

DAFTAR PUSTAKA

- [1] “Arrhythmias - What Is an Arrhythmia? | NHLBI, NIH,” National Heart, Lung, and Blood Institute.
- [2] B. Azeem *et al.*, “Unmasking Arrhythmia Mortality: A 25-Year Analysis of Trends and Disparities in the United States (1999–2023),” *Clin Cardiol*, vol. 48, no. 3, Mar. 2025, doi: 10.1002/clc.70109.
- [3] World Health Organization, “Cardiovascular diseases (CVDs),” WHO.
- [4] Marsha Anindita, “Peringatan Hari Jantung Sedunia 2021: Jaga Jantungmu untuk Hidup Lebih Sehat,” Ayo Sehat Kemenkes.
- [5] F. R. Muharram *et al.*, “Adequacy and Distribution of the Health Workforce in Indonesia,” pp. 45–55, Jul. 2024, doi: 10.4103/WHO-SEAJPH.WHO-SEAJPH_28_24.
- [6] C. J. Breen, G. P. Kelly, and W. G. Kernohan, “ECG interpretation skill acquisition: A review of learning, teaching and assessment,” Jul. 01, 2022, *Elsevier B.V.* doi: 10.1016/j.jelectrocard.2019.03.010.
- [7] J. A. Joglar *et al.*, “2023 ACC/AHA/ACCP/HRS Guideline for the Diagnosis and Management of Atrial Fibrillation: A Report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines,” Jan. 2024, *Lippincott Williams and Wilkins*. doi: 10.1161/CIR.0000000000001193.
- [8] P. Madan, V. Singh, D. P. Singh, M. Diwakar, B. Pant, and A. Kishor, “A Hybrid Deep Learning Approach for ECG-Based Arrhythmia Classification,” *Bioengineering*, vol. 9, no. 4, Apr. 2022, doi: 10.3390/bioengineering9040152.
- [9] X. Bai, X. Dong, Y. Li, R. Liu, and H. Zhang, “A hybrid deep learning network for automatic diagnosis of cardiac arrhythmia based on 12-

- lead ECG,” *Sci Rep*, vol. 14, no. 1, Dec. 2024, doi: 10.1038/s41598-024-75531-w.
- [10] Y. Ansari, O. Mourad, K. Qaraqe, and E. Serpedin, “Deep learning for ECG Arrhythmia detection and classification: an overview of progress for period 2017–2023,” 2023, *Frontiers Media SA*. doi: 10.3389/fphys.2023.1246746.
 - [11] R. M. Merchant *et al.*, “The American Heart Association Emergency Cardiovascular Care 2030 Impact Goals and Call to Action to Improve Cardiac Arrest Outcomes: A Scientific Statement from the American Heart Association,” *Circulation*, vol. 149, no. 8, pp. E914–E933, Feb. 2024, doi: 10.1161/CIR.0000000000001196.
 - [12] D. S. Desai and S. Hajouli, “Arrhythmias,” in <https://www.ncbi.nlm.nih.gov/books/NBK558923/>, vol. 4, Elsevier, 2023, p. V4:432-V4:468.
 - [13] J. Grune, M. Yamazoe, and M. Nahrendorf, “Electroimmunology and cardiac arrhythmia,” Aug. 2021, *Nature Research*. doi: 10.1038/s41569-021-00520-9.
 - [14] “Arrhythmias,” <https://www.nhlbi.nih.gov/health/arrhythmias>.
 - [15] J. Kaplan, A. Kanwal, I. Ahmed, and V. Lala, “Reentrant Arrhythmia,” National Library of Medicine.
 - [16] U. Kharad, M. Benayon, and L. Latchupatula, “ECG Basics,” ECG Essentials.
 - [17] H. Mitchell, N. Rosario, C. Hernandez, S. R. Lipsitz, and D. M. Levine, “Single-lead arrhythmia detection through machine learning: Cross-sectional evaluation of a novel algorithm using real-world data,” *Open Heart*, vol. 10, no. 2, Sep. 2023, doi: 10.1136/openhrt-2022-002228.

- [18] S. Sahoo, M. Dash, S. Behera, and S. Sabut, "Machine Learning Approach to Detect Cardiac Arrhythmias in ECG Signals: A Survey," Aug. 01, 2020, *Elsevier Masson SAS*. doi: 10.1016/j.irbm.2019.12.001.
- [19] A. R. Omar and K. K. Poh, "Managing ventricular ectopics: Are ventricular ectopic beats just an annoyance?," 2011. [Online]. Available: <https://www.researchgate.net/publication/51727199>
- [20] "Junctional Rhythm," ECGsmart.
- [21] C. Reynolds, B. Cooper, J. Giordano, and T. Fadial, "Paced Rhythms," ECGSTAMPEDE.
- [22] E. Burns and R. Buttner, "Supraventricular Tachycardia (SVT)," Life in the fastlane.
- [23] E. Burns and R. Buttner, "Normal Sinus Rhythm," Life in the Fastlane.
- [24] P. R. Kowey and D. Z. Kocovic, "Ambulatory Electrocardiographic Recording," *Circulation*, vol. 108, no. 5, Aug. 2003, doi: 10.1161/01.CIR.0000082930.04238.8C.
- [25] C. W. Israel and S. Tribunyan, "Holter monitoring," *Herzschrittmachertherapie + Elektrophysiologie*, vol. 35, pp. 234–249, Aug. 2024.
- [26] R. Dey and F. M. Salemt, "Gate-variants of Gated Recurrent Unit (GRU) neural networks," in *Midwest Symposium on Circuits and Systems*, Institute of Electrical and Electronics Engineers Inc., Sep. 2017, pp. 1597–1600. doi: 10.1109/MWSCAS.2017.8053243.
- [27] F. M. Salem, "Gated RNN: The Gated Recurrent Unit (GRU) RNN," in *Recurrent Neural Networks*, Springer International Publishing, 2022, pp. 85–100. doi: 10.1007/978-3-030-89929-5_5.

