DAFTAR PUSTAKA

[1] S. Widuri and A. SZ, "Hubungan suhu dan kelembapan dengan keluhan sick building syndrome pada karyawan di kampus 4 universitas ahmad dahlan yogyakarta," *Skripsi. Yogyakarta: Universitas Ahmad Dahlan, Fakultas Kesehatan Masyarakat*, 2019.

[2] F. Fatma and R. Ramadhani, "Perbedaan jumlah angka kuman udara berdasarkan hari dalam ruangan di puskesmas guguk panjang," *Human Care Journal*, vol. 5, no. 3, pp. 777–785, 2020.

[3] D. B. Ginting, I. Santosa, and S. I. Trigunarso, "Pengaruh suhu, kelembapan dan kecepatan angin air conditioner (ac) terhadap jumlah angka kuman udara ruangan," *Jurnal Analis Kesehatan*, vol. 11, no. 1, pp. 44–50, 2022.

[4] C. M. Blatteis, *Physiology and Pathophysiology of Temperature Regulation*. World Scientific, 1998.

[5] O. Seppänen, W. J. Fisk, and Q. Lei, "Effect of temperature on task performance in office environment," Lawrence Berkeley National Laboratory, Berkeley, CA, USA, Tech. Rep. LBNL-60946, July 2006. [Online]. Available: https://escholarship.org/uc/item/45g4n3rv

[6] D. Witczak and S. Szymoniak, "Review of monitoring and control systems based on internet of things," *Applied Sciences*, vol. 14, no. 19, 2024. [Online]. Available: https://www.mdpi.com/2076-3417/14/19/8943

[7] U. E. P. Agency, "Quality assurance guidance document 2.12: Monitoring pm2.5 in ambient air using designated reference or class i equivalent methods," Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, EPA-454/B-16-001, January 2016. [Online]. Available: https://www.epa.gov/sites/default/files/2021-03/documents/p100oi8x.pdf

[8] H. Othman, R. Azari, and T. Guimarães, "Low-cost iot-based indoor air quality monitoring," *Technology—Architecture + Design*, vol. 8, no. 2, pp. 250–270, 2024. [Online]. Available: https://doi.org/10.1080/24751448.2024.2405403

[9] T. L. Narayana, C. Venkatesh, A. Kiran, C. B. J, A. Kumar, S. B. Khan, A. Almusharraf, and M. T. Quasim, "Advances in real time smart monitoring of environmental parameters using iot and sensors," *Heliyon*, vol. 10, no. 7, p. e28195, mar 2024.

[10] A. Miqdad, K. Kadir, and S. F. Ahmed, "Development of data acquisition system for temperature and humidity monitoring scheme," in *2017 IEEE 4th International Conference on Smart Instrumentation, Measurement and Application (ICSIMA)*, 2017, pp. 1–4.

[11] J. Saini, M. Dutta, and G. Marques, "Indoor air quality monitoring systems based on internet of things: A systematic review," *International Journal of Environmental Research and Public Health*, vol. 17, no. 14, 2020. [Online]. Available: https://www.mdpi.com/1660-4601/17/14/4942

[12] S. Esfahani, P. Rollins, J. P. Specht, M. Cole, and J. W. Gardner, "Smart city battery operated iot based indoor air quality monitoring system," in *2020 IEEE SENSORS*, 2020, pp. 1–4.

[13] Z. Xu, M. Dun, and L. Wu, "Prediction of air quality based on hybrid grey double exponential smoothing model," *Complexity*, vol. 2020, p. 13, 2020. [Online]. Available: https://doi.org/10.1155/2020/9427102

[14] R. J. Hyndman and G. Athanasopoulos, *Forecasting: Principles and Practice*, 3rd ed. Melbourne, Australia: OTexts, 2021. [Online]. Available: https://otexts.com/fpp3/

[15] V. I. Kontopoulou, A. D. Panagopoulos, I. Kakkos, and G. K. Matsopoulos, "A review of arima vs. machine learning approaches for time series forecasting in data driven networks," *Future Internet*, vol. 15, no. 8, 2023. [Online]. Available: https://www.mdpi.com/1999-5903/15/8/255

[16] P. Ghafariasl, M. Zeinalnezhad, and A. Ahmadishokooh, "Optimizing pm2.5 forecasting accuracy with hybrid meta-heuristic and machine learning models," 2024. [Online]. Available: https://arxiv.org/abs/2407.01647

[17] F. Gül and H. Eroğlu, "Low-cost iot mesh network for real-time indoor air quality monitoring," in *2024 9th International Conference on Communication and Electronics Systems (ICCES)*, 2024, pp. 01–06.

