

Bibliography

- Abd El Meguid, Mostafa K and Martin D Levine (2014). “Fully automated recognition of spontaneous facial expressions in videos using random forest classifiers”. In: *IEEE Transactions on Affective Computing* 5.2, pp. 141–154.
- Abdul, Zrar Kh and Abdulbasit K Al-Talabani (2022). “Mel frequency cepstral coefficient and its applications: A review”. In: *IEEE Access* 10, pp. 122136–122158.
- Ahmad, Zeeshan et al. (2021). “ECG heartbeat classification using multimodal fusion”. In: *IEEE Access* 9, pp. 100615–100626.
- Ahmed, Ferdous, ASM Hossain Bari, and Marina L Gavrilova (2019). “Emotion recognition from body movement”. In: *IEEE Access* 8, pp. 11761–11781.
- Al Machot, Fadi et al. (2019). “A deep-learning model for subject-independent human emotion recognition using electrodermal activity sensors”. In: *Sensors* 19.7, p. 1659.
- Alarcao, Soraia M and Manuel J Fonseca (2017). “Emotions recognition using EEG signals: A survey”. In: *IEEE transactions on affective computing* 10.3, pp. 374–393.
- Alexander, David M et al. (2005). “Separating individual skin conductance responses in a short interstimulus-interval paradigm”. In: *Journal of neuroscience methods* 146.1, pp. 116–123.
- Amin, Md Rafiul and Rose T Faghieh (2020). “Identification of sympathetic nervous system activation from skin conductance: A sparse decomposition approach with physiological priors”. In: *IEEE Transactions on Biomedical Engineering* 68.5, pp. 1726–1736.

- Amin, Rafiul and Rose T Faghih (2022). “Physiological characterization of electrodermal activity enables scalable near real-time autonomic nervous system activation inference”. In: *PLoS computational biology* 18.7, e1010275.
- Anandhalli, Mallikarjun, A Tanuja, and Pavana Baligar (2022). “Geometric invariant features for the detection and analysis of vehicle”. In: *Multimedia tools and applications* 81.23, pp. 33549–33567.
- Anderson, Adam, Thomas Hsiao, and Vangelis Metsis (n.d.). “Classification of emotional arousal during multimedia exposure”. In: *Proceedings of the 10th international conference on pervasive technologies related to assistive environments*, pp. 181–184.
- Asahina, Masato, Anupama Poudel, and Shigeki Hirano (2015). “Sweating on the palm and sole: physiological and clinical relevance”. In: *Clinical Autonomic Research* 25, pp. 153–159.
- Atmaca, Çağla et al. (2020). “An emotion focused approach in predicting teacher burnout and job satisfaction”. In: *Teaching and Teacher Education* 90, p. 103025.
- Awais, Muhammad et al. (2020). “LSTM-based emotion detection using physiological signals: IoT framework for healthcare and distance learning in COVID-19”. In: *IEEE Internet of Things Journal* 8.23, pp. 16863–16871.
- Bach, Dominik R (2014). “A head-to-head comparison of SCRalyze and Ledalab, two model-based methods for skin conductance analysis”. In: *Biological psychology* 103, pp. 63–68.
- Bach, Dominik R et al. (2011). “Dynamic causal modeling of spontaneous fluctuations in skin conductance”. In: *Psychophysiology* 48.2, pp. 252–257.
- Bălan, Oana et al. (2019). “Fear level classification based on emotional dimensions and machine learning techniques”. In: *Sensors* 19.7, p. 1738.
- Benedek, Mathias and Christian Kaernbach (2010a). “A continuous measure of phasic electrodermal activity”. In: *Journal of neuroscience methods* 190.1, pp. 80–91.
- (2010b). “Decomposition of skin conductance data by means of nonnegative deconvolution”. In: *psychophysiology* 47.4, pp. 647–658.