- [28] Saddam Abdulwahab, Mohammed Jabreel, and Dr Antonio Moreno, "Deep Learning Models for Paraphrases Identification," 2017. doi: 10.13140/RG.2.2.15743.46240.
- [29] Y. Sun, J. Zhang, Z. Yu, Y. Zhang, and Z. Liu, "The Bidirectional Gated Recurrent Unit Network Based on the Inception Module (Inception-BiGRU) Predicts the Missing Data by Well Logging Data," *ACS Omega*, vol. 8, pp. 27710–27724, Jul. 2023, doi: 10.1021/acsomega.3c03677.
- [30] G. Yao *et al.*, "Interpretation of Electrocardiogram Heartbeat by CNN and GRU," *Comput Math Methods Med*, vol. 2021, 2021, doi: 10.1155/2021/6534942.
- [31] J. Sun, "Automatic cardiac arrhythmias classification using CNN and attention-based RNN network," *Healthc Technol Lett*, vol. 10, no. 3, pp. 53–61, Jun. 2023, doi: 10.1049/htl2.12045.
- [32] M. S. Islam, M. N. Islam, N. Hashim, M. Rashid, B. S. Bari, and F. Al Farid, "New Hybrid Deep Learning Approach Using BiGRU-BiLSTM and Multilayered Dilated CNN to Detect Arrhythmia," *IEEE Access*, vol. 10, pp. 58081–58096, 2022, doi: 10.1109/ACCESS.2022.3178710.
- [33] P. Lu *et al.*, "Identification of Arrhythmia by Using a Decision Tree and Gated Network Fusion Model," *Comput Math Methods Med*, vol. 2021, 2021, doi: 10.1155/2021/6665357.
- [34] F. Akalın, P. D. Çavdaroglu, and M. F. Orhan, "Arrhythmia detection with transfer learning architecture integrating the developed optimization algorithm and regularization method," *BMC Biomed Eng*, vol. 7, no. 1, p. 8, Jul. 2025, doi: 10.1186/s42490-025-00094-4.
- [35] G. Moody and R. Mark, "MIT-BIH Arrhythmia Database," PhysioNet.

- [36] F. Ansari, “NOISE REDUCTION IN ECG BY IIR FILTERS: A COMPARATIVE STUDY.” [Online]. Available: <https://www.researchgate.net/publication/344508453>
- [37] D. Makowski *et al.*, “NeuroKit2: A Python toolbox for neurophysiological signal processing,” *Behav Res Methods*, vol. 53, pp. 1689–1696, Aug. 2021, doi: 10.3758/s13428-020-01516-y.
- [38] S. Mandala *et al.*, “An improved method to detect arrhythmia using ensemble learning-based model in multi lead electrocardiogram (ECG),” *PLoS One*, vol. 19, Apr. 2024, doi: 10.1371/journal.pone.0297551.
- [39] A. Kumarsinha, “GRU Variants - Comparing 5 different implementations of Gated Recurrent Units (GRU) in Keras/TensorFlow.”
- [40] K. Cho *et al.*, “Learning phrase representations using RNN encoder-decoder for statistical machine translation,” in *EMNLP 2014 - 2014 Conference on Empirical Methods in Natural Language Processing, Proceedings of the Conference*, Association for Computational Linguistics (ACL), 2014, pp. 1724–1734. doi: 10.3115/v1/d14-1179.
- [41] “tf.keras.layers.RNN | TensorFlow v2.16.1,” TensorFlow. Accessed: Jul. 14, 2025. [Online]. Available: https://www.tensorflow.org/api_docs/python/tf/keras/layers/RNN
- [42] M. S. Islam, M. N. Islam, N. Hashim, M. Rashid, B. S. Bari, and F. Al Farid, “New Hybrid Deep Learning Approach Using BiGRU-BiLSTM and Multilayered Dilated CNN to Detect Arrhythmia,” *IEEE Access*, vol. 10, pp. 58081–58096, May 2022, doi: 10.1109/ACCESS.2022.3178710.
- [43] N. Reimers and I. Gurevych, “Optimal Hyperparameters for Deep LSTM-Networks for Sequence Labeling Tasks,” Aug. 2017.

- [44] S. Merity, N. S. Keskar, and R. Socher, “An Analysis of Neural Language Modeling at Multiple Scales,” Mar. 2018.