



DAFTAR PUSTAKA

- [1] E. Bou Assi, D. K. Nguyen, S. Rihana, and M. Sawan, “Towards accurate prediction of epileptic seizures: A review,” *Biomedical Signal Processing and Control*, vol. 34, pp. 144–157, apr 2017. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S1746809417300277>
- [2] Yayasan Epilepsi Indonesia, *Out of Shadow*, 1st ed. IPB Press, 2013.
- [3] ——, *Bunga Rampai Epilepsi Di Indonesia*. Jakarta: Balai Penerbit FKUI, 2004.
- [4] World Health Organization, *WHO | Epilepsy: a public health imperative*, 2019. [Online]. Available: https://www.who.int/mental_health/neurology/epilepsy/report/_/2019/en/
- [5] ——, “Epilepsy: Keyfacts,” 2018. [Online]. Available: <http://www.who.int/news-room/fact-sheets/detail/epilepsy>
- [6] Menteri Kesehatan Republik Indonesia, “Keputusan Menteri Kesehatan Republik Indonesia No.367 Tahun 2017,” 2017.
- [7] R. S. Fisher, W. v. E. Boas, W. Blume, C. Elger, P. Genton, P. Lee, and J. Engel, “Epileptic Seizures and Epilepsy: Definitions Proposed by the International League Against Epilepsy (ILAE) and the International Bureau for Epilepsy (IBE),” *Epilepsia*, vol. 46, no. 4, pp. 470–472, apr 2005. [Online]. Available: <http://doi.wiley.com/10.1111/j.0013-9580.2005.66104.x>
- [8] D. J. Thurman, E. Beghi, C. E. Begley, A. T. Berg, J. R. Buchhalter, D. Ding, D. C. Hesdorffer, W. A. Hauser, L. Kazis, R. Kobau, B. Kroner, D. Labiner, K. Liow, G. Logroscino, M. T. Medina, C. R. Newton, K. Parko, A. Paschal, P.-M. Preux, J. W. Sander, A. Selassie, W. Theodore, T. Tomson, and S. Wiebe, “Standards for epidemiologic studies and surveillance of epilepsy,” *Epilepsia*, vol. 52, no. SUPPL. 7, pp. 2–26, sep 2011. [Online]. Available: <http://doi.wiley.com/10.1111/j.1528-1167.2011.03121.x>
- [9] B. S. Chang and D. H. Lowenstein, “Epilepsy,” *New England Journal of Medicine*, vol. 349, no. 13, pp. 1257–1266, sep 2003. [Online]. Available: <http://www.nejm.org/doi/abs/10.1056/NEJMra022308>
- [10] B. Litt and J. Echaz, “Prediction of epileptic seizures,” *The Lancet Neurology*, vol. 1, no. 1, pp. 22–30, may 2002. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S1474442202000030>



- [11] E. Niedermeyer and F. L. D. Silva, *Electroencephalography: Basic Principles, Clinical Applications, and Related Fields*, fifth edit ed. Lippincott Williams and Wilkins, 2005.
- [12] K. Lehnertz, F. Mormann, T. Kreuz, R. Andrzejak, C. Rieke, P. David, and C. Elger, “Seizure prediction by nonlinear EEG analysis,” *IEEE Engineering in Medicine and Biology Magazine*, vol. 22, no. 1, pp. 57–63, jan 2003. [Online]. Available: <http://ieeexplore.ieee.org/document/1191451/>
- [13] T. N. Alotaiby, S. A. Alshebeili, F. E. A. El-Samie, A. Alabdulrazak, and E. Alkhnaian, “Channel selection and seizure detection using a statistical approach,” in *2016 5th International Conference on Electronic Devices, Systems and Applications (ICEDSA)*. IEEE, dec 2016, pp. 1–4. [Online]. Available: <http://ieeexplore.ieee.org/document/7818505/>
- [14] S. Sanei and J. Chambers, *EEG Signal Processing*. West Sussex, England: John Wiley & Sons Ltd., sep 2007. [Online]. Available: <http://doi.wiley.com/10.1002/9780470511923>
- [15] U. R. Acharya, V. K. Sudarshan, S. Q. Rong, Z. Tan, C. M. Lim, J. E. Koh, S. Nayak, and S. V. Bhandary, “Automated detection of premature delivery using empirical mode and wavelet packet decomposition techniques with uterine electromyogram signals,” *Computers in Biology and Medicine*, vol. 85, pp. 33–42, jun 2017. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S0010482517300999>
- [16] D. Cho, B. Min, J. Kim, and B. Lee, “EEG-Based Prediction of Epileptic Seizures Using Phase Synchronization Elicited from Noise-Assisted Multivariate Empirical Mode Decomposition,” *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 25, no. 8, pp. 1309–1318, aug 2017. [Online]. Available: <http://ieeexplore.ieee.org/document/7593373/>
- [17] Y. Paul, “Various epileptic seizure detection techniques using biomedical signals: a review,” *Brain Informatics*, vol. 5, no. 2, p. 6, dec 2018. [Online]. Available: <https://doi.org/10.1186/s40708-018-0084-z>
- [18] M. E. Weinand, L. P. Carter, W. F. El-Saadany, P. J. Sioutos, D. M. Labiner, and K. J. Oommen, “Cerebral blood flow and temporal lobe epileptogenicity,” *Neurosurgical Focus*, vol. 1, no. 5, p. E5, nov 1996. [Online]. Available: <https://thejns.org/view/journals/neurosurg-focus/1/5/article-pE5.xml>



- [19] C. Baumgartner, W. Series, F. Leutmezer, E. Pataraia, S. Aull, T. Czech, U. Pietrzky, A. Relic, and I. Podreka, “Preictal SPECT in temporal lobe epilepsy: Regional cerebral blood flow is increased prior to electroencephalography-seizure onset,” *Journal of Nuclear Medicine*, vol. 39, no. 6, pp. 978–982, 1998.
- [20] P. D. Adelson, E. Nemoto, M. Scheuer, M. Painter, J. Morgan, and H. Yonas, “Noninvasive Continuous Monitoring of Cerebral Oxygenation Periictally Using Near-Infrared Spectroscopy: A Preliminary Report,” *Epilepsia*, vol. 40, no. 11, pp. 1484–1489, nov 1999. [Online]. Available: <http://doi.wiley.com/10.1111/j.1528-1157.1999.tb02030.x>
- [21] R. Badawy, R. Macdonell, G. Jackson, and S. Berkovic, “The periictal state: cortical excitability changes within 24 h of a seizure,” *Brain*, vol. 132, no. 4, pp. 1013–1021, apr 2009. [Online]. Available: <https://academic.oup.com/brain/article-lookup/doi/10.1093/brain/awp017>
- [22] P. Federico, D. F. Abbott, R. S. Briellmann, A. S. Harvey, and G. D. Jackson, “Functional MRI of the pre-ictal state,” *Brain*, vol. 128, no. 8, pp. 1811–1817, aug 2005. [Online]. Available: <http://academic.oup.com/brain/article/128/8/1811/481362/Functional-MRI-of-the-preictal-state>
- [23] V. Novak, A. L. Reeves, P. Novak, P. A. Low, and F. W. Sharbrough, “Time-frequency mapping of R–R interval during complex partial seizures of temporal lobe origin,” *Journal of the Autonomic Nervous System*, vol. 77, no. 2-3, pp. 195–202, sep 1999. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S0165183899000442>
- [24] D. H. Kerem and A. B. Geva, “Forecasting epilepsy from the heart rate signal,” *Medical & Biological Engineering & Computing*, vol. 43, no. 2, pp. 230–239, apr 2005. [Online]. Available: <http://link.springer.com/10.1007/BF02345960>
- [25] T. N. Alotaiby, S. A. Alshebeili, F. M. Alotaibi, and S. R. Alrshoud, “Epileptic Seizure Prediction Using CSP and LDA for Scalp EEG Signals,” *Computational Intelligence and Neuroscience*, vol. 2017, pp. 1–11, 2017. [Online]. Available: <https://www.hindawi.com/journals/cin/2017/1240323/>
- [26] P. Geethanjali and K. K. Ray, “A Low-Cost Real-Time Research Platform for EMG Pattern Recognition-Based Prosthetic Hand,” *IEEE/ASME Transactions on Mechatronics*, vol. 20, no. 4, pp. 1948–1955, aug 2015. [Online]. Available: <http://ieeexplore.ieee.org/document/6922555/>



- [27] A. Sharmila, "Epilepsy detection from EEG signals: a review," *Journal of Medical Engineering & Technology*, vol. 42, no. 5, pp. 368–380, jul 2018. [Online]. Available: <https://doi.org/10.1080/03091902.2018.1513576> <https://www.tandfonline.com/doi/full/10.1080/03091902.2018.1513576>
- [28] B. Land and D. Elias, "Measuring the " Complexity " of a time series," 2005. [Online]. Available: <https://people.ece.cornell.edu/land/PROJECTS/Complexity/index.html>
- [29] W.-C. Weng, G. J. A. Jiang, C.-F. Chang, W.-Y. Lu, C.-Y. Lin, W.-T. Lee, and J.-S. Shieh, "Complexity of Multi-Channel Electroencephalogram Signal Analysis in Childhood Absence Epilepsy," *PLOS ONE*, vol. 10, no. 8, p. e0134083, aug 2015. [Online]. Available: <https://dx.plos.org/10.1371/journal.pone.0134083>
- [30] C. Bandt and B. Pompe, "Permutation Entropy: A Natural Complexity Measure for Time Series," *Physical Review Letters*, vol. 88, no. 17, p. 174102, apr 2002. [Online]. Available: <https://link.aps.org/doi/10.1103/PhysRevLett.88.174102>
- [31] M. Zanin, L. Zunino, O. A. Rosso, and D. Papo, "Permutation Entropy and Its Main Biomedical and Econophysics Applications: A Review," *Entropy*, vol. 14, no. 8, pp. 1553–1577, aug 2012. [Online]. Available: <http://www.mdpi.com/1099-4300/14/8/1553>
- [32] X. Yan and M. Jia, "Intelligent fault diagnosis of rotating machinery using improved multiscale dispersion entropy and mRMR feature selection," *Knowledge-Based Systems*, vol. 163, pp. 450–471, jan 2019. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S0950705118304556>
- [33] B. Fadlallah, B. Chen, A. Keil, and J. Príncipe, "Weighted-permutation entropy: A complexity measure for time series incorporating amplitude information," *Physical Review E*, vol. 87, no. 2, p. 022911, feb 2013. [Online]. Available: <https://link.aps.org/doi/10.1103/PhysRevE.87.022911>
- [34] M. Rostaghi and H. Azami, "Dispersion Entropy: A Measure for Time-Series Analysis," *IEEE Signal Processing Letters*, vol. 23, no. 5, pp. 610–614, 2016.
- [35] H. Azami and J. Escudero, "Amplitude- and fluctuation-based dispersion entropy," *Entropy*, vol. 20, no. 3, pp. 1–21, 2018.
- [36] K. Mohanchandra, S. Saha, and K. S. Murthy, "Evidence of Chaos in EEG Signals: An Application to BCI," in *Studies in Fuzziness and Soft Computing*, ser. Studies in Fuzziness and Soft Computing, A. T. Azar and S. Vaidyanathan,



