

DAFTAR PUSTAKA

- Abhang, P.A., Gawali, B.W. and Mehrotra, S.C., 2016. *Technological Basics of EEG Recording and Operation of Apparatus*.
- Aditya yanuar r, 2018. Inception Network. *UNIVERSITAS GADJAH MADA MENARA ILMU MACHINE LEARNING*. Terdapat di: <https://machinelearning.mipa.ugm.ac.id/2018/08/10/inception-network/>.
- Al-Nafjan, A., Hosny, M., Al-Ohali, Y. and Al-Wabil, A., 2017. Review and classification of emotion recognition based on EEG brain-computer interface system research: A systematic review. *Applied Sciences (Switzerland)*, 7(12).
- Al-Odienat, A.I. and Al-Mbaideen, A.A., 2015. Optimal length determination of the moving average filter for power system applications. *International Journal of Innovative Computing, Information and Control*, 11(2), pp.691–705.
- Al-Qammaz, A.Y., Yusof, Y. and Ahamd, F.K., 2017. An enhanced discrete wavelet packet transform for feature extraction in electroencephalogram signals. *ACM International Conference Proceeding Series*, Part F1313, pp.88–93.
- Al-Shargie, F., Tariq, U., Alex, M., Mir, H. and Al-Nashash, H., 2019. Emotion Recognition Based on Fusion of Local Cortical Activations and Dynamic Functional Networks Connectivity: An EEG Study. *IEEE Access*, 7, pp.143550–143562.
- Alhagry, S., Aly, A. and A., R., 2017. Emotion Recognition based on EEG using LSTM Recurrent Neural Network. *International Journal of Advanced Computer Science and Applications*, 8(10), pp.8–11.
- Ali, M., Mosa, A.H., Machot, F.A. and Kyamakya, K., 2018. *Emotion recognition involving physiological and speech signals: A comprehensive review*.
- Alotaiby, T., El-Samie, F.E.A., Alshebeili, S.A. and Ahmad, I., 2015. A review of channel selection algorithms for EEG signal processing. *Eurasip Journal on Advances in Signal Processing*, 2015(1). Terdapat di: <http://dx.doi.org/10.1186/s13634-015-0251-9>.
- Arguedas, M., Xhafa, F., Daradoumis, T. and Caballe, S., 2015. An Ontology about Emotion Awareness and Affective Feedback in Elearning. *Proceedings - 2015 International Conference on Intelligent Networking and Collaborative Systems, IEEE INCoS 2015*, pp.156–163.
- Athavipach, C., Pan-Ngum, S. and Israsena, P., 2019. A wearable in-ear EEG device for emotion monitoring. *Sensors (Switzerland)*, 19(18), pp.1–16.
- Aytekin, A., 2021. Comparative analysis of normalization techniques in the context of MCDM problems. *Decision Making: Applications in Management and Engineering*, 4(2), pp.1–25.
- Ayvaz, U., Gürüler, H. and Devrim, M.O., 2017. Use of Facial Emotion Recognition in E-Learning Systems. *Information Technologies and Learning Tools*, 60(4), p.95.
- Bahreini, K., Nadolski, R. and Westera, W., 2016. Data Fusion for Real-time Multimodal Emotion Recognition through Webcams and Microphones in E-Learning. *International Journal of Human-Computer Interaction*, 32(5),

pp.415–430.

- Barrett, L.F. and Russell, J.A., 1999. Russel_1999_Core_affect_prototypical_emotions. , 76(5).
- Bhandari, N.K. and Jain, M., 2020. Emotion recognition and classification using Eeg: A review. *International Journal of Scientific and Technology Research*, 9(2), pp.1827–1836.
- Birditt, K.S. and Fingerman, K.L., 2003. Age and gender differences in adults' descriptions of emotional reactions to interpersonal problems. *Journals of Gerontology - Series B Psychological Sciences and Social Sciences*, 58(4), pp.237–245.
- Bloom, B.S., Engelhart, M.D., Furst, E.J., Hill, W.H. and Krathwohl, D.R., 1956. *The Classification of Educational Goals*,
- Bradley, M.M. and Lang, P.J., 1994. Measuring emotion: The self-assessment manikin and the semantic differential. *Journal of Behavior Therapy and Experimental Psychiatry*, 25(1), pp.49–59.