- Benito-Gorron, Diego de et al. (2019). “Exploring convolutional, recurrent, and hybrid deep neural networks for speech and music detection in a large audio dataset”. In: *EURASIP Journal on Audio, Speech, and Music Processing* 2019.1, p. 9.
- Bhatti, Anubhav et al. (n.d.). “AttX: Attentive cross-connections for fusion of wearable signals in emotion recognition”. In: *arXiv preprint arXiv:2206.04625* ().
- Bianco, Simone and Paolo Napoletano (2019). “Biometric recognition using multimodal physiological signals”. In: *IEEE access* 7, pp. 83581–83588.
- Bornoiu, Ionut-Vlad and Ovidiu Grigore (2014). “Kohonen neural network stress detection using only electrodermal activity features”. In: *Advances in Electrical and Computer Engineering* 14.3, pp. 71–79.
- Boucsein, Wolfram (1999). “Electrodermal activity as an indicator of emotional processes”. In: *Science of Emotion and Sensibility* 2.1, pp. 1–25.
- (2012). *Electrodermal activity*. Springer Science & Business Media.
- Boucsein, Wolfram and Wolfram Boucsein (2012). “Principles of electrodermal phenomena”. In: *Electrodermal activity*, pp. 1–86.
- Burns, Alexis, Hojjat Adeli, and John A Buford (2020). “Upper limb movement classification via electromyographic signals and an enhanced probabilistic network”. In: *Journal of medical systems* 44.10, p. 176.
- Cacioppo, John T, Louis G Tassinary, and Gary Berntson (2007). *Handbook of psychophysiology*. Cambridge university press.
- Cannon, Walter B (1927). “The James-Lange theory of emotions: A critical examination and an alternative theory”. In: *The American journal of psychology* 39.1/4, pp. 106–124.
- Cavallo, Filippo et al. (2021). “Mood classification through physiological parameters”. In: *Journal of Ambient Intelligence and Humanized Computing* 12, pp. 4471–4484.
- Cecchi, Stefania et al. (2020). “Physical stimuli and emotions: EDA features analysis from a wrist-worn measurement sensor”. In: *2020 IEEE 25th International Workshop on Computer Aided Modeling and Design of Communication Links and Networks (CAMAD)*. IEEE, pp. 1–6.

- Chen, Mingyi et al. (2018). “3-D convolutional recurrent neural networks with attention model for speech emotion recognition”. In: *IEEE Signal Processing Letters* 25.10, pp. 1440–1444.
- Chen, Shiyi et al. (2023). “A fast method for robust video watermarking based on zernike moments”. In: *IEEE Transactions on Circuits and Systems for Video Technology*.
- Chen, Shuhao et al. (2021). “Emotion recognition based on skin potential signals with a portable wireless device”. In: *Sensors* 21.3, p. 1018.
- Chunawale, Abhishek and MV Bedekar (2020). “Human emotion recognition using physiological signals: A survey”. In: *2nd International Conference on Communication & Information Processing (ICCIP)*.
- Clynes, Manfred (1977). *Sentics: The touch of emotions*. Anchor Press.
- Costa, Yandre MG, Luiz S Oliveira, and Carlos N Silla Jr (2017). “An evaluation of convolutional neural networks for music classification using spectrograms”. In: *Applied soft computing* 52, pp. 28–38.
- Crawford, Kate and Trevor Paglen (2021). “Excavating AI: The politics of images in machine learning training sets”. In: *Ai & Society* 36.4, pp. 1105–1116.
- D’mello, Sidney K and Jacqueline Kory (2015). “A review and meta-analysis of multimodal affect detection systems”. In: *ACM computing surveys (CSUR)* 47.3, pp. 1–36.
- Dawson, Michael E, Anne M Schell, Diane L Filion, et al. (2007). “The electrodermal system”. In: *Handbook of psychophysiology* 2, pp. 200–223.
- Den Uyl, MJ and H Van Kuilenburg (2005). “The FaceReader: Online facial expression recognition”. In: *Proceedings of measuring behavior*. Vol. 30. 2. Citeseer, pp. 589–590.
- Dissanayake, Vipula et al. (2022). “SigRep: Toward Robust Wearable Emotion Recognition With Contrastive Representation Learning”. In: *IEEE Access* 10, pp. 18105–18120.
- Domínguez-Jiménez, Juan Antonio et al. (2020). “A machine learning model for emotion recognition from physiological signals”. In: *Biomedical signal processing and control* 55, p. 101646.

- Edelberg, Robert (1993). "Electrodermal mechanisms: A critique of the two-effector hypothesis and a proposed replacement". In: *Progress in electrodermal research*, pp. 7–29.
- Ekman, Paul (1992). "Are there basic emotions?" In.
- Elalamy, Rayan, Marios Fanourakis, and Guillaume Chanel (2021). "Multi-modal emotion recognition using recurrence plots and transfer learning on physiological signals". In: *2021 9th International Conference on Affective Computing and Intelligent Interaction (ACII)*. IEEE, pp. 1–7.
- Elbir, Ahmet et al. (2018). "Short Time Fourier Transform based music genre classification". In: *2018 Electric Electronics, Computer Science, Biomedical Engineerings' Meeting (EBBT)*. IEEE, pp. 1–4.
- Ellis, David et al. (2017). "Stress detection using wearable physiological and sociometric sensors". In.
- Feng, Xue et al. (n.d.). "Investigating the Physiological Correlates of Daily Well-being: A PERMA Model-Based Study". In: *The Open Psychology Journal* 13.1 ().
- Fere, C (1888). "Note on changes in electrical resistance under the effect of sensory stimulation and emotion". In: *Comptes rendus des seances de la societ  de biologie* 5, pp. 217–219.
- Fiorini, Laura et al. (2020). "Unsupervised emotional state classification through physiological parameters for social robotics applications". In: *Knowledge-Based Systems* 190, p. 105217.
- Freedman, Lauren W et al. (1994). "The relationship of sweat gland count to electrodermal activity". In: *Psychophysiology* 31.2, pp. 196–200.
- Frijda, Nico H (1986). *The emotions*. Cambridge University Press.
- Ganapathy, Nagarajan and Ramakrishnan Swaminathan (2019). "Emotion recognition using electrodermal activity signals and multiscale deep convolution neural network." In: *Studies in health technology and informatics* 258, pp. 140–140.

