

DAFTAR PUSTAKA

- [1] N. Fadillah, "Algoritma lebah, solusi metaheuristik dalam penemuan nilai optimal pada variabel alat industri," vol. 04, no. 02, pp. 122–128, 2023.
- [2] M. Noorvand, F. B. Mofrad, and E. Saeedzadeh, "Introduction of a hybrid approach based on statistical shape model and Adaptive Neural Fuzzy Inference System (ANFIS) to assess dosimetry uncertainty : A Monte Carlo study," *Comput. Biol. Med.*, vol. 189, no. February 2024, p. 109978, 2025, doi: 10.1016/j.compbimed.2025.109978.
- [3] N. Jafarzade, O. Kisi, M. Yousefi, and M. Baziar, "Heliyon Viability of two adaptive fuzzy systems based on fuzzy c means and subtractive clustering methods for modeling Cadmium in groundwater resources," *Heliyon*, vol. 9, no. 8, p. e18415, 2023, doi: 10.1016/j.heliyon.2023.e18415.
- [4] T. Tziolas, K. Papageorgiou, I. Apostolopoulos, and E. Papageorgiou, "Neural-FCM : a deep learning approach for weight matrix optimization in Fuzzy Cognitive Map classifiers," pp. 1–19, 2025.
- [5] S. Mirjalili, S. Mohammad, and A. Lewis, "Advances in Engineering Software Grey Wolf Optimizer," *Adv. Eng. Softw.*, vol. 69, pp. 46–61, 2014, [Online]. Available: <http://dx.doi.org/10.1016/j.advengsoft.2013.12.007>
- [6] S. Arora and S. Singh, "Butterfly optimization algorithm: a novel approach for global optimization," *Soft Comput.*, vol. 23, no. 3, pp. 715–734, 2019, doi: 10.1007/s00500-018-3102-4.
- [7] F. Kutlu, "Integrating fuzzy metrics and negation operator in FCM algorithm via genetic algorithm for MRI image segmentation," vol. 3, pp. 17057–17077, 2024, doi: 10.1007/s00521-024-09994-3.
- [8] N. Alifia, A. Nizar, B. Sawitri, J. Pertanian, P. Pembangunan, and P. Malang, "Pengaruh penggunaan insect light trap tenaga surya dalam pengendalian

hama wereng batang coklat pada tanaman padi,” vol. 15, no. 2, pp. 80–83, 2022.

- [9] P. Studi, T. Informatika, and D. Indonesia, “Prediksi Luas Sebaran Hama Wareng pada Tanaman Padi dengan RNN Time Series,” vol. 5, no. 1, pp. 21–32, 2022, doi: 10.33173/jsikti.174.
- [10] K. O. Olatunji, S. O. Oladipo, D. M. Madyira, and Y. Sun, “Performance Evaluation of Different Clustering Techniques and Parameters of Hybrid PSO- and GA-ANFIS on Optimization and Prediction of Biomethane Yield of Alkali-Pretreated Groundnut Shells,” *Waste and Biomass Valorization*, no. 0123456789, 2024, doi: 10.1007/s12649-024-02674-2.
- [11] V. K. Polishetty, G. Balamurugan, and K. Jayaraman, “Mitigation of power quality disturbances in wind energy conversion systems with fed unified power flow controllers using cascaded adaptive neuro-fuzzy inference system controller,” *Int. J. Adv. Technol. Eng. Explor.*, vol. 10, no. 108, pp. 1503–1523, 2023, doi: 10.19101/IJATEE.2023.10101457.
- [12] F. Debiche, M. A. Benbouras, A. I. Petrisor, L. M. Baba Ali, and A. Leghouchi, “Advancing Landslide Susceptibility Mapping in the Medea Region Using a Hybrid Metaheuristic ANFIS Approach,” *Land*, vol. 13, no. 6, 2024, doi: 10.3390/land13060889.
- [13] S. H. Jadhav and R. V. Sarwadnya, “Direct expansion (DX) air conditioning (A/C) system control: Hybrid BOANFIS technique,” *Int. Rev. Appl. Sci. Eng.*, vol. 14, no. 3, pp. 303–315, 2023, doi: 10.1556/1848.2023.00524.
- [14] S. Thawkar, S. Sharma, M. Khanna, and L. kumar Singh, “Breast cancer prediction using a hybrid method based on Butterfly Optimization Algorithm and Ant Lion Optimizer,” *Comput. Biol. Med.*, vol. 139, no. September, p. 104968, 2021, doi: 10.1016/j.compbiomed.2021.104968.

