Brief Curriculum Vitae

Prof Phool Singh
MPhil, PhD, CSIR-NET, GATE (2006, AIR 23)
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Department of Mathematics under SoET, Central University of Haryana

Prof Phool Singh received his PhD in Mathematics from Banasthali University in the area of Computational Fluid Dynamics, and MPhil, MSc and BSc from Maharshi Dayanand University, Rohtak. He has been working at the Central University of Haryana as Professor of Mathematics under the School of Engineering and Technology. He is also Dean of School of Engineering and Technology and Nodal Officer of CUET. Earlier, Prof Singh has served Avvaiyar Government College for Women, Karaikal, Puducherry and The NorthCap University Gurugram as Assistant Professor of Mathematics. In 2006, he qualified CSIR-NET, and GATE (AIR- 23). He is an active researcher, and published more than 750 research papers in international journals of repute and edited four conference proceedings. He has diverse research interests encompassing optical image processing, computational neuroscience and computational fluid dynamics and promotes open source software like Scilab, Octave, Openfoam. He has also worked as a Principal Investigator in a project (Parkinson's disease) funded by Cognitive Science Research Initiative (CSRI-DST).

➢ **Work Experience (Total Experience: 16 Years)**

S. No.	Institute Name	Designation	Duration	Major Role
1	Central University of Haryana (CUH)	Professor	10 Months and continuing (21-Aug 21 to till date)	Teaching, Research and Administration
2	Central University of Haryana (CUH)	Associate Professor	3 Years (21-Aug 18 to 20-Aug-21)	Teaching, Research and Administration
3	Avvaiyar Government College for Women, Karaikal, Puducherry (UT)	Assistant Professor	7 Months (23- Jan 18 to 20-Aug-18)	Teaching
4	The NorthCap University, Gurugram, Haryana	Assistant Professor (AGP 8000)	10 Years and 5 Months (18-Sep-07 to 19-Jan-18)	Teaching, Research and Administration
5	GITM, Bilaspur, Gurgaon, Haryana	Lecturer	1 Year and 1 Month (08-Aug-06 to17-Sept-07)	Teaching

➢ **Administrative Experience in CUH (Last three year)**

S. No.	Responsibility	Duration	Specific Role

1	Dean, School of Engineering and Technology	27 Jan 2022	Academics and Research in SoET
2	Controller of Examination (In-charge)	30 Apr 2021 to 23 Aug 2021	Conducted two Examination Office role
3	Nodal officer: Common Universities Entrance Test (CUET) Central Universities Common Entrance Test (CUCET)	CUET-2022 CUCET 2021 CUCET-2020 CUCET-2019	Conducted entrance exam in four states including Haryana, Delhi, Uttar Pradesh, Uttarakhand and Chandigarh in CUCET 2019, 2020 Settling of accounts (Appr. 75 Lakhs)
4	Admission In-charge University level, Nodal Officer for Access: Student annual In-take of the Tripartite MoU (2020-21 & 2021-2022) between UGC, MHRD and CUH Member of Central Admission Advisory Committee	2019, 2020 and 2021	Hiring of agency for online counseling, Coordination with CUH departments Settling of accounts
5	First Appellate Authority- for RTI	Oct 2018 to 11 Feb 2020	Hearing appeals
6	Coordinator- Computer Centre	Jul 2019- Mar 2020	
7	Teacher-In-Charge B Tech CSE	27 Aug 2018 to 18 Mar 2020	Regular classes of students Streamlined syllabus Conducted Board of Studies
8	Member of various University level Committee – ➢ Cell handling Student's grievances related to examination and other academic activities in Covid-19 ➢ Necessary preparation for conduct of examination and declaration of result. ➢ Creation of Central Computing facility ➢ Creation of Central instrumentation Centre ➢ Purchase of hardware and software of Smart Classrooms items ➢ Local Purchase Committee ➢ Procurement of MS Office licenses for University Desktop Systems ➢ Procurement of 500 Quickheal Antivirus ➢ Inspection Committee for freshly purchased Consumable and non-Consumable items ➢ NIRF and AQAR Team member ➢ NAAC Coordinator		

➢ **Research Contribution** (Citations:690 h-index:14 i10-index:25 as per Google Scholar)
➢ **Research Interest:** Computational Imaging, Computational Neuroscience, Soft-computing
➢ **Research Publication in Journal (Last three year)**