- Ganapathy, Nagarajan, Yedukondala Rao Veeranki, Himanshu Kumar, et al. (2021). “Emotion recognition using electrodermal activity signals and multiscale deep convolutional neural network”. In: *Journal of Medical Systems* 45.4, p. 49.
- Ganapathy, Nagarajan, Yedukondala Rao Veeranki, and Ramakrishnan Swaminathan (2020). “Convolutional neural network based emotion classification using electrodermal activity signals and time-frequency features”. In: *Expert Systems with Applications* 159, p. 113571.
- Gannouni, Sofien et al. (2021). “Emotion detection using electroencephalography signals and a zero-time windowing-based epoch estimation and relevant electrode identification”. In: *Scientific Reports* 11.1, p. 7071.
- García-Martínez, Beatriz et al. (2022). “Evaluation of brain functional connectivity from electroencephalographic signals under different emotional states”. In: *International Journal of Neural Systems* 32.10, p. 2250026.
- Ghiasi, Shadi et al. (2020). “Assessing autonomic function from electrodermal activity and heart rate variability during cold-pressor test and emotional challenge”. In: *Scientific reports* 10.1, p. 5406.
- Glowinski, Donald et al. (2011). “Toward a minimal representation of affective gestures”. In: *IEEE Transactions on Affective Computing* 2.2, pp. 106–118.
- Greco, Alberto, Gaetano Valenza, Antonio Lanata, et al. (2015). “cvxEDA: A convex optimization approach to electrodermal activity processing”. In: *IEEE transactions on biomedical engineering* 63.4, pp. 797–804.
- Greco, Alberto, Gaetano Valenza, Jesús Lázaro, et al. (2021). “Acute stress state classification based on electrodermal activity modeling”. In: *IEEE Transactions on Affective Computing* 14.1, pp. 788–799.
- Greco, Alberto, Gaetano Valenza, Mimma Nardelli, et al. (2016). “Force–velocity assessment of caress-like stimuli through the electrodermal activity processing: Advantages of a convex optimization approach”. In: *IEEE Transactions on Human-Machine Systems* 47.1, pp. 91–100.
- Gurney, Edmund (1884). “What is an emotion?” In: *Mind* 9.35, pp. 421–426.

-
- Haralick, Robert M, Karthikeyan Shanmugam, and Its' Hak Dinstein (1973). "Textural features for image classification". In: *IEEE Transactions on systems, man, and cybernetics* 6, pp. 610–621.
- Hassanpour, Ahmad et al. (2019). "A novel end-to-end deep learning scheme for classifying multi-class motor imagery electroencephalography signals". In: *Expert Systems* 36.6, e12494.
- Heinisch, Judith S, Isabel Hübener, and Klaus David (2018). "The Impact of Physical Activities on the Physiological Response to Emotions". In: *2018 IEEE International Conference on Pervasive Computing and Communications Workshops (PerCom Workshops)*. IEEE, pp. 824–829.
- Hernando-Gallego, Francisco, David Luengo, and Antonio Artés-Rodríguez (2017). "Feature extraction of galvanic skin responses by nonnegative sparse deconvolution". In: *IEEE journal of biomedical and health informatics* 22.5, pp. 1385–1394.
- Hinduja, Saurabh, Gurmeet Kaur, and Shaun Canavan (2021). "Investigation into Recognizing Context Over Time using Physiological Signals". In: *2021 9th International Conference on Affective Computing and Intelligent Interaction (ACII)*. IEEE, pp. 1–8.
- Horvers, Anne et al. (2021). "Detecting emotions through electrodermal activity in learning contexts: A systematic review". In: *Sensors* 21.23, p. 7869.
- Hossain, Md Motahar and Munish Gupta (2023). "Demonstrating the Impact of Financial Difficulties on Mental Stress". In: *2023 International Conference on Advanced Computing & Communication Technologies (ICACCTech)*. IEEE, pp. 341–346.
- Hu, Y et al. (2018). "Neural control of sweat secretion: a review". In: *British Journal of Dermatology* 178.6, pp. 1246–1256.
- Huang, Shitong et al. (2018). "Detection of mental fatigue state with wearable ECG devices". In: *International journal of medical informatics* 119, pp. 39–46.
- Ingle, Manasi Bharat, Chetan Tanaji Rakshe, Jac Fredo Agastinose Ronickom, et al. (2023). "Advancing ASD Diagnostic Classification with Features of Continuous Wavelet Transform of fMRI and Machine Learning Algorithms". In: *2023 IEEE 5th International*

