Resume

1. **Name: Prof. Singara Singh**

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   Research Area: Machine Learning, Deep Learning, Federated Learning, Digital Image Processing, Information Security, Hyperspectral Imaging, Multispectral Imaging, Medical Imaging, Quantum Machine Learning.

2. **Qualifications**

   ➢ Ph**.** D. (Computer Science) from Thapar University Patiala.

   ➢ M**.** Tech. (Computer Science and Engineering) from Guru Jambeshwar University of Science and Technology, Hisar.

3. Experience

Sr. No	Designation	Nature of Job	Duration
1	Professor, Computer Science and Information Technology, Central University of Haryana Mahendergarh	Teaching and Research	16 December 2022- till Date
2	Associate Professor Computer Science and Engineering Department Thapar Institute of Engineering and Technology, Patiala	Teaching and Research	13 March 2018 – 15 Dec 2022
3	Assistant Professor, Computer Science and Engineering Department Thapar University, Patiala	Teaching and Research	12 August 2003 to 12 March 2018
4	Lecturer, DAV Centenary College, Faridabad	Teaching	1 year
5	Programmer, Excel Computer Services	Software Development	2 years

4. Sponsored Research Projects

Sr. No.	Project Title	Agency	Team Members	Amount	Status
1	To Develop a Universal Power Train Controller for PMSM and Induction Motor used in Electric Vehicle from TRL-5	Department of Science and Technology, Govt of India	Prof Mukesh Singh Prof Singara Singh Dr. P. S. Rana	1.02 Crore	Ongoing
2	Hybrid control strategy involving daylight harvesting for lighting applications in smart buildings	Council of Scientific and Industrial Research, Govt of India	Dr Mukesh Singh Dr R. S. Kaler Dr Singara Singh	25 Lakh	Completed
3	Designing of AC and DC Net Meter for Electric Vehicle Applications	Department of Science and Technology, Govt of India	Dr Mukesh Singh Dr R. S. Kaler Dr Singara Singh	55 Lakh	Completed

5. Ph. D. Thesis Supervised

Sr. No.	Name of Scholar	Thesis Title	Year of Award	Co-Guide
1.	Himanshu Jindal	Procreation of Energy Efficient Topologies for Data Transmission in Underwater Sensor Network	2019	Dr. Sharad Saxena

2.	Ram Paul	Efficient Algorithms for Image Denoising using Wavelets	2019	Prof. Rajesh Gupta
3.	Isha Kansal	Development of Efficient Techniques for Fog Removal from Digital Images	2020	-
4.	Simranjit Singh	Efficient Classification and Soil Quantification using Hyperspectral Data	2020	-
5.	Gagandeep Kaur	Efficient Watermarking for High Efficiency Video Coding	2020	Prof. M. K. Sharma
6.	Sonal Kukreja	Development of Copyright Protection and Authentication Schemes with Extended Visual Cryptography	2021	Dr. Geeta Kasana
7.	Nitin Arvind Shelke	Development of Multiple Forgery Detection and Localization Techniques for Digital Video	2021	-
8.	Roopam Bamal	Development of Efficient Watermarking Techniques for Medical Images	2023	-
9.	Nazir Bhat	Energy Management in Vehicle-to-Grid with Net-Meter using Machine Learning Techniques	On-going	Prof. Mukesh Singh
10.	Reaya Grewal	Towards Efficient Segmentation of Hyperspectral Images	On-going	Dr. Geeta Kasana

6. List of Publications

A. SCI Journals:

i. **Singara Singh Kasana** and Ajayraj Singh Rathore, Attention-Based Light Weight Deep Learning Models for Early Potato Disease Detection, Applied Sciences, 14(17), 8038, 2024, Impact Factor:2.5.

ii. Reaya Grewal, Geeta Kasana, **Singara Singh Kasana**, A Novel Technique for Semantic Segmentation of Hyperspectral Images Using Multi-View Features, Applied Sciences, 14 (11), 4909, 2024, Impact Factor: 2.5.