S. No.	Details	Impact factor if any
1.	J. Kumar, P. Singh, A. K. Yadav, "Asymmetric double-image encryption using twin decomposition in fractional Hartley domain," Optica Applicata, vol. LII, No. 1, p. 21-35, 2022, doi: 10.37190/oa220102	0.518

2.	Sachin, P. Singh, "A novel chaotic Umbrella map and its application to image encryption," Opt Quant Electron, vol. 54, 266, 2022, doi:10.1007/s11082-022-03646-3	2.89
3.	Sachin, R. Kumar, and P. Singh, "Modified plaintext attacks in a session for an optical cryptosystem based on DRPE with PF", Applied Optics, vol. 61, No. 2, p. 623-628. Jan 2022, doi: 10.1364/AO.446070.	1.980
4.	Archana, P.Singh, and P. Rakheja, "Asymmetric watermarking scheme for color images using cascaded unequal modulus decomposition in Fourier domain", Journal of Modern Optics, vol. 68, No. 20, p.1094-1107, Sep 2021, doi:10.1080/09500340.2021.1977404	1.464
5.	P. Singh, R. Kumar, A. K. Yadav, and K. Singh, "Security analysis and modified attack algorithms for a nonlinear optical cryptosystem based on DRPE," Opt. Lasers Eng., vol. 139, p. 106501, Apr. 2021, doi: 10.1016/j.optlaseng.2020.106501.	4.836
6.	Archana, Sachin, and P. Singh, "Cascaded unequal modulus decomposition in Fresnel domain-based cryptosystem to enhance the image security," Opt. Lasers Eng., vol. 137, p. 106399, Feb. 2021, doi: 10.1016/j.optlaseng.2020.106399.	4.836
7.	P. Rakheja, P. Singh, and R. Vig, "An asymmetric image encryption mechanism using QR decomposition in hybrid multi-resolution wavelet domain," Opt. Lasers Eng., vol. 134, p. 106177, Nov. 2020, doi: 10.1016/j.optlaseng.2020.106177.	4.836
8.	P. Rakheja, R. Vig, and P. Singh, "Optical asymmetric watermarking using 4D hyperchaotic system and modified equal modulus decomposition in hybrid multi resolution wavelet domain," Optik, vol. 176, pp. 425–437, Jan. 2019, doi: 10.1016/j.ijleo.2018.09.088.	2.187
9.	P. Rakheja, R. Vig, and P. Singh, "An asymmetric hybrid cryptosystem using hyperchaotic system and random decomposition in hybrid multi resolution wavelet domain," Multimed. Tools Appl., Mar. 2019, doi: 10.1007/s11042-019-7406-x.	2.757
10.	P. Rakheja, R. Vig, and P. Singh, "Double image encryption using 3D Lorenz chaotic system, 2D non-separable linear canonical transform and QR decomposition," Opt. Quantum Electron., vol. 52, no. 2, p. 103, Feb. 2020, doi: 10.1007/s11082-020-2219-8.	2.084
11.	Sachin, R. Kumar, P. Singh, "Unequal modulus decomposition and modified Gerchberg Saxton algorithm based asymmetric cryptosystem in Chirp-Z transform domain, Optical and Quantum Electronics, Vol 53, no. 5, 2021 https://doi.org/10.1007/s11082-021-02908-w	2.084
12.	P. Rakheja, R. Vig, P. Singh, and R. Kumar, "An iris biometric protection scheme using 4D hyperchaotic system and modified equal modulus decomposition in hybrid multi resolution wavelet domain," Opt. Quantum Electron., vol. 51, no. 6, p. 204, Jun. 2019, doi: 10.1007/s11082-019-1921-x.	2.084
13.	P. Rakheja, R. Vig, and P. Singh, "An asymmetric hybrid cryptosystem using equal modulus and random decomposition in hybrid transform domain," Opt. Quantum Electron., vol. 51, no. 2, p. 54, Feb. 2019, doi: 10.1007/s11082-019-1769-0.	2.084
14.	P. Rakheja, R. Vig, and P. Singh, "An asymmetric watermarking scheme based on random decomposition in hybrid multi-resolution wavelet domain using 3D Lorenz chaotic system," Optik, vol. 198, p. 163289, Dec. 2019, doi: 10.1016/j.ijleo.2019.163289.	2.187