- Eds. Cham: Springer International Publishing, 2016, vol. 337, pp. 609–625. [Online]. Available: http://www.scopus.com/inward/record.url?eid=2-s2.0-84963812178&partnerID=tZOTx3y1http://link.springer.com/10.1007/978-3-319-30340-6http://link.springer.com/10.1007/978-3-319-30340-6{_}25
- [37] A. T. Azar, *Studies in Computational Intelligence 581: Chaos Modeling and Control Systems Design*, 2015. [Online]. Available: <https://link.springer.com/content/pdf/10.1007/978-3-319-13132-0.pdf>
- [38] M. Sharma and R. B. Pachori, “A Novel Approach to Detect Epileptic Seizures using A Combination of Tunable-Q Wavelet Transform and Fractal Dimension,” *Journal of Mechanics in Medicine and Biology*, vol. 17, no. 07, p. 1740003, nov 2017. [Online]. Available: <https://www.worldscientific.com/doi/abs/10.1142/S0219519417400036>
- [39] D. K. Kumar, S. Poosapadi Arjunan, and B. Aliahmad, *Fractals: applications in biological signalling and image processing*. CRC Press, 2016.
- [40] K. Rasheed, A. Qayyum, J. Qadir, S. Sivathamboo, P. Kwan, L. Kuhlmann, T. O’Brien, and A. Razi, “Machine Learning for Predicting Epileptic Seizures Using EEG Signals: A Review,” *IEEE Reviews in Biomedical Engineering*, vol. 14, pp. 139–155, 2021. [Online]. Available: <https://ieeexplore.ieee.org/document/9139257/>
- [41] M. Bandarabadi, J. Rasekhi, C. A. Teixeira, M. R. Karami, and A. Dourado, “On the proper selection of preictal period for seizure prediction,” *Epilepsy & Behavior*, vol. 46, pp. 158–166, may 2015. [Online]. Available: <http://dx.doi.org/10.1016/j.yebeh.2015.03.010https://linkinghub.elsevier.com/retrieve/pii/S1525505015001158>
- [42] J. Niederhauser, R. Esteller, J. Echauz, G. Vachtsevanos, and B. Litt, “Detection of seizure precursors from depth-EEG using a sign periodogram transform,” *IEEE Transactions on Biomedical Engineering*, vol. 50, no. 4, pp. 449–458, apr 2003. [Online]. Available: <http://ieeexplore.ieee.org/document/1193778/>
- [43] M. L. Van Quyen, J. Martinerie, M. Baulac, and F. Varela, “Anticipating epileptic seizures in real time by a non-linear analysis of similarity between EEG recordings,” *NeuroReport*, vol. 10, no. 10, pp. 2149–2155, jul 1999. [Online]. Available: <http://journals.lww.com/00001756-199907130-00028>
- [44] Y. Park, L. Luo, K. K. Parhi, and T. Netoff, “Seizure prediction with spectral power of EEG using cost-sensitive support vector machines,”



Epilepsia, vol. 52, no. 10, pp. 1761–1770, oct 2011. [Online]. Available: <http://doi.wiley.com/10.1111/j.1528-1167.2011.03138.x>

- [45] J. J. Howbert, E. E. Patterson, S. M. Stead, B. Brinkmann, V. Vasoli, D. Crepeau, C. H. Vite, B. Sturges, V. Ruedebusch, J. Mavoori, K. Leyde, W. D. Sheffield, B. Litt, and G. A. Worrell, “Forecasting Seizures in Dogs with Naturally Occurring Epilepsy,” *PLoS ONE*, vol. 9, no. 1, p. e81920, jan 2014. [Online]. Available: <https://dx.plos.org/10.1371/journal.pone.0081920>
- [46] C. Alexandre Teixeira, B. Direito, M. Bandarabadi, M. Le Van Quyen, M. Valderrama, B. Schelter, A. Schulze-Bonhage, V. Navarro, F. Sales, and A. Dourado, “Epileptic seizure predictors based on computational intelligence techniques: A comparative study with 278 patients,” *Computer Methods and Programs in Biomedicine*, vol. 114, no. 3, pp. 324–336, may 2014. [Online]. Available: <http://dx.doi.org/10.1016/j.cmpb.2014.02.007><https://linkinghub.elsevier.com/retrieve/pii/S0169260714000571>
- [47] F. Mormann, T. Kreuz, C. Rieke, R. G. Andrzejak, A. Kraskov, P. David, C. E. Elger, and K. Lehnertz, “On the predictability of epileptic seizures,” *Clinical Neurophysiology*, vol. 116, no. 3, pp. 569–587, mar 2005. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S1388245704004638>
- [48] M. Bandarabadi, C. A. Teixeira, J. Rasekhi, and A. Dourado, “Epileptic seizure prediction using relative spectral power features,” *Clinical Neurophysiology*, vol. 126, no. 2, pp. 237–248, feb 2015. [Online]. Available: <http://dx.doi.org/10.1016/j.clinph.2014.05.022><https://linkinghub.elsevier.com/retrieve/pii/S1388245714002971>
- [49] S. Cang and D. Partridge, “Feature ranking and best feature subset using mutual information,” *Neural Computing and Applications*, vol. 13, no. 3, pp. 175–184, sep 2004. [Online]. Available: <http://link.springer.com/10.1007/s00521-004-0400-9>
- [50] L. Boubchir, B. Daachi, and V. Pangracious, “A review of feature extraction for EEG epileptic seizure detection and classification,” in *2017 40th International Conference on Telecommunications and Signal Processing (TSP)*. IEEE, jul 2017, pp. 456–460. [Online]. Available: <http://ieeexplore.ieee.org/document/8076027/>
- [51] P. Boonyakanont, A. Lek-uthai, K. Chomtho, and J. Songsiri, “A review of feature extraction and performance evaluation in epileptic seizure detection



using EEG,” *Biomedical Signal Processing and Control*, vol. 57, p. 101702, 2020. [Online]. Available: <https://doi.org/10.1016/j.bspc.2019.101702>

- [52] E. Alickovic, J. Kevric, and A. Subasi, “Performance evaluation of empirical mode decomposition, discrete wavelet transform, and wavelet packed decomposition for automated epileptic seizure detection and prediction,” *Biomedical Signal Processing and Control*, vol. 39, pp. 94–102, jan 2018. [Online]. Available: <http://dx.doi.org/10.1016/j.bspc.2017.07.022><https://linkinghub.elsevier.com/retrieve/pii/S1746809417301544>
- [53] M. Mursalin, Y. Zhang, Y. Chen, and N. V. Chawla, “Automated epileptic seizure detection using improved correlation-based feature selection with random forest classifier,” *Neurocomputing*, vol. 241, pp. 204–214, jun 2017. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S0925231217303442>
- [54] K. Biju and M. Jibukumar, “Ictal EEG Classification based on State Space Modeling of Intrinsic Mode functions,” *Procedia Computer Science*, vol. 125, pp. 468–475, 2018. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S1877050917328259>
- [55] A. Baldominos and C. Ramon-Lozano, “Optimizing EEG energy-based seizure detection using genetic algorithms,” in *2017 IEEE Congress on Evolutionary Computation (CEC)*. IEEE, jun 2017, pp. 2338–2345. [Online]. Available: <http://ieeexplore.ieee.org/document/7969588/>
- [56] E. Tessy, P. M. Shanir, and S. Manafuddin, “Time domain analysis of epileptic EEG for seizure detection,” in *2016 International Conference on Next Generation Intelligent Systems (ICNGIS)*. IEEE, sep 2016, pp. 1–4. [Online]. Available: <https://ieeexplore.ieee.org/document/7854034/>
- [57] R. Sharma and R. B. Pachori, “Classification of epileptic seizures in EEG signals based on phase space representation of intrinsic mode functions,” *Expert Systems with Applications*, vol. 42, no. 3, pp. 1106–1117, feb 2015. [Online]. Available: <http://dx.doi.org/10.1016/j.eswa.2014.08.030><https://linkinghub.elsevier.com/retrieve/pii/S0957417414005120>
- [58] S. Janjarasjitt, “Epileptic seizure classifications of single-channel scalp EEG data using wavelet-based features and SVM,” *Medical & Biological Engineering & Computing*, vol. 55, no. 10, pp. 1743–1761, oct 2017. [Online]. Available: <http://link.springer.com/10.1007/s11517-017-1613-2>



