

DAFTAR PUSTAKA

- [1] A. Alamsyah and A. N. Zahir, "Artificial neural network for predicting indonesia stock exchange composite using macroeconomic variables," in *2018 6th International Conference on Information and Communication Technology (ICoICT)*, 2018. doi: 10.1109/ICoICT.2018.8528774 pp. 44–48.
- [2] I. Wingdes, S. Nurfaizi, and M. Rifki, "Pca implementation in identifying risk and return of lq45 stocks," *Conference Series*, vol. 4, pp. 32–42, 1 2022. doi: 10.34306/conferenceseries.v4i1.668
- [3] A. Rahmadeyan and Mustakim, "Long short-term memory and gated recurrent unit for stock price prediction," *Procedia Computer Science*, vol. 234, pp. 204–212, 1 2024. doi: 10.1016/J.PROCS.2024.02.167
- [4] M. E. Karmelia, M. Widjaja, and S. Hansun, "Candlestick pattern classification using feedforward neural network," *International Journal of Advances in Soft Computing and its Applications*, vol. 14, pp. 79–95, 7 2022. doi: 10.15849/IJASCA.220720.06
- [5] N. Ayyildiz and O. Iskenderoglu, "How effective is machine learning in stock market predictions?" *Heliyon*, vol. 10, p. e24123, 1 2024. doi: 10.1016/J.HELIYON.2024.E24123
- [6] R. DiPietro and G. D. Hager, *Deep learning: RNNs and LSTM*. Elsevier, 1 2019, pp. 503–519. doi: 10.1016/B978-0-12-816176-0.00026-0. ISBN 9780128161760
- [7] A. Sethia and P. Raut, "Application of lstm, gru and ica for stock price prediction," in *Smart Innovation, Systems and Technologies*, vol. 107. Springer Science and Business Media Deutschland GmbH, 2019. doi: 10.1007/978-981-13-1747-7_46. ISBN 9789811317460. ISSN 21903026 pp. 479–487.
- [8] S. Hansun and J. C. Young, "Predicting lq45 financial sector indices using rnn-lstm," *Journal of Big Data*, vol. 8, 12 2021. doi: 10.1186/s40537-021-00495-x
- [9] J. Xiao, S. Bi, and T. Deng, "Comparative analysis of lstm, gru, and transformer models for stock price prediction," *Independent Researcher, Tech. Rep.*, 2024. doi: 10.1145/3700058.3700075
- [10] R. S. Permana, V. W. Mahyastuty, N. E. Budiyanta, K. O. Bachri, and M. A. Kartawidjaja, "Predicting stock market trends based on moving average using lstm algorithm," *COGITO Smart Journal*, vol. 10, 2024. doi: 10.31937/si.v9i1.1223

