DAFTAR PUSTAKA

[1] World Health Organization, “Cardiovascular diseases (CVDs).” Accessed: Aug. 13, 2026. [Online]. Available: https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)

[2] Kementerian Kesehatan Republik Indonesia, “Penyakit Jantung Penyebab Utama Kematian, Kemenkes Perkuat Layanan Primer.” Accessed: Sep. 01, 2026. [Online]. Available: https://kemkes.go.id/id/penyakit-jantung-penyebab-utama-kematian-kemenkes-perkuat-layanan-primer

[3] J. Parlindungan Pane *et al.*, “Faktor-Faktor Risiko Penyakit Kardiovaskular Berbasis Masyarakat,” vol. 4, no. 4, pp. 1183–1192, Sep. 2022, doi: https://doi.org/10.37287/jppp.v4i4.1218.

[4] dr. Marianti, “Penyakit Jantung,” Alodokter. Accessed: Sep. 03, 2026. [Online]. Available: https://www.alodokter.com/penyakit-jantung

[5] W. C. Wahyudin, T. Sutikno, R. Umar, and A. Ridwan, “Comparison of Data Mining Model Performance in Heart Disease Detection with Feature Selection Application,” *JOINCS (Journal of Informatics, Network, and Computer Science)*, vol. 8, no. 1, pp. 87–93, Apr. 2025, doi: https://doi.org/10.21070/joincs.v8i1.1669.

[6] L. Hakim, A. Sobri, L. Sunardi, and D. Nurdiansyah, “Prediksi penyakit jantung berbasis mesin learning dengan menggunakan metode k-nn,” *Jurnal Digital Teknologi Informasi*, vol. 7, no. 2, p. 14, Feb. 2025, doi: 10.32502/digital.v7i2.9429.

[7] D. Asif, M. Bibi, M. S. Arif, and A. Mukheimer, “Enhancing Heart Disease Prediction through Ensemble Learning Techniques with Hyperparameter Optimization,” *Algorithms*, vol. 16, no. 6, Jun. 2023, doi: 10.3390/a16060308.

[8] L. Mochurad, V. Babii, Y. Boliubash, and Y. Mochurad, “Improving by integrating XGBoost, optimized principal component analysis, and explainable artificial intelligence,” *BMC Med. Inform. Decis. Mak.*, vol. 25, no. 1, 2025, doi: 10.1186/s12911-025-02894-z.

[9] E. H. Yulianti, O. Soesanto, and Y. Sukmawaty, “Penerapan Metode Extreme Gradient Boosting (XGBOOST) pada Klasifikasi Nasabah Kartu Kredit,”

JOMTA Journal of Mathematics: Theory and Applications, vol. 4, no. 1, 2022.

[10] M. Anita, I. Grecea, D. Yulianti, and S. V. Pasaribu, "KLASIFIKASI FAKTOR RISIKO PENYAKIT JANTUNG MENGGUNAKAN MACHINE LEARNING", doi: 10.52972/hoaq.vol16no1.

[11] A. Jain, A. Singh, and A. Doherey, "Prediction of Cardiovascular Disease using XGBoost with OPTUNA," *SN Comput. Sci.*, vol. 6, no. 5, p. 421, 2025, doi: https://doi.org/10.1007/s42979-025-03954-x.

[12] B. T. Pramesti, F. T. Anggraeny, and W. S. J. Saputra, "Klasifikasi Data Tidak Seimbang Menggunakan SMOTE-ENN dengan Optimasi Bayesian," *JIIP - Jurnal Ilmiah Ilmu Pendidikan*, vol. 8, pp. 12207–12210, Oct. 2025, doi: https://doi.org/10.54371/jiip.v8i10.9456.

[13] P. Srinivas and R. Katarya, "hyOPTXg: OPTUNA hyper-parameter optimization framework for predicting cardiovascular disease using XGBoost," *Biomed. Signal Process. Control*, vol. 73, p. 103456, 2022, doi: https://doi.org/10.1016/j.bspc.2021.103456.

[14] K. V. V. Reddy, I. Elamvazuthi, A. A. Aziz, S. Paramasivam, H. N. Chua, and S. Pranavanand, "Prediction of Heart Disease Risk Using Machine Learning with Correlation-based Feature Selection and Optimization Techniques," in *2021 7th International Conference on Signal Processing and Communication (ICSC)*, 2021, pp. 228–233. doi: 10.1109/ICSC53193.2021.9673490.

[15] F. I. Adani[1] and H. Amalia[2], "Penerapan Metode Algoritma XGBoost untuk Prediksi Risiko Penyakit Jantung," *Jurnal INSAN (Journal of Information Systems Management Innovation*, vol. 5, no. 2, 2025, [Online]. Available: http://jurnal.bsi.ac.id/index.php/jinsan

[16] A. Abdellatif, H. Abdellatef, J. Kanesan, C.-O. Chow, J. H. Chuah, and H. M. Gheni, "An Effective Heart Disease Detection and Severity Level Classification Model Using Machine Learning and Hyperparameter Optimization Methods," *IEEE Access*, vol. 10, pp. 79974–79985, 2022, doi: 10.1109/ACCESS.2022.3191669.