15.	P. Singh, A. K. Yadav, K. Singh, and I. Saini, "Asymmetric watermarking scheme in fractional Hartley domain using modified equal modulus decomposition," J. Optoelectron. Adv. Mater., vol. 21, no. 7–8, pp. 484–491, 2019.	0.631
16.	P. Rakheja, P. Singh, R. Vig, and R. Kumar, "Double image encryption scheme for iris template protection using 3D Lorenz system and modified equal modulus decomposition in hybrid transform domain," J. Mod. Opt., vol. 67, no. 7, pp. 592–605, Apr. 2020, doi: 10.1080/09500340.2020.1760384.	1.464
17.	A. K. Yadav, P. Singh, I. Saini, and K. Singh, "Asymmetric encryption algorithm for colour images based on fractional Hartley transform," J. Mod. Opt., vol. 66, no. 6, pp. 629–642, Mar. 2019, doi: 10.1080/09500340.2018.1559951.	1.464
18.	P. Rakheja, R. Vig, and P. Singh, "Asymmetric hybrid encryption scheme based on modified equal modulus decomposition in hybrid multi-resolution wavelet domain," J. Mod. Opt., vol. 66, no. 7, pp. 799–811, Apr. 2019, doi: 10.1080/09500340.2019.1574037.	1.464
19.	P. Rakheja, R. Vig, and P. Singh, "An asymmetric hybrid watermarking mechanism using hyperchaotic system and random decomposition in 2D Non-separable linear canonical domain," Proc. Indian Natl. Sci. Acad., Mar. 2019, doi: 10.16943/ptinsa/2019/49590.	1.544
20.	P. Singh, A. K. Yadav, S. Yadav, and K. Singh, "Security-enhanced cryptosystem in fractional Hartley domain using double random phase encoding with nonlinear mask," Asian Journal of Physics, vol. 30, no. 1, pp. 79–90, 2021.	
21.	S. Bhatia, P. Sharma, P. Singh, and P. Bhatia, "Analyzing the impact of temperature on axoplasmic fluid properties defining neuronal excitation," J. Therm. Eng., pp. 227–241, Mar. 2020, doi: 10.18186/thermal.710960.	
22.	S. Dhar, P. Singh, J. Singh, A. K. Yadav, and S. Yadav, "Analysis of discharge patterns of subthalamic nucleus and external globus pallidus coupling in Parkinson condition using particle swarm optimization algorithm," Dyn. Contin. Discrete Impuls. Syst. Ser. B Appl. Algorithms, vol. 28, pp. 25–40, 2021.	
23.	S. Dhar, S. Yadav, P. Singh, J. Singh, and A. K. Yadav, "Optimization of discharge patterns in parkinson condition In subthalamic nucleus model of basal ganglia using Particle swarm optimization algorithm," Adv. Math. Sci. J., vol. 9, no. 5, pp. 3135–3153, Jul. 2020, doi: 10.37418/amsj.9.5.72.	
24.	P. Rakheja, R. Vig, and P. Singh, "A hybrid multiresolution wavelet transform based encryption scheme," AIP Conf. Proc., vol. 2061, p. 020008, 2019, doi: 10.1063/1.5086630.	
25.	E. Kumari, S. Mukherjee, P. Singh, and R. Kumar, "Asymmetric color image encryption and compression based on discrete cosine transform in Fresnel domain," Results Opt., vol. 1, p. 100005, Nov. 2020, doi: 10.1016/j.rio.2020.100005.	
26.	E. Kumari, P. Singh, S. Mukherjee, and G. N. Purohit, "Analysis of triple random phase encoding cryptosystem in Fresnel domain," Results Opt., vol. 1, p. 100009, Nov. 2020, doi: 10.1016/j.rio.2020.100009.	
27.	V. Poply, P. Singh, and A. K. Yadav, "Analysis of stability and dual solution of MHD outer fluid velocity with partial slip on a stretching cylinder," Int. J. Adv. Trends Comput. Appl., vol. Special Issue 1, no. 1, pp. 194–203, 2019.	

| 28. | P. Singh, A. K. Yadav, S. Vashisth, and K. Singh, "Review of optical image encryption schemes based on fractional Hartley transform," Asian J. Phys., vol. 28, no. 7–9, pp. 701–716, 2019. | |