- [59] U. R. Acharya, H. Fujita, V. K. Sudarshan, S. Bhat, and J. E. Koh, “Application of entropies for automated diagnosis of epilepsy using EEG signals: A review,” *Knowledge-Based Systems*, vol. 88, pp. 85–96, 2015. [Online]. Available: <http://dx.doi.org/10.1016/j.knosys.2015.08.004>
- [60] Z. Mei, X. Zhao, H. Chen, and W. Chen, “Bio-Signal Complexity Analysis in Epileptic Seizure Monitoring: A Topic Review,” *Sensors*, vol. 18, no. 6, p. 1720, may 2018. [Online]. Available: <http://www.mdpi.com/1424-8220/18/6/1720>
- [61] M. D. Costa, C.-K. Peng, and A. L. Goldberger, “Multiscale Analysis of Heart Rate Dynamics: Entropy and Time Irreversibility Measures,” *Cardiovascular Engineering*, vol. 8, no. 2, pp. 88–93, jun 2008. [Online]. Available: <http://link.springer.com/10.1007/s10558-007-9049-1>
- [62] U. R. Acharya, S. V. Sree, P. C. A. Ang, R. Yanti, and J. S. Suri, “Application of non-linear and wavelet based features for the automated identification of epileptic EEG signals,” *International Journal of Neural Systems*, vol. 22, no. 2, 2012.
- [63] U. R. Acharya, F. Molinari, S. V. Sree, S. Chattopadhyay, K.-H. Ng, and J. S. Suri, “Automated diagnosis of epileptic EEG using entropies,” *Biomedical Signal Processing and Control*, vol. 7, no. 4, pp. 401–408, jul 2012. [Online]. Available: <http://dx.doi.org/10.1016/j.bspc.2011.07.007https://linkinghub.elsevier.com/retrieve/pii/S1746809411000838>
- [64] R. Sharma, R. Pachori, and U. Acharya, “Application of Entropy Measures on Intrinsic Mode Functions for the Automated Identification of Focal Electroencephalogram Signals,” *Entropy*, vol. 17, no. 2, pp. 669–691, feb 2015. [Online]. Available: <http://www.mdpi.com/1099-4300/17/2/669>
- [65] S. M. Pincus, “Approximate entropy as a measure of system complexity,” *Proceedings of the National Academy of Sciences*, vol. 88, no. 6, pp. 2297–2301, mar 1991. [Online]. Available: <http://www.pnas.org/cgi/doi/10.1073/pnas.88.6.2297>
- [66] J. S. Richman and J. R. Moorman, “Physiological time-series analysis using approximate entropy and sample entropy,” *American Journal of Physiology-Heart and Circulatory Physiology*, vol. 278, no. 6, pp. H2039–H2049, jun 2000. [Online]. Available: <https://www.physiology.org/doi/10.1152/ajpheart.2000.278.6.H2039>



- [67] S. Wang, J. Zhang, F. Feng, X. Qian, L. Jiang, J. Huang, B. Liu, J. Li, Y. Xia, and P. Feng, “Fractal Analysis on Artificial Profiles and Electroencephalography Signals by Roughness Scaling Extraction Algorithm,” *IEEE Access*, vol. 7, pp. 89 265–89 277, 2019. [Online]. Available: <https://ieeexplore.ieee.org/document/8754680/>
- [68] M. Sabeti, S. Katebi, and R. Boostani, “Entropy and complexity measures for EEG signal classification of schizophrenic and control participants,” *Artificial Intelligence in Medicine*, vol. 47, no. 3, pp. 263–274, nov 2009. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S0933365709000530>
- [69] T. Higuchi, “Approach to an irregular time series on the basis of the fractal theory,” *Physica D: Nonlinear Phenomena*, vol. 31, no. 2, pp. 277–283, jun 1988. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/0167278988900814>
- [70] M. Li, W. Chen, and T. Zhang, “Automatic epileptic EEG detection using DT-CWT-based non-linear features,” *Biomedical Signal Processing and Control*, vol. 34, pp. 114–125, apr 2017. [Online]. Available: <http://dx.doi.org/10.1016/j.bspc.2017.01.010> <https://linkinghub.elsevier.com/retrieve/pii/S1746809417300186>
- [71] T. Zhang, Z. Han, X. Chen, and W. Chen, “Subbands and cumulative sum of subbands based nonlinear features enhance the performance of epileptic seizure detection,” *Biomedical Signal Processing and Control*, vol. 69, no. 5988, p. 102827, 2021. [Online]. Available: <https://doi.org/10.1016/j.bspc.2021.102827>
- [72] M. J. Katz, “Fractals and the analysis of waveforms,” *Computers in Biology and Medicine*, vol. 18, no. 3, pp. 145–156, jan 1988. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/0010482588900418>
- [73] K. Jindal, R. Upadhyay, and H. S. Singh, “Application of tunable-Q wavelet transform based nonlinear features in epileptic seizure detection,” *Analog Integrated Circuits and Signal Processing*, vol. 100, no. 2, pp. 437–452, 2019. [Online]. Available: <https://doi.org/10.1007/s10470-019-01424-y>
- [74] D. P. Dash, M. H. Kolekar, and K. Jha, “Multi-channel EEG based automatic epileptic seizure detection using iterative filtering decomposition and Hidden Markov Model,” *Computers in Biology and Medicine*, vol. 116, no. October 2019, p. 103571, jan 2020. [Online]. Available: <https://doi.org/10.1016/j.combiomed.2019.103571> <https://linkinghub.elsevier.com/retrieve/pii/S0010482519304251>



- [75] S. M. Usman, M. Usman, and S. Fong, “Epileptic Seizures Prediction Using Machine Learning Methods,” *Computational and Mathematical Methods in Medicine*, vol. 2017, pp. 1–10, 2017. [Online]. Available: <https://www.hindawi.com/journals/cmmm/2017/9074759/>
- [76] Y. Yang, M. Zhou, Y. Niu, C. Li, R. Cao, B. Wang, P. Yan, Y. Ma, and J. Xiang, “Epileptic seizure prediction based on permutation entropy,” *Frontiers in Computational Neuroscience*, vol. 12, no. July, 2018.
- [77] M. Costa, A. L. Goldberger, and C.-K. Peng, “Multiscale Entropy Analysis of Complex Physiologic Time Series,” *Physical Review Letters*, vol. 89, no. 6, p. 068102, jul 2002. [Online]. Available: <https://link.aps.org/doi/10.1103/PhysRevLett.89.068102>
- [78] M. Costa and A. Goldberger, “Generalized Multiscale Entropy Analysis: Application to Quantifying the Complex Volatility of Human Heartbeat Time Series,” *Entropy*, vol. 17, no. 3, pp. 1197–1203, mar 2015. [Online]. Available: <http://www.mdpi.com/1099-4300/17/3/1197>
- [79] H. Amoud, H. Snoussi, D. Hewson, M. Doussot, and J. Duchêne, “Intrinsic mode entropy for nonlinear discriminant analysis,” *IEEE Signal Processing Letters*, vol. 14, no. 5, pp. 297–300, 2007.
- [80] Y. Jiang, C. K. Peng, and Y. Xu, “Hierarchical entropy analysis for biological signals,” *Journal of Computational and Applied Mathematics*, vol. 236, no. 5, pp. 728–742, 2011. [Online]. Available: <http://dx.doi.org/10.1016/j.cam.2011.06.007>
- [81] M. Hu and H. Liang, “Adaptive multiscale entropy analysis of multivariate neural data,” *IEEE Transactions on Biomedical Engineering*, vol. 59, no. 1, pp. 12–15, 2012.
- [82] H. B. Xie, W. X. He, and H. Liu, “Measuring time series regularity using nonlinear similarity-based sample entropy,” *Physics Letters, Section A: General, Atomic and Solid State Physics*, vol. 372, no. 48, pp. 7140–7146, 2008. [Online]. Available: <http://dx.doi.org/10.1016/j.physleta.2008.10.049>
- [83] J. F. Valencia, A. Porta, M. Vallverdú, F. Clarià, R. Baranowski, E. Orłowska-Baranowska, and P. Caminal, “Refined multiscale entropy: Application to 24-h holter recordings of heart period variability in healthy and aortic stenosis subjects,” *IEEE Transactions on Biomedical Engineering*, vol. 56, no. 9, pp. 2202–2213, 2009.



- [84] S. D. Wu, C. W. Wu, S. G. Lin, C. C. Wang, and K. Y. Lee, “Time series analysis using composite multiscale entropy,” *Entropy*, vol. 15, no. 3, pp. 1069–1084, 2013.
- [85] S.-D. Wu, C.-W. Wu, K.-Y. Lee, and S.-G. Lin, “Modified multiscale entropy for short-term time series analysis,” *Physica A: Statistical Mechanics and its Applications*, vol. 392, no. 23, pp. 5865–5873, dec 2013. [Online]. Available: <http://dx.doi.org/10.1016/j.physa.2013.07.075><https://linkinghub.elsevier.com/retrieve/pii/S0378437113007061>
- [86] Y. C. Chang, H. T. Wu, H. R. Chen, A. B. Liu, J. J. Yeh, M. T. Lo, J. H. Tsao, C. J. Tang, I. T. Tsai, and C. K. Sun, “Application of a modified entropy computational method in assessing the complexity of pulse wave velocity signals in healthy and diabetic subjects,” *Entropy*, vol. 16, no. 7, pp. 4032–4043, 2014.
- [87] A. Rizal, R. Hidayat, and H. A. Nugroho, “Hjorth descriptor measurement on multidistance signal level difference for lung sound classification,” *Journal of Telecommunication, Electronic and Computer Engineering*, vol. 9, no. 2, pp. 23–27, 2017.
- [88] S. D. Wu, C. W. Wu, S. G. Lin, K. Y. Lee, and C. K. Peng, “Analysis of complex time series using refined composite multiscale entropy,” *Physics Letters, Section A: General, Atomic and Solid State Physics*, vol. 378, no. 20, pp. 1369–1374, 2014. [Online]. Available: <http://dx.doi.org/10.1016/j.physleta.2014.03.034>
- [89] H. Azami, M. Rostaghi, D. Abasolo, and J. Escudero, “Refined Composite Multiscale Dispersion Entropy and its Application to Biomedical Signals,” *IEEE Transactions on Biomedical Engineering*, vol. 64, no. 12, pp. 2872–2879, 2017.
- [90] H. Azami and J. Escudero, “Coarse-graining approaches in univariate multiscale sample and dispersion entropy,” *Entropy*, vol. 20, no. 2, pp. 1–20, 2018.
- [91] H. Azami, S. E. Arnold, S. Sanei, Z. Chang, G. Sapiro, J. Escudero, and A. S. Gupta, “Multiscale Fluctuation-Based Dispersion Entropy and Its Applications to Neurological Diseases,” *IEEE Access*, vol. 7, pp. 68 718–68 733, 2019. [Online]. Available: <https://ieeexplore.ieee.org/document/8721041/>
- [92] Sukriti, M. Chakraborty, and D. Mitra, “A novel automated seizure detection system from EMD-MSPCA denoised EEG: Refined composite multiscale sample, fuzzy and permutation entropies based scheme,” *Biomedical Signal*