- Candra Kirana, K., Wibawanto, S. and Wahyu Herwanto, H., 2018. Facial Emotion Recognition Based on Viola-Jones Algorithm in the Learning Environment. *Proceedings - 2018 International Seminar on Application for Technology of Information and Communication: Creative Technology for Human Life, iSemantic 2018*, pp.406–410.
- Carstensen, L.L. and Charles, S.T., 1998. Emotion in the Second Half of Life. *SAGE Journal*, 7(5).
- Chao, H., Dong, L., Liu, Y. and Lu, B., 2019. Emotion recognition from multiband eeg signals using capsnet. *Sensors (Switzerland)*, 19(9).
- Chatchinarat, A., Wong, K.W. and Fung, C.C., 2016. A comparison study on the relationship between the selection of EEG electrode channels and frequency bands used in classification for emotion recognition. *Proceedings - International Conference on Machine Learning and Cybernetics*, 1, pp.251–256.
- Chen, D.W., Miao, R., Yang, W.Q., Liang, Y., Chen, H.H., Huang, L., Deng, C.J. and Han, N., 2019. A feature extraction method based on differential entropy and linear discriminant analysis for emotion recognition. *Sensors (Switzerland)*, 19(7).
- Cheng, J., Chen, M., Li, C., Liu, Y., Song, R., Liu, A. and Chen, X., 2020. Emotion Recognition from Multi-Channel EEG via Deep Forest. *IEEE Journal of Biomedical and Health Informatics*, 2194(MAY), pp.1–1.
- D'Mello, S., Lehman, B., Pekrun, R. and Graesser, A., 2014. Confusion can be beneficial for learning. *Learning and Instruction*, 29, pp.153–170.
- Dattola, S., Morabito, F.C., Mammone, N. and La Foresta, F., 2020. Findings about loreta applied to high-density eeg—a review. *Electronics (Switzerland)*, 9(4).
- Deng, L., 2012. The MNIST database of handwritten digit images for machine learning research. *IEEE Signal Processing Magazine*, 29(6), pp.141–142.
- Dzedzickis, A., Kaklauskas, A. and Bucinskas, V., 2020. Human emotion recognition: Review of sensors and methods. *Sensors (Switzerland)*, 20(3).
- Ekman, P., 1992. An Argument for Basic Emotions. *Cognition and Emotion*, 6(3–4), pp.169–200.

- Ekman, P. et al., 1987. Universals and Cultural Differences in the Judgments of Facial Expressions of Emotion. *Journal of Personality and Social Psychology*, 53(4), pp.712–717.
- Ekman, P., Friesen, W. V. and Simons, R.C., 1985. Is the Startle Reaction an Emotion? *Journal of Personality and Social Psychology*, 49(5), pp.1416–1426.
- Eldor, T., 2018. Capsule Neural Networks – Part 2: What is a Capsule? Terdapat di: <https://towardsdatascience.com/capsule-neural-networks-part-2-what-is-a-capsule-846d5418929f> [Accessed 21 February 2021].
- Elgayar, S., A.Abdelhamid, A.E. and Fayed, Z.T.A., 2017. Emotion Detection from Text: Survey *Salma. *Journal of Computer Engineering*, 19(4), pp.30–37.
- Eliot, J.A.R. and Hirumi, A., 2019. Emotion theory in education research practice: an interdisciplinary critical literature review. *Educational Technology Research and Development*, 67(5), pp.1065–1084. Terdapat di: <https://doi.org/10.1007/s11423-018-09642-3>.
- Ergin, T., Ozdemir, M.A. and Akan, A., 2019. Emotion recognition with multi-channel EEG signals using visual stimulus. *TIPTEKNO 2019 - Tip Teknologileri Kongresi*, pp.1–4.
- Faria, A.R.S., 2015. Emotion vs cognition in e-learning process: The role of affective computing. *PQDT - Global*, p.167. Terdapat di: <http://210.48.222.80/proxy.pac/docview/1894937174?accountid=44024>.
- Garg, D. and Verma, G.K., 2020. Emotion Recognition in Valence-Arousal Space from Multi-channel EEG data and Wavelet based Deep Learning Framework. *Procedia Computer Science*, 171(2019), pp.857–867. Terdapat di: <https://doi.org/10.1016/j.procs.2020.04.093>.