- Conference on Cybernetics, Cognition and Machine Learning Applications (ICCCMLA)*.
IEEE, pp. 571–577.
- Izard, Carroll E (1972). “Anxiety: A variable combination of interacting fundamental emotions”. In: *Anxiety: Current trends in theory and research* 1, pp. 55–106.
- Jain, Swayambhoo et al. (2016). “A compressed sensing based decomposition of electrodermal activity signals”. In: *IEEE Transactions on biomedical engineering* 64.9, pp. 2142–2151.
- Jang, Eun-Hye et al. (2015). “Analysis of physiological signals for recognition of boredom, pain, and surprise emotions”. In: *Journal of physiological anthropology* 34, pp. 1–12.
- Jiang, Jehn-Ruey and Hsueh-Chih Chen (2023). “Manufacturing Quality Prediction Based on Deep Learning in Conjunction with Gramian Angular and Markov Transition Fields”. In: *2023 International Conference on Consumer Electronics-Taiwan (ICCE-Taiwan)*. IEEE, pp. 439–440.
- Jin, Huibin and Shouyi Chen (2023). “Biometric Recognition Based on Recurrence Plot and InceptionV3 Model Using Eye Movements”. In: *IEEE Journal of Biomedical and Health Informatics*.
- Katsis, Christos D, Nikolaos S Katertsidis, and Dimitrios I Fotiadis (2011). “An integrated system based on physiological signals for the assessment of affective states in patients with anxiety disorders”. In: *Biomedical Signal Processing and Control* 6.3, pp. 261–268.
- Kavasidis, Isaak et al. (2017). “Brain2image: Converting brain signals into images”. In: *Proceedings of the 25th ACM international conference on Multimedia*, pp. 1809–1817.
- Khalifa, Stéphanie et al. (2008). “Role of tempo entrainment in psychophysiological differentiation of happy and sad music?” In: *International Journal of Psychophysiology* 68.1, pp. 17–26.
- Khezri, Mahdi, Mohammad Firoozabadi, and Ahmad Reza Sharafat (2015). “Reliable emotion recognition system based on dynamic adaptive fusion of forehead biopotential signals”.

- tials and physiological signals”. In: *Computer methods and programs in biomedicine* 122.2, pp. 149–164.
- Kim, Ah Young et al. (2018). “Automatic detection of major depressive disorder using electrodermal activity”. In: *Scientific reports* 8.1, p. 17030.
- Koelstra, Sander et al. (2011). “Deap: A database for emotion analysis; using physiological signals”. In: *IEEE transactions on affective computing* 3.1, pp. 18–31.
- Kołodziej, Marcin et al. (2019). “Electrodermal activity measurements for detection of emotional arousal”. In: *Bulletin of the Polish Academy of Sciences. Technical Sciences* 67.4, pp. 813–826.
- Kroupi, Eleni, Jean-Marc Vesin, and Touradj Ebrahimi (2013). “Phase-amplitude coupling between EEG and EDA while experiencing multimedia content”. In: *2013 Humaine Association Conference on Affective Computing and Intelligent Interaction*. IEEE, pp. 865–870.
- Kumar, Nagendra et al. (2021). “CNN based approach for Speech Emotion Recognition Using MFCC, Croma and STFT Hand-crafted features”. In: *2021 3rd International Conference on Advances in Computing, Communication Control and Networking (ICAC3N)*. IEEE, pp. 981–985.
- Kumar, P Sriram et al. (2023). “A comparative analysis of eda decomposition methods for improved emotion recognition”. In: *Journal of Mechanics in Medicine and Biology* 23.06, p. 2340043.
- KumarP, Sriram and Jac Fredo Agastinose Ronickom (2023). “Investigating the Effects of Two-Class Categorical Emotion Classification Through Electrodermal Activity and Machine Learning”. In: *2023 IEEE 5th International Conference on Cybernetics, Cognition and Machine Learning Applications (ICCCMLA)*. IEEE, pp. 594–599.
- Laborde, Sylvain, Fabrice Dosseville, and Mark S Allen (2016). “Emotional intelligence in sport and exercise: A systematic review”. In: *Scandinavian journal of medicine & science in sports* 26.8, pp. 862–874.

