



## DAFTAR PUSTAKA

- Acharya, U. R. *et al.* (2016) ‘Automated detection and localization of myocardial infarction using electrocardiogram: A comparative study of different leads’, *Knowledge-Based Systems*. Elsevier B.V., 99(2016), pp. 146–156. doi: 10.1016/j.knosys.2016.01.040.
- Ahmed P, K. and Acharjya, D. P. (2020) ‘A Hybrid Scheme for Heart Disease Diagnosis Using Rough Set and Cuckoo Search Technique’, *Journal of Medical Systems*. Journal of Medical Systems, 44(1). doi: 10.1007/s10916-019-1497-9.
- Alangari, N. *et al.* (2023) ‘Exploring Evaluation Methods for Interpretable Machine Learning: A Survey’, *Information (Switzerland)*, 14(8), pp. 1–29. doi: 10.3390/info14080469.
- AlMahamdy, M. and Riley, H. B. (2014) ‘Performance study of different denoising methods for ECG signals’, *Procedia Computer Science*. Elsevier Masson SAS, 37, pp. 325–332. doi: 10.1016/j.procs.2014.08.048.
- Almustafa, K. M. (2020) ‘Prediction of heart disease and classifiers’ sensitivity analysis’, *BMC Bioinformatics*. BMC Bioinformatics, 21(1), pp. 1–18. doi: 10.1186/s12859-020-03626-y.
- Alzubi, J., Nayyar, A. and Kumar, A. (2018) ‘Machine Learning from Theory to Algorithms: An Overview’, *Journal of Physics: Conference Series*, 1142(1). doi: 10.1088/1742-6596/1142/1/012012.
- Amann, J. *et al.* (2020) ‘Explainability for artificial intelligence in healthcare: a multidisciplinary perspective’, *BMC Medical Informatics and Decision Making*. BioMed Central, 20(1), pp. 1–9. doi: 10.1186/s12911-020-01332-6.
- Anonim (2023) *Decision Tree*, [geeksforgeeks.org](https://www.geeksforgeeks.org/decision-tree/). Available at: <https://www.geeksforgeeks.org/decision-tree/> (Accessed: 26 November 2023).
- Ayano, Y. M. *et al.* (2023) ‘Interpretable Machine Learning Techniques in ECG-Based Heart Disease Classification: A Systematic Review’, *Diagnostics*, 13(1), pp. 1–37. doi: 10.3390/diagnostics13010111.
- Aziz, S., Ahmed, S. and Alouini, M. S. (2021) ‘ECG-based machine-learning algorithms for heartbeat classification’, *Scientific Reports*. Nature Publishing Group UK, 11(1), pp. 1–14. doi: 10.1038/s41598-021-97118-5.
- Azizah, N. (2023) *Kemenkes: Penyakit Kardiovaskular Jadi Penyebab Kematian Terbanyak di Indonesia*, Republika News. Available at: <https://news.republika.co.id/berita/s1jq78463/kemenkes-penyakit->



kardiovaskular-jadi-penyebab-kematian-terbanyak-di-indonesia  
(Accessed: 12 December 2023).

- Balasubramanian, S. and Naruka, M. S. (2022) ‘A noise removal methodology for effective ecg enhancement in heart disease prediction & analysis’, *International journal of health sciences*, 6(March), pp. 11578–11593. doi: 10.53730/ijhs.v6ns1.7813.
- Baştanlar, Y. and Ozuysal, M. (2014) *Introduction to Machine Learning Second Edition, Methods in molecular biology* (Clifton, N.J.). doi: 10.1007/978-1-62703-748-8\_7.
- Brady, W. J. (2006) ‘ST Segment and T Wave Abnormalities Not Caused by Acute Coronary Syndromes’, *Emergency Medicine Clinics of North America*, 24(1), pp. 91–111. doi: <https://doi.org/10.1016/j.emc.2005.08.004>.
- Breiman, L. et al. (1984) *Classification and Regression Trees*. Taylor & Francis. Available at: [https://books.google.co.id/books/about/Classification\\_and\\_Regression\\_Trees.html?id=JwQx-WOmSyQC&redir\\_esc=y](https://books.google.co.id/books/about/Classification_and_Regression_Trees.html?id=JwQx-WOmSyQC&redir_esc=y).
- Bukhari, H. R., Cheng, Y. and Li, Q. (2023) ‘Studying the Impact of Varying Sample Length of ECG Signal on Classification Accuracy’, *ICAC 2023 - 28th International Conference on Automation and Computing*. IEEE, pp. 1–7. doi: 10.1109/ICAC57885.2023.10275207.
- Chen, X. and Jeong, C. J. (2008) ‘Enhanced Recursive Features Elimination’, *Proceedings - 6th International Conference on Machine Learning and Applications, ICMLA 2008*, (January), pp. 330–335. doi: 10.1109/ICMLA.2007.35.
- Chumachenko, D. et al. (2022) ‘Machine Learning Methods in Predicting Patients with Suspected Myocardial Infarction Based on Short-Time HRV Data’, *Sensors*, 22(18). doi: 10.3390/s22187033.
- Ciocirlan, M. and Udrea, A. (2023) ‘Techniques of biological signals classification and comparisons using Machine Learning Techniques’, *Proceedings - 2023 24th International Conference on Control Systems and Computer Science, CSCS 2023*, pp. 467–472. doi: 10.1109/CSCS59211.2023.00079.
- Clark, P. and Niblett, T. (1989) ‘The CN2 rule induction algorithm’, *Machine Learning*, 3(4), pp. 261–284. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.51.3672&rep=rep1&type=pdf>.
- Cohen, W. W. (1995) *Fast Effective Rule Induction, Proceedings of the 12th International Conference on Machine Learning, ICML 1995*. Morgan Kaufmann Publishers, Inc. doi: 10.1016/b978-1-55860-377-6.50023-2.
- Dupre, A., Vieau, S. and Iaizzo, P. A. (2005) ‘Basic ECG theory, 12-lead recordings and their interpretation’, *Handbook of Cardiac Anatomy, Physiology, and*