[18] C. B. Dwi Kuncoro, A. N. Hikmah, M. M. Sakanti, and A. F. Permana, "Integrating multi indoor air quality sensors and internet of things for indoor air quality monitoring system," in *2024 10th International Conference on Control, Automation and Robotics (ICCAR)*, 2024, pp. 323–327.

[19] K. H. Yusof, F. Aman, A. S. Ahmad, M. Abdulrazaq, M. N. Mohammed, M. Syahrul Zahwan Mohd Zabidi, and A. Asyraf, "Design and development of real time indoor and outdoor air quality monitoring system based on iot technology," in *2022 IEEE*

18th International Colloquium on Signal Processing & Applications (CSPA), 2022, pp. 101–104.

[20] T. H. Nasution, A. Hizriadi, K. Tanjung, and F. Nurmayadi, "Design of indoor air quality monitoring systems," in *2020 4th International Conference on Electrical, Telecommunication and Computer Engineering (ELTICOM)*, 2020, pp. 238–241.

[21] H. S. Sridhar, V. Nuthana, and K. B. Rakesh, ""smart air purification: Enhancing indoor air quality using arduino uno and thingspeak integration"," in *2024 International Conference on Smart Systems for applications in Electrical Sciences (ICSSES)*, 2024, pp. 1–5.

[22] S. Pandya, "Towards smarter cities: Iot and ai integration for effective air quality monitoring and forecasting," in *2025 4th International Conference on Distributed Computing and Electrical Circuits and Electronics (ICDCECE)*, 2025, pp. 1–6.

[23] K. Mantha, E. Arranaga, D. Dhanger, S. Zaidi, and P. Kapilavai, "Predicting air quality in new delhi using an auto-arima machine learning algorithm," in *2025 IEEE Integrated STEM Education Conference (ISEC)*, 2025, pp. 1–5.

[24] M. N. Rahman, E. A. Sadiq, H. R. Mahim, F. Shahryer, and M. Akhtaruzzaman, "Comparative analysis among arima, sarima, ets, and tbats to forecast the air quality index of 13 cities in bangladesh," in *2025 International Conference on Quantum Photonics, Artificial Intelligence, and Networking (QPAIN)*, 2025, pp. 1–6.

[25] S. Veera Manikandan, Y. Abilash, S. Hari Prasanth, J. Alfred Daniel, and R. Santhosh, "Optimized feature selection for air quality index forecasting using gpr and sarima models," in *2023 International Conference on Inventive Computation Technologies (ICICT)*, 2023, pp. 730–735.

[26] A. C. Purba, T. Handhayani, and J. Hendryli, "Comparison of support vector regression (svr) and long short-term memory (lstm) methods for meteorological data prediction in nusa tenggara," in *2025 International Conference on Computer Sciences, Engineering, and Technology Innovation (ICoCSETI)*, 2025, pp. 675–680.

[27] A. Singh, M. Islam, and N. Dinh, "Forecasting indoor air quality using machine learning models," in *2024 IEEE International Conference on Consumer Electronics (ICCE)*, 2024, pp. 1–6.