[17] S. Parthasarathy, V. Jayaraman, and J. P. Princy R, "Predicting Heart Failure

using SMOTE-ENN-XGBoost," in *2023 International Conference on Intelligent Data Communication Technologies and Internet of Things (IDCIoT)*, IEEE, Jan. 2023, pp. 661–666. doi: 10.1109/IDCIoT56793.2023.10053458.

[18] S. D. Kurniawan, P. Purwono, A. Ma'Arif, and I. Suwarno, "Diabetes Classification Problem with CatBoost Method and Optuna Gradient Boosting Optimization," in *2023 6th International Conference on Information and Communications Technology (ICOIACT)*, 2023, pp. 361–366. doi: 10.1109/ICOIACT59844.2023.10455940.

[19] G. Shukla, V. Awasthi, P. Dubey, Saranya, D. Shekhawat, and A. Shrotriya, "Hybrid RBC Morphology Analysis and Diagnostic Framework for β-Thalassemia Using SEBlock-CBAM Enhanced MobileNetV2, TabNet with Optuna Optimization and SMOTE-ENN Resampling," in *2025 3rd International Conference on Communication, Security, and Artificial Intelligence (ICCSAI)*, 2025, pp. 1527–1532. doi: 10.1109/ICCSAI64074.2025.11064027.

[20] A. Puji, "Penyakit Jantung," May 2025, *HelloSehat*. [Online]. Available: https://hellosehat.com/jantung/penyakit-jantung/pengertian-penyakit-jantung/

[21] S. A. T. Al Azhima, D. Darmawan, N. F. Arief Hakim, I. Kustiawan, M. Al Qibtiya, and N. S. Syafei, "Hybrid Machine Learning Model untuk memprediksi Penyakit Jantung dengan Metode Logistic Regression dan Random Forest," *Jurnal Teknologi Terpadu*, vol. 8, no. 1, pp. 40–46, Jul. 2022, doi: 10.54914/jtt.v8i1.539.

[22] Centers for Disease Control and Prevention, "Heart Disease Risk Factors," Dec. 2024. [Online]. Available: https://www.cdc.gov/heart-disease/risk-factors/index.html

[23] D. Wardhani *et al.*, "Pengantar Data Mining PT. MIFANDI MANDIRI DIGITAL," vol. Vol. 1 No. 01, Nov. 2024, Accessed: Sep. 03, 2026. [Online]. Available: https://jurnal.mifandimandiri.com/index.php/penerbitmmd/article/view/36

[24] A. Ahmad, "Mengenal Artificial Intelligence, Machine Learning, Neural

Network, dan Deep Learning." [Online]. Available: www.teknoindonesia.com

[25] A. Fauziah and Julan Hernadi, "Klasifikasi Data Tak Seimbang menggunakan Algoritma Random Forest dengan SMOTE dan SMOTE-ENN (Studi Kasus pada Data Stunting)," *Jurnal Riset Sistem dan Teknologi Informasi*, vol. 3, no. 2, pp. 112–121, Jul. 2025, doi: 10.30787/restia.v3i2.1906.

[26] J. Homepage *et al.*, "MALCOM: Indonesian Journal of Machine Learning and Computer Science Implementation of Hyperparameter Tuning for Classification Models in Heart Disease Risk Prediction Penerapan Hyperparameter Tuning pada Model Klasifikasi untuk Prediksi Risiko Penyakit Jantung," vol. 5, pp. 1181–1189, 2025, doi: 10.57152/malcom.v5i4.2138.

[27] N. Istiana and A. Mustafiril, "Perbandingan Metode Klasifikasi pada Data dengan Imbalance Class dan Missing Value," *Jurnal Informatika*, vol. 10, no. 2, pp. 101–108, Oct. 2023, doi: 10.31294/inf.v10i2.15540.

[28] F. Yulian Pamuji, A. Rofiqul Muslikh, R. Muhammad Arief, and D. Muti, "JIP (Jurnal Informatika Polinema) KOMPARASI METODE MEAN DAN KNN IMPUTATION DALAM MENGATASI MISSING VALUE PADA DATASET KECIL", [Online]. Available: https://archive.ics.uci.edu/datasets.

[29] P. P. Allorerung, A. Erna, M. Bagussahrir, and S. Alam, "Analisis Performa Normalisasi Data untuk Klasifikasi K-Nearest Neighbor pada Dataset Penyakit," *JISKA (Jurnal Informatika Sunan Kalijaga)*, vol. 9, no. 3, pp. 178–191, Sep. 2024, doi: https://doi.org/10.14421/jiska.2024.9.3.178-191.