*Devices: Second Edition*, pp. 257–269. doi: 10.1007/978-1-60327-372-5\_17.

Fletcher, S. and Islam, M. Z. (2019) ‘Decision tree classification with differential privacy: A survey’, *ACM Computing Surveys*, 52(4), pp. 1–35. doi: 10.1145/3337064.

Frank, E. and Witten, I. H. (1998) ‘Generating accurate rule sets without global optimization’, *Proceedings of the Fifteenth International Conference on Machine Learning*, (June 1998), pp. 144–151. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.143.8073&am>p;rep=rep1&type=pdf.

Fürnkranz, J. (1999) ‘Separate-and-conquer rule learning’, *Artificial Intelligence Review*, 13(1), pp. 3–54. doi: <https://doi.org/10.1023/A:1006524209794>.

García, S. et al. (2013) ‘A survey of discretization techniques: Taxonomy and empirical analysis in supervised learning’, *IEEE Transactions on Knowledge and Data Engineering*, 25(4), pp. 734–750. doi: 10.1109/TKDE.2012.35.

Halder, B., Mitra, S. and Mitra, M. (2022) ‘Classification of Complete Myocardial Infarction Using Rule-Based Rough Set Method and Rough Set Explorer System’, *IETE Journal of Research*. Taylor & Francis, 68(1), pp. 85–95. doi: 10.1080/03772063.2019.1588175.

Han, C. et al. (2023) ‘Automated Detection and Localization of Myocardial Infarction With Interpretability Analysis Based on Deep Learning’, *IEEE Transactions on Instrumentation and Measurement*. IEEE, 72, pp. 1–12. doi: 10.1109/TIM.2023.3258521.

Han, J., Kambe, M. and Pe, J. (2011) *Data Mining: Concepts and Techniques, Data Mining: Concepts and Techniques*. doi: 10.1016/C2009-0-61819-5.

Hasbullah, S., Mohd Zahid, M. S. and Mandala, S. (2023) ‘Detection of Myocardial Infarction Using Hybrid Models of Convolutional Neural Network and Recurrent Neural Network’, *BioMedInformatics*, 3(2), pp. 478–492. doi: 10.3390/biomedinformatics3020033.

Hodnesdal, C. et al. (2013) ‘Rapidly upsloping ST-segment on exercise ECG: A marker of reduced coronary heart disease mortality risk’, *European Journal of Preventive Cardiology*, 20(4), pp. 541–548. doi: 10.1177/2047487312444370.

Hollenberg, S. M. and Nathan, S. (2005) ‘Myocardial infarction’, *Surgical Critical Care, Second Edition*, 6(4), pp. 367–384. doi: 10.29309/tpmj/2017.24.09.814.

Holte, R. C. (1993) ‘Very Simple Classification Rules Perform Well on Most Commonly Used Datasets’, *Machine Learning*, 11, pp. 63–91.