[28] A. Cincinelli and T. Martellini, "Indoor air quality and health," *International Journal of Environmental Research and Public Health*, vol. 14, no. 11, 2017. [Online]. Available: https://www.mdpi.com/1660-4601/14/11/1286

[29] Kementerian Kesehatan Republik Indonesia, "Peraturan Menteri Kesehatan Republik Indonesia Nomor 2 Tahun 2023 tentang Peraturan Pelaksanaan Peraturan Pemerintah Nomor 66 Tahun 2014 tentang Kesehatan Lingkungan," Peraturan Menteri Republik Indonesia, 2023, https://peraturan.bpk.go.id/Details/245563/permen. [Online]. Available: https://peraturan.bpk.go.id/Details/245563/permen

[30] Higienis. (2025) Humidity guide. Diakses pada 22 Juli 2025. [Online]. Available: https://www.higienis.com/blog/humidity-guide/?srsltid=AfmBOorAAslk7JgZa-KouB1EGrQXJwkB8bKbY8-4J5TAQOkCurBBQpHE

[31] F. S. Arsad, R. Hod, N. Ahmad, M. Baharom, and M. H. Ja'afar, "Assessment of indoor thermal comfort temperature and related behavioural adaptations: a systematic review," *Environmental Science and Pollution Research*, vol. 30, no. 29, pp. 73 137–73 149, Jun 2023. [Online]. Available: https://doi.org/10.1007/s11356-023-27089-9

[32] E. Lavigne, A. Gasparrini, X. Wang, H. Chen, A. Yagouti, M. D. Fleury, and S. Cakmak, "Extreme ambient temperatures and cardiorespiratory emergency room visits: assessing risk by comorbid health conditions in a time series study," *Environmental Health*, vol. 13, no. 1, p. 5, Feb 2014. [Online]. Available: https://doi.org/10.1186/1476-069X-13-5

[33] T. Z. Maung, J. E. Bishop, E. Holt, A. M. Turner, and C. Pfrang, "Indoor air pollution and the health of vulnerable groups: A systematic review focused on particulate matter (pm), volatile organic compounds (vocs) and their effects on children and people with pre-existing lung disease," *International Journal of Environmental Research and Public Health*, vol. 19, no. 14, 2022. [Online]. Available: https://www.mdpi.com/1660-4601/19/14/8752

[34] A. Wibowo, *Internet of Things (IoT) dalam Ekonomi dan Bisnis Digital*. Semarang: Yayasan Prima Agus Teknik, 2023.

[35] A. Choudhary, "Internet of things: a comprehensive overview, architectures, applications, simulation tools, challenges and future directions," *Discover Internet of Things*, vol. 4, no. 1, p. 31, 2024. [Online]. Available: https://doi.org/10.1007/s43926-024-00084-3

[36] Random Nerd Tutorials, "Getting started with esp32," https://randomnerdtutorials.com/getting-started-with-esp32/, accessed: 2025-07-22.

[37] Protosupplies, "GY-BME280 Pressure, Humidity, and Temperature Sensor Module," https://protosupplies.com/product/

gy-bme280-pressure-humidity-temperature-sensor-module/, 2025.

[38] R. Jeyashree, M. L. Priya, N. Jeyasri, and S. Dhanalakshmi, "Air pollution control and monitoring in smart cities," in *2025 7th International Conference on Intelligent Sustainable Systems (ICISS)*, 2025, pp. 28–33.

[39] S. Gomathy, S. Kayalvizhi, G. Prakashini, T. R. Kumar, K. Darshan, and R. Vaishya, "Monitoring dust pollution in textile industries," in *2023 International Conference on Self Sustainable Artificial Intelligence Systems (ICSSAS)*, 2023, pp. 664–668.

[40] A. Indonesia. (2024) Arduino dan oled display: Panduan pemula. [Online]. Available: https://www.arduinoindonesia.id/2024/02/arduino-dan-oled-display-panduan-pemula.html

[41] O. Toutsop, K. Kornegay, and E. Smith, "A comparative analyses of current iot middleware platforms," in *2021 8th International Conference on Future Internet of Things and Cloud (FiCloud)*, 2021, pp. 413–420.

[42] MDN contributors, "Http: Hypertext transfer protocol," https://developer.mozilla.org/en-US/docs/Web/HTTP, 2025.