- Lee, Myeongkyu et al. (2023). “Effect of emotion on galvanic skin response and vehicle control data during simulated driving”. In: *Transportation research part F: traffic psychology and behaviour* 93, pp. 90–105.
- Levenson, Robert W (2014). “The autonomic nervous system and emotion”. In: *Emotion review* 6.2, pp. 100–112.
- Li, Frédéric et al. (2020). “Deep transfer learning for time series data based on sensor modality classification”. In: *Sensors* 20.15, p. 4271.
- Li, Wanxiang et al. (2022). “A novel intelligent fault diagnosis method of rotating machinery based on signal-to-image mapping and deep Gabor convolutional adaptive pooling network”. In: *Expert Systems with Applications* 205, p. 117716.
- Liu, Shuaiqi et al. (2023). “EEG emotion recognition based on the attention mechanism and pre-trained convolution capsule network”. In: *Knowledge-Based Systems* 265, p. 110372.
- Lu, Xin, Zhimin Chen, and Yuxuan Jia (2022). “Feature Extraction Method of UAV Life Detection Radar Signal Based on Markov Transition Field”. In: *2022 IEEE 5th International Conference on Electronics Technology (ICET)*. IEEE, pp. 191–194.
- Lutin, Erika et al. (2021). “Feature Extraction for Stress Detection in Electrodermal Activity.” In: *BIOSIGNALS*. Vienna, Austria, pp. 177–185.
- Machot, Al et al. (June 2018). “Improving subject-independent human emotion recognition using electrodermal activity sensors for active and assisted living”. In: *Proceedings of the 11th Pervasive Technologies Related to Assistive Environments Conference*, pp. 222–228.
- Martinez, Raquel et al. (2019). “A self-paced relaxation response detection system based on galvanic skin response analysis”. In: *IEEE Access* 7, pp. 43730–43741.
- Meghrajani, Vanee R et al. (2023). “A Comprehensive Analysis of Mental Health Problems in India and the Role of Mental Asylums”. In: *Cureus* 15.7.
- Mehrabian, Albert (1996). “Pleasure-arousal-dominance: A general framework for describing and measuring individual differences in temperament”. In: *Current Psychology* 14, pp. 261–292.

- Menghini, Luca et al. (2019). “Stressing the accuracy: Wrist-worn wearable sensor validation over different conditions”. In: *Psychophysiology* 56.11, e13441.
- Miranda, Jose A et al. (2021). “Fear recognition for women using a reduced set of physiological signals”. In: *Sensors* 21.5, p. 1587.
- Mirzaeian, Rezvan and Peyvand Ghaderyan (2023). “Gray-level co-occurrence matrix of Smooth Pseudo Wigner-Ville distribution for cognitive workload estimation”. In: *Bio-cybernetics and Biomedical Engineering* 43.1, pp. 261–278.
- Moradi, Foad et al. (2020). “A novel method for sleep-stage classification based on sonification of sleep electroencephalogram signals using wavelet transform and recurrent neural network”. In: *European Neurology* 83.5, pp. 468–486.
- Morris, Jon D (1995). “Observations: SAM: the Self-Assessment Manikin; an efficient cross-cultural measurement of emotional response”. In: *Journal of advertising research* 35.6, pp. 63–68.
- Nandi, Arijit et al. (2022). “Reward-penalty weighted ensemble for emotion state classification from multi-modal data streams”. In: *International journal of neural systems* 32.12, p. 2250049.
- Nikhil, V et al. (2024). “Revolutionizing Influenza A Detection in Humans: Unleashing the Power of XGBoost Classification”. In: *2024 IEEE International Conference for Women in Innovation, Technology & Entrepreneurship (ICWITE)*. IEEE, pp. 229–234.
- Ocuppaugh, Jaclyn, Ryan Baker, and Gautam Biswas (2020). “Modeling the Relationships Between Basic and Achievement Emotions in Computer-Based Learning Environments”. In.
- Öztürk, Şaban and Bayram Akdemir (2018). “Application of feature extraction and classification methods for histopathological image using GLCM, LBP, LBGLCM, GLRLM and SFTA”. In: *Procedia computer science* 132, pp. 40–46.
- Panksepp, Jaak (1986). “The anatomy of emotions”. In: *Biological foundations of emotion*. Elsevier, pp. 91–124.

- Patel, Sahaj Anilbhai and Abidin Yildirim (2023). “Non-stationary neural signal to image conversion framework for image-based deep learning algorithms”. In: *Frontiers in Neuroinformatics* 17, p. 1081160.
- Paula, Patrick Oliveira de et al. (2023). “Classification of image encoded SSVEP-based EEG signals using Convolutional Neural Networks”. In: *Expert Systems with Applications* 214, p. 119096.
- Picard, Rosalind W et al. (1997). *Affective Computing*.
- Pinto, Joana, Ana Fred, and Hugo Plácido da Silva (2019). “Biosignal-based multimodal emotion recognition in a valence-arousal affective framework applied to immersive video visualization”. In: *2019 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*. IEEE, pp. 3577–3583.
- Plutchik, Robert (1980). “A general psychoevolutionary theory of emotion”. In: *Theories of emotion*. Elsevier, pp. 3–33.
- Polo, Edoardo Maria et al. (2021). “Emotion recognition from multimodal physiological measurements based on an interpretable feature selection method”. In: *2021 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*. IEEE, pp. 989–992.
- Posada-Quintero, Hugo F and Ki H Chon (2020). “Innovations in electrodermal activity data collection and signal processing: A systematic review”. In: *Sensors* 20.2, p. 479.
- Posada-Quintero, Hugo F, John P Florian, et al. (2018). “Electrodermal activity is sensitive to cognitive stress under water”. In: *Frontiers in physiology* 8, p. 326478.
- Posada-Quintero, Hugo F, Natasa Reljin, et al. (2019). “Mild dehydration identification using machine learning to assess autonomic responses to cognitive stress”. In: *Nutrients* 12.1, p. 42.
- Qiu, Jie-Lin, Xin-Yi Qiu, and Kai Hu (2018). “Emotion recognition based on gramian encoding visualization”. In: *Brain Informatics: International Conference, BI 2018, Arlington, TX, USA, December 7–9, 2018, Proceedings 11*. Springer, pp. 3–12.
- Quazi, Muhammad Tauseef (2012). “Human emotion recognition using smart sensors”. In: *Palmerston North*.