- Gasper, K., 2018. Utilizing Neutral Affective States in Research: Theory, Assessment, and Recommendations. *Emotion Review*, 10(3), pp.255–266. Terdapat di: <https://doi.org/10.1177/1754073918765660>.
- Gasper, K., Spencer, L.A. and Hu, D., 2019. Does Neutral Affect Exist? How Challenging Three Beliefs About Neutral Affect Can Advance Affective Research. *Frontiers in Psychology*, 10(November).
- Gebhard, P., 2005. ALMA - A layered model of affect. *Proceedings of the International Conference on Autonomous Agents*, pp.177–184.
- GhasemAghaei, R., Arya, A. and Biddle, R., 2016. A Dashboard for Affective E-learning: Data Visualization for Monitoring Online Learner Emotions. *Proceedings of EdMedia + Innovate Learning 2016*, pp.1536–1543. Terdapat di: <https://www.learntechlib.org/p/173153>.
- Ghosh, R., Sinha, N. and Singh, N., 2019. Emotion recognition from EEG signals using back propagation neural network. *2019 2nd International Conference on Innovations in Electronics, Signal Processing and Communication (IESC)*, pp.188–191.
- Gopika Gopan, K., Sinha, N. and Dinesh Babu, J., 2017. Statistical feature analysis for EEG baseline classification: Eyes Open vs Eyes Closed. *IEEE Region 10 Annual International Conference, Proceedings/TENCON*, pp.2466–2469.
- Gottardo, E. and Pimentel, A.R., 2019. Inferring Students Emotions Using a Hybrid Approach that Combine Cognitive and Physical Data. In *Lecture Notes in*

Business Information Processing. pp. 283–302.

- Gunadi, I.G.A., Harjoko, A., Wardoyo, R. and Ramdhani, N., 2015. The extraction and the recognition of facial feature state to emotion recognition based on certainty factor. *Journal of Theoretical and Applied Information Technology*, 82(1), pp.113–121.
- Hammoui, O. El, Benmarrakchi, F., Ouherrou, N., Kafi, J. El and Hore, A. El, 2018. Emotion Recognition in E-learning Systems. *2018 6th International Conference on Multimedia Computing and Systems (ICMCS)*, pp.1–6.
- He, Y., Ai, Q. and Chen, K., 2017. A MEMD method of human emotion recognition based on valence-Arousal model. *Proceedings - 9th International Conference on Intelligent Human-Machine Systems and Cybernetics, IHMSC 2017*, 2, pp.399–402.
- Henritius, E., Löfström, E. and Hannula, M.S., 2019. University students' emotions in virtual learning: a review of empirical research in the 21st century. *British Journal of Educational Technology*, 50(1), pp.80–100.
- Hinton, G., Krizhevsky, A., Jaitly, N., Tieleman, T. and Tang, Y., 2012. Does the Brain do Inverse Graphics? *Brain and Cognitive Sciences Fall Colloquium*. Terdapat di: <https://www.youtube.com/watch?v=TFIMqt0yT2I>.
- Hu, X., Chen, J., Wang, F. and Zhang, D., 2019. Ten challenges for EEG-based affective computing. *Brain Science Advances (BSA)*, 5(1), pp.1–20.
- Huang, D., Zhang, S. and Zhang, Y., 2017. EEG-based emotion recognition using empirical wavelet transform. *2017 4th International Conference on Systems and Informatics, ICSAI 2017*, 2018-Janua(Icsai), pp.1444–1449.
- Huang, Y. De, Wang, K.Y., Ho, Y.L., He, C.Y. and Fang, W.C., 2019. An edge ai system-on-chip design with customized convolutional-neural-network architecture for real-Time eeg-based affective computing system. *BioCAS 2019 - Biomedical Circuits and Systems Conference, Proceedings*, pp.1–4.
- Ilonen, S. and Heinonen, J., 2018. Understanding affective learning outcomes in entrepreneurship education. *Industry and Higher Education*, 32(6), pp.391–404.
- James Nestor, 2021. *Breath Cara Bernafas dengan Benar*, PT Gramedia Pustaka Utama.