- Hossin, M. and Sulaiman, M. . (2015) ‘A Review on Evaluation Metrics for Data Classification Evaluations’, *International Journal of Data Mining & Knowledge Management Process*, 5(2), pp. 01–11. doi: 10.5121/ijdkp.2015.5201.
- Huang, J. and Ling, C. X. (2005) ‘Using AUC and accuracy in evaluating learning algorithms’, *IEEE Transactions on Knowledge and Data Engineering*, 17(3), pp. 299–310. doi: 10.1109/TKDE.2005.50.
- Jenkal, W. *et al.* (2015) ‘An Efficient Method of ECG Signals Denoising Based on an Adaptive Algorithm Using Mean Filter and an Adaptive Dual Threshold Filter’, *International Review on Computers and Software (IRECOS)*, 10(11), pp. 1089–1095. doi: <https://doi.org/10.15866/irecos.v10i11.7821>.
- Jenkal, W. *et al.* (2016) ‘An efficient algorithm of ECG signal denoising using the adaptive dual threshold filter and the discrete wavelet transform’, *Biocybernetics and Biomedical Engineering*. Nałęcz Institute of Biocybernetics and Biomedical Engineering of the Polish Academy of Sciences, 36(3), pp. 499–508. doi: 10.1016/j.bbe.2016.04.001.
- Kass, G. V. (1980) ‘An Exploratory Technique for Investigating Large Quantities of Categorical Data’, *Journal of the Royal Statistical Society. Series C (Applied Statistics)*, 29(2), pp. 119–127.
- Lelawati, I., Arif, A. and Nopriadi (2016) *PENERAPAN SUPPORT VECTOR MACHINES PADA PENGGOLONGAN CITRA SEL DARAH PUTIH*. Universitas Gadjah Mada. Available at: <https://etd.repository.ugm.ac.id/pemelitian/detail/93954>.
- Liu, K. *et al.* (2024) ‘SRTNet: Scanning, Reading, and Thinking Network for myocardial infarction detection and localization[Formula presented]’, *Expert Systems with Applications*. Elsevier Ltd, 240(May 2022). doi: 10.1016/j.eswa.2023.122402.
- London, A. J. (2019) ‘Artificial Intelligence and Black-Box Medical Decisions: Accuracy versus Explainability’, *Hastings Center Report*, 49(1), pp. 15–21. doi: 10.1002/hast.973.
- Lu, P. *et al.* (2021) ‘KecNet: A Light Neural Network for Arrhythmia Classification Based on Knowledge Reinforcement’, *Journal of Healthcare Engineering*, 2021. doi: 10.1155/2021/6684954.
- Lund-Andersen, C. *et al.* (2018) ‘Precision of automated QRS duration measurement in patients treated with cardiac resynchronization therapy’, *Journal of Interventional Cardiac Electrophysiology*. Journal of Interventional Cardiac Electrophysiology, 52(1), pp. 103–110. doi: 10.1007/s10840-018-0334-2.
- Maharani, E. *et al.* (2018) *Elektrokardiografi Konsep Dasar dan Praktik Klinik*. 1st



edn. Edited by E. Maharani. Yogyakarta: Gadjah Mada University Press.

Mahmoudinejad, S. and Safdarian, N. (2021) ‘Evaluating morphological features of electrocardiogram signals for diagnosing of myocardial infarction using classification-based feature selection’, *Journal of Medical Signals and Sensors*, 11(2), pp. 79–91. doi: 10.4103/jmss.JMSS\_12\_20.

Manishdavi, A. and Rafie, M. (2023) ‘Automatic diagnosis of ischemic heart disease using combined classifiers’, *Multimedia Tools and Applications*. Multimedia Tools and Applications, 82(21), pp. 33135–33159. doi: 10.1007/s11042-023-14834-y.

Markus, A. F., Kors, J. A. and Rijnbeek, P. R. (2021) ‘The role of explainability in creating trustworthy artificial intelligence for health care: A comprehensive survey of the terminology, design choices, and evaluation strategies’, *Journal of Biomedical Informatics*. Elsevier Inc., 113(December 2020), p. 103655. doi: 10.1016/j.jbi.2020.103655.

Miller, T. (2017) ‘Explanation in artificial intelligence: Insights from the social sciences’, *arXiv*.

Mohan, H. (2005) *Textbook of Pathology*. 5th Editio. New Delhi: Jaypee Brothers medical publishers ltd.

Mohd Razali, N. and Bee Wah, Y. (2011) ‘Power comparisons of Shapiro-Wilk, Kolmogorov-Smirnov, Lilliefors and Anderson-Darling tests’, *Journal of Statistical Modeling and Analytics*, 2(1), pp. 21–33. Available at: [https://www.nbi.dk/~petersen/Teaching/Stat2017/Power\\_Comparisons\\_of\\_Shapiro-Wilk\\_Kolmogorov-Smirn.pdf](https://www.nbi.dk/~petersen/Teaching/Stat2017/Power_Comparisons_of_Shapiro-Wilk_Kolmogorov-Smirn.pdf).