Processing and Control, vol. 67, no. February, p. 102514, 2021. [Online].
Available: <https://doi.org/10.1016/j.bspc.2021.102514>

- [93] ——, “Automated detection of epileptic seizures using multiscale and refined composite multiscale dispersion entropy,” *Chaos, Solitons and Fractals*, vol. 146, p. 110939, 2021. [Online]. Available: <https://doi.org/10.1016/j.chaos.2021.110939>
- [94] G. Singh, M. Kaur, and B. Singh, “Detection of Epileptic Seizure EEG Signal Using Multiscale Entropies and Complete Ensemble Empirical Mode Decomposition,” *Wireless Personal Communications*, vol. 116, no. 1, pp. 845–864, 2021. [Online]. Available: <https://doi.org/10.1007/s11277-020-07742-z>
- [95] T. Tuncer, S. Dogan, and U. Rajendra Acharya, “Automated EEG signal classification using chaotic local binary pattern,” *Expert Systems with Applications*, vol. 182, no. May, p. 115175, 2021. [Online]. Available: <https://doi.org/10.1016/j.eswa.2021.115175>
- [96] M. Sharma, R. B. Pachori, and U. Rajendra Acharya, “A new approach to characterize epileptic seizures using analytic time-frequency flexible wavelet transform and fractal dimension,” *Pattern Recognition Letters*, vol. 94, pp. 172–179, jul 2017. [Online]. Available: <http://dx.doi.org/10.1016/j.patrec.2017.03.023><https://linkinghub.elsevier.com/retrieve/pii/S0167865517300995>
- [97] J. Jirka, M. Prauzek, O. Krejcar, and K. Kuca, “Automatic epilepsy detection using fractal dimensions segmentation and GP-SVM classification,” *Neuropsychiatric Disease and Treatment*, vol. Volume 14, pp. 2439–2449, sep 2018.
- [98] R. Bose, S. Pratiher, and S. Chatterjee, “Detection of epileptic seizure employing a novel set of features extracted from multifractal spectrum of electroencephalogram signals,” *IET Signal Processing*, vol. 13, no. 2, pp. 157–164, 2019.
- [99] Z. Zhang, T. Wen, W. Huang, M. Wang, and C. Li, “Automatic epileptic seizure detection in EEGs using MF-DFA, SVM based on cloud computing,” *Journal of X-Ray Science and Technology*, vol. 25, no. 2, pp. 261–272, mar 2017. [Online]. Available: <https://www.medra.org/servlet/aliasResolver?alias=iospress{&}doi=10.3233/XST-17258>
- [100] A. Bhattacharyya, R. Pachori, A. Upadhyay, and U. Acharya, “Tunable-Q Wavelet Transform Based Multiscale Entropy Measure for Automated



Classification of Epileptic EEG Signals,” *Applied Sciences*, vol. 7, no. 4, p. 385, apr 2017. [Online]. Available: <http://www.mdpi.com/2076-3417/7/4/385>

- [101] P. Fergus, A. Hussain, D. Hignett, D. Al-Jumeily, K. Abdel-Aziz, and H. Hamdan, “A machine learning system for automated whole-brain seizure detection,” *Applied Computing and Informatics*, vol. 12, no. 1, pp. 70–89, jan 2016. [Online]. Available: <http://dx.doi.org/10.1016/j.aci.2015.01.001><https://linkinghub.elsevier.com/retrieve/pii/S2210832715000022>
- [102] H. Namazi, V. V. Kulish, J. Hussaini, J. Hussaini, A. Delaviz, F. Delaviz, S. Habibi, and S. Ramezanpoor, “A signal processing based analysis and prediction of seizure onset in patients with epilepsy,” *Oncotarget*, vol. 7, no. 1, pp. 342–350, 2016.
- [103] F. Redelico, F. Traversaro, M. García, W. Silva, O. Rosso, and M. Risk, “Classification of Normal and Pre-Ictal EEG Signals Using Permutation Entropies and a Generalized Linear Model as a Classifier,” *Entropy*, vol. 19, no. 2, p. 72, feb 2017. [Online]. Available: <http://www.mdpi.com/1099-4300/19/2/72>
- [104] K. Fei, W. Wang, Q. Yang, and S. Tang, “Chaos feature study in fractional Fourier domain for preictal prediction of epileptic seizure,” *Neurocomputing*, vol. 249, pp. 290–298, aug 2017. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S0925231217306896>
- [105] K. M. Tsiouris, V. C. Pezoulas, M. Zervakis, S. Konitsiotis, D. D. Koutsouris, and D. I. Fotiadis, “A Long Short-Term Memory deep learning network for the prediction of epileptic seizures using EEG signals,” *Computers in Biology and Medicine*, vol. 99, pp. 24–37, aug 2018. [Online]. Available: <https://doi.org/10.1016/j.compbiomed.2018.05.019><https://linkinghub.elsevier.com/retrieve/pii/S001048251830132X>
- [106] M. Savadkoohi, T. Oladunni, and L. Thompson, “A machine learning approach to epileptic seizure prediction using Electroencephalogram (EEG) Signal,” *Biocybernetics and Biomedical Engineering*, vol. 40, no. 3, pp. 1328–1341, 2020. [Online]. Available: <https://doi.org/10.1016/j.bbe.2020.07.004>
- [107] B. Buyukcakir, F. Elmaz, and A. Y. Mutlu, “Hilbert Vibration Decomposition-based epileptic seizure prediction with neural network,” *Computers in Biology and Medicine*, vol. 119, no. December 2019, p. 103665, apr 2020. [Online]. Available: <https://doi.org/10.1016/j.compbiomed.2020.103665><https://linkinghub.elsevier.com/retrieve/pii/S0010482520300585>



- [108] S. M. Usman, S. Khalid, and Z. Bashir, “Epileptic seizure prediction using scalp electroencephalogram signals,” *Biocybernetics and Biomedical Engineering*, vol. 41, no. 1, pp. 211–220, 2021. [Online]. Available: <https://doi.org/10.1016/j.bbe.2021.01.001>
- [109] Q. Zhang, J. Ding, W. Kong, Y. Liu, Q. Wang, and T. Jiang, “Epilepsy prediction through optimized multidimensional sample entropy and Bi-LSTM,” *Biomedical Signal Processing and Control*, vol. 64, no. November 2020, p. 102293, 2021. [Online]. Available: <https://doi.org/10.1016/j.bspc.2020.102293>
- [110] R. S. Fisher, J. H. Cross, J. A. French, N. Higurashi, E. Hirsch, F. E. Jansen, L. Lagae, S. L. Moshé, J. Peltola, E. Roulet Perez, I. E. Scheffer, and S. M. Zuberi, “Operational classification of seizure types by the International League Against Epilepsy: Position Paper of the ILAE Commission for Classification and Terminology,” *Epilepsia*, vol. 58, no. 4, pp. 522–530, apr 2017. [Online]. Available: <http://doi.wiley.com/10.1111/epi.13670>
- [111] S. Shorvon, *Handbook of Epilepsy Treatment*, third edit ed. John Wiley & Sons, Ltd., Publication, 2010.
- [112] International League Against Epilepsy, “Guidelines for Epidemiologic Studies on Epilepsy. Commission on Epidemiology and Prognosis, International League Against Epilepsy,” *Epilepsia*, vol. 34, no. 4, pp. 592–596, jul 1993. [Online]. Available: <http://doi.wiley.com/10.1111/j.1528-1157.1993.tb00433.x>
- [113] J. Engel, “A Proposed Diagnostic Scheme for People with Epileptic Seizures and with Epilepsy: Report of the ILAE Task Force on Classification and Terminology,” *Epilepsia*, vol. 42, no. 6, pp. 796–803, dec 2001. [Online]. Available: <http://doi.wiley.com/10.1046/j.1528-1157.2001.10401.x>
- [114] J. J. Claus, B. W. Ongerboer de Visser, G. J. M. Walstra, A. Hijdra, B. Verbeeten, and W. A. van Gool, “Quantitative Spectral Electroencephalography in Predicting Survival in Patients With Early Alzheimer Disease,” *Archives of Neurology*, vol. 55, no. 8, p. 1105, aug 1998. [Online]. Available: <http://archneur.jamanetwork.com/article.aspx?doi=10.1001/archneur.55.8.1105>
- [115] O. Rosso, M. Martin, and A. Plastino, “Brain electrical activity analysis using wavelet-based informational tools,” *Physica A: Statistical Mechanics and its Applications*, vol. 313, no. 3-4, pp. 587–608, oct 2002. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S0378437102009585>



