



DAFTAR PUSTAKA

- [1] E. S. Doda and E. R. Mehta, "Speech Recognition Techniques : A Review," *Int. J. Adv. Res. Comput. Sci. Softw. Eng.*, vol. 4, no. 8, pp. 944–947, 2014.
- [2] S. Sakti, P. Hutagaol, A. A. Arman, and S. Nakamura, "Indonesian Speech Recognition for Hearing and Speaking Impaired People," in *The 8th International Conference on Spoken Language Processing (ICSLP)*, 2004.
- [3] A. Hasan and S. Dardjowidjojo, *Tata Bahasa Baku Bahasa Indonesia (Indonesian Grammar)*, Vol.3. Jakarta: Balai Pustaka, 2003.
- [4] F. L. Hardjono and R. A. Fox, "Stop Consonant Characteristics: VOT and Voicing in American-Born-Indonesian Children's Stop Consonants," The Ohio State University, 2011.
- [5] R. P. Sharma, O. Farooq, and I. Khan, "Wavelet based sub-band parameters for classification of unaspirated Hindi stop consonants in initial position of CV syllables," *Int. J. Speech Technol.*, vol. 16, no. 3, pp. 323–332, 2013.
- [6] Suyanto and S. Hartati, "Design of Indonesian LVCSR using Combined Phoneme The Approaches of LVCSR," *ICTS*, pp. 191–196, 2013.
- [7] S. Hidayat, R. Hidayat, and T. B. Adji, "Speech recognition of CV-patterned indonesian syllable using MFCC, wavelet and HMM," *J. Ilm. Kursor*, vol. 8, no. 2, pp. 67–78, 2015.
- [8] Z. Shirzhiyan, E. Shamsi, A. Salar, and A. Homayoun, "Objective classification of auditory brainstem responses to consonant-vowel syllables using local discriminant bases," *Speech Commun.*, vol. 114, no. August, pp. 36–48, 2019.
- [9] U. De Sherbrooke, S. Q. Canada, V. Santini, P. Gournay, and R. Lefebvre, "A study of the perceptual relevance of the burst phase of stop consonants with implications in speech coding," *2016 IEEE 18th Int. Work. Multimed. Signal Process.*, pp. 1–6.
- [10] N. S. Nehe and R. S. Holambe, "DWT and LPC based feature extraction methods for isolated word recognition," *EURASIP J. Audio, Speech, Music Process.*, vol. 2012, no. 1, p. 7, 2012.
- [11] M. A. Anusuya and S. K. Katti, "Front end analysis of speech recognition: a review," *Int. J. Speech Technol.*, vol. 14, no. 2, pp. 99–145, Jun. 2011.
- [12] S. K. Gaikwad, B. W. Gawali, and P. Yannawar, "A Review on Speech Recognition Technique," *Int. J. Comput. Appl.*, vol. 10, no. 3, pp. 16–24, 2010.
- [13] P. Kulkarni, S. Kulkarni, S. Mulange, A. Dand, and A. N. Cheeran, "Speech recognition using wavelet packets, neural networks and support vector machines," in *2014 International Conference on Signal Propagation*