- Jiang, H. and Jia, J., 2019. Research on EEG Emotional Recognition Based on LSTM. In *Bio-inspired Computing: Theories and Applications*. China, pp. 409–417.
- Jiang, X., Bian, G. Bin and Tian, Z., 2019. Removal of artifacts from EEG signals: A review. *Sensors (Switzerland)*, 19(5), pp.1–18.
- Jimenez-Molina, A., Retamal, C. and Lira, H., 2018. Using psychophysiological sensors to assess mental workload during web browsing. *Sensors (Switzerland)*, 18(2), pp.1–26.
- Joshi, K., 2016. *Sensemo: An Adaptive Learning System Based on Real-Time User Emotions*. Stony Brook University.
- Jurcak, V., Tsuzuki, D. and Dan, I., 2007. 10/20, 10/10, and 10/5 systems revisited: Their validity as relative head-surface-based positioning systems. *NeuroImage*, 34(4), pp.1600–1611.
- Katsigiannis, S. and Ramzan, N., 2018. DREAMER: A Database for Emotion

- Recognition Through EEG and ECG Signals from Wireless Low-cost Off-the-Shelf Devices. *IEEE Journal of Biomedical and Health Informatics*, 22(1), pp.98–107.
- Kawala-Sterniuk, A., Podpora, M., Pelc, M., Blaszczyzyn, M., Gorzelanczyk, E.J., Martinek, R. and Ozana, S., 2020. Comparison of smoothing filters in analysis of eeg data for the medical diagnostics purposes. *Sensors (Switzerland)*, 20(3), pp.1–18.
- Kawintiranon, K., Buatong, Y. and Vateekul, P., 2016. Online music emotion prediction on multiple sessions of EEG data using SVM. *2016 13th International Joint Conference on Computer Science and Software Engineering, JCSSE 2016*.
- Keskitalo, T. and Ruokamo, H., 2017. Students' emotions in simulation-based medical education. *Journal of Interactive Learning Research*, 28(2), pp.149–159.
- Kleinginna, P.R. and Kleinginna, A.M., 1981. A categorized list of motivation definitions, with a suggestion for a consensual definition. *Motivation and Emotion*, 5(3), pp.263–291.
- Koelstra, S., Mühl, C., Soleymani, M., Lee, J.S., Yazdani, A., Ebrahimi, T., Pun, T., Nijholt, A. and Patras, I., 2012. DEAP: A database for emotion analysis; Using physiological signals. *IEEE Transactions on Affective Computing*, 3(1), pp.18–31.
- Kort, B., Reilly, R. and Picard, R.W., 2001. An affective model of interplay between emotions and learning: Reengineering educational pedagogy-building a learning companion. *Proceedings - IEEE International Conference on Advanced Learning Technologies, ICALT 2001*, pp.43–46.
- Kowalski, P. and Smyk, R., 2018. Review and comparison of smoothing algorithms for one-dimensional data noise reduction. *2018 International Interdisciplinary PhD Workshop, IIPhDW 2018*, pp.277–281.
- Kragel, P.A., Knodt, A.R., Hariri, A.R. and LaBar, K.S., 2016. Decoding Spontaneous Emotional States in the Human Brain. *PLoS Biology*, 14(9), pp.1–19. Terdapat di: <http://dx.doi.org/10.1371/journal.pbio.2000106>.
- Lan, Z., Sourina, O., Wang, L., Scherer, R. and Muller-Putz, G.R., 2019. Domain Adaptation Techniques for EEG-Based Emotion Recognition: A Comparative Study on Two Public Datasets. *IEEE Transactions on Cognitive and Developmental Systems*, 11(1), pp.85–94.
- Lang, P.J., 1995. The Emotion Probe. *American Psychologist Association*, 50(5), pp.372–385.
- Lazarus, R.S., 1991. Progress on a cognitive-motivational-relational theory of emotion. *American Psychologist*, 46(8), pp.819–834.
- Lazarus, R.S., 1996. The Role of Coping in the Emotions and How Coping Changes over the Life Course. *Handbook of Emotion, Adult Development, and Aging*, pp.289–306.
- Lee, D.S., 2012. Preferred viewing distance of liquid crystal high-definition television. *Applied Ergonomics*, 43(1), pp.151–156. Terdapat di: <http://dx.doi.org/10.1016/j.apergo.2011.04.007>.