[30] A.-Z. A. Romadhoni, Y. H. Chrisnanto, and G. Abdillah, "Penggunaan Chi-Square Test dalam Peningkatan Kemampuan XGBoost pada Klasifikasi Penyakit Gagal Jantung," *JIPI (Jurnal Ilmiah Penelitian dan Pembelajaran Informatika)*, vol. 11, no. 2, pp. 1213–1223, May 2026, doi: 10.29100/jipi.v11i2.7848.

[31] N. V Chawla, K. W. Bowyer, L. O. Hall, and W. P. Kegelmeyer, "SMOTE: Synthetic Minority Over-sampling Technique," 2002.

[32] Z. Amri, Muhammad Rodi, M. Nurul Wathani, Amir Bagja, and Zulkipli, "Prediksi Diabetes Menggunakan Algoritma K-Nearest (KNN) Teknik SMOTE-ENN," *Infotek: Jurnal Informatika dan Teknologi*, vol. 8, no. 1, pp. 193–204, Jan. 2025, doi: 10.29408/jit.v8i1.27975.

[33] F. Yang, K. Wang, L. Sun, M. Zhai, J. Song, and H. Wang, "A Hybrid Sampling Algorithm Combining Synthetic Minority Over-Sampling Technique and Edited Nearest Neighbor for Missed Abortion Diagnosis," *BMC Med. Inform. Decis. Mak.*, vol. 22, no. 1, p. 344, 2022, doi: https://doi.org/10.1186/s12911-022-02075-2.

[34] T. Chen and C. Guestrin, "XGBoost: A Scalable Tree Boosting System," in *Proceedings of the 22nd ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, in KDD '16. New York, NY, USA: Association for Computing Machinery, 2016, pp. 785–794. doi: https://doi.org/10.1145/2939672.2939785.

[35] T. Akiba, S. Sano, T. Yanase, T. Ohta, and M. Koyama, "Optuna: A Next-generation Hyperparameter Optimization Framework," in *Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining*, in KDD '19. New York, NY, USA: Association for Computing Machinery, 2019, pp. 2623–2631. doi: https://doi.org/10.1145/3292500.3330701.

[36] F. Reynaldi Valerian, M. Syarief, D. Abdul Fatah, J. Raya Telang, K. Kamal, and J. Timur, "KLASIFIKASI TINGKAT OBESITAS MENGGUNAKAN METODE GBM DAN CONFUSION MATRIX," 2025.

[37] UCI Machine Learning Repository, "Statlog (Heart)," UCI Machine Learning Repository. Accessed: Sep. 01, 2026. [Online]. Available: https://archive.ics.uci.edu/dataset/145/statlog+heart

[38] K. V. V. Reddy, I. Elamvazuthi, A. A. Aziz, S. Paramasivam, H. N. Chua, and S. Pranavanand, "An Efficient Prediction System for Coronary Heart Disease Risk Using Selected Principal Components and Hyperparameter Optimization," *Applied Sciences (Switzerland)*, vol. 13, no. 1, Jan. 2023, doi: https://doi.org/10.3390/app13010118.

[39] A. Janosi, W. Steinbrunn, M. Pfisterer, and R. Detrano, "Heart Disease," UCI

Machine Learning Repository. Accessed: Aug. 13, 2026. [Online]. Available: https://doi.org/10.24432/C52P4X

[40] N. Louridi, S. Douzi, and B. El Ouahidi, "Machine learning-based identification of patients with a cardiovascular defect," *J. Big Data*, vol. 8, no. 1, Dec. 2021, doi: 10.1186/s40537-021-00524-9.

[41] A. Desiani, N. R. Dewi, A. N. Fauza, N. Rachmatullah, M. Arhami, and M. Nawawi, "Handling Missing Data Using Combination of Deletion Technique, Mean, Mode and Artificial Neural Network Imputation for Heart Disease Dataset," *Science and Technology Indonesia*, vol. 6, no. 4, pp. 303–312, Oct. 2021, doi: https://doi.org/10.26554/sti.2021.6.4.303-312.

[42] K. Dissanayake and M. G. Md Johar, "Comparative Study on Heart Disease Prediction Using Feature Selection Techniques on Classification Algorithms," *Applied Computational Intelligence and Soft Computing*, vol. 2021, pp. 1–17, Nov. 2021, doi: 10.1155/2021/5581806.

[43] R. Spencer, F. Thabtah, N. Abdelhamid, and M. Thompson, "Exploring feature selection and classification methods for predicting heart disease," *Digit. Health*, vol. 6, 2020, doi: 10.1177/2055207620914777.

[44] J. P. Anggraini, Chaya Gladys Zhafirah A, and A. Desiani, "Perbandingan Algoritma Random Forest dan Extreme Gradient Boosting (XGBoost) dalam Klasifikasi Penyakit Gagal Jantung," *Komputika : Jurnal Sistem Komputer*, vol. 14, no. 2, pp. 149–157, Nov. 2025, doi: 10.34010/komputika.v14i2.16618.