iii.   Sławomir Zator Michał Tomaszewski, · Rafał Gasz, **Singara Singh Kasana**, Jakub Osuchowsk, Simranjit Singh, TCIP: Transformed Colour Intensity Profiles Analysis for Fault Detection in Power Line Insulators, Multimedia Tools and Applications, 2024, Impact Factor: 3.0, ISSN: 1380-7501.

iv.   Nitin Arvind Shelke and **Singara Singh Kasana**, Multiple Forgery Detection in Digital Video with VGG-16-based Deep Neural Network and KPCA, Multimedia Tools and Applications, 83(2), pp. 5415-5435, 2024, Impact Factor: 3.0, ISSN: 1380-7501.

v.   H Jindal, M Bharti, **Singara Singh Kasana** and S. Saxena, An ensemble mosaicing and ridgelet based fusion technique for underwater panoramic image reconstruction and its refinement, Multimedia Tools and Applications, 82, pp. 33719–33771, 2023, Impact Factor: 3.0, ISSN: 1380-7501.

vi.   Reaya Grewal, **Singara Singh Kasana** and Geeta Kasana, Hyperspectral Image Segmentation: A Comprehensive Survey, Multimedia Tools and Applications, 82 (14), pp. 20819-20872, 2023, Impact Factor: 3.0, ISSN: 1380-7501.

vii.   Simranjit Singh and **Singara Singh Kasana**, Quantitative Estimation of Soil Properties using Hybrid Features and RNN Variants, Chemosphere, Vol. 287, pp. 1-10, Impact Factor: 8.1, 2022, ISSN: 0045-6535.

viii.   Nitin Arvind Shelke and **Singara Singh Kasana**. Multiple forgery detection and localization technique for digital video using PCT and NBAP, Multimedia Tools and Applications, pp.1-29, 2021, Impact Factor: 3.0, ISSN: 1380-7501.

ix.   Nitin Arvind Shelke and **Singara Singh Kasana**. A comprehensive survey on passive techniques for digital video forgery detection, Multimedia Tools and Applications, Vol. 80, pp. 6247-6310, 2021, Impact Factor: 3.0, ISSN: 1380-7501.

x.   Nitin Arvind Shelke and **Singara Singh Kasana**, Multiple Forgeries Identification in Digital Video based on Correlation Consistency between Entropy Coded Frames, Multimedia Systems, Vol. 28, pp. 267-280, Impact Factor =3.5, 2021, ISSN: 1432-1882.

xi.   Sonal Kukreja, Geeta Kasana, and **Singara Singh Kasana,** Copyright Protection Scheme for Color Images using Extended Visual Cryptography, Computers & Electrical Engineering Journal, Vol. 91, pp. 106931(1-19), 2021, Impact Factor:4.0, ISSN: 0045-7906.

xii.   Simranjit Singh and **Singara Singh Kasana**, A Pre-processing framework for spectral classification of hyperspectral images", Multimedia Tools and Applications, Vol. 80, pp. 243-262, 2021, Impact Factor=3.0, ISSN: 1380-7501.

xiii. Sonal Kukreja, Geeta Kasana, and **Singara Singh Kasana**. "Extended visual cryptography-based copyright protection scheme for multiple images and owners using LBP–SURF descriptors" Visual Computer, Vol. 37, pp. 1481-1498, 2021, Impact Factor= 3.0, ISSN: 0178-2789.

xiv. Sonal Kukreja, Geeta Kasana, and **Singara Singh Kasana**. "Curvelet transform based robust copyright protection scheme for color images using extended visual cryptography", Multimedia Tools and Applications, Vol. 79, pp. 26155-26179, 2020, Impact Factor=3.0, ISSN: 1380-7501.