- Lelono, D., Nuradi, H., Satriyo, M.R., Widodo, T.W., Dharmawan, A. and

- Istiyanto, J.E., 2019. Comparison of Difference, Relative and Fractional Methods for Classification of the Black Tea Based on Electronic Nose. *2019 International Conference on Computer Engineering, Network, and Intelligent Multimedia, CENIM 2019 - Proceeding*, 2019-Novem.
- Li, J., Zhang, Z. and He, H., 2018. Hierarchical Convolutional Neural Networks for EEG-Based Emotion Recognition. *Cognitive Computation*, 10(2), pp.368–380.
- Li, Y., Huang, J., Zhou, H. and Zhong, N., 2017. Human emotion recognition with electroencephalographic multidimensional features by hybrid deep neural networks. *Applied Sciences (Switzerland)*, 7(10).
- Liang, Y., 2019. Intelligent emotion evaluation method of classroom teaching based on expression recognition. *International Journal of Emerging Technologies in Learning*, 14(4), pp.127–141.
- Liu, J., Meng, H., Li, M., Zhang, F., Qin, R. and Nandi, A.K., 2018. Emotion detection from EEG recordings based on supervised and unsupervised dimension reduction. *Concurrency Computation*, 30(23), pp.1–13.
- Liu, N., Fang, Y., Li, L., Hou, L., Yang, F. and Guo, Y., 2018. MULTIPLE FEATURE FUSION FOR AUTOMATIC EMOTION RECOGNITION USING EEG SIGNALS School of Computer Engineering and Science, Shanghai University School of Computing, University of Kent School of Communication and Information Engineering, Shanghai University. In *2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. pp. 896–900.
- Liu, Y., Ding, Y., Li, C., Cheng, J., Song, R., Wan, F. and Chen, X., 2020. Multi-channel EEG-based emotion recognition via a multi-level features guided capsule network. *Computers in Biology and Medicine*, 123(March), p.103927. Terdapat di: <https://doi.org/10.1016/j.combiomed.2020.103927>.
- Liu, Z., Zhang, W., Sun, J., Cheng, H.N.H., Peng, X. and Liu, S., 2017. Emotion and Associated Topic Detection for Course Comments in a MOOC Platform. *Proceedings - 5th International Conference on Educational Innovation through Technology, EITT 2016*, pp.15–19.
- Liu, Z.T., Xie, Q., Wu, M., Cao, W.H., Li, D.Y. and Li, S.H., 2019. Electroencephalogram Emotion Recognition Based on Empirical Mode Decomposition and Optimal Feature Selection. *IEEE Transactions on Cognitive and Developmental Systems*, 11(4), pp.517–526.
- Malekzadeh, M., Mustafa, M.B. and Lahsasna, A., 2015. A review of emotion regulation in intelligent tutoring systems. *Educational Technology and Society*, 18(4), pp.435–445.
- Mei, H. and Xu, X., 2017. EEG-Based Emotion Classification Using Convolutional Neural Networks. In *2017 International Conference on Security, Pattern Analysis, and Cybernetics (SPAC)*. pp. 130–135.
- Miranda Correa, J.A., Abadi, M.K., Sebe, N. and Patras, I., 2018. AMIGOS: A Dataset for Affect, Personality and Mood Research on Individuals and Groups. *IEEE Transactions on Affective Computing*, (i), pp.1–14.
- Narayana, S., Prasad, R.R.V. and Warmerdam, K., 2019. Mind your thoughts: BCI using single EEG electrode. *IET Cyber-Physical Systems: Theory and*

- Applications*, 4(2), pp.164–172.
- naturomics, 2018. A Tensorflow implementation of CapsNet(Capsules Net) in paper Dynamic Routing Between Capsules. Terdapat di: <https://github.com/naturomics/CapsNet-Tensorflow> [Accessed 21 February 2021].
- Oryina, A.K. and Adedolapo, A.O., 2016. Emotion Recognition for User Centred E-Learning. *Proceedings - International Computer Software and Applications Conference*, 2, pp.509–514.