- [116] B. Litt, R. Esteller, J. Echauz, M. D'Alessandro, R. Shor, T. Henry, P. Pennell, C. Epstein, R. Bakay, M. Dichter, and G. Vachtsevanos, "Epileptic Seizures May Begin Hours in Advance of Clinical Onset," *Neuron*, vol. 30, no. 1, pp. 51–64, apr 2001. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S0896627301002628>
- [117] R. G. Andrzejak, K. Lehnertz, F. Mormann, C. Rieke, P. David, and C. E. Elger, "Indications of nonlinear deterministic and finite-dimensional structures in time series of brain electrical activity: Dependence on recording region and brain state," *Physical Review E*, vol. 64, no. 6, p. 061907, nov 2001. [Online]. Available: <https://link.aps.org/doi/10.1103/PhysRevE.64.061907>
- [118] R. J. Martis, U. Rajendra Acharya, J. H. Tan, A. Petznick, R. Yanti, C. K. Chua, E. Y. K. Ng, and L. Tong, "Application of Empirical Mode Decomposition (EMD) for Automated Detection of Epilepsy using EEG Signals," *International Journal of Neural Systems*, vol. 22, no. 06, p. 1250027, dec 2012. [Online]. Available: <https://www.worldscientific.com/doi/abs/10.1142/S012906571250027X>
- [119] E. J. Speckmann, C. E. Elger, and A. Gorji, "Neurophysiologic basis of EEG and DC potentials," *Niedermeyer's Electroencephalography: Basic Principles, Clinical Applications, and Related Fields: Sixth Edition*, pp. 17–31, 2012.
- [120] M. B. Sterman, L. R. Macdonald, and R. K. Stone, "Biofeedback Training of the Sensorimotor Electroencephalogram Rhythm in Man: Effects on Epilepsy," *Epilepsia*, vol. 15, no. 3, pp. 395–416, sep 1974. [Online]. Available: <http://doi.wiley.com/10.1111/j.1528-1157.1974.tb04016.x>
- [121] M. Nuwer, "Assessment of digital EEG, quantitative EEG, and EEG brain mapping: Report of the American Academy of Neurology and the American Clinical Neurophysiology Society," *Neurology*, vol. 49, no. 1, pp. 277–292, jul 1997. [Online]. Available: <http://www.neurology.org/cgi/content/abstract/49/1/277>
- [122] S. Siuly, Y. Li, and Y. Zhang, *EEG Signal Analysis and Classification*, ser. Health Information Science. Cham: Springer International Publishing, 2016. [Online]. Available: <http://link.springer.com/10.1007/978-3-319-47653-7>
- [123] D. P. Subha, P. K. Joseph, R. Acharya U, and C. M. Lim, "EEG Signal Analysis: A Survey," *Journal of Medical Systems*, vol. 34, no. 2, pp. 195–212, apr 2010. [Online]. Available: <http://link.springer.com/10.1007/s10916-008-9231-z>



- [124] T. N. Alotaiby, S. A. Alshebeili, T. Alshawi, I. Ahmad, and F. E. Abd El-Samie, “EEG seizure detection and prediction algorithms: a survey,” *EURASIP Journal on Advances in Signal Processing*, vol. 2014, no. 1, p. 183, dec 2014. [Online]. Available: <https://asp-eurasipjournals.springeropen.com/articles/10.1186/1687-6180-2014-183>
- [125] M. S. P.P., Y. U.Khan, and O. Farooq, “Time Domain Analysis of EEG for Automatic Seizure Detection,” *Emerging Trends in Electrical And Electronics Engineering (ETEEE-2015)*, no. February, pp. 1–5, 2015.
- [126] P. P. M. Shanir, K. A. Khan, Y. U. Khan, O. Farooq, and H. Adeli, “Automatic Seizure Detection Based on Morphological Features Using One-Dimensional Local Binary Pattern on Long-Term EEG,” *Clinical EEG and Neuroscience*, vol. 49, no. 5, pp. 351–362, sep 2018. [Online]. Available: <http://journals.sagepub.com/doi/10.1177/1550059417744890>
- [127] A. Mert and A. Akan, “Seizure onset detection based on frequency domain metric of empirical mode decomposition,” *Signal, Image and Video Processing*, vol. 12, no. 8, pp. 1489–1496, nov 2018. [Online]. Available: <https://doi.org/10.1007/s11760-018-1304-y>
- [128] L. Hussain, “Detecting epileptic seizure with different feature extracting strategies using robust machine learning classification techniques by applying advance parameter optimization approach,” *Cognitive Neurodynamics*, vol. 12, no. 3, pp. 271–294, jun 2018. [Online]. Available: <https://doi.org/10.1007/s11571-018-9477-1>
- [129] M. Akin, “Comparison of Wavelet Transform and FFT Methods in the Analysis of EEG Signals,” *Journal of Medical Systems*, vol. 26, pp. 241–247, 2002. [Online]. Available: <https://link.springer.com/article/10.1023/A:1015075101937>
- [130] A. Omidvarnia, M. Mesbah, M. Pedersen, and G. Jackson, “Range Entropy: A Bridge between Signal Complexity and Self-Similarity,” *Entropy*, vol. 20, no. 12, p. 962, dec 2018. [Online]. Available: <http://www.mdpi.com/1099-4300/20/12/962>
- [131] U. R. Acharya, S. Vinitha Sree, G. Swapna, R. J. Martis, and J. S. Suri, “Automated EEG analysis of epilepsy: A review,” *Knowledge-Based Systems*, vol. 45, pp. 147–165, jun 2013. [Online]. Available: <http://dx.doi.org/10.1016/j.knosys.2013.02.014>



- [132] W. Chaovalltwongse, L. Iasemidis, P. Pardalos, P. Carney, D.-S. Shiu, and J. Sackellares, “Performance of a seizure warning algorithm based on the dynamics of intracranial EEG,” *Epilepsy Research*, vol. 64, no. 3, pp. 93–113, may 2005. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S0920121105000525>
- [133] M. Le Van Quyen, J. Soss, V. Navarro, R. Robertson, M. Chavez, M. Baulac, and J. Martinerie, “Preictal state identification by synchronization changes in long-term intracranial EEG recordings,” *Clinical Neurophysiology*, vol. 116, no. 3, pp. 559–568, mar 2005. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S1388245704004626>
- [134] N. Kannathal, U. R. Acharya, C. Lim, and P. Sadasivan, “Characterization of EEG—A comparative study,” *Computer Methods and Programs in Biomedicine*, vol. 80, no. 1, pp. 17–23, oct 2005. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S0169260705001227>
- [135] S. Li, W. Zhou, Q. Yuan, and Y. Liu, “Seizure Prediction Using Spike Rate of Intracranial EEG,” *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 21, no. 6, pp. 880–886, nov 2013. [Online]. Available: <https://ieeexplore.ieee.org/document/6626552/>
- [136] S. S. Viglione and G. O. Walsh, “Proceedings: Epileptic seizure prediction.” *Electroencephalography and clinical neurophysiology*, vol. 39, no. 4, pp. 435–6, oct 1975. [Online]. Available: <http://www.ncbi.nlm.nih.gov/pubmed/51767>
- [137] F. Mormann, R. G. Andrzejak, C. E. Elger, and K. Lehnertz, “Seizure prediction: the long and winding road,” *Brain*, vol. 130, no. 2, pp. 314–333, feb 2007. [Online]. Available: <https://academic.oup.com/brain/article-lookup/doi/10.1093/brain/awl241>
- [138] Z. Rogowski, I. Gath, and E. Bental, “On the prediction of epileptic seizures,” *Biological Cybernetics*, vol. 42, no. 1, pp. 9–15, nov 1981. [Online]. Available: <http://link.springer.com/10.1007/BF00335153>
- [139] Y. Salant, I. Gath, and O. Henriksen, “Prediction of epileptic seizures from two-channel EEG,” *Medical & Biological Engineering & Computing*, vol. 36, no. 5, pp. 549–556, sep 1998. [Online]. Available: <http://link.springer.com/10.1007/BF02524422>
- [140] L. D. Iasemidis, J. Chris Sackellares, H. P. Zaveri, and W. J. Williams, “Phase space topography and the Lyapunov exponent of electrocorticograms in partial



seizures,” *Brain Topography*, vol. 2, no. 3, pp. 187–201, 1990. [Online]. Available: <http://link.springer.com/10.1007/BF01140588>

- [141] L. Chisci, A. Mavino, G. Perferi, M. Sciandrone, C. Anile, G. Colicchio, and F. Fuggetta, “Real-Time Epileptic Seizure Prediction Using AR Models and Support Vector Machines,” *IEEE Transactions on Biomedical Engineering*, vol. 57, no. 5, pp. 1124–1132, may 2010. [Online]. Available: <http://ieeexplore.ieee.org/document/5415597/>
- [142] P.-N. Yu, S. A. Naiini, C. N. Heck, C. Y. Liu, D. Song, and T. W. Berger, “A sparse Laguerre-Volterra autoregressive model for seizure prediction in temporal lobe epilepsy,” in *2016 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, vol. 2016-Octob. IEEE, aug 2016, pp. 1664–1667. [Online]. Available: <http://ieeexplore.ieee.org/document/7591034/>
- [143] S. Mohamadi, H. Amindavar, and S. A. Tayaranian Hosseini, “ARIMA-GARCH modeling for epileptic seizure prediction,” in *2017 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. IEEE, mar 2017, pp. 994–998. [Online]. Available: <https://ieeexplore.ieee.org/document/7952305/>
- [144] M. Z. Parvez and M. Paul, “Seizure Prediction Using Undulated Global and Local Features,” *IEEE Transactions on Biomedical Engineering*, vol. 64, no. 1, pp. 208–217, jan 2017. [Online]. Available: <http://ieeexplore.ieee.org/document/7451217/>
- [145] E. Bou Assi, D. K. Nguyen, S. Rihana, and M. Sawan, “A Functional-Genetic Scheme for Seizure Forecasting in Canine Epilepsy,” *IEEE Transactions on Biomedical Engineering*, vol. 65, no. 6, pp. 1339–1348, jun 2018. [Online]. Available: <https://ieeexplore.ieee.org/document/8036226/>
- [146] H. G. Kang, M. D. Costa, A. A. Priplata, O. V. Starobinets, A. L. Goldberger, C.-K. Peng, D. K. Kiely, L. A. Cupples, and L. A. Lipsitz, “Frailty and the Degradation of Complex Balance Dynamics During a Dual-Task Protocol,” *The Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, vol. 64A, no. 12, pp. 1304–1311, dec 2009. [Online]. Available: <https://academic.oup.com/biomedgerontology/article-lookup/doi/10.1093/gerona/glp113>
- [147] P. Paramanathan and R. Uthayakumar, “Application of fractal theory in analysis of human electroencephalographic signals,” *Computers in Biology*



and Medicine, vol. 38, no. 3, pp. 372–378, mar 2008. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S001048250700193X>