- [11] J. Zhang, Y. Xiang, Y. Zou, and S. Guo, "Volatility forecasting of chinese energy market: Which uncertainty have better performance?" *International Review of Financial Analysis*, vol. 91, p. 102952, 1 2024. doi: 10.1016/J.IRFA.2023.102952
- [12] "Ihsg." [Online]. Available: <https://www.idx.co.id/id/produk/indeks>
- [13] D. Widodo and S. Hansun, "Implementasi simple moving average dan exponential moving average dalam menentukan tren harga saham perusahaan," p. 113, 2015. doi: 10.31937/ti.v7i2.354
- [14] S. Hansun, "A new approach of moving average method in time series analysis," Universitas Multimedia Nusantara, Tech. Rep., 2013. doi: 10.1109/CoNMedia.2013.6708545
- [15] I. H. Sarker, "Deep learning: A comprehensive overview on techniques, taxonomy, applications and research directions," 11 2021. doi: 10.1007/s42979-021-00815-1
- [16] S. H. Noh, "Analysis of gradient vanishing of rnns and performance comparison," *Information (Switzerland)*, vol. 12, 11 2021. doi: 10.3390/info12110442
- [17] T. P. Lillicrap and A. Santoro, "Backpropagation through time and the brain," *Current Opinion in Neurobiology*, vol. 55, pp. 82–89, 4 2019. doi: 10.1016/J.CONB.2019.01.011. [Online]. Available: <https://www.sciencedirect.com/science/article/pii/S0959438818302009>
- [18] G. Shen, Q. Tan, H. Zhang, P. Zeng, and J. Xu, "Deep learning with gated recurrent unit networks for financial sequence predictions," *Procedia Computer Science*, vol. 131, pp. 895–903, 1 2018. doi: 10.1016/J.PROCS.2018.04.298
- [19] F. Rivas, J. E. Sierra-Garcia, and J. M. Camara, "Comparison of lstm- and gru-type rnn networks for attention and meditation prediction on raw eeg data from low-cost headsets," *Electronics (Switzerland)*, vol. 14, 2 2025. doi: 10.3390/electronics14040707
- [20] K. Liu and J. Zhang, "A dual-layer attention-based lstm network for fed-batch fermentation process modelling," *Computer Aided Chemical Engineering*, vol. 50, pp. 541–547, 1 2021. doi: 10.1016/B978-0-323-88506-5.50086-3
- [21] A. Moghar and M. Hamiche, "Stock market prediction using lstm recurrent neural network," *Procedia Computer Science*, vol. 170, pp. 1168–1173, 1 2020. doi: 10.1016/J.PROCS.2020.03.049
- [22] R. A. Saputra, "A stock prediction system using teknikal indicators with the lstm method," *International Journal on Information and Communication Technology (IJoICT)*, vol. 9, pp. 27–43, 6 2023. doi: 10.21108/ijoict.v9i1.713

- [23] G. V. Houdt, C. Mosquera, and G. Nápoles, “A review on the long short-term memory model,” *Artificial Intelligence Review*, vol. 53, pp. 5929–5955, 12 2020. doi: 10.1007/s10462-020-09838-1
- [24] S. Mohsen, A. Elkaseer, and S. G. Scholz, “Industry 4.0-oriented deep learning models for human activity recognition,” *IEEE Access*, vol. 9, pp. 150 508–150 521, 2021. doi: 10.1109/ACCESS.2021.3125733
- [25] T. O. Hodson, “Root-mean-square error (rmse) or mean absolute error (mae): when to use them or not,” pp. 5481–5487, 7 2022. doi: 10.5194/gmd-15-5481-2022
- [26] A. T. Keleko, B. Kamsu-Foguem, R. H. Ngouna, and A. Tongne, “Health condition monitoring of a complex hydraulic system using deep neural network and deepshap explainable xai,” *Advances in Engineering Software*, vol. 175, p. 103339, 1 2023. doi: 10.1016/J.ADVENGSOFT.2022.103339
- [27] S. M. Malakouti, M. B. Menhaj, and A. A. Suratgar, “The usage of 10-fold cross-validation and grid search to enhance ml methods performance in solar farm power generation prediction,” *Cleaner Engineering and Technology*, vol. 15, p. 100664, 8 2023. doi: 10.1016/J.CLET.2023.100664
- [28] J. Allgaier and R. Pryss, “Cross-validation visualized: A narrative guide to advanced methods,” *Machine Learning and Knowledge Extraction*, vol. 6, pp. 1378–1388, 6 2024. doi: 10.3390/make6020065
- [29] C. Lee, H. Cho, and S. Lee, “Analysis of bi-lstm crf series models for semantic classification of navtex navigational safety messages,” *Journal of Marine Science and Engineering*, vol. 12, p. 1518, 9 2024. doi: 10.3390/jmse12091518
- [30] M. Boman, “Human-curated validation of machine learning algorithms for health data,” *Digital Society*, vol. 2, 12 2023. doi: 10.1007/s44206-023-00076-w
- [31] B. Xu, *Forecasting stock prices in two ways based on LSTM neural network*. IEEE Press, 2019. ISBN 9781538662434 Multivariate more accurate.
- [32] S. R. Dubey, S. K. Singh, and B. B. Chaudhuri, “Activation functions in deep learning: A comprehensive survey and benchmark,” *Neurocomputing*, vol. 503, pp. 92–108, 9 2022. doi: 10.1016/J.NEUCOM.2022.06.111. [Online]. Available: <https://www.sciencedirect.com/science/article/abs/pii/S0925231222008426>
- [33] M. Nivetha, J. Chockalingam, and A. S. A. Khadir, “Enhanced stock market prediction with bigdata analytics over the cloud data using lstm and gated recurrent neural network (lstm - grnn),” *International Journal of Computational and Experimental Science and Engineering*,