- Ouherrou, N., Elhammoumi, O., Benmarrakchi, F. and El Kafi, J., 2019. Comparative study on emotions analysis from facial expressions in children with and without learning disabilities in virtual learning environment. *Education and Information Technologies*, 24(2), pp.1777–1792.
- Pan, C., Shi, C., Mu, H., Li, J. and Gao, X., 2020. EEG-based emotion recognition using logistic regression with gaussian kernel and laplacian prior and investigation of critical frequency bands. *Applied Sciences (Switzerland)*, 10(5), pp.1–24.
- Pandey, P. and Seeja, K.R., 2019. Subject Independent Emotion recognition from EEG using VMD and Deep Learning. *Journal of King Saud University - Computer and Information Sciences*. Terdapat di: <https://doi.org/10.1016/j.jksuci.2019.11.003>.
- Pane, E.S., Wibawa, A.D. and Pumomo, M.H., 2018. Channel Selection of EEG Emotion Recognition using Stepwise Discriminant Analysis. *2018 International Conference on Computer Engineering, Network and Intelligent Multimedia, CENIM 2018 - Proceeding*, (4), pp.14–19.
- Parui, S., Kumar, A., Bajiya, R., Samanta, D. and Chakravorty, N., 2019. Emotion recognition from EEG signal using XGBoost algorithm. *2019 IEEE 16th India Council International Conference, INDICON 2019 - Symposium Proceedings*, pp.1–4.
- Pătruț, B. and Spatariu, R.-P., 2016. Implementation of Artificial Emotions and Moods in a Pedagogical Agent. *Emotions, Technology, Design, and Learning*, pp.63–86.
- Prabhu, N.G., Singh, N.S., Singh, S. V and Patil, N., 2016. Affective E-Learning Using Emotion Detection. *International Journal of Technical Research and Applications*, 4(2), pp.216–220.
- Pradipta, G.A., Wardoyo, R., Musdholifah, A. and Sanjaya, I.N.H., 2020. Improving classification performance of fetal umbilical cord using combination of SMOTE method and multiclassifier voting in imbalanced data and small dataset. *International Journal of Intelligent Engineering and Systems*, 13(5), pp.441–454.
- Purnamaningsih, E.H., 2017. Personality and emotion regulation strategies. *International Journal of Psychological Research*, 10(1), pp.53–60.
- Putra, A.E., Atmaji, C. and Ghaleb, F., 2018. EEG-Based Emotion Classification Using Wavelet Decomposition and K-Nearest Neighbor. *Proceedings - 2018 4th International Conference on Science and Technology, ICST 2018*, 1, pp.1–4.
- Ramdhani, N., 2012. Adaptasi Bahasa dan Budaya Inventori Big Five. *JURNAL*

PSIKOLOGI, 39(2), pp.189–207.

- Rasamoelina, A.D., Adjailia, F. and Sincak, P., 2020. A Review of Activation Function for Artificial Neural Network. *SAMI 2020 - IEEE 18th World Symposium on Applied Machine Intelligence and Informatics, Proceedings*, pp.281–286.
- Ray, A. and Chakrabarti, A., 2015. Biophysical signal based emotion detection for technology enabled affective learning. *Proceedings of 2015 IEEE International Conference on Electrical, Computer and Communication Technologies, ICECCT 2015*, (Figure 1), pp.1–6.
- Roy, V. and Shukla, S., 2019. Designing Efficient Blind Source Separation Methods for EEG Motion Artifact Removal Based on Statistical Evaluation. *Wireless Personal Communications*, 108(3), pp.1311–1327. Terdapat di: <https://doi.org/10.1007/s11277-019-06470-3>.
- Sabour, S., Frosst, N. and Hinton, G.E., 2017. Dynamic routing between capsules. *Advances in Neural Information Processing Systems*, 2017-Decem(Nips), pp.3857–3867.
- Sahoo, B., Behera, R.N. and Pattnaik, P.K., 2022. A Comparative Analysis of Multi-Criteria Decision Making Techniques for Ranking of Attributes for e-Governance in India. , 13(3), pp.65–70.
- Sarma, P. and Barma, S., 2020. Review on Stimuli Presentation for Affect Analysis Based on EEG. *IEEE Access*, 8, pp.51991–52009.
