

A look into the categorization of neurological using deep learning

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ABSTRACT

Interpreting brainwave data has grown in popularity in recent years due to its efficiency in dealing with and treating a variety of illnesses related with the field of neuroscience. According to current trends, machine learning has shown numerous promising outcomes as compared to machine learning owing to its capacity to automatically extract end-to-end features from raw input data and subsequently provide superior classification results. This work analysed research studies that used several deep learning approaches, such as CNN, R-CNN, LSTM, GAN, and others, to classify EEG signals related to epileptic, sleeping stage, and cognitive stage problems.

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References

- [1] S. A. Bini, "Artificial Intelligence, Machine Learning, Deep Learning, and Cognitive Computing: What Do These Terms Mean and How Will They Impact Health Care?" *J. Arthroplasty*, vol. 33, no. 8, pp. 2358–2361, 2018, doi: 10.1016/j.arth.2018.02.067.
- [2] A. S. Sultan, M. A. Elgharib, T. Tavares, M. Jessri, and J. R. Basile, "The use of artificial intelligence, machine learning and deep learning in oncologic histopathology," *J. Oral Pathol. Med.*, vol. 49, no. 9, pp. 849–856, 2020, doi: 10.1111/jop.13042.
- [3] P. P. Shinde and S. Shah, "A Review of Machine Learning and Deep Learning Applications," *Proc. - 2018 4th Int. Conf. Comput. Commun. Control Autom. ICCUBEA 2018*, pp. 1–6, 2018, doi: 10.1109/IC- CUBEA.2018.8697857.
- [4] Q. Bi, K. E. Goodman, J. Kaminsky, and J. Lessler, "What is machine learning? A primer for the epidemiologist," *Am. J. Epidemiol.*, vol. 188, no. 12, pp. 2222–2239, 2019, doi: 10.1093/aje/kwz189.
- [5] J. Yu et al., "Noninvasive IDH1 mutation estimation based on a quantitative radiomics approach for grade II glioma." *Eur. Radiol.*, vol. 27, no. 8, pp. 3509–3522, 2017, doi: 10.1007/s00330-016-4653-3.

- [6] R. Chen and M. Snyder, "Promise of personalized omics to precision medicine," *Wiley Interdiscip. Rev. Syst. Biol. Med.*, vol. 5, no. 1, pp. 73–82, 2013, doi: 10.1002/wsbm.1198.
- [7] Rui Ha, Pengyu Liu and Kebin Jia, "An Improved Adaptive Median Filter Algorithm and Its Application", *International conference in Advances in Intelligent Information Hiding and Multimedia Signal Processing*, 2016.
- [8] Madhu S. Nair , P. M. Ameera Mol, "An Efficient Adaptive Weighted Switching Median Filter for Removing High Density Impulse Noise", *Springer ,J. Inst. Eng. India*, 95(3):255–278, 2014.
- [9] Duan F, Zhang Y-J,"A Highly effective impulse noise detection algorithm for switching median filters", *IEEE Signal Process. Lett.*, 17(7), pp. 647–650, 2010.
- [10] L. E. Rossovskii, "Image Filtering with the Use of anisotropic diffusion", *ISSN 0965-5425, Computational Mathematics and Mathematical Physics*, Vol. 57, No. 3, pp. 401–408, 2017.
- [11] Resmi R. Nair, Ebenezer David and Sivakumar Raja gopal, "A robust anisotropic diffusion filter with low arithmetic complexity for images", *EURASIP Journal on Image and Video Processing*, vol-48, 2019.
- [12] M. Hanmandlu, D.V. Ramona Murthy Vamsi Krishna Madasu, "Fuzzy Model based recognition of handwritten Hindi characters", *International Conference on Computer and Information Science (ICIS 2007) 0-7695-2841-4,IEEE 2007*.
- [13] Akanksha Gaur, Sunita Yadav, "Handwritten Hindi character recognition using K Means clustering and SVM", *International Symposium on Emerging Trends and Technologies in Libraries and Information Services*, pp. 65-70,IEEE 2015.
- [14] Nikita Singh, "An Efficient Approach for handwritten devanagari character recognition based on Artificial Neural Network", *IEEE 2018*.
- [15] Whig, P., & Ahmad, S. (2019). Methodology for Calibrating Photocatalytic Sensor Output. *International Journal of Sustainable Development in Computing Science*, 1(1), 1-10. Retrieved from <https://ijsdcs.com/index.php/ijsdcs/article/view/4>
- [16] Pawan Whig and S. N Ahmad, "CMOS Integrated VDBA-ISFET Device for Water Quality Monitoring, *International journal of intelligent engineering and systems*, accepted for publication 2014, Vol.7, No.1,2014. (Scopus) ISSN: 2185-3118
- [17] Pawan Whig and Vaibhav Bhatia," Performance Analysis of Multi-Functional Bot System Design Using Microcontroller" *International Journal of Intelligent Systems and Applications*,2014 ,02 pp 69-75.ISSN No: 2074-9058
- [18] Pawan Whig and S. N. Ahmad, "Development of Low Power Dynamic Threshold PCS System", *Journal of Electrical and Electronic Systems*,2014, Vol. 3, Issue3, pp. 1-6. ISSN No:2332-0796
- [19] Pawan Whig and S. N. Ahmad, "Novel FGMOS Based PCS Device for Low Power Applications ",*Photonic Sensor(Springer)*, 2015,Vol.5,Issue 2, pp 1-5.(SCI, ISI Index) ISSN No: 1674-9251

- [20] Pawan Whig and S. N. Ahmad, "Impact of Parameters on characteristic of Novel PCS", *Canadian journal of Basic and applied Science*, 2015, Vol.3, Issue2, pp 45-52. ISSN No: 2292-3381
- [21] Ruchin, Chandan Mahto and Pawan Whig, "Design and Simulation of Dynamic UART Using Scan Path Technique (USPT)", *International Journal of Electrical, Electronics & Computer Science Engineering* 2015, Vol 1, pp 6-11. ISSN No: 2348-2273
- [22] Aastha Sharma, Abhishek Kumar, Pawan Whig, "On the performance of CDTA based novel analog inverse low pass filter using 0.35 μ m CMOS parameter", *International Journal of Science, Technology & Management*, 2015, Vol 4, Issue 1, pp. 594-601. ISSN No: 1460-6720
- [23] Pawan Whig and S. N Ahmad, "Simulation and Performance Analysis of Low Power Quasi Floating Gate PCS Model", *International Journal of Intelligent Engineering and Systems*, 2016, Vol 9, Issue 2, pp. 8-13(Scopus). ISSN: 2185-3118
- [24] Pawan Whig and S. N Ahmad, "Ultraviolet Photo Catalytic Oxidation (UVPCO) Sensor for Air and Surface Sanitizers Using CS amplifier", *global Journal of researches in engineering: F* 2016, Vol. 16, Issue 6, pp.1-13. ISSN Numbers: Online: 2249-4596 Print: 0975-5861 DOI: 10.17406/GJRE
- [25] Arrese A and Albarran AB (2003) *Time and media markets: Summary and research agenda*. In: Albarran AB and Arrese A (eds) *Time and Media Markets*. London: Lawrence Erlbaum Associates Publishers, pp. 161–171.