- Quiroz, Juan Carlos, Elena Geangu, and Min Hooi Yong (2018). “Emotion recognition using smart watch sensor data: Mixed-design study”. In: *JMIR mental health* 5.3, e10153.
- Rahman, Jessica Sharmin, Md Zakir Hossain, and Tom Gedeon (2019). “Measuring Observers’ EDA Responses to Emotional Videos”. In: *Proceedings of the 31st Australian Conference on Human-Computer-Interaction*, pp. 457–461.
- Rao Veeranki, Yedukondala, Nagarajan Ganapathy, and Ramakrishnan Swaminathan (2021). “Electrodermal activity based emotion recognition using time-frequency methods and machine learning algorithms”. In: *Current Directions in Biomedical Engineering* 7.2, pp. 863–866.
- Ronicko, Jac Fredo Agastinose et al. (2020). “Diagnostic classification of autism using resting-state fMRI data improves with full correlation functional brain connectivity compared to partial correlation”. In: *Journal of Neuroscience Methods* 345, p. 108884.
- Russell, JA (1980). “A Circumplex Model of Affect *Journal of Personality and Social Psychology* 39”. In: *161-178*.
- Russell, James A. and Lisa Feldman Barrett (May 1999). “Core affect, prototypical emotional episodes, and other things called emotion: dissecting the elephant”. In: *Journal of Personality and Social Psychology* 76.5, pp. 805–819. DOI: [10.1037/0022-3514.76.5.805](https://doi.org/10.1037/0022-3514.76.5.805).
- Sakr, George E, Imad H Elhadj, and Huda Abou-Saad Huijer (2010). “Support vector machines to define and detect agitation transition”. In: *IEEE transactions on affective computing* 1.2, pp. 98–108.
- Sánchez-Reolid, Roberto, Francisco López de la Rosa, et al. (2022). “Machine learning techniques for arousal classification from electrodermal activity: A systematic review”. In: *Sensors* 22.22, p. 8886.
- Sánchez-Reolid, Roberto, Arturo Martínez-Rodrigo, et al. (2020). “Deep support vector machines for the identification of stress condition from electrodermal activity”. In: *International Journal of Neural Systems* 30.07, p. 2050031.

- Schmidt, Philip et al. (n.d.). “Introducing wesad, a multimodal dataset for wearable stress and affect detection”. In: *Proceedings of the 20th ACM international conference on multimodal interaction*, pp. 400–408.
- Shabu, SL Jany and C Jayakumar (2020). “Brain tumor classification with mri brain images using 2-level GLCM features and sparse representation based segmentation”. In: *2020 3rd International Conference on Intelligent Sustainable Systems (ICISS)*. IEEE, pp. 793–799.
- Sharma, Karan et al. (2019). “A dataset of continuous affect annotations and physiological signals for emotion analysis”. In: *Scientific data* 6.1, p. 196.
- Shu, Lin, Jinyan Xie, et al. (2018). “A review of emotion recognition using physiological signals”. In: *Sensors* 18.7, p. 2074.
- Shu, Lin, Yang Yu, et al. (2020). “Wearable emotion recognition using heart rate data from a smart bracelet”. In: *Sensors* 20.3, p. 718.
- Shukla, Jainendra et al. (2019). “Feature extraction and selection for emotion recognition from electrodermal activity”. In: *IEEE Transactions on Affective Computing* 12.4, pp. 857–869.
- Siirtola, Pekka (n.d.). “Continuous stress detection using the sensors of commercial smart-watch”. In: *Adjunct proceedings of the 2019 ACM international joint conference on pervasive and ubiquitous computing and proceedings of the 2019 ACM international symposium on wearable computers*, pp. 1198–1201.
- SK, P and Agastinose Ronickom JF (n.d.). “Optimal Electrodermal Activity Segment for Enhanced Emotion Recognition Using Spectrogram-Based Feature Extraction and Machine Learning.” In: *International Journal of Neural Systems* (), pp. 2450027–2450027.
- Soleymani, Mohammad et al. (2011). “A multimodal database for affect recognition and implicit tagging”. In: *IEEE transactions on affective computing* 3.1, pp. 42–55.
- Song, Juncai et al. (2023). “PMSLM Eccentricity Fault Diagnosis Based on Deep Feature Fusion of Stray Magnetic Field Signals”. In: *IEEE Transactions on Instrumentation and Measurement*.