- [15] B. Bilal, K. H. Adjallah, A. Sava, K. Yetilmezsoy, and M. Ouassaid, “Wind turbine output power prediction and optimization based on a novel adaptive neuro-fuzzy inference system with the moving window,” *Energy*, vol. 263, no. PE, p. 126159, 2023, doi: 10.1016/j.energy.2022.126159.
- [16] T. Fujita, “Examples of Fuzzy Sets , Hyperfuzzy Sets , and SuperHyperfuzzy Sets in Climate Change and the Proposal of Several New Concepts,” vol. 2, pp. 1–18, 2025.
- [17] L. A. Zadeh, “Fuzzy Sets,” *Procedia Comput. Sci.*, vol. 207, pp. 338–353, 1965, doi: 10.1016/j.procs.2022.09.516.
- [18] L. Wang and J. M. Mendel, “Fuzzy Basis Functions, Universal Approximation, and Orthogonal Least-Squares Learning,” vol. 3, no. 5, pp. 807–814, 1992.
- [19] S. U. Filla, U. Islam, and N. Sumatera, “PROTOTYPE ALAT PENGATUR TEMPERATUR RUANG KERJA PADA RUMAH MENGGUNAKAN LOGIKA FUZZY TSUKAMOTO BERBASIS IOT,” vol. 4307, no. 1, pp. 68–77, 2024.
- [20] A. K. Varshney, “Literature Review of the Recent Trends and Applications in Various Fuzzy Rule-Based Systems,” vol. 25, pp. 2163–2186, 2023, doi: 10.1007/s40815-023-01534-w.
- [21] A. F. Syalsabilla, S. Astutik, A. F. Rozy, U. Brawijaya, and P. Korespondensi, “OPTIMALISASI PREDIKSI HARGA IHSG MENGGUNAKAN HYBRID WEIGHTED FUZZY TIME SERIES HIDDEN MARKOV MODEL DENGAN ALGORITMA OPTIMIZATION OF IHSG PRICE PREDICTION USING THE HYBRID WEIGHTED FUZZY TIME SERIES HIDDEN MARKOV MODEL WITH DIFFERENTIAL,” vol. 11, no. 4, pp. 837–844, 2024.

- [22] R. M. Simanjorang, A. Simangunsong, M. Arifin, and M. Yamin, "Penerapan Sistem Pakar Dalam Diagnosis Dini Penyakit Jantung Dengan Metode Sistem Inferensi Fuzzy," vol. 7, 2024.
- [23] N. Science, C. Phenomena, H. Sarkheil, S. Rahbari, and B. Rayegani, "Chaos , Solitons and Fractals Conversion based fuzzy fractal dimension integrating self-similarity and porosity , via DFS and FIS (Mamdani and Sugeno systems)," vol. 140, 2020, doi: 10.1016/j.chaos.2020.110183.
- [24] S. Kusumadewi, L. Rosita, E. Gustri, and S. Mulyati, "Biomedical Signal Processing and Control Implementation of decision tree and Mamdani fuzzy inference system for Erythropoietin resistance prediction," *Biomed. Signal Process. Control*, vol. 104, no. September 2024, p. 107496, 2025, doi: 10.1016/j.bspc.2025.107496.
- [25] A. Kasbi, A. Rahali, Y. Djeriri, and N. El, "Franklin Open A robust and computationally efficient adaptive PI controller based on Takagi-Sugeno fuzzy model for improving the dynamic behavior of DFIG-based wind turbine systems," *Franklin Open*, vol. 13, no. March, p. 100424, 2025, doi: 10.1016/j.fraope.2025.100424.
- [26] M. K. Sharma, N. Dhiman, A. Sharma, and T. Kumar, "Clinical eHealth IoMT Tsukamoto Type-2 fuzzy expert system for tuberculosis and Alzheimer ' s disease," *Clin. eHealth*, vol. 7, no. 2024, pp. 77–91, 2025, doi: 10.1016/j.ceh.2024.05.002.
- [27] S. Yaghoubi, A. Piccininni, M. Seidi, and P. Guglielmi, "Multi-criteria optimization of the warm hydroforming process of an aluminum component based on the adaptive neuro-fuzzy inference system," *J. Manuf. Process.*, vol. 132, no. October, pp. 75–92, 2024, doi: 10.1016/j.jmapro.2024.10.075.
- [28] J. S. R. Jang, "ANFIS: Adaptive-Network-Based Fuzzy Inference System," *IEEE Trans. Syst. Man Cybern.*, vol. 23, no. 3, pp. 665–685, 1993, doi:

10.1109/21.256541.