xv. Isha Kansal and **Singara Singh Kasana**, Improved Color Attenuation Prior based Image De-fogging Technique, Multimedia Tools and Applications, Vol. **79**, pp. 12069–12091, 2020, Impact Factor=3.0, ISSN: 1380-7501.

xvi. Sonal Kukreja, Geeta Kasana and **Singara Singh Kasana**, Cellular Automata Based Image Authentication Scheme Using Extended Visual Cryptography, Computing and Informatics, Vol. 38, Issue 6, pp. 1272-1300, 2019, Impact Factor = 0.7, ISSN: 1335-9150.

xvii. Simranjit Singh and **Singara Singh Kasana**, "Estimation of Soil Properties from the EU Spectral Library using Long Short Term Memory Networks", Geoderma Regional, Vol.18, pp. 1-12(e00233), 2019, Impact Factor=3.1, ISSN: 2352-0094.

xviii. Gagandeep Kaur, **Singara Singh Kasana** and M. K. Sharma, An Efficient Authentication Scheme for High Efficiency Video Coding/H.265, Multimedia Tools and Applications, Vol. 78, Issue , pp. 21245-21271, 2019, Impact Factor=3.0, ISSN: 1380-7501.

xix. Gagandeep Kaur, **Singara Singh Kasana** and M. K. Sharma, An Efficient Watermarking Scheme for Enhanced High Efficiency Video Coding/H.265, Multimedia Tools and Applications, Vol. 78, Issue 9, pp. 12537-12559, 2019, Impact Factor=3.0, ISSN: 1380-7501.

xx. Sonal Kukreja, **Singara Singh Kasana** and Geeta Kasana, Histogram based Multilevel Reversible Data Hiding Scheme using Simple and Absolute Difference Images, *Multimedia Tools and Applications*, Vol. 78, Issue 5, pp. 6139-6162, 2019, Impact Factor=3.0, ISSN: 1380-7501.

xxi. Sonal Kukreja, **Singara Singh Kasana** and Geeta Kasana, Adaptive Reversible Data Hiding Scheme for Digital Images based on Histogram Shifting, *Computing and Informatics*, Vol. 38, Issue 2, pp.321-342, 2019, Impact Factor = 0.7, ISSN: 1335-9150.

xxii. Roopam Bamal and **Singara Singh Kasana**, Dual Hybrid Medical Watermarking using Walsh Slantlet Transform, *Multimedia Tools and Applications*, Vol. 78, pp. 17899–17927, 2019, Impact Factor=3.0, ISSN: 1380-7501.

xxiii. Isha Kansal and **Singara Singh Kasana,** Fusion based Image De-fogging using Dual Tree Complex Wavelet Transform, *International Journal of Wavelets, Multiresolution and Information Processing*, Vol. 16, Issue 5, pp. 1850054(1-27), 2018, Impact Factor = 1.1, ISSN: 0219-6913.

xxiv. Isha Kansal and **Singara Singh Kasana**, Minimum Preserving Subsampling based Fast Image De-fogging, *Journal of Modern Optics*, vol. 65, Issue 18, pp. 2103-2123, 2018, Impact Factor=1.2, ISSN: **0950-0340**.

xxv. Kirti Dhiman and **Singara Singh Kasana**, Sharing Two True Color Images using (3, 3) Extended Visual Cryptography, *Journal of Modern Optics*, vol. 65, issue 17, pp. 1949-1959, 2018, Impact Factor=1.2, ISSN: **0950-0340**.

xxvi. Simranjit Singh and **Singara Singh Kasana**, Efficient Classification of the Hyperspectral Images using Deep Learning, *Multimedia Tools and Applications*, vol. 77, Issue 20, pp 27061–27074, 2018, Impact Factor=3.0, ISSN: 1380-7501.

xxvii. Neeraj Jain and **Singara Singh Kasana,** High Capacity Reversible Data Hiding using Modified PVO Approach, *Journal of Circuits, Systems, and Computer*, vol. 27, Issue 11, pp. 1850175(1-19), 2018, Impact Factor= 0.9, ISSN: 0218-1266.