- [148] H. Ocak, “Automatic detection of epileptic seizures in EEG using discrete wavelet transform and approximate entropy,” *Expert Systems with Applications*, vol. 36, no. 2, pp. 2027–2036, mar 2009. [Online]. Available: <http://dx.doi.org/10.1016/j.eswa.2007.12.065>
<https://linkinghub.elsevier.com/retrieve/pii/S0957417407006203>
- [149] M. Syakir, R. Jaafar, K. Chellappan, R. Remli, and W. Asyraf, “Complexity Analysis on EEG Signal via Lempel-Ziv and Approximate Entropy : Effect of Multiresolution Analysis,” *International Medical Device and Technology Conference 2017*, vol. 1, no. C, pp. 236–240, 2017.
- [150] C. E. Shannon, “A Mathematical Theory of Communication,” *Bell System Technical Journal*, vol. 27, no. 3, pp. 379–423, jul 1948. [Online]. Available: <https://ieeexplore.ieee.org/document/6773024>
- [151] M. Ribeiro, T. Henriques, L. Castro, A. Souto, L. Antunes, C. Costa-Santos, and A. Teixeira, “The entropy universe,” *Entropy*, vol. 23, no. 2, pp. 1–35, 2021.
- [152] B. B. Mandelbrot, *The Fractal Geometry of Nature*. New York: W.H Freeman and Company, 1983.
- [153] I. Wijayanto, R. Hartanto, and H. A. Nugroho, “Comparison of empirical mode decomposition and coarse-grained procedure for detecting preictal and ictal condition in electroencephalography signal,” *Informatics in Medicine Unlocked*, vol. 19, p. 100325, 2020. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S2352914820300137>
- [154] N. E. Huang, Z. Shen, S. R. Long, M. C. Wu, H. H. Shih, Q. Zheng, N.-C. Yen, C. C. Tung, and H. H. Liu, “The empirical mode decomposition and the Hilbert spectrum for nonlinear and non-stationary time series analysis,” *Proceedings of the Royal Society of London. Series A: Mathematical, Physical and Engineering Sciences*, vol. 454, no. 1971, pp. 903–995, mar 1998. [Online]. Available: <https://royalsocietypublishing.org/doi/10.1098/rspa.1998.0193>
- [155] G. Rilling, P. Flandrin, and P. Goncalves, “On empirical mode decomposition and its algorithms,” *IEEE-EURASIP workshop on nonlinear signal and image processing*, vol. 3, pp. 8–11, 2003.



- [156] Y. Chen, “Sparse Representation,” in *Computer Vision*. Boston, MA: Springer US, 2014, pp. 748–748. [Online]. Available: http://link.springer.com/10.1007/978-0-387-31439-6{_}100096
- [157] S. Hadiyoso, T. L. E. Mengko, and H. Zakaria, “Complexity Analysis of EEG Signal in Patients with Cognitive Impairment Using the Hjorth Descriptor,” *Proceedings - 2019 2nd International Conference on Bioinformatics, Biotechnology and Biomedical Engineering - Bioinformatics and Biomedical Engineering, BiomIC 2019*, pp. 0–4, 2019.
- [158] I. R. Dwi Saputro, N. D. Maryati, S. R. Solihati, I. Wijayanto, S. Hadiyoso, and R. Patmasari, “Seizure Type Classification on EEG Signal using Support Vector Machine,” *Journal of Physics: Conference Series*, vol. 1201, no. 1, p. 012065, may 2019. [Online]. Available: <https://iopscience.iop.org/article/10.1088/1742-6596/1201/1/012065>
- [159] A. Zahra, N. Kanwal, N. ur Rehman, S. Ehsan, and K. D. McDonald-Maier, “Seizure detection from EEG signals using Multivariate Empirical Mode Decomposition,” *Computers in Biology and Medicine*, vol. 88, no. March, pp. 132–141, sep 2017. [Online]. Available: <http://dx.doi.org/10.1016/j.compbiomed.2017.07.010><https://linkinghub.elsevier.com/retrieve/pii/S0010482517302330>
- [160] D. Tripathi and N. Agrawal, “Epileptic Seizure Detection Using Empirical Mode Decomposition Based Fuzzy Entropy and Support Vector Machine,” in *Lecture Notes in Electrical Engineering*, 2019, vol. 502, pp. 109–118. [Online]. Available: http://link.springer.com/10.1007/978-981-13-0311-1{_}20
- [161] H. Bhardwaj, A. Sakalle, A. Bhardwaj, and A. Tiwari, “Classification of electroencephalogram signal for the detection of epilepsy using Innovative Genetic Programming,” *Expert Systems*, vol. 36, no. 1, p. e12338, feb 2019. [Online]. Available: <http://doi.wiley.com/10.1111/exsy.12338>
- [162] S. G. Mallat, “A theory for multiresolution signal decomposition: The wavelet representation,” *Fundamental Papers in Wavelet Theory*, vol. I, no. 7, pp. 494–513, 2009.
- [163] S. L. Brunton and J. N. Kutz, *Data-Driven Science and Engineering*. Cambridge University Press, jan 2019. [Online]. Available: <https://www.cambridge.org/core/product/identifier/9781108380690/type/book>



- [164] J. S. Weszka, C. R. Dyer, and A. Rosenfeld, “A Comparative Study of Texture Measures for Terrain Classification,” *IEEE Transactions on Systems, Man and Cybernetics*, vol. SMC-6, no. 4, pp. 269–285, 1976.
- [165] S. M. Bowyer, “Coherence a measure of the brain networks: past and present,” *Neuropsychiatric Electrophysiology*, vol. 2, no. 1, pp. 1–12, 2016. [Online]. Available: <http://dx.doi.org/10.1186/s40810-015-0015-7>
- [166] T. Alotaiby, F. E. A. El-Samie, S. A. Alshebeili, and I. Ahmad, “A review of channel selection algorithms for EEG signal processing,” *EURASIP Journal on Advances in Signal Processing*, vol. 2015, no. 1, p. 66, dec 2015. [Online]. Available: <http://dx.doi.org/10.1186/s13634-015-0251-9> <https://asp-eurasipjournals.springeropen.com/articles/10.1186/s13634-015-0251-9>
- [167] E. N. Bruce, “Biomedical signal processing and biometrics.” John Wiley & Sons, 2001.
- [168] P. L. Nunez and R. Srinivasan, “A theoretical basis for standing and traveling brain waves measured with human EEG with implications for an integrated consciousness,” *Clinical Neurophysiology*, vol. 117, no. 11, pp. 2424–2435, nov 2006. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S1388245706013678>
- [169] W. Singer, “Neuronal Synchrony: A Versatile Code for the Definition of Relations?” *Neuron*, vol. 24, no. 1, pp. 49–65, sep 1999. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/B9780123708809002875> <https://linkinghub.elsevier.com/retrieve/pii/S0896627300808211>
- [170] C. P. Warren, S. Hu, M. Stead, B. H. Brinkmann, M. R. Bower, and G. A. Worrell, “Synchrony in Normal and Focal Epileptic Brain: The Seizure Onset Zone is Functionally Disconnected,” *Journal of Neurophysiology*, vol. 104, no. 6, pp. 3530–3539, dec 2010. [Online]. Available: <https://www.physiology.org/doi/10.1152/jn.00368.2010>
- [171] J. Song, D. M. Tucker, T. Gilbert, J. Hou, C. Mattson, P. Luu, and M. D. Holmes, “Methods for Examining Electrophysiological Coherence in Epileptic Networks,” *Frontiers in Neurology*, vol. 4, no. May, 2013. [Online]. Available: <http://journal.frontiersin.org/article/10.3389/fneur.2013.00055/abstract>
- [172] D. K. Ravish, S. Shenbaga Devi, and S. G. Krishnamoorthy, “Wavelet analysis of EEG for seizure detection: Coherence and phase synchrony estimation,” *Biomedical Research (India)*, vol. 26, no. 3, pp. 514–524, 2015.



- [173] G. Aggarwal and T. K. Gandhi, “Prediction of Epileptic Seizures based on Mean Phase Coherence,” *bioRxiv*, jan 2017.
- [174] Z. Bian, Q. Li, L. Wang, C. Lu, S. Yin, and X. Li, “Relative power and coherence of EEG series are related to amnestic mild cognitive impairment in diabetes,” *Frontiers in Aging Neuroscience*, vol. 6, no. FEB, pp. 1–9, 2014. [Online]. Available: <http://journal.frontiersin.org/article/10.3389/fnagi.2014.00011/abstract>
- [175] M. H. Myers, A. Padmanabha, G. Hossain, A. L. de Jongh Curry, and C. D. Blaha, “Seizure Prediction and Detection via Phase and Amplitude Lock Values,” *Frontiers in Human Neuroscience*, vol. 10, no. MAR2016, pp. 1–9, mar 2016. [Online]. Available: <http://journal.frontiersin.org/Article/10.3389/fnhum.2016.00080/abstract>
- [176] K. Samiee, P. Kovács, and M. Gabbouj, “Epileptic seizure detection in long-term EEG records using sparse rational decomposition and local Gabor binary patterns feature extraction,” *Knowledge-Based Systems*, vol. 118, pp. 228–240, feb 2017. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S0950705116304804>
- [177] A. Shoeb, “Application of machine learning to epileptic seizure onset detection and treatment,” Ph.D. dissertation, 2009. [Online]. Available: <http://dspace.mit.edu/handle/1721.1/54669>
- [178] V. Shah, E. von Weltin, S. Lopez, J. R. McHugh, L. Veloso, M. Golmohammadi, I. Obeid, and J. Picone, “The Temple University Hospital Seizure Detection Corpus,” *Frontiers in Neuroinformatics*, vol. 12, no. November, pp. 1–6, nov 2018. [Online]. Available: <https://www.frontiersin.org/article/10.3389/fninf.2018.00083/full>
- [179] M. Golmohammadi, S. Ziyabari, V. Shah, S. L. de Diego, I. Obeid, and J. Picone, “Deep Architectures for Automated Seizure Detection in Scalp EEGs,” dec 2017. [Online]. Available: <http://arxiv.org/abs/1712.09776>
- [180] H. Fauzi, M. A. Azzam, M. I. Shapiai, M. Kyoso, U. Khairuddin, and T. Komura, “Energy extraction method for EEG channel selection,” *TELKOMNIKA (Telecommunication Computing Electronics and Control)*, vol. 17, no. 5, p. 2561, oct 2019. [Online]. Available: <http://journal.uad.ac.id/index.php/TELKOMNIKA/article/view/12805>