- Scherer, K.R., Schorr, A. and Johnstone, T., 2001. *Series in affective science. Appraisal processes in emotion: Theory, methods, research* 2001st ed. K. R. Scherer, A. Schorr, & T. Johnstone, eds., United States of America: Oxford University Press.
- Schwartzman, H., 1974. What Happened at Hawthorne? New evidence suggests the Hawthorne effect resulted from operant reinforcement contingencies. *Ethnography in Organizations*, 183(1972), pp.922–932.
- Sena, S., 2017. Pengenalan Deep Learning Part 7 : Convolutional Neural Network (CNN). Terdapat di: <https://medium.com/@samuelsena/pengenalan-deep-learning-part-7-convolutional-neural-network-cnn-b003b477dc94> [Accessed 21 February 2021].
- Setyohadi, D.B., Sri Kusrohmaniah, Christian, E., Dewi, L.T. and Sukci, B.P., 2017. M-Learning interface design based on emotional aspect analysis. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 10127 LNCS, pp.276–287.
- Setyohadi, D.B., Sri Kusrohmaniah, Christian, E., Dewi, L.T. and Sukci, B.P., 2017. M-Learning interface design based on emotional aspect analysis. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 10127 LNCS(January), pp.276–287.
- Shen, L., Wang, M. and Shen, R., 2009. Affective e-Learning: Using “motional” data to improve learning in pervasive learning environment. *Educational Technology and Society*, 12(2), pp.176–189.
- Shu, L., Xie, J., Yang, M., Li, Z., Li, Z., Liao, D., Xu, X. and Yang, X., 2018. A

- review of emotion recognition using physiological signals. *Sensors (Switzerland)*, 18(7).
- Song, T., Zheng, W., Lu, C., Zong, Y., Zhang, X. and Cui, Z., 2019. MPED: A multi-modal physiological emotion database for discrete emotion recognition. *IEEE Access*, 7(c), pp.12177–12191.
- Song, T., Zheng, W., Song, P. and Cui, Z., 2018. EEG Emotion Recognition Using Dynamical Graph Convolutional Neural Networks. *IEEE Transactions on Affective Computing*, 11(3), pp.532–541.
- Sun, A., Li, Y.J., Huang, Y.M. and Li, Q., 2017. Using facial expression to detect emotion in e-learning system: A deep learning method. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 10676 LNCS, pp.446–455.
- Tawsif, K., Azlina, N., Aziz, A., Raja, J.E., Hossen, J. and Jesmeen, M.Z.H., 2022. A Systematic Review on Emotion Recognition System Using Physiological Signals : Data Acquisition and Methodology. , 6(5), pp.1167–1198.
- Teplan, M., 2002. FUNDAMENTALS OF EEG MEASUREMENT. *Measurement Science Review*, 2(Section 2), pp.1–11. Terdapat di: <http://www.edumed.org.br/cursos/neurociencia/MethodsEEGMeasurement.pdf>.
- Tyng, C.M., Amin, H.U., Saad, M.N.M. and Malik, A.S., 2017. The influences of emotion on learning and memory. *Frontiers in Psychology*, 8(AUG).
- Um, E.R., Plass, J.L., Hayward, E.O. and Homer, B.D., 2012. Emotional Design in Multimedia Learning. *Journal of Educational Psychology*, 104(2), pp.485–498.
- Usakli, A.B., 2010. Improvement of EEG signal acquisition: An electrical aspect for state of the Art of front end. *Computational Intelligence and Neuroscience*, 2010.
- Veeramallu, G.K.P., Anupalli, Y., Jilumudi, S.K. and Bhattacharyya, A., 2019. EEG based automatic emotion recognition using EMD and Random forest classifier. In *2019 10th International Conference on Computing, Communication and Networking Technologies, ICCCNT 2019*. IEEE, pp. 1–6.
- Vogel, S. and Schwabe, L., 2016. Learning and memory under stress: implications for the classroom. *npj Science of Learning*, 1(1), pp.1–10.
- Wardoyo, R., Wirawan, I.M.A. and Pradipta, I.G.A., 2022. Oversampling Approach Using Radius-SMOTE for Imbalance Electroencephalography Datasets. *Emerging Science Journal*, 6(2), pp.382–398. Terdapat di: <https://www.ijournalse.org/index.php/ESJ/article/view/868>.