xxviii. Kirti Dhiman and **Singara Singh Kasana**, Extended Visual Cryptography Techniques for Color Images, *Computers & Electrical Engineering*, vol. 70, pp. 647-658, 2018, Impact Factor= 4.0, ISSN: 0045-7906.

xxix. Geeta Kasana and **Singara Singh Kasana**, Reference based Semi blind Image Watermarking Scheme in Wavelet Domain, *International Journal for Light and Electron Optics*, Volume 142, pp. 191-204, 2017, Impact Factor=2.443, ISSN: **0030-4026**.

xxx. Isha Kansal and **Singara Singh Kasana**, Weighted Image De-fogging using Luminance Dark Prior, *Journal of Modern Optics*, Vol. 64, Issue 19, pp. 1333641(1-13), 2017, Impact Factor=1.2, ISSN: **0950-0340**.

xxxi. Himanshu Jindal, Sharad Saxena and **Singara Singh Kasana**, A Sustainable Multi-Parametric Sensors Network Topology for River Water Quality Monitoring, *Wireless Networks*, Vol. 24, pp. 3241-3265, 2018, Impact Factor=2.1, ISSN: 1022-0038.

xxxii. Himanshu Jindal, Sharad Saxena and **Singara Singh Kasana**, Sewage Water Quality Monitoring Framework using Multi-parametric Sensors, *Wireless Personal Communications*, 97(1), pp. 881-913, 2017, Impact Factor=1.9, ISSN: **0929-6212**.

xxxiii. Roopam Bamal and **Singara Singh Kasana**, Slantlet based Hybrid Watermarking Technique for Medical Images, *Multimedia Tools and Applications*, Vol. 77, pp. 12493–12518, 2018, Impact Factor=3.0, ISSN: 1380-7501.

xxxiv. Himanshu Jindal, **Singara Singh Kasana**, Sharad Saxena, Underwater Pipelines Panoramic Image Transmission and Refinement using Acoustic Sensors, *International Journal of Wavelets, Multiresolution and Information Processing*, Volume 16, Issue 3, pp. 1850013(1-37), 2018. Impact Factor = 0.9, ISSN: 0219-6913.

xxxv. Himanshu Jindal, **Singara Singh Kasana**, Sharad Saxena, Triangular Pyramidal Topology to Measure Temporal and Spatial Variations in Shallow River Water using Ad-hoc Sensors Network, *Ad Hoc & Sensor Wireless Networks*, Volume 39, Number 1-4, pp. 1-35, 2017, Impact Factor = 0.6, ISSN: 1551-9899.

xxxvi. Pankaj Garg, **Singara Singh Kasana** and Geeta Kasana, Block based Reversible Data Hiding using Histogram Shifting and Modulus Operator for Digital Images, *Journal of Circuits, Systems and Computers,* 26(7), pp. 1750103(1-17), 2017, Impact Factor=0.9, ISSN: 0218-1266.

xxxvii. **Singara Singh**, R. K. Sharma and M. K. Sharma, Efficient Rate Control Approach for JPEG2000 Image Coding, *Journal of Electronic Imaging*, 21(3), pp. 033004(1-8), 2012, Impact Factor = 0.9, ISSN: 1017-9909.