[43] Codepolitan. (2024) Apa itu deployment: Pengertian, manfaat, dan jenisnya. Codepolitan. [Online]. Available: https://www.codepolitan.com/blog/apa-itu-deployment-pengertian-manfaat-dan-jenisnya/

[44] M. E. Khabarov and V. V. Gurenko, "Forecasting time series in the stock exchange quotations using the fourier series," in *2025 7th International Youth Conference on Radio Electronics, Electrical and Power Engineering (REEPE)*, 2025, pp. 1–5.

[45] R. Chuentawat and Y. Kan-ngan, "The comparison of pm2.5 forecasting methods in the form of multivariate and univariate time series based on support vector machine and genetic algorithm," in *2018 15th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON)*, 2018, pp. 572–575.

[46] J. Deng and P. Jirutitijaroen, "Short-term load forecasting using time series analysis: A case study for singapore," in *2010 IEEE Conference on Cybernetics and Intelligent Systems*, 2010, pp. 231–236.

[47] F. M. Bianchi, "Time series analysis with python," Online, 2024. [Online]. Available: https://github.com/FilippoMB/python-time-series-handbook

[48] V. Arumugam and V. Natarajan, "Time series modeling and forecasting using autoregressive integrated moving average and seasonal autoregressive integrated moving average models," *Instrumentation Mesure Métrologie*, vol. 22, no. 4, pp. 161–168, 2023. [Online]. Available: https://doi.org/10.18280/i2m.220404

[49] C. Chatfield, *The Analysis of Time Series: Theory and Practice*, ser. Monographs on Statistics and Applied Probability. Springer US, 2013. [Online]. Available: https://books.google.co.id/books?id=u1D5BwAAQBAJ

[50] E. R. Rosca, "Stationary and non-stationary time series," *The Annals of the "Stefan cel Mare" University of Suceava. Fascicle of The Faculty of Economics and Public Administration*, vol. 10, no. 1(11), pp. 177–186, 2010. [Online]. Available: http://www.annals.seap.usv.ro/index.php/annals/article/viewArticle/262#

[51] L. Monigatti, "Interpreting acf and pacf plots for time series forecasting," https://towardsdatascience.com/interpreting-acf-and-pacf-plots-for-time-series-forecasting-af0d6db4061c/, 2023.

[52] D. Rosadi, *Analisis Runtun Waktu*. Yogyakarta: Gadjah Mada University Press, 2014.

[53] N. Vélez-Cruz, "A survey on bayesian nonparametric learning for time series analysis," *Frontiers in Signal Processing*, vol. Volume 3 - 2023, 2024. [Online]. Available: https://www.frontiersin.org/journals/signal-processing/articles/10.3389/frsip.2023.1287516

[54] N. D. Maulana, B. D. Setiawan, and C. Dewi, "Implementasi metode support vector regression (svr) dalam peramalan penjualan roti (studi kasus: Harum bakery)," *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer*, vol. 3, no. 3, pp. 2986–2995, 2019.

[55] M. Awad and R. Khanna, *Support Vector Regression*. Berkeley, CA: Apress, 2015, pp. 67–80. [Online]. Available: https://doi.org/10.1007/978-1-4302-5990-9_4

[56] A. Takilalte and S. Harrouni, "Daily direct normal irradiance forecasting by support vector regression case study: in ghardaia-algeria," in *2019 International Conference on Advanced Electrical Engineering (ICAEE)*, 2019, pp. 1–6.

[57] D. I. Purnama, "Peramalan jumlah penumpang datang melalui transportasi udara di sulawesi tengah menggunakan support vector regression (svr)," *Jurnal Ilmiah Matematika dan Terapan*, vol. 17, no. 1, 2020.

[58] Herimanto, A. S. Dharma, H. Manurung, and A. B. Nababan, "Comparison of support vector regression and artificial neural network algorithm in predicting the number of

prospective student registrans," in *2023 IEEE International Conference on Data and Software Engineering (ICoDSE)*, 2023, pp. 43–48.