- [181] V. L. Towle, F. Ahmad, M. Kohrman, K. Hecox, and S. Chkhenkeli, “Electrocorticographic Coherence Patterns of Epileptic Seizures,” in *Epilepsy as a Dynamic Disease*. Berlin, Heidelberg: Springer Berlin Heidelberg, 2003, vol. 16, no. 6, pp. 69–81. [Online]. Available: http://link.springer.com/10.1007/978-3-662-05048-4{_}6
- [182] J. Jeong, “EEG dynamics in patients with Alzheimer’s disease,” *Clinical Neurophysiology*, vol. 115, no. 7, pp. 1490–1505, jul 2004. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S138824570400015X>
- [183] E. St. Louis, L. Frey, J. Britton, J. Hopp, P. Korb, M. Koubeissi, W. Lievens, and E. Pestana-Knight, *Electroencephalography (EEG): An Introductory Text and Atlas of Normal and Abnormal Findings in Adults, Children, and Infants*. American Epilepsy Society, 2016. [Online]. Available: <https://www.ncbi.nlm.nih.gov/books/NBK390354/>
- [184] L. A. Aguirre, “A Tutorial introduction to nonlinear dynamics and chaos, Part II: modeling and control,” *Controle and Automacao*, vol. 7, no. 1, pp. 50–66, 1996.
- [185] P. Julkunen, L. Säisänen, M. Könönen, R. Vanninen, R. Kälviäinen, and E. Mervaala, “TMS-EEG reveals impaired intracortical interactions and coherence in Unverricht-Lundborg type progressive myoclonus epilepsy (EPM1),” *Epilepsy Research*, vol. 106, no. 1-2, pp. 103–112, 2013. [Online]. Available: <http://dx.doi.org/10.1016/j.eplepsyres.2013.04.001>
- [186] R. Shriram, V. V. Baskar, B. Martin, M. Sundhararajan, and N. Daimiwal, “Energy Distribution and Coherence-Based Changes in Normal and Epileptic Electroencephalogram.” Springer Singapore, 2019, vol. 104, pp. 625–635. [Online]. Available: <http://link.springer.com/10.1007/978-981-13-1921-1>
- [187] G. Busonera, M. Cogoni, M. Puligheddu, R. Ferri, G. Milioli, L. Parrino, F. Marrosu, and G. Zanetti, “EEG Spectral Coherence Analysis in Nocturnal Epilepsy,” *IEEE Transactions on Biomedical Engineering*, vol. 65, no. 12, pp. 2713–2719, dec 2018. [Online]. Available: <https://ieeexplore.ieee.org/document/8310595/>
- [188] B. Abbaszadeh, R. S. Fard, and M. C. Yagoub, “Application of Global Coherence Measure to Characterize Coordinated Neural Activity during Frontal and Temporal Lobe Epilepsy,” *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, vol. 2020-July, pp. 3699–3702, 2020.



- [189] S. Narasimhan, K. B. Kundassery, K. Gupta, G. W. Johnson, K. E. Wills, S. E. Goodale, K. Haas, J. D. Rolston, R. P. Naftel, V. L. Morgan, B. M. Dawant, H. F. González, and D. J. Englot, “Seizure-onset regions demonstrate high inward directed connectivity during resting-state: An SEEG study in focal epilepsy,” *Epilepsia*, vol. 61, no. 11, pp. 2534–2544, 2020.
- [190] N. An, X. Ye, Q. Liu, J. Xu, and P. Zhang, “Localization of the epileptogenic zone based on ictal stereo-electroencephalogram: Brain network and single-channel signal feature analysis,” *Epilepsy Research*, vol. 167, no. November 2019, p. 106475, 2020. [Online]. Available: <https://doi.org/10.1016/j.eplepsyres.2020.106475>
- [191] F. T. Sun, L. M. Miller, and M. D’Esposito, “Measuring temporal dynamics of functional networks using phase spectrum of fMRI data,” *NeuroImage*, vol. 28, no. 1, pp. 227–237, oct 2005. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S1053811905003939>
- [192] I. Wijayanto, R. Hartanto, and H. A. Nugroho, “Multi-distance fluctuation based dispersion fractal for epileptic seizure detection in EEG signal,” *Biomedical Signal Processing and Control*, vol. 69, no. March, p. 102938, aug 2021. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S1746809421005358>
- [193] M. Costa, A. L. Goldberger, and C.-K. Peng, “Multiscale entropy analysis of biological signals,” *Physical Review E*, vol. 71, no. 2, p. 021906, feb 2005. [Online]. Available: <https://link.aps.org/doi/10.1103/PhysRevE.71.021906>
- [194] P. Szendro, G. Vincze, and A. Szasz, “Pink-noise behaviour of biosystems,” *European Biophysics Journal*, vol. 30, no. 3, pp. 227–231, jul 2001. [Online]. Available: <http://link.springer.com/10.1007/s002490100143>
- [195] K. J. Blinowska and J. Zygierekiewicz, *Practical Biomedical Signal Analysis*. CRC Press Taylor & Francis Group, 2012.
- [196] I. Wijayanto, R. Hartanto, and H. A. Nugroho, “Complexity Based Multilevel Signal Analysis for Epileptic Seizure Detection,” in *2020 3rd International Conference on Information and Communications Technology (ICOIACT)*. IEEE, nov 2020, pp. 388–393. [Online]. Available: <https://ieeexplore.ieee.org/document/9331975/>
- [197] Y.-j. Xue, J.-x. Cao, H.-k. Du, G.-l. Zhang, and Y. Yao, “Does mode mixing matter in EMD-based highlight volume methods for hydrocarbon detection?



Experimental evidence," *Journal of Applied Geophysics*, vol. 132, pp. 193–210, sep 2016. [Online]. Available: <http://dx.doi.org/10.1016/j.jappgeo.2016.07.017><https://linkinghub.elsevier.com/retrieve/pii/S0926985116302026>

- [198] B. Xu, Y. Sheng, P. Li, Q. Cheng, and J. Wu, "Causes and classification of EMD mode mixing," *Vibroengineering PROCEDIA*, vol. 22, pp. 158–164, mar 2019. [Online]. Available: <https://www.jvejournals.com/article/20250>
- [199] K. Samiee, P. Kovacs, S. Kiranyaz, M. Gabbouj, and T. Saramaki, "Sleep stage classification using sparse rational decomposition of single channel EEG records," in *2015 23rd European Signal Processing Conference (EUSIPCO)*. IEEE, aug 2015, pp. 1860–1864. [Online]. Available: <http://ieeexplore.ieee.org/document/7362706/>
- [200] N. S. Tawfik, S. M. Youssef, and M. Kholief, "A hybrid automated detection of epileptic seizures in EEG records," *Computers & Electrical Engineering*, vol. 53, pp. 177–190, jul 2016. [Online]. Available: <http://dx.doi.org/10.1016/j.compeleceng.2015.09.001><https://linkinghub.elsevier.com/retrieve/pii/S0045790615003079>
- [201] A. R. Hassan and A. Subasi, "Automatic identification of epileptic seizures from EEG signals using linear programming boosting," *Computer Methods and Programs in Biomedicine*, vol. 136, pp. 65–77, nov 2016. [Online]. Available: <http://dx.doi.org/10.1016/j.cmpb.2016.08.013><https://linkinghub.elsevier.com/retrieve/pii/S0169260716304928>
- [202] B. Harender and R. K. Sharma, "DWT based epileptic seizure detection from EEG signal using k-NN classifier," in *2017 International Conference on Trends in Electronics and Informatics (ICETI)*. IEEE, may 2017, pp. 762–765. [Online]. Available: <https://ieeexplore.ieee.org/document/8300806/>
- [203] M. Li, W. Chen, and T. Zhang, "A novel seizure diagnostic model based on kernel density estimation and least squares support vector machine," *Biomedical Signal Processing and Control*, vol. 41, pp. 233–241, mar 2018. [Online]. Available: <http://dx.doi.org/10.1016/j.bspc.2017.12.005><https://linkinghub.elsevier.com/retrieve/pii/S1746809417302884>
- [204] P. Li, C. Karmakar, J. Yearwood, S. Venkatesh, M. Palaniswami, and C. Liu, "Detection of epileptic seizure based on entropy analysis of short-term EEG," *PLOS ONE*, vol. 13, no. 3, p. e0193691, mar 2018. [Online]. Available: <http://ieeexplore.ieee.org/document/5646824/><https://dx.plos.org/10.1371/journal.pone.0193691>