B. Non-SCI Journals:

i. Ram Paul Hathwal, Rajesh Kumar Gupta and **Singara Singh Kasana** Performance Analysis of Impulse Denoising Techniques in Magnetic Resonance Imaging, International Journal of Computer Applications, 136(12), 2016, ISSN: 0975-8887.

ii. Chirag Garg and **Singara Singh Kasana,** Image Super Resolution using Fusion of Images, *International Journal of Image and Data Fusion*, 6(4), pp. 366-376, 2015, ISSN: 1947-9832.

iii. **Singara Singh,** R. K. Sharma and M. K. Sharma, Use of Wavelet Transform Extension for Graphics Image Compression using JPEG2000 standard, *International Journal of Image Processing*, 3(1), pp. 55-60, 2009, ISSN: 1985-2304.

iv. **Singara Singh**, R. K. Sharma and M. K. Sharma, Weighted Bit Rate Allocation in JPEG2000 Tile Encoding, *International Journal of Computer Science Issues*, 8(5), pp. 458-462, 2011, ISSN: 1694-0784.

v. **Singara Singh**, R. K. Sharma and M. K. Sharma, Post Processing Technique to Reduce Tile Boundary Artifacts in JPEG2000 Compressed Images, *International Journal of Multimedia and its Applications*, 4(1), pp. 127- 136, 2012, ISSN: 0975-5578.

C. Conference Publications:

i. Ishpreet Kaur, Mukesh Singh and **Singara Singh Kasana**, Early Detection of Fire in EV Battery Using Machine Learning Approach, IEEE International Conference on Metrology for eXtended Reality, Artificial Intelligence and Neural Engineering (MetroXRAINE), 2023.

ii. Sonal Kukreja, **Singara Singh Kasana**, Geeta Kasana, "Visual cryptography based robust copyright protection scheme to secure online color images with multiple owners", In Proceedings of Applications of Digital Image Processing XLII, SPIE Optics+ Photonics 2019, San Diego, USA, ISBN: 9781510629677

iii. Simranjit Singh and **Singara Sing Kasana**, Hyperspectral Image Classification using Spectral LSTM Networks, 40th Asian Conference on Remote Sensing, 14-18 Oct, 2019, Daejeon, Korea, ISBN: **9781713803263.**

iv. Sonal Kukreja, **Singara Singh Kasana**, Geeta Kasana, Random Grid based Extended Visual Secret Sharing Scheme for Image Authentication, 8th IEEE International Conference on Cloud Computing, Data Science & Engineering (Confluence), pp. 870-875, 11-12 Jan 2018,

v. Shivani Pahuja and **Singara Singh Kasana**, Halftone visual cryptography for color images, International Conference on Computer, Communications and Electronics (Comptelix), pp. 281-285, July1-2, 2017, Jaipur.

vi. Pankaj Garg and **Singara Singh Kasana,** Interpolation based Reversible Data Hiding Scheme for Digital Images, *21st Western Canadian Conference on Computing Education*, pp. 110-115, 6-7 May, 2016, Kamloops, Canada.

vii. Swati and **Singara Singh Kasana**, Region based blind Image Watermarking Scheme in Wavelet Domain, ACM International Conference on Advances in Information Communication Technology and Computing, pp. 1-4, 12 August 2016.

viii. Himanshu Jindal, **Singara Singh Kasana** and Sharad Saxena, Challenges and Issues in Underwater Acoustics Sensor Networks: A Review, International Conference on Parallel, Distributed and Grid Computing, pp. 251-255, 12 Dec, 2014.

ix. Richa Grover and **Singara Singh Kasana**, Ïmage Super Resolution by fast edge adaptive interpolation, *IEEE International Conference on Advanced Computing and Communication Systems*, pp. 1-5, Jan 5-7, 2015, Coimbatore.

x. Chirag Garg and **Singara Singh Kasana**, Analysis of various direction lifting schemes for JPEG2000 Standard, *IEEE International Conference on Recent Advances and Innovations in Engineering,* May 9-11, 2014.

xi. Himanshu Jindal, **Singara Singh Kasana** and Sharad Saxena, A Novel Image Zooming Approach using Wavelet Coefficients, *International Conference on Recent Cognizance in Wireless Communication and Image Processing*, Jan 16-18, pp. 1-7, 2015, Jaipur, ISBN: 978-81-322-2638-3.

7. PG Thesis: Guided- 32

(**Prof. Singara Singh**)