[59] Sharp Corporation, *Dust Sensor GP2Y1010AU0F Datasheet*, 2006. [Online]. Available: https://global.sharp/products/device/lineup/data/pdf/datasheet/gp2y1010au_e.pdf

[60] T. S. Kitchilan, M. D. B. C. K. Abeyratne, and E. P. S. K. Ediriweera, "Air quality monitoring and prediction using iot and machine learning approaches," *International Journal of Scientific and Research Publications (IJSRP)*, vol. 12, no. 3, 2022. [Online]. Available: http://dx.doi.org/10.29322/IJSRP.12.03.2022.p12307

[61] E. R. Kaburuan, R. Mutu Manikam, O. K. Kucharov Olimjon Ruzimurodovich, and A. Rianggi Boyo, "Comparison of lstm and arima algorithms in predicting water levels in jakarta," in *2024 International Conference on Orange Technology (ICOT)*, 2024, pp. 1–8.

[62] N. Niako, J. D. Melgarejo, G. E. Maestre *et al.*, "Effects of missing data imputation methods on univariate blood pressure time series data analysis and forecasting with arima and lstm," *BMC Medical Research Methodology*, vol. 24, no. 1, p. 320, 2024. [Online]. Available: https://doi.org/10.1186/s12874-024-02448-3

[63] J. Youness and M. Driss, "An arima model for modeling and forecasting the dynamic of univariate time series: The case of moroccan inflation rate," in *2022 International Conference on Intelligent Systems and Computer Vision (ISCV)*, 2022, pp. 1–5.

[64] A. Ruke, S. Gaikwad, G. Yadav, A. Buchade, S. Nimbarkar, and A. Sonawane, "Predictive analysis of stock market trends: A machine learning approach," in *2024 4th International Conference on Data Engineering and Communication Systems (ICDECS)*, 2024, pp. 1–6.

[65] R. Garg, A. Kumar, S. Singh, and R. Dayana, "Advanced air quality monitoring system using iot and sensor technology," in *2025 3rd International Conference on Intelligent Data Communication Technologies and Internet of Things (IDCIoT)*, 2025, pp. 687–692.

[66] Y.-L. Hsu, H.-L. Tsai, and G.-H. Lu, "Development of wireless multi-sensor module for monitoring environment of smart manufacturing workplace," in *2022 61st Annual Conference of the Society of Instrument and Control Engineers (SICE)*, 2022, pp. 797–802.

[67] A. Parkavi, B. J. Sowmya, S. A. Alex, S. Supreeth, G. Shruthi, S. Rohith, S. Chatterjee, and K. Lingaraj, "Air quality and dust level monitoring systems in hospitals using iot," *Discover Internet of Things*, vol. 5, 12 2025.

[68] M. R. Giordano, C. Malings, S. N. Pandis, A. A. Presto, V. McNeill, D. M. Westervelt, M. Beekmann, and R. Subramanian, "From low-cost sensors to high-quality data: A summary of challenges and best practices for effectively calibrating low-cost particulate matter mass sensors," *Journal of Aerosol Science*, vol. 158, p. 105833, 2021. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0021850221005644

[69] M. Tagle, F. Rojas, F. Reyes, Y. Vásquez, F. Hallgren, J. Lindén, D. Kolev, Å. K. Watne, and P. Oyola, "Field performance of a low-cost sensor in the monitoring of particulate matter in santiago, chile," *Environmental Monitoring and Assessment*, vol. 192, no. 3, p. 171, 2020.

[70] C. Tofallis, "A better measure of relative prediction accuracy for model selection and model estimation," *Journal of the Operational Research Society*, vol. 66, no. 8, pp. 1352–1362, 2015. [Online]. Available: https://doi.org/10.1057/jors.2014.103

[71] N. Kunhare, R. K. Gupta, M. Mohanty, J. Patel, and A. Jain, "Ai-based daily, weekly and monthly rain forecasting by using different time series models," in *2024 2nd World Conference on Communication & Computing (WCONF)*, 2024, pp. 1–6.

[72] B. Mohapatra, A. Ballaji, R. Dash, P. S. N, and B. K. Sahu, "Comparative analysis of arima and sarima models for improving solar power prediction accuracy in bangalore region," in *2025 International Conference in Advances in Power, Signal, and Information Technology (APSIT)*, 2025, pp. 1–6.