- Sriram Kumar, P et al. (2023). “Electrodermal activity-based analysis of emotion recognition using temporal-morphological features and machine learning algorithms”. In: *Journal of Mechanics in Medicine and Biology* 23.06, p. 2340044.
- Sun, Junwei et al. (2023). “Memristor-based circuit design of PAD emotional space and its application in mood congruity”. In: *IEEE Internet of Things Journal* 10.18, pp. 16332–16342.
- Tao, Wei et al. (2020). “EEG-based emotion recognition via channel-wise attention and self attention”. In: *IEEE Transactions on Affective Computing* 14.1, pp. 382–393.
- Tarchanoff, J (1890). “Galvanic phenomena in the human skin during stimulation of the sensory organs and during various forms of mental activity”. In: *Pflügers Archiv für die gesammte Physiologie des Menschen und der Tiere* 46, pp. 46–55.
- Tronstad, Christian et al. (2022). “Current trends and opportunities in the methodology of electrodermal activity measurement”. In: *Physiological measurement* 43.2, 02TR01.
- Tsiaparas, Nikolaos N et al. (2010). “Comparison of multiresolution features for texture classification of carotid atherosclerosis from B-mode ultrasound”. In: *IEEE Transactions on Information Technology in Biomedicine* 15.1, pp. 130–137.
- Uban, Ana-Sabina, Berta Chulvi, and Paolo Rosso (2021). “An emotion and cognitive based analysis of mental health disorders from social media data”. In: *Future Generation Computer Systems* 124, pp. 480–494.
- Umair, Muhammad et al. (2021). “HRV and stress: A mixed-methods approach for comparison of wearable heart rate sensors for biofeedback”. In: *IEEE Access* 9, pp. 14005–14024.
- Veeranki, Yedukondala Rao, Luis Roberto Mercado Diaz, et al. (2024). “Non-Linear Signal Processing Methods for Automatic Emotion Recognition using Electrodermal Activity”. In: *IEEE Sensors Journal*.
- Veeranki, Yedukondala Rao, Nagarajan Ganapathy, et al. (2024). “Comparison of Electrodermal Activity Signal Decomposition Techniques for Emotion Recognition”. In: *IEEE Access*.

- Wang, Zhiguang and Tim Oates (2015). “Spatially encoding temporal correlations to classify temporal data using convolutional neural networks”. In: *arXiv preprint arXiv:1509.07481*.
- Wang et al. (2018). “EEG emotion recognition using dynamical graph convolutional neural networks and broad learning system”. In: *2018 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*. IEEE, pp. 1240–1244.
- Wu, Jia-Jhou and Sue-Ting Chang (2020). “Exploring customer sentiment regarding online retail services: a topic-based approach”. In: *Journal of Retailing and Consumer Services* 55, p. 102145.
- Wu, Yujin, Mohamed Daoudi, and Ali Amad (2023). “Transformer-based self-supervised multimodal representation learning for wearable emotion recognition”. In: *IEEE Transactions on Affective Computing*.
- Xiefeng, Cheng et al. (2019). “Heart sound signals can be used for emotion recognition”. In: *Scientific reports* 9.1, p. 6486.
- Xue, Tianju, Sigrid Adriaenssens, and Sheng Mao (2023). “Learning the nonlinear dynamics of mechanical metamaterials with graph networks”. In: *International Journal of Mechanical Sciences* 238, p. 107835.
- Yang, Kangning et al. (2021). “Behavioral and physiological signals-based deep multimodal approach for mobile emotion recognition”. In: *IEEE Transactions on Affective Computing* 14.2, pp. 1082–1097.
- Yang, Wenlu et al. (2018). “Physiological-based emotion detection and recognition in a video game context”. In: *2018 International joint conference on neural networks (IJCNN)*. IEEE, pp. 1–8.
- Yilmaz, Selim F et al. (2021). “Multi-label sentiment analysis on 100 languages with dynamic weighting for label imbalance”. In: *IEEE Transactions on Neural Networks and Learning Systems*.
- Zangróniz, Roberto et al. (2017). “Electrodermal activity sensor for classification of calm/distress condition”. In: *Sensors* 17.10, p. 2324.

- Zeng, Zhihong et al. (2007). “A survey of affect recognition methods: audio, visual and spontaneous expressions”. In: *Proceedings of the 9th international conference on Multimodal interfaces*, pp. 126–133.
- Zhang, Tianyi et al. (2020). “Cornet: Fine-grained emotion recognition for video watching using wearable physiological sensors”. In: *Sensors* 21.1, p. 52.
- (2022). “Weakly-supervised Learning for Fine-grained Emotion Recognition using Physiological Signals”. In: *IEEE Transactions on Affective Computing*.
- Zhong, Peixiang, Di Wang, and Chunyan Miao (2020). “EEG-based emotion recognition using regularized graph neural networks”. In: *IEEE Transactions on Affective Computing* 13.3, pp. 1290–1301.