- and Computer Technology, ICSPCT 2014*, 2014, pp. 451–455.
- [14] X. Zhao, Z. Wu, J. Xu, K. Wang, and J. Niu, “Speech Signal Feature Extraction Based on Wavelet Transform,” *2011 Int. Conf. Intell. Comput. Bio-Medical Instrum.*, no. 1, pp. 179–182, 2011.
 - [15] F. B. F. Bo-zhi and Z. H. Z. Hong-bin, “Feature Extraction Using Wavelet Packet Decomposition Based on MPEG-I,” *2008 Int. Conf. Comput. Sci. Softw. Eng.*, vol. 1, pp. 1048–1052, 2008.
 - [16] P. K. Cherupalli and J. S. Kottareddy Gari, “A Wavelet based Feature Extraction for Voice-Lock systems,” *TENCON 2005 2005 IEEE Reg. 10*.
 - [17] S. A. Fattah, A. H. M. Rubaiyat, and M. M. Hassan, “An Approach to Vowel Recognition Using 2D- DWT Based Visual Information of the Lip Region,” pp. 1089–1092, 2014.
 - [18] C. Lin, S. Chen, T. Lin, and T. k. Truong, “Feature Comparison among Various Wavelets in Speaker Recognition Using Support Vector Machine,” *Eighth IEEE Int. Symp. Multimed.*, pp. 811–816, 2006.
 - [19] R. C. Guido, J. F. W. Slaets, R. Koberle, L. O. B. Almeida, and J. C. Pereira, “A new technique to construct a wavelet transform matching a specified signal with applications to digital, real time, spike, and overlap pattern recognition,” *Digit. Signal Process. A Rev. J.*, vol. 16, no. 1, pp. 24–44, 2006.
 - [20] M. Panwar, R. P. Sharma, I. Khan, and O. Farooq, “Design of Wavelet Based Features for recognition of hindi digits,” *2011 Int. Conf. Multimedia, Signal Process. Commun. Technol. IMPACT 2011*, pp. 232–235, 2011.
 - [21] D. P. Lestari, K. Iwano, and S. Furui, “A Large Vocabulary Continuous Speech Recognition System for Indonesian Language,” in *15th Indonesian Scientific Conference in Japan Proceedings*, 2006, pp. 17–22.
 - [22] S. Sakti, E. Kelana, H. Riza, and S. Sakai, “Development of Indonesian Large Vocabulary Continuous Speech Recognition System within A-STAR Project,” *Tcast*, pp. 19–24, 2008.
 - [23] V. Ferdiansyah and A. Purwarianti, “Indonesian Automatic Speech Recognition System Using English-Based Acoustic Model,” *Am. J. Signal Process.*, vol. 2, no. 4, pp. 60–63, 2012.
 - [24] Abriyono and A. Harjoko, “Pengenalan Ucapan Suku Kata Bahasa Lisan Menggunakan Ciri LPC, MFCC, dan JST,” *IJCCS*, vol. 6, no. 2, pp. 23–34, 2012.
 - [25] O. Farooq and S. Datta, “Phoneme recognition using wavelet based features,” *Elsevier Inf. Sci.*, vol. 150, pp. 5–15, 2003.
 - [26] S. Ranjan, “A Discrete Wavelet Transform Based Approach to Hindi Speech Recognition,” *Signal Acquis. Process. 2010. ICSAP '10. Int. Conf.*, 2010.
 - [27] N. Trivedi, D. V. K. Kumar, S. Singh, S. Ahuja, and R. Chadha, “Speech



- Recognition by Wavelet Analysis," *Int. J. Comput. Appl.*, vol. 15, no. 8, pp. 27–32, 2011.
- [28] J. Saraswathy, M. Hariharan, T. Nadarajaw, W. Khairunizam, and S. Yaacob, "Optimal selection of mother wavelet for accurate infant cry classification," *Australas. Phys. Eng. Sci. Med.*, vol. 37, no. 2, pp. 439–456, 2014.
- [29] A. Biswas, P. K. Sahu, A. Bhowmick, and M. Chandra, "Hindi phoneme classification using Wiener filtered wavelet packet decomposed periodic and aperiodic acoustic feature," *Comput. Electr. Eng.*, vol. 42, pp. 12–22, 2015.
- [30] R. Hidayat, Priyatmadi, and W. Ikawijaya, "Wavelet based feature extraction for the vowel sound," in *2015 International Conference on Information Technology Systems and Innovation (ICITSI)*, 2015, pp. 1–4.
- [31] A. Biswas, P. K. Sahu, A. Bhowmick, and M. Chandra, "Admissible wavelet packet sub-band-based harmonic energy features for Hindi phoneme recognition," *IET Signal Process.*, vol. 9, no. 6, pp. 511–519, Aug. 2015.
- [32] P. Kulkarni, S. Kulkarni, S. Mulange, A. Dand, and A. N. Cheeran, "Support Vector Machines for Isolated Word Recognition using Wavelet Packet Features," *Int. J. Eng. Technol. Res.*, no. 2, pp. 31–37, 2014.
- [33] N. Amalia, A. E. Fahrudi, A. V Nasrulloh, and N. Amalia, "Indonesian Vowel Recognition using Artificial Neural Network based on the Wavelet Features," *Int. J. Electr. Comput. Eng.*, vol. 3, no. 2, pp. 260–269, 2013.
- [34] K. H. Davis, R. Biddulph, and S. Balashek, "Automatic Recognition of Spoken Digits," *J. Acoust. Soc. Am.*, vol. 24, no. 6, 1952.
- [35] H. F. Olson and H. Belar, "Phonetic Typewriter," *J. Acoust. Soc. Am.*, vol. 28, no. 6, pp. 90–95, 1957.
- [36] P. Denes, "The Design and Operation of the Mechanical Speech Recognizer at University College London," *J. Br. Inst. Radio Eng.*, vol. 19, no. 4, pp. 219–234, 1959.
- [37] J. W. Forgie and C. D. Forgie, "Results Obtained from a Vowel Recognition Computer Program," *J. Acoust. Soc. Am.*, vol. 31, no. 11, pp. 1480–1489, 1959.
- [38] S. Furui, "50 Years of Progress in Speech and Speaker Recognition," *Specom*, no. 1, pp. 1–9, 2005.
- [39] K. Umapathy, S. Krishnan, and R. K. Rao, "Audio Signal Feature Extraction and Classification Using Local Discriminant Bases," *IEEE Trans. Audio, Speech Lang. Process.*, vol. 15, no. 4, pp. 1236–1246, May 2007.
- [40] D. J. Price and C. L. Brooks, "Detailed considerations for a balanced and broadly applicable force field: A study of substituted benzenes modeled