Molnar, C. (2021) *Interpretable Machine Learning: A Guide for Making Black Box Models Explainable*. Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License. Available at: <https://christophm.github.io/>.

Moody, G. B. and Mark, R. G. (2001) ‘The impact of the MIT-BIH arrhythmia database’, *IEEE Engineering in Medicine and Biology Magazine*, 20(3), pp. 45–50. doi: 10.1109/51.932724.

Moran, G. (no date) *Cardiology Teaching Package, The University of Nottingham*. Available at: <https://www.nottingham.ac.uk/nursing/practice/resources/cardiology/acs/changes.php> (Accessed: 4 February 2024).

Myint, K. L., Cho, A. A. and Win, A. M. (2019) ‘CLASSIFICATION OF C4 . 5 AND CART ALGORITHMS USING DECISION TREE METHOD’, 5(2), pp. 1936–1940.

Nguyen, T. D., Ho, T. B. and Shimodaira, H. (2001) ‘A scalable algorithm for rule post-pruning of large decision trees’, *Lecture Notes in Artificial Intelligence (Subseries of Lecture Notes in Computer Science)*, 2035, pp.



467–476. doi: 10.1007/3-540-45357-1\_49.

- Ojha, N. and Dhamoon, A. S. (2023) *Myocardial Infarction*. StatPearls Publishing LLC. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK537076/>.
- Palma, L. De *et al.* (2023) ‘ECG wave segmentation algorithm for complete P-QRS-T detection’, *2023 IEEE International Symposium on Medical Measurements and Applications, MeMeA 2023 - Conference Proceedings*. IEEE, pp. 1–6. doi: 10.1109/MeMeA57477.2023.10171894.
- Patil, H. T. and Holambe, R. S. (2013) ‘New approach of threshold estimation for denoising ECG signal using wavelet transform’, *2013 Annual IEEE India Conference, INDICON 2013*. IEEE, (1), pp. 1–4. doi: 10.1109/INDCON.2013.6726038.
- Paul, A. *et al.* (2023) ‘Development Of Automated Cardiac Arrhythmia Detection Methods Using Single Channel ECG Signal’, pp. 1–17. Available at: <http://arxiv.org/abs/2308.02405>.
- Pawlak, Z. (1991) *Rough sets: Theoretical aspects of reasoning about data*. 1st edn. Edited by W. Leinfellner and G. Eberlein. Netherlands: Kluwer Academic Publishers. doi: 10.1016/s0967-0661(96)90021-0.
- Quinlan, J. R. (1986) ‘Induction of decision trees’, *Machine Learning*, 1(1), pp. 81–106. doi: 10.1007/bf00116251.
- Quinlan, J. R. (1987) ‘Generating Production Rules From Decision Trees’, *IJCAI International Joint Conference on Artificial Intelligence*, 1, pp. 304–307.
- Quinlan, J. R. (1993) *C4.5: Programs for Machine Learning*. San Mateo, California: Morgan Kaufmann Publishers, Inc.:
- Rakotomamonjy, A. (2004) ‘Optimizing Area Under Roc Curve with SVMs’, *Unknown*, pp. 71–80.
- Reynara, F. J., Carolina, S. and Simbolon, I. N. (2022) ‘The Comparison of C4.5 and CART (Classification and Regression Tree) Algorithm in Classification of Occupation for Fresh Graduate’. doi: 10.4108/eai.27-11-2021.2315527.
- Salerno, S. M., Alguire, P. C. and Waxman, H. S. (2003) ‘Competency in Interpretation of 12-Lead Electrocardiograms: A Summary and Appraisal of Published Evidence Background: There have been many proposals for objective’, pp. 43–45. Available at: [www.annals.org](http://www.annals.org).
- Sameni, R. *et al.* (2007) ‘A nonlinear Bayesian filtering framework for ECG denoising’, *IEEE Transactions on Biomedical Engineering*, 54(12), pp. 2172–2185. doi: 10.1109/TBME.2007.897817.
- Sattar, Y. and Chhabra, L. (2023) ‘Electrocardiogram’, in *Bookshelf-StatPearls [Internet]*. StatPearls Publishing LLC. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK549803/>.