List of Publications

List of Journals

1. **Sriram Kumar P** and **Jac Fredo AR**, “Optimal electrodermal activity segment for enhanced emotion recognition using spectrogram-based feature extraction and machine learning”, International Journal of Neural Systems, 2024.

[DOI:10.1142/S0129065724500278](https://doi.org/10.1142/S0129065724500278).

(Impact Factor: **8.00**)

2. **Sriram Kumar P**, Praveen Kumar G, Nagarajan G, and **Jac Fredo AR**, “A comparative analysis of EDA decomposition methods for improved emotion recognition”, Journal of Mechanics in Medicine and Biology, 2023.

[DOI: 10.1142/S0219519423400432](https://doi.org/10.1142/S0219519423400432).

(Impact Factor: **0.89**)

3. **Sriram Kumar P**, Praveen Kumar G, Nagarajan G, and **Jac Fredo AR**, “Electrodermal activity-based analysis of emotion recognition using temporal-morphological features and machine learning algorithms”, Journal of Mechanics in Medicine and Biology, 2023.

[DOI:10.1142/S0219519423400444](https://doi.org/10.1142/S0219519423400444).

(Impact Factor: **0.89**)

4. **Sriram Kumar P**, Praveen Kumar G, Abdul ASG, Nagarajan G, and **Jac Fredo AR**, “Deep learning-based automated emotion recognition using multimodal physi-

ological signals and time-frequency methods”. IEEE Transactions on Measurement and Instrumentation, Manuscript ID: TIM-24-00978 (Under Revision).

(Impact Factor: **5.6**)

5. **Sriram Kumar P** and **Jac Fredo AR**, “Emotion classification through optimal segments of EDA and texture analysis of time-encoded images with artificial intelligence”. IEEE Transactions on Measurement and Instrumentation, Manuscript ID: TIM-S-24-02382 (Under Revision)

(Impact Factor: **5.6**)

Presentations in International Conferences

1. **Sriram Kumar P**, Praveen Kumar G, Nagarajan G, and **Jac Fredo AR**, “Comparative analysis of electrodermal activity decomposition methods in emotion detection using machine learning”, Medical Informatics Europe (MIE), Gothenburg, Sweden, May 22-25, 2023.

[DOI: 10.3233/SHTI230067](https://doi.org/10.3233/SHTI230067).

2. **Sriram Kumar P** and **Jac Fredo AR**, “Investigating the effects of two-class categorical emotion classification through electrodermal activity and machine learning”, IEEE Fifth International Conference on Cybernetics, Cognition and Machine Learning Applications (ICCCMLA), Hamburg, Germany, October 7-8, 2023.

[DOI: 10.1109/ICCCMLA58983.2023.10346868](https://doi.org/10.1109/ICCCMLA58983.2023.10346868).

3. **Sriram Kumar P** and **Jac Fredo AR**, “Enhancing emotion recognition: Machine learning with phasic spectrogram texture features”, IEEE Fifth International Conference on Cybernetics, Cognition and Machine Learning Applications (ICCCMLA), Hamburg, Germany, October 7-8, 2023.

[DOI: 10.1109/ICCCMLA58983.2023.10346619](https://doi.org/10.1109/ICCCMLA58983.2023.10346619).

4. **Sriram Kumar P** and **Jac Fredo AR**, “Identification of optimal EDA segment for improved emotion detection using time-series image encoding and machine

- learning”, 61st International Biomedical Sciences Instrumentation Symposium and Rocky Mountain Bioengineering Symposium, Louisiana, USA, April 11-14, 2024.
5. **Sriram Kumar P** and **Jac Fredo AR**, “A comparative study of time-frequency methods for the effective classification of categorical emotions using EDA and deep learning”, 61st International Biomedical Sciences Instrumentation Symposium and Rocky Mountain Bioengineering Symposium, Louisiana, USA, April 11-14, 2024.
6. **Sriram Kumar P** and **Jac Fredo AR**, “Classification of emotional states using electrodermal activity and random forest”, 22nd International Conference on Mechanics in Medicine and Biology, Bologna, Italy, September 19-21, 2022.

Curriculum Vitae

1. **NAME:** Sriram Kumar P

2. **DATE OF BIRTH:** 20 January 1986

3. **EDUCATIONAL QUALIFICATIONS**

- **Bachelor of Technology** (2003 - 2007)

Institution: Kamala Institute of Technology and Science

Jawaharlal Nehru Technological University

Hyderabad, Telangana, India

Specialization: Electronics and Communication Engineering

- **Master of Engineering** (2007 - 2009)

Institution: Vasavi College of Engineering, Osmania University

Hyderabad, Telangana, India

Specialization: VLSI and Embedded System Design

- **Doctor of Philosophy** (2021 - 2024)

Institution: Indian Institution of Technology (BHU) Varanasi

Uttar Pradesh, India

Specialization: School of Biomedical Engineering