- with OPLS-AA,” *J. Comput. Chem.*, vol. 26, no. 14, pp. 1529–1541, 2005.
- [41] S. Theodoridis and K. Koutroumbas, *Pattern Recognition*, 4th ed. United States of America, 2009.
 - [42] O Farooq and S. Datta, “Wavelet based robust sub-band features for phoneme recognition,” *Chinese J. Electron.*, vol. 14, no. 1, pp. 115–118, 2005.
 - [43] B. Carnero and A. Drygajlo, “Perceptual speech coding and enhancement using frame-synchronized fast wavelet packet transform algorithms,” *IEEE Trans. Signal Process.*, vol. 47, no. 6, pp. 1622–1635, 1999.
 - [44] O. Farooq and S. Datta, “Mel filter-like admissible wavelet packet structure for speech recognition,” *IEEE Signal Process. Lett.*, vol. 8, no. 7, pp. 196–198, 2001.
 - [45] K. Daqrouq and K. Y. Al Azzawi, “Arabic vowels recognition based on wavelet average framing linear prediction coding and neural network,” *Speech Commun.*, vol. 55, no. 5, pp. 641–652, 2013.
 - [46] P. Král, “Discrete Wavelet Transform for automatic speaker recognition,” *Image Signal Process. (CISP), 2010 3rd Int. Congr.*, vol. 7, pp. 3514–3518, 2010.
 - [47] B. Boashash, N. A. Khan, and T. Ben-Jabeur, “Time-frequency features for pattern recognition using high-resolution TFDs: A tutorial review,” *Digit. Signal Process. A Rev. J.*, vol. 40, no. 1, pp. 1–30, 2015.
 - [48] D. Kristomo, R. Hidayat, and I. Soesanti, “Feature extraction and classification of the Indonesian syllables using Discrete Wavelet Transform and statistical features,” in *2016 2nd International Conference on Science and Technology-Computer (ICST)*, 2016, pp. 88–92.
 - [49] M. Elrgaby, A. Amoura, and A. Ganoun, “Spoken Arabic digits recognition using discrete wavelet,” *Proc. - UKSim-AMSS 16th Int. Conf. Comput. Model. Simulation, UKSim 2014*, pp. 275–279, 2014.
 - [50] D. Kristomo, R. Hidayat, and I. Soesanti, “Classification of the Syllables Sound Using Wavelet , Renyi Entropy and AR-PSD Features,” in *2017 IEEE 13th International Colloquium on Signal Processing & its Application (CSPA 2017)*, 2017, pp. 97–102.
 - [51] M. El Ayadi, M. S. Kamel, and F. Karray, “Survey on speech emotion recognition: Features, classification schemes, and databases,” *Pattern Recognit.*, vol. 44, no. 3, pp. 572–587, Mar. 2011.
 - [52] C. Chandra and B. Yegnanarayana, “A constraint satisfaction model for recognition of stop consonant-vowel (SCV) utterances,” *IEEE Trans. Speech Audio Process.*, vol. 10, no. 7, pp. 472–480, 2002.
 - [53] A. K. Vuppala, K. S. Rao, and S. Chakrabarti, “Spotting and recognition of consonant-vowel units from continuous speech using accurate detection of vowel onset points,” *Circuits, Syst. Signal Process.*, vol. 31, no. 4, pp.