- [205] A. K. Jaiswal and H. Banka, “Epileptic seizure detection in EEG signal using machine learning techniques,” *Australasian Physical & Engineering Sciences in Medicine*, vol. 41, no. 1, pp. 81–94, mar 2018. [Online]. Available: <http://dx.doi.org/10.1007/s13246-017-0610-y>
- [206] M. Li, W. Chen, and T. Zhang, “Automatic epilepsy detection using wavelet-based nonlinear analysis and optimized SVM,” *Biocybernetics and Biomedical Engineering*, vol. 36, no. 4, pp. 708–718, 2016. [Online]. Available: <http://dx.doi.org/10.1016/j.bbe.2016.07.004><https://linkinghub.elsevier.com/retrieve/pii/S0208521616301735>
- [207] Z. Mohammadpoory, M. Nasrolahzadeh, and J. Haddadnia, “Epileptic seizure detection in EEGs signals based on the weighted visibility graph entropy,” *Seizure*, vol. 50, pp. 202–208, aug 2017. [Online]. Available: <http://dx.doi.org/10.1016/j.seizure.2017.07.001><https://linkinghub.elsevier.com/retrieve/pii/S105913111730198X>
- [208] T. Zhang, W. Chen, and M. Li, “Generalized Stockwell transform and SVD-based epileptic seizure detection in EEG using random forest,” *Biocybernetics and Biomedical Engineering*, vol. 38, no. 3, pp. 519–534, 2018. [Online]. Available: <https://doi.org/10.1016/j.bbe.2018.03.007><https://linkinghub.elsevier.com/retrieve/pii/S0208521617302577>
- [209] I. Ullah, M. Hussain, E.-u.-H. Qazi, and H. Aboalsamh, “An automated system for epilepsy detection using EEG brain signals based on deep learning approach,” *Expert Systems with Applications*, vol. 107, pp. 61–71, oct 2018. [Online]. Available: <https://doi.org/10.1016/j.eswa.2018.04.021><https://linkinghub.elsevier.com/retrieve/pii/S0957417418302513>
- [210] U. R. Acharya, S. L. Oh, Y. Hagiwara, J. H. Tan, and H. Adeli, “Deep convolutional neural network for the automated detection and diagnosis of seizure using EEG signals,” *Computers in Biology and Medicine*, vol. 100, no. July, pp. 270–278, sep 2018. [Online]. Available: <https://doi.org/10.1016/j.compbiomed.2017.09.017><https://linkinghub.elsevier.com/retrieve/pii/S0010482517303153>
- [211] Y. Qiu, W. Zhou, N. Yu, and P. Du, “Denoising Sparse Autoencoder-Based Ictal EEG Classification,” *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 26, no. 9, pp. 1717–1726, sep 2018. [Online]. Available: <https://ieeexplore.ieee.org/document/8429921/>



- [212] A. M. Karim, M. S. Güzel, M. R. Tolun, H. Kaya, and F. V. Çelebi, “A New Generalized Deep Learning Framework Combining Sparse Autoencoder and Taguchi Method for Novel Data Classification and Processing,” *Mathematical Problems in Engineering*, vol. 2018, pp. 1–13, jun 2018. [Online]. Available: <https://www.hindawi.com/journals/mpe/2018/3145947/>
- [213] T. Wen and Z. Zhang, “Deep Convolution Neural Network and Autoencoders-Based Unsupervised Feature Learning of EEG Signals,” *IEEE Access*, vol. 6, pp. 25 399–25 410, 2018. [Online]. Available: <https://ieeexplore.ieee.org/document/8355473/>
- [214] R. Akut, “Wavelet based deep learning approach for epilepsy detection,” *Health Information Science and Systems*, vol. 7, no. 1, p. 8, dec 2019. [Online]. Available: <http://link.springer.com/10.1007/s13755-019-0069-1>
- [215] Ö. Türk and M. S. Özerdem, “Epilepsy detection by using scalogram based convolutional neural network from eeg signals,” *Brain Sciences*, vol. 9, no. 5, 2019.
- [216] R. Hussein, H. Palangi, R. K. Ward, and Z. J. Wang, “Optimized deep neural network architecture for robust detection of epileptic seizures using EEG signals,” *Clinical Neurophysiology*, vol. 130, no. 1, pp. 25–37, jan 2019. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S1388245718313464>
- [217] R. Abiyev, M. Arslan, J. Bush Idoko, B. Sekeroglu, and A. Ilhan, “Identification of Epileptic EEG Signals Using Convolutional Neural Networks,” *Applied Sciences*, vol. 10, no. 12, p. 4089, jun 2020. [Online]. Available: <https://www.mdpi.com/2076-3417/10/12/4089>
- [218] A. Mansouri, S. P. Singh, and K. Sayood, “Online EEG Seizure Detection and Localization,” *Algorithms*, vol. 12, no. 9, p. 176, aug 2019. [Online]. Available: <https://www.mdpi.com/1999-4893/12/9/176>
- [219] J. Xiang, C. Li, H. Li, R. Cao, B. Wang, X. Han, and J. Chen, “The detection of epileptic seizure signals based on fuzzy entropy,” *Journal of Neuroscience Methods*, vol. 243, pp. 18–25, mar 2015. [Online]. Available: <http://dx.doi.org/10.1016/j.jneumeth.2015.01.015><https://linkinghub.elsevier.com/retrieve/pii/S0165027015000163>
- [220] K. A. Khan, S. P. P., Y. U. Khan, and O. Farooq, “A hybrid Local Binary Pattern and wavelets based approach for EEG classification for diagnosing epilepsy,”



Expert Systems with Applications, vol. 140, p. 112895, feb 2020. [Online].
Available: <https://linkinghub.elsevier.com/retrieve/pii/S0957417419306116>

- [221] L. S. Vidyaratne and K. M. Iftekharuddin, “Real-Time Epileptic Seizure Detection Using EEG,” *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 25, no. 11, pp. 2146–2156, nov 2017. [Online]. Available: <https://ieeexplore.ieee.org/document/7911296/>
- [222] A. Shoeb and J. Guttag, “Application of machine learning to epileptic seizure onset detection,” in *27th international conference on machine learning (ICML), Haifa*, 2010.
- [223] D. K. Ravish and S. S. Devi, “Automated seizure detection and spectral analysis of EEG seizure time series,” *European Journal of Scientific Research*, vol. 68, no. 1, pp. 72–82, 2012.
- [224] A. Yan, W. Zhou, Q. Yuan, S. Yuan, Q. Wu, X. Zhao, and J. Wang, “Automatic seizure detection using Stockwell transform and boosting algorithm for long-term EEG,” *Epilepsy and Behavior*, vol. 45, pp. 8–14, 2015.
- [225] S. Kiranyaz, T. Ince, M. Zabihi, and D. Ince, “Automated patient-specific classification of long-term Electroencephalography,” *Journal of Biomedical Informatics*, vol. 49, pp. 16–31, jun 2014. [Online]. Available: <http://dx.doi.org/10.1016/j.jbi.2014.02.005><https://linkinghub.elsevier.com/retrieve/pii/S1532046414000410>
- [226] Y. Yuan, G. Xun, K. Jia, and A. Zhang, “A Multi-View Deep Learning Framework for EEG Seizure Detection,” *IEEE Journal of Biomedical and Health Informatics*, vol. 23, no. 1, pp. 83–94, jan 2019. [Online]. Available: <https://ieeexplore.ieee.org/document/8470079/>
- [227] M. S. Hossain, S. U. Amin, M. Alsulaiman, and G. Muhammad, “Applying Deep Learning for Epilepsy Seizure Detection and Brain Mapping Visualization,” *ACM Transactions on Multimedia Computing, Communications, and Applications*, vol. 15, no. 1s, pp. 1–17, jan 2019. [Online]. Available: <https://dl.acm.org/doi/10.1145/3241056>
- [228] B. Bouaziz, L. Chaari, H. Batatia, and A. Quintero-Rincón, “Epileptic Seizure Detection Using a Convolutional Neural Network,” 2019, pp. 79–86. [Online]. Available: http://link.springer.com/10.1007/978-3-030-11800-6{_}9
- [229] X. Tian, Z. Deng, W. Ying, K.-S. Choi, D. Wu, B. Qin, J. Wang, H. Shen, and S. Wang, “Deep Multi-View Feature Learning for EEG-Based Epileptic



Seizure Detection," *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 27, no. 10, pp. 1962–1972, oct 2019. [Online]. Available: <https://ieeexplore.ieee.org/document/8832223/>

- [230] Z. Wei, J. Zou, J. Zhang, and J. Xu, "Automatic epileptic EEG detection using convolutional neural network with improvements in time-domain," *Biomedical Signal Processing and Control*, vol. 53, p. 101551, aug 2019. [Online]. Available: <https://doi.org/10.1016/j.bspc.2019.04.028><https://linkinghub.elsevier.com/retrieve/pii/S1746809419301259>
- [231] Y. Yuan, G. Xun, Q. Suo, K. Jia, and A. Zhang, "Wave2Vec: Deep representation learning for clinical temporal data," *Neurocomputing*, vol. 324, pp. 31–42, jan 2019. [Online]. Available: <https://doi.org/10.1016/j.neucom.2018.03.074><https://linkinghub.elsevier.com/retrieve/pii/S092523121830626X>
- [232] Y. Yuan and K. Jia, "FusionAtt: Deep Fusional Attention Networks for Multi-Channel Biomedical Signals," *Sensors*, vol. 19, no. 11, p. 2429, may 2019. [Online]. Available: <https://www.mdpi.com/1424-8220/19/11/2429>
- [233] J. Cao, J. Zhu, W. Hu, and A. Kummert, "Epileptic Signal Classification With Deep EEG Features by Stacked CNNs," *IEEE Transactions on Cognitive and Developmental Systems*, vol. 12, no. 4, pp. 709–722, dec 2020. [Online]. Available: <https://ieeexplore.ieee.org/document/8807291/>
- [234] W. Liang, H. Pei, Q. Cai, and Y. Wang, "Scalp EEG epileptogenic zone recognition and localization based on long-term recurrent convolutional network," *Neurocomputing*, vol. 396, pp. 569–576, jul 2020. [Online]. Available: <https://linkinghub.elsevier.com/retrieve/pii/S0925231219304928>
- [235] I. Wijayanto, R. Hartanto, and H. Adi, "Quantitative Analysis of Inter - and Intrahemispheric Coherence on Epileptic Electroencephalography Signal," *Journal of Medical Signals & Sensors*, 2021.