31] *OPC UA Specification Part 4: Services*, OPC Foundation, Org, October 2021, 1.05.00 ed.
- [32] *OPC UA Specification Part 5: Information Model*, OPC Foundation, Org, November 2022, 1.05.02 ed.
- [33] *OPC UA Specification Part 2: Security*, OPC Foundation, Org, November 2022, 1.05.02 ed.
- [34] *OPC UA Specification Part 7: Profiles*, OPC Foundation, Org, November 2017, 1.04 ed.
- [35] (2023) Introduction - open62541. Open62541, org. [Online]. Available: <https://www.open62541.org/doc/master/>
- [36] (2023) Open source implementation of opc ua (opc unified architecture) aka iec 62541 licensed under mozilla public license v2.0. Open62541, Org. [Online]. Available: <https://github.com/open62541/open62541>
- [37] (2015, January) Introduction the mqtt protocol. HiveMQ, GmbH. [Online]. Available: <https://www.hivemq.com/blog/mqtt-essentials-part-1-introducing-mqtt/>
- [38] (2015, January) Mqtt publish/subscribe architecture (pub/sub). HiveMQ, GmbH. [Online]. Available: <https://www.hivemq.com/blog/mqtt-essentials-part2-publish-subscribe/>
- [39] *MQTT Version 3.1.1*, OASIS, Org, October 2014.
- [40] Node-red. Open JS Foundation. [Online]. Available: <https://nodered.org>
- [41] Eclipse mosquitto. Mosquitto, Org. [Online]. Available: <https://mosquitto.org/>
- [42] D. Leibovitch. (2021, December) Eclipse paho. Eclipse Foundation, Org. [Online]. Available: <https://wiki.eclipse.org/Paho>
- [43] Mqtt software. MQTT, Org. [Online]. Available: <https://mqtt.org/software/>
- [44] (2022, September) Eclipse paho c client library for the mqtt protocol. Eclipse Foundation, Org. [Online]. Available: <https://github.com/eclipse/paho.mqtt.c>
- [45] Instance types - amazon elastic compute cloud. Amazon Web Services, Inc. [Online]. Available: <https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/instance-types.html>



- [46] Amazon elastic compute cloud documentation. Amazon Web Services, Inc. [Online]. Available: <https://docs.aws.amazon.com/ec2/index.html>
- [47] What is amazon ec2? - amazon elastic compute cloud. Amazon Web Services, Inc. [Online]. Available: <https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/concepts.html>
- [48] Free cloud computing services - aws free tier. Amazon Web Service, Inc. [Online]. Available: <https://aws.amazon.com/free/>
- [49] P. Ferrari, A. Flammini, E. Sisinni, S. Rinaldi, D. Brandão, and M. S. Rocha, “Delay estimation of industrial iot applications based on messaging protocols,” *IEEE Transactions on Instrumentation and Measurement*, vol. 67, no. 9, pp. 2188–2199, 2018.
- [50] A. Morato, S. Vitturi, F. Tramarin, and A. Cenedese, “Assessment of different opc ua industrial iot solutions for distributed measurement applications,” in *2020 IEEE International Instrumentation and Measurement Technology Conference (I2MTC)*, 2020, pp. 1–6.
- [51] C. Botta, L. Pierangelini, and L. Vollero, “Iot gateways for industrial and medical applications: Architecture and performance assessment,” in *2020 IEEE International Workshop on Metrology for Industry 4.0 & IoT*, 2020, pp. 596–599.
- [52] A. S. Escobar, M. M. Pereira, R. D. Pimenta, L. Y. Lau, and H. S. Cerqueira, “Interaction between ni and v with ushy and rare earth hy zeolite during hydrothermal deactivation,” *Applied Catalysis A-general*, vol. 286, pp. 196–201, 2005.
- [53] E. Tangstad, A. Andersen, E. M. Myhrvold, and T. Myrstad, “Catalytic behaviour of nickel and iron metal contaminants of an fcc catalyst after oxidative and reductive thermal treatments,” *Applied Catalysis A: General*, vol. 346, pp. 194–199, 2008.
- [54] N. Mühlbauer, E. Kirdan, M.-O. Pahl, and G. Carle, “Open-source opc ua security and scalability,” in *2020 25th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA)*, vol. 1, 2020, pp. 262–269.
- [55] (2023, January) Building open62541 - open62541 1.3.0-dirty documentation. Open62541, org. [Online]. Available: <https://www.open62541.org/doc/1.3/building.html>