- 1459–1474, 2012.
- [54] N. ‘Athifah Arifin and S. Tiun, “Predicting Malay Prominent Syllable Using Support Vector Machine,” *Procedia Technol.*, vol. 11, no. Iceei, pp. 861–869, 2013.
 - [55] M. Anusuya and S. Katti, “Speech recognition by machine: A review,” *Int. J. Comput. Sci. Inf. Secur.*, vol. 6, no. 3, pp. 181–205, 2009.
 - [56] G. Dede and M. H. Sazli, “Speech recognition with artificial neural networks,” *Digit. Signal Process.*, vol. 20, no. 3, pp. 763–768, 2010.
 - [57] S. N. Endah, S. Adhy, and S. Sutikno, “Comparison of Feature Extraction Mel Frequency Cepstral Coefficients and Linear Predictive Coding in Automatic Speech Recognition for Indonesian,” *TELKOMNIKA (Telecommunication Comput. Electron. Control.)*, vol. 15, no. 1, p. 292, 2017.
 - [58] A. Rényi, “On measures of entropy and information,” in *Fourth Berkeley Symposium on Mathematical Statistics and Probability*, 1961, vol. 1, pp. 547–561.
 - [59] D. Kristomo, R. Hidayat, I. Soesanti, and A. Kusjani, “Heart sound feature extraction and classification using autoregressive power spectral density (AR-PSD) and statistics features,” in *AIP Conference Proceedings*, 2016, vol. 1755, pp. 90007-1-90007-7.
 - [60] D. L. Fugal, *Conceptual Wavelets in Digital Signal Processing*. San Diego, California: Space & Signals Technical Publishing, 2009.
 - [61] S. Boccaletti, A. Giaquinta, and F. T. Arecchi, “Adaptive recognition and filtering of noise using wavelets,” *Phys. Rev. E*, vol. 55, no. 5, pp. 5393–5397, May 1997.
 - [62] A. J. Santoso, “Gelombang-Singkat untuk Pemampatan Citra Sekuensial,” Universitas Gadjah Mada, 2012.
 - [63] K. Basar, “Catatan Singkat : Ortogonalitas dan Normalitas,” vol. 1, no. 4, 2013, pp. 2–3.
 - [64] PYWAVELETS, “WAVELET BROWSER.” [Online]. Available: <http://wavelets.pybytes.com/>. [Accessed: 12-Nov-2019].
 - [65] C. Beneteau, C. Haddad, D. Ruch, and P. J. Van Fleet, “Classical Theory and Daubechies Wavelet,” in *PREP-Wavelet Workshop, USA*, 2009.
 - [66] S. Lu, Y. Xia, W. Cai, M. Fulham, and D. D. Feng, “Early identification of mild cognitive impairment using incomplete random forest-robust support vector machine and FDG-PET imaging,” *Comput. Med. Imaging Graph.*, pp. 1–7, 2017.
 - [67] L. Breiman, “Random Forests,” *Mach. Learn.*, vol. 45, pp. 5–32, 2001.
 - [68] M. Fachrie and M. Fachrie, “Robust Indonesian Digit Speech Recognition using Elman Recurrent Neural Network,” no. January 2015, 2018.



- [69] A. Biswas, P. K. Sahu, and M. Chandra, “Admissible wavelet packet features based on human inner ear frequency response for Hindi consonant recognition,” *Comput. Electr. Eng.*, vol. 40, no. 4, pp. 1111–1122, 2014.
- [70] R. Hidayat, D. Kristomo, and I. Togarma, “Feature Extraction of the Indonesian Phonemes Using Discrete Wavelet and Wavelet Packet Transform,” in *The 8th International Conference on Information Technology and Electrical Engineering (ICITEE)*, 2016, pp. 478–483.
- [71] D. Kristomo, R. Hidayat, and I. Soesanti, “Feature Selection using Singular Value Decomposition for Stop Consonant Classification,” in *2018 Joint 7th International Conference on Informatics, Electronics & Vision (ICIEV) and 2018 2nd International Conference on Imaging, Vision & Pattern Recognition (icIVPR)*, 2018, pp. 432–435.
- [72] D. Kristomo, R. Hidayat, and I. Soesanti, “Comparison of Five Classifiers for Classification of Syllables Sound using Time-Frequency Features,” *J. Eng. Sci. Technol.*, vol. 13, no. 9, pp. 2962–2975, 2018.
- [73] D. Kristomo, R. Hidayat, and I. Soesanti, “Wavelet Based Feature Extraction for the Indonesian CV Syllables Sound,” *TELKOMNIKA Indones. J.*, vol. 16, no. 3, pp. 925–933, 2018.
- [74] D. Kristomo, R. Hidayat, and I. Soesanti, “Comparison of Different Wavelet Sub-Band Features in the Classification of Indonesian Stop Consonants in CV Syllable Context,” *Int. J. Eng. Technol.*, vol. 7 (4.40), pp. 61–65, 2018.
- [75] D. Kristomo, R. Hidayat, and I. Soesanti, “Syllables sound signal classification using multi-layer perceptron in varying number of hidden-layer and hidden-neuron,” in *MATEC Web of Conferences 154*, 2018, vol. 3015, pp. 1–5.