- Wirawan, I.M.A., Wardoyo, R. and Lelono, D., 2022. The challenges of emotion recognition methods based on electroencephalogram signals: a literature review. *International Journal of Electrical and Computer Engineering (IJECE)*, 12(2), p.1508. Terdapat di: <http://ijece.iaescore.com/index.php/IJECE/article/view/25953>.
- Wirawan, I.M.A., Wardoyo, R., Lelono, D., Kusrohmaniah, S. and Asrori, S., 2021. Comparison of Baseline Reduction Methods for Emotion Recognition Based On Electroencephalogram Signals. In *2021 Sixth International Conference on*

- Informatics and Computing (ICIC)*. Yogyakarta: IEEE, pp. 1–7.
- Xu, J., Ren, F. and Bao, Y., 2019. EEG Emotion Classification Based on Baseline Strategy. In *Proceedings of 2018 5th IEEE International Conference on Cloud Computing and Intelligence Systems, CCIS 2018*. IEEE, pp. 43–46.
- Xu, T., Zhou, Y., Wang, Z. and Peng, Y., 2018. Learning Emotions EEG-based Recognition and Brain Activity: A Survey Study on BCI for Intelligent Tutoring System. *Procedia Computer Science*, 130, pp.376–382. Terdapat di: <https://doi.org/10.1016/j.procs.2018.04.056>.
- Yadegaridehkordi, E., Noor, N.F.B.M., Ayub, M.N. Bin, Affal, H.B. and Hussin, N.B., 2019. Affective computing in education: A systematic review and future research. *Computers and Education*, 142(August), p.103649. Terdapat di: <https://doi.org/10.1016/j.compedu.2019.103649>.
- Yang, D., Alsadoon, A., Prasad, P.W.C., Singh, A.K. and Elchouemi, A., 2018. An Emotion Recognition Model Based on Facial Recognition in Virtual Learning Environment. *Procedia Computer Science*, 125(2009), pp.2–10.
- Yang, Y., Wu, Q., Fu, Y. and Chen, X., 2018. Continuous convolutional neural network with 3D input for EEG-based emotion recognition. In *International Conference on Neural Information Processing*. Springer International Publishing, pp. 433–443.
- Yang, Y., Wu, Q., Qiu, M., Wang, Y. and Chen, X., 2018. Emotion Recognition from Multi-Channel EEG through Parallel Convolutional Recurrent Neural Network. *Proceedings of the International Joint Conference on Neural Networks*, 2018-July(July), pp.1–7.
- Zangeneh Soroush, M., Maghooli, K., Setarehdan, S.K. and Nasrabadi, A.M., 2019. A novel EEG-based approach to classify emotions through phase space dynamics. *Signal, Image and Video Processing*. Terdapat di: <https://doi.org/10.1007/s11760-019-01455-y>.
- Zhang, J., Yin, Z., Chen, P. and Nichele, S., 2020. Emotion recognition using multi-modal data and machine learning techniques: A tutorial and review. *Information Fusion*, 59(January), pp.103–126. Terdapat di: <https://doi.org/10.1016/j.inffus.2020.01.011>.
- Zhao, G., Ge, Y., Shen, B., Wei, X. and Wang, H., 2018. Emotion Analysis for Personality Inference from EEG Signals. *IEEE Transactions on Affective Computing*, 9(3), pp.362–371.
- Zhao, Y., Yang, J., Lin, J., Yu, D. and Cao, X., 2020. A 3D Convolutional Neural Network for Emotion Recognition based on EEG Signals. *Proceedings of the International Joint Conference on Neural Networks*.
- Zheng, W.-L., Zhu, J.-Y. and Lu, B.-L., 2016. Identifying Stable Patterns over Time for Emotion Recognition from EEG. *IEEE Transactions on Affective Computing*, pp.1949–3045.
- Zhong, X., Yin, Z. and Zhang, J., 2020. Cross-Subject emotion recognition from EEG using Convolutional Neural Networks. In *39th Chinese Control Conference*. pp. 7516–7521.
- Zhuang, N., Zeng, Y., Yang, K., Zhang, C., Tong, L. and Yan, B., 2018. Investigating patterns for self-induced emotion recognition from EEG signals. *Sensors (Switzerland)*, 18(3), pp.1–22.