- Serengil, S. I. (2018) *A Step By Step C4.5 Decision Tree Example*. Available at: <https://sefiks.com/2018/05/13/a-step-by-step-c4-5-decision-tree-example/>.
- Setiawan, N. A. et al. (2022) ‘Classification of arrhythmia’s ECG signal using cascade transparent classifier’, *Journal of Intelligent and Fuzzy Systems*, 42(2), pp. 1015–1025. doi: 10.3233/JIFS-189768.
- De Silva, S. et al. (2019) ‘A Rule-Based System for ADHD Identification using Eye Movement Data’, *MERCon 2019 - Proceedings, 5th International Multidisciplinary Moratuwa Engineering Research Conference*. IEEE, pp. 538–543. doi: 10.1109/MERCon.2019.8818865.
- Singh, N. and Singh, P. (2019) ‘Cardiac Arrhythmia Classification Using Machine Learning Techniques’, *Engineering Vibration, Communication and Information Processing*. Springer Singapore, 478, pp. 523–535. doi: 10.1007/978-981-13-1642-5.
- Singh, S. (2014) ‘Comparative Study Id3 , Cart and C4 . 5 Decision Tree Algorithm : a Survey’, *International Journal of Advanced Information Science and Technology (IJAIST)*, 27(27), pp. 97–103. doi: 10.15693/ijaist/2014.v3i7.47-52.
- Siuly, S., Li, Y. and Zhang, Y. (2016) *EEG Signal Analysis and Classification*. doi: 978-3-319-47653-7.
- Slowinski, R. (1992) *Intelligent Decision Support: Handbook of Applications and Advances of the Rough Set Theory*. Dordrecht: Kluwer Academic Publishers.
- Śmigiel, S. (2022) ‘ECG Classification Using Orthogonal Matching Pursuit and Machine Learning’, *Sensors*, 22(13). doi: 10.3390/s22134960.
- Śmigiel, S., Pałczyński, K. and Ledziński, D. (2021) ‘Deep learning techniques in the classification of ecg signals using r-peak detection based on the ptb-xl dataset’, *Sensors*, 21(24), pp. 1–18. doi: 10.3390/s21248174.
- Song, Y. Y. and Lu, Y. (2015) ‘Decision tree methods: applications for classification and prediction’, *Shanghai Archives of Psychiatry*, 27(2), pp. 130–135. doi: 10.11919/j.issn.1002-0829.215044.
- Strothoff, N. and Strothoff, C. (2019) ‘Detecting and interpreting myocardial infarction using fully convolutional neural networks’, *Physiological Measurement*, 40(1), pp. 1–11. doi: 10.1088/1361-6579/aaf34d.
- Subasi, A. (2019) *Feature Extraction and Dimension Reduction, Practical Guide for Biomedical Signals Analysis Using Machine Learning Techniques*. doi: 10.1016/b978-0-12-817444-9.00004-0.
- Susi and Hermaningsih (2021) *Elektrokardiografi*. Semarang: Universitas Diponegoro.
- Syafriani, D. et al. (2023) ‘Buku Ajar Statistik Uji Beda Untuk Penelitian



Pendidikan (Cara Dan Pengolahannya Dengan SPSS)', *Cv.Eureka Media Aksara*, pp. 1–50.

Turbé, H. *et al.* (2023) 'Evaluation of post-hoc interpretability methods in time-series classification', *Nature Machine Intelligence*. Springer US, 5(3), pp. 250–260. doi: 10.1038/s42256-023-00620-w.

Vellido, A. (2020) 'The importance of interpretability and visualization in machine learning for applications in medicine and health care', *Neural Computing and Applications*. Springer London, 32(24), pp. 18069–18083. doi: 10.1007/s00521-019-04051-w.

Wagner, P. *et al.* (2020) 'PTB-XL, a large publicly available electrocardiography dataset', *Scientific Data*. Springer US, 7(1), pp. 1–15. doi: 10.1038/s41597-020-0495-6.

World Heart Federation (2023) 'World Heart Report 2023: Confronting the World's Number One Killer', pp. 1–52.

Wu, T. K. *et al.* (2011) 'Rough sets as a knowledge discovery and classification tool for the diagnosis of students with learning disabilities', *International Journal of Computational Intelligence Systems*, 4(1), pp. 29–43. doi: 10.1080/18756891.2011.9727761.

Xun, L. and Zheng, G. (2013) 'ECG Signal Feature Selection for Emotion Recognition', *TELKOMNIKA Indonesian Journal of Electrical Engineering*, 11(3), pp. 1363–1370. doi: 10.11591/telkomnika.v11i3.2215.

Yeh, Y. C. and Wang, W. J. (2008) 'QRS complexes detection for ECG signal: The Difference Operation Method', *Computer Methods and Programs in Biomedicine*, 91(3), pp. 245–254. doi: 10.1016/j.cmpb.2008.04.006.