vol. 11, 4 2025. doi: 10.22399/ijcesen.1672. [Online]. Available: <https://www.ijcesen.com/index.php/ijcesen/article/view/1672>

- [34] A. Pranolo, F. U. Setyaputri, A. K. I. Paramarta, A. P. P. Triono, A. F. Fadhillah, A. K. G. Akbari, A. B. P. Utama, A. P. Wibawa, and W. Uriu, "Enhanced multivariate time series analysis using lstm: A comparative study of min-max and z-score normalization techniques," *ILKOM Jurnal Ilmiah*, vol. 16, pp. 210–220, 8 2024. doi: 10.33096/ilkom.v16i2.2333.210-220. [Online]. Available: <https://jurnal.fikom.umi.ac.id/index.php/ILKOM/article/view/2333>
- [35] S. A. Alex, N. Z. Jhanjhi, M. Humayun, A. O. Ibrahim, and A. W. Abulfaraj, "Deep lstm model for diabetes prediction with class balancing by smote," *Electronics (Switzerland)*, vol. 11, 9 2022. doi: 10.3390/electronics11172737
- [36] K. Nifa, A. Boudhar, H. Ouatiki, H. Elyoussfi, B. Bargam, and A. Chehbouni, "Deep learning approach with lstm for daily streamflow prediction in a semi-arid area: A case study of oum er-rbia river basin, morocco," *Water (Switzerland)*, vol. 15, 1 2023. doi: 10.3390/w15020262
- [37] K. Park, Y. Jung, K. Kim, and S. K. Park, "Determination of deep learning model and optimum length of training data in the river with large fluctuations in flow rates," *Water (Switzerland)*, vol. 12, 12 2020. doi: 10.3390/w12123537
- [38] K. O. Adefemi and M. B. Mutanga, "A robust hybrid cnn-lstm model for predicting student academic performance," *Digital*, vol. 5, p. 16, 5 2025. doi: 10.3390/digital5020016
- [39] S. J. Yu, S. B. Yang, and S. H. Yoon, "The design of an intelligent lightweight stock trading system using deep learning models: Employing technical analysis methods," *Systems*, vol. 11, 9 2023. doi: 10.3390/systems11090470
- [40] B. R. Alqaysi, M. Rosa-Zurera, and A. A. Aldujaili, "Non-linear synthetic time series generation for electroencephalogram data using long short-term memory models," *AI (Switzerland)*, vol. 6, 5 2025. doi: 10.3390/ai6050089
- [41] H. Song and H. Choi, "Forecasting stock market indices using the recurrent neural network based hybrid models: Cnn-lstm, gru-cnn, and ensemble models," *Applied Sciences (Switzerland)*, vol. 13, 4 2023. doi: 10.3390/app13074644
- [42] C.-S. Kim, K.-H. Kok, and C.-R. Kim, "Quasi-optimized lstm approach for river water level forecasting," *Water*, vol. 17, p. 2087, 7 2025. doi: 10.3390/w17142087. [Online]. Available: <https://www.mdpi.com/2073-4441/17/14/2087>
- [43] V. Babaey and H. R. Faragardi, "Detecting zero-day web attacks with an ensemble of lstm, gru, and stacked autoencoders," *Computers*, vol. 14, 6 2025. doi: 10.3390/computers14060205