

International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)

International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Volume 3, Issue 16, May 2023

## Signature Verification using CNN

Hrishikesh Mhaske<sup>1</sup>, Rushikesh Bhalerao<sup>2</sup>, Sanket Walke<sup>3</sup>, Vaibhav Gholap<sup>4</sup>, Prof. Puja Lingampalli<sup>5</sup> <sup>1,2,3,4</sup>Student, Computer Engineering, Rajiv Gandhi College of Engineering, Karjule Harya, India <sup>5</sup>Assistant Professor, Computer Engineering, Rajiv Gandhi College of Engineering, Karjule Harya, India

Abstract: One of the most popular verification biometrics is the signature. The usage of handwritten signatures incheques, applications, letters, forms, minutes, etc. A person's handwritten signature must be individually identified because each individual's signature is unique by nature. Verifying signatures is a popular utilised technique for verifying someone while they are away. Human verification can be inaccurate and occasionally unsure. The most common method for confirming a person or a private is with a signature. A person's signature is used to identify them in all social, professional, and commercial contexts. The word "signature may be a behavioural biometric trait that combines the signer's neuromotor characteristics (e.g., how our brain and muscles, among other things, shape how we tend to sign) as well as sociocultural influences (e.g., the differences between Western and Asian styles). Through the ages, United Nations agency experts have constructed signature examinations to verify the validity of sample-supported rhetorical analysis.

**Keywords:** CNN (Convolutional Neural Network), Signature Verification, Support Vector Machine, Biometric Analysis.

## REFERENCES

- [1] Bharadi, V. A. & Singh, V. I. (2014), 'Hybrid Wavelets based Feature Vector Generation from Multidimensional Data set for On-line Handwritten Signature Recognition', 5th International Conference- Conuencethe Next Generation Information Technology Summit (Conuence pp. 561-568).
- [2] Chang, H., Dai, D., Wang, P. & Xu, Y. (2012), 'Online Signature Verification Using Wavelet Transform of Feature Function Architecture of an Online Signature Verification System', 11(2011), 3135-3142.
- [3] Fernandes, J. & Bhandarkar, N. (n.d.), 'Enhanced online signature verification system', International Journal of Emerging Trends and Technology in Computer Science (IJETTCS), Volume 3, Issue 6, November - December 2014, pp. 205-209, ISSN 2278-6856.
- [4] Fierrez-aguilar, J., Krawczyk, S., Ortega-garcia, J. & Jain, A. K.(2005), 'Fusion of Local and Regional Approaches for On-Line Signature Verification', Iwbrs 2005 LNCS 3781, 188-196.
- [5] Hafemann, L. G., Sabourin, R. & Oliveira, L. S. (2017), 'Learning features for online handwritten signature verification using deep convolutional neural networks', Pattern Recognition 70, 163-176.
- [6] Iranmanesh, V., Ahmad, S. M. S., Adnan, W. A. W., Yussof, S., Arigbabu, O. A. &Malallah, F. L. (2014), 'Online Handwritten Signature Verification Using Neural Network Classifier Based on Principal Component Analysis', The Scientific World Journal 2014, 1-9.
- [7] Jain, A. K., Ross, A. A. & Nandakumar, K. (2011), Introduction, in 'Introduction to Biometrics', Springer, pp. 1-49.
- [8] Kaur, M. R. & Choudhary, M. P. (2015), 'Handwritten Signature Verification Based on Surf Features Using Hmm', 3(1), 187-195.
- [9] Khalil, M., Moustafa, M. & Abbas, H. (2009), 'Enhanced DTW based on-line signature verification', Image Processing (ICIP), 2009 16<sup>th</sup>IEEE International Conference on pp. 2713-2716.
- [10] Liu, Y., Yang, Z. & Yang, L. (2015), 'Online signature verification based on dct and sparse representation', IEEE transactions on cybernetics 45(11), 2498-2511.
- [11] Nagbhidkar, K. P. &Bagdi, P. V. (2015), `Online Signature Verification on smart phone using discrete wavelet transforms.', 2(2), 1-6.

Copyright to IJARSCT www.ijarsct.co.in DOI: 10.48175/568



## IJARSCT



International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)

International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

## Volume 3, Issue 16, May 2023

- [12] Nanni, L., Maiorana, E., Lumini, A. &Campisi, P. (2010), 'Combining local, regional and global matchers for a template protected on-line signature verification system', Expert Systems with Applications 37(5), 3676-3684.URL: http://dx.doi.org/10.1016/j.eswa.2009.10.023
- [13] Parodi, M. & Gomez, J. C. (2014), 'Legendre polynomials-based feature extraction for online signature verification. Consistency analysis of feature combinations', Pattern Recognition 47(1), 128-140.URL: http://dx.doi.org/10.1016/j.patcog.2013.06.026.
- [14] Plamondon, R., Pirlo, G. &Impedovo, D. (2014), Online signature verification, in 'Handbook of Document Image Processing and Recognition', Springer, pp. 917-947.
- [15] Plotz, T. & Fink, G. a. (2009), 'Markov models for offline handwriting recognition: A survey', International Journal on Document Analysis and Recognition 12, 269-298.
- [16] Rua, E. A. & Castro, J. L. A. (2012), 'Online signature verification based on generative models', IEEE Trans. Syst., Man, Cybern. B, Cybern 42(4), 1231-1242.
- [17] Saffar, M. H., Fayyaz, M., Sabokrou, M. & Fathy, M. (2018), 'Online signature verification using deep representation: A new descriptor', arXiv preprint arXiv:1806.09986.
- [18] Sharma, A. & Sundaram, S. (2016), 'An enhanced contextual dtw based system for online signature verification using vector quantization', Pattern Recognition Letters 84, 22-28.
- [19] Thumwarin, P., Pernwong, J. & Matsuura, T. (2013), 'FIR signature verification system characterizing dynamics of handwriting features.URL: http://asp.eurasipjournals.com/content/2013/1/183.