- [29] M. Casari, P. A. Kowalski, and L. Po, “Optimisation of the adaptive neuro-fuzzy inference system for adjusting low-cost sensors PM concentrations,” *Ecological Informatics*, vol. 83. 2024. doi: 10.1016/j.ecoinf.2024.102781.
- [30] D. Karaboga and E. Kaya, “Adaptive network based fuzzy inference system (ANFIS) training approaches: a comprehensive survey,” *Artif. Intell. Rev.*, vol. 52, no. 4, pp. 2263–2293, 2019, doi: 10.1007/s10462-017-9610-2.
- [31] G. P. Chander and S. Das, “Chaotic Rao3 based adaptive neuro-fuzzy inference system to solve global infrastructure project selection problem,” *Appl. Soft Comput.*, vol. 165, no. August, p. 112046, 2024, doi: 10.1016/j.asoc.2024.112046.
- [32] E. T. Mharakurwa and D. W. Gicheru, “Transformer hot spot temperature estimation through adaptive neuro fuzzy inference system approach,” *Heliyon*, vol. 10, no. 4, p. e26338, 2024, doi: 10.1016/j.heliyon.2024.e26338.
- [33] S. Wasi, A. H. Ramadani, and M. B. Tamam, “Pengaruh Ekstrak Etanol Daun Serai Wangi *Cymbopogon nardus* (L .) Rendle Terhadap Mortalitas Wereng Coklat *Niparvata lugens* Stal . (Hemiptera : Delphacidae),” vol. 5, no. 2, pp. 64–72, 2023.
- [34] W. Long, M. Xu, J. Jiao, T. Wu, M. Tang, and S. Cai, “A velocity-based butterfly optimization algorithm for high-dimensional optimization and feature selection,” *Expert Syst. Appl.*, vol. 201, no. December 2020, p. 117217, 2022, doi: 10.1016/j.eswa.2022.117217.
- [35] T. Vinod Kumar and S. Kumar Injeti, “Probabilistic optimal planning of dispatchable distributed generator units in distribution systems using a multi-objective velocity-based butterfly optimization algorithm,” *Renew. Energy Focus*, vol. 43, pp. 191–209, 2022, doi: 10.1016/j.ref.2022.10.001.

- [36] T. K. Sharma, A. Kumar Sahoo, and P. Goyal, “Bidirectional butterfly optimization algorithm and engineering applications,” *Materials Today: Proceedings*, vol. 34. pp. 736–741, 2019. doi: 10.1016/j.matpr.2020.04.679.
- [37] W. Long, T. Wu, M. Xu, M. Tang, and S. Cai, “Parameters identification of photovoltaic models by using an enhanced adaptive butterfly optimization algorithm,” *Energy*, vol. 229, 2021, doi: 10.1016/j.energy.2021.120750.
- [38] H. Zhou, G. Zhang, X. Wang, P. Ni, and J. Zhang, “Structural identification using improved butterfly optimization algorithm,” 2021, doi: <https://doi.org/10.1016/j.istruc.2021.05.043>.
- [39] J. C. Baird, *Fundamentals of Scaling and Psychophysics*, 1st ed. Canada: John Wiley, 1978. [Online]. Available: https://www.researchgate.net/profile/Elliot-Noma/publication/246274903_Fundamentals_of_Scaling_and_Psychophysics/links/55bf630708aec0e5f4470904/Fundamentals-of-Scaling-and-Psychophysics.pdf
- [40] W. Long, J. Jiao, X. Liang, T. Wu, M. Xu, and S. Cai, “Pinhole-imaging-based learning butterfly optimization algorithm for global optimization and feature selection,” *Appl. Soft Comput.*, vol. 103, p. 107146, 2021, doi: 10.1016/j.asoc.2021.107146.
- [41] M. Peng, X. Wei, and H. Huang, “A chaotic adaptive butterfly optimization algorithm,” *Evol. Intell.*, vol. 17, no. 1, pp. 493–511, 2024, doi: 10.1007/s12065-023-00832-4.
- [42] P. Chakraborty, S. Sharma, and A. K. Saha, “Convergence analysis of butterfly optimization algorithm,” *Soft Comput.*, vol. 27, no. 11, pp. 7245–7257, 2023, doi: 10.1007/s00500-023-07920-8.
- [43] Y. He, Y. Zhou, Y. Wei, Q. Luo, and W. Deng, *Wind Driven Butterfly*

Optimization Algorithm with Hybrid Mechanism Avoiding Natural Enemies for Global Optimization and PID Controller Design, vol. 20, no. 6. Springer Nature Singapore, 2023. doi: 10.1007/s42235-023-00416-z.