- ➢ **Research Publication in Book Chapter (Last three year)**

Sr.	Details of Chapter
1	Sachin, Singh, P., Kumar, R., Yadav, A.K. (2022). Asymmetric Cryptosystem for Color Images Based on Unequal Modulus Decomposition in Chirp-Z Domain. In: Gupta, G., Wang, L., Yadav, A., Rana, P., Wang, Z. (eds) Proceedings of Academia-Industry Consortium for Data Science. Advances in Intelligent Systems and Computing, vol 1411. Springer, Singapore. https://doi.org/10.1007/978-981-16-6887-6_27
2.	S. Dhar, P. Singh, J. Singh and A. K. Yadav, "Optimization of discharge patterns in Parkinson condition in External Globus Pallidus model of Basal Ganglia Using particle Swarm optimization algorithm," in Proceedings of International Conference on Trends in Computational and Cognitive Engineering, Singapore, 2021, pp. 281–291, doi: 10.1007/978-981-15-5414-8_23.
3.	J. Kumar, P. Singh, and A. K. Yadav, "Asymmetric color image encryption using singular value decomposition and chaotic Tinkerbell map in fractional Fourier domain," in Optics and Photonics for Information Processing XIV, Online Only, United States, Aug. 2020, p. 10, doi: 10.1117/12.2568447.
4.	E. Kumari, P. Singh, S. Mukherjee, and G. N. Purohit, "Optical Chaotic Cryptosystem for Phase Images Using Random Amplitude and Phase Masks with Lorenz Map in Fresnel Domain," in Proceedings of International Conference on Trends in Computational and Cognitive Engineering, Singapore, 2021, pp. 1–13, doi: 10.1007/978-981-15-5414-8_1.
5.	Sachin, Archana, and P. Singh, "Optical Image Encryption Algorithm Based on Chaotic Tinker Bell Map with Random Phase Masks in Fourier Domain," in Proceedings of International Conference on Data Science and Applications, Singapore, 2021, pp. 249–262, doi: 10.1007/978-981-15-7561-7_20.
6.	J. Kumar, P. Singh, and A. K. Yadav, "Asymmetric color image encryption using singular value decomposition and chaotic Tinkerbell map in fractional Fourier domain," in Optics and Photonics for Information Processing XIV, Online Only, United States, Aug. 2020, p. 10, doi: 10.1117/12.2568447.
7.	S. Dhar, J. Singh, P. Singh, and A. K. Yadav, "Stability and Bifurcation Analysis of Delayed Neural Network Using Harmonic Balance Approach," in 2019 6th International Conference on Signal Processing and Integrated Networks (SPIN), Noida, India, Mar. 2019, pp. 1053–1057, doi: 10.1109/SPIN.2019.8711676.
8.	S. Dhar, P. Singh, J. Singh and A. K. Yadav, "Optimization of discharge patterns in Parkinson condition in External Globus Pallidus model of Basal Ganglia Using particle Swarm optimization algorithm," in Proceedings of International Conference on Trends in Computational and Cognitive Engineering, Singapore, 2021, pp. 281–291, doi: 10.1007/978-981-15-5414-8_23.

- ➢ **PhD Supervision: Seven Ph.D. students** Awarded PhD degree

- ➢ **Edited Book:** Phool Singh, R.K. Gupta, K. Ray, A. Bandyopadhyay, **Proceedings of International Conference on Trends in Computational and Cognitive Engineering**: TCCE 2019, Springer, October 2020.

- ➤ **Conference Organized**: 3 days **International Conference on Trends in Computational and Cognitive Engineering**, November 28-30, 2019 as **Convener** and it is sponsored by CSIR and DST (Rs 1.25 Lakhs).

- ➤ **Award:** Awarded the **Best Researcher Award** for the year 2020 from SOET, CUH.

- ➤ **Project:** Completed a **DST sponsored Project under Cognitive Science Research Initiative (CSRI)** Scheme, entitled "A Computational model for STN (sub thalamic nucleus) in Parkinson Disease to investigate the discharge patterns" Sept 2015-Dec 2018, Amount Rs 15.58 Lakhs.

- ➤ Guided **Seven MSc Mathematics students** in their project in department of Mathematics, CUH.

- ➤ Guiding **five PhD students** in Department of Mathematics, CUH.

- ➤ Resource Person at **various UGC-Human Resource Development Centres, International Conferences, national conference and workshops.**

Phool Singh