- [44] Z. Geng, W. Kong, X. Wang, L. Wang, and Y. Han, “Adaptive search based Grey Wolf optimization algorithm for multi-objective optimization of ethylene cracking furnace,” *Swarm Evol. Comput.*, vol. 92, no. December 2024, p. 101810, 2024, doi: 10.1016/j.swevo.2024.101810.
- [45] L. Zhang and X. Chen, “Elite-driven grey wolf optimization for global optimization and its application to feature selection,” *Swarm Evol. Comput.*, vol. 92, no. December 2024, p. 101795, 2024, doi: 10.1016/j.swevo.2024.101795.
- [46] A. Ali *et al.*, “An optimized multilayer perceptron-based network intrusion detection using Gray Wolf Optimization,” *Comput. Electr. Eng.*, vol. 120, no. October, pp. 1–14, 2024, doi: 10.1016/j.compeleceng.2024.109838.
- [47] L. D. Mech, “Alpha status, dominance, and division of labor in wolf packs,” *Can. J. Zool.*, vol. 77, no. 8, pp. 1196–1203, 1999, doi: 10.1139/z99-099.
- [48] S. Sharma and I. Ali, “Efficient Energy Management and Cost Optimization Using Grey Wolf Optimization for Ev Charging and Discharging in Microgrid.” 2024. doi: <https://doi.org/10.1016/j.prime.2024.100804>.
- [49] X. Yu and Z. Hu, “A multi-strategy driven reinforced hierarchical operator in the grey wolf optimizer for feature selection,” *Inf. Sci.*, 2024, doi: <https://doi.org/10.1016/j.ins.2024.120924>.
- [50] Y. Zhou, L. Zhang, and W. Li, “Partitioned uneven cluster routing algorithm based on gray wolf optimization in WSNs,” *Ad Hoc Networks*, vol. 163. 2024. doi: 10.1016/j.adhoc.2024.103564.

- [51] L. Yan *et al.*, “Recent Advances in Molecular Mechanism and Breeding Utilization of Brown Planthopper Resistance Genes in Rice : An Integrated Review,” 2023.
- [52] W. Huang, Y. Huo, S. Yang, M. Liu, H. Li, and M. Zhang, “Detection of *Laodelphax striatellus* (small brown planthopper) based on improved YOLOv5,” *Comput. Electron. Agric.*, vol. 206, no. January, p. 107657, 2023, doi: 10.1016/j.compag.2023.107657.
- [53] D. I. Mulyana and Marjuki, “Optimasi Prediksi Harga Udang Vaname Dengan Metode Rmse Dan Mae Dalam Algoritma Regresi Linier,” *J. Ilm. Betrik*, vol. 13, no. 1, pp. 50–58, 2022, doi: 10.36050/betrik.v13i1.439.
- [54] D. D. Pramesti, D. C. R. Novitasari, F. Setiawan, and H. Khaulasari, “Long-Short Term Memory (Lstm) for Predicting Velocity and Direction Sea Surface Current on Bali Strait,” *BAREKENG J. Ilmu Mat. dan Terap.*, vol. 16, no. 2, pp. 451–462, 2022, doi: 10.30598/barekengvol16iss2pp451-462.
- [55] U. Duta, B. Surakarta, S. City, U. K. Lumpur, and K. Lumpur, “THE IMPROVEMENT PREDICTION MODEL USING ANFIS FOR MEDICAL DATASET,” vol. 102, no. 5, pp. 1663–1672, 2024.
- [56] D. A. Sofyan, Y. Koesmaryono, and R. Hidayati, “Analisis pengaruh faktor cuaca terhadap dinamika populasi wereng batang coklat (*Nilaparvata lugens* Stål) yang tertangkap lampu perangkap Analysis of the effect of weather on population dynamics of brown,” vol. 16, no. 1, pp. 1–8, 2019, doi: 10.5994/jei.16.1.1.