


Title	Dr.	First Name	Harendra Pal	Last Name	Singh	Photograph
Designation	Assistant Professor					
Address	Room No.-206, Second Floor, Rugby Sevens Building, G.C. Narang Marg, University Stadium, Cluster Innovation Centre, University of Delhi, Delhi-110007.					
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Residence Mobile	9891910248					
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Educational Qualifications						
Degree	Institution				Year	
B.Sc.	C.C.S. University				2003	
M.Sc. (Mathematics)	C.C.S. University (Campus)				2005	
M.Phil. (Mathematics)	C.C.S. University (Campus)				2009	
Ph.D. (Mathematics)	I.I.T. Roorkee				2013	
Career Profile						
Cluster Innovation Centre, University of Delhi, Delhi-110007. 2015 – Onwards.						
Administrative Assignments						
<ul style="list-style-type: none"> • Member of Examination Committee • Member of Library Committee 						

- Convener of Grievance Committee
- Member of North-East Grievance Committee
- Member of Anti-Ragging Committee
- Member of Disciplinary Committee
- Member of Caste based Discrimination Committee

Areas of Interest / Specialization

- Robotics
- Modeling, Stability and Simulation: Ecology, Epidemiology, Eco-epidemiology
- Fractional Order Linear and Nonlinear Systems
- Modeling and Control of Dynamical Systems

Subjects Taught

- Linear Algebra (Undergraduate and Postgraduate)
- Ordinary Differential Equations (Undergraduate)
- Robotics (Undergraduate)
- Control Systems (Undergraduate)
- Probability and Statistics (Postgraduate)
- Calculus (Undergraduate and Postgraduate)
- Partial Differential Equations (Undergraduate)

Publications Profile

- P. Kumari, H. P. Singh, S. Singh, “Global stability of novel coronavirus model using fractional derivative”, Computational and Applied Mathematics, Springer, 2023. Accepted
- S. Kumar, A. Sharma, H. P. Singh, “Numerical solutions of fractional differential equation with multiple delays via block boundary value method”, International Journal of Dynamics and Control, <https://doi.org/10.1007/s40435-023-01209-2>, Springer, 2023.
- A. Sharma, Nilam, H. P. Singh, “Computer-controlled diabetes disease diagnosis technique based on fuzzy inference structure for insulin-dependent patients”, Applied Intelligence, <https://doi.org/10.1007/s10489-022-03416-4>, Springer, 2023.
- A. Sharma, H. P. Singh, Nilam, “Physical Exercise: Effective Aspect in Diabetes Management”, Advances in Intelligent Systems and Computing (Mathematical Modeling, Computational Intelligence Techniques and Renewable Energy), pp. 261–273, Springer, 2023.

- A. Sharma, H. P. Singh, Nilam, “A methodical survey of mathematical model-based control techniques based on open and closed loop control approach for diabetes management”, *International Journal of Biomathematics*, 2250051, <https://doi.org/10.1142/S1793524522500516>, World Scientific, 2022.
- P. Kumari, S. Singh, H. P. Singh, “Dynamical Analysis of COVID-19 Model Incorporating Environmental Factors”, *Iranian Journal of Science and Technology, Transactions A: Science*, 45, pp. 1743–1756, Springer, 2022.
- H. P. Singh, S. Bhatia, Y. Bahri, R. Jain, “Optimal control strategies to combat COVID-19 transmission: A mathematical model with incubation time delay”, *Results in Control and Optimization.*, 9, 100176, Elsevier. <https://doi.org/10.1016/j.rico.2022.100176>, Elsevier, 2022.
- K. Coble, A. Mahajan, S. Kaul, H. P. Singh, “Motion Model and Filtering Techniques for Scaled Vehicle Localization with Fiducial Marker Detection”, *Advances in Intelligent Systems and Computing (Soft Computing: Theories and Applications)*, https://doi.org/10.1007/978-981-16-1740-9_47, Springer, 2022.
- H. P. Singh, S. Arora, L. Sahota, M. K. Arora, A. Jain and A. Singh, “Evaluation of the performance parameters of a PVT system: Case study of composite environmental conditions for different Indian cities”, *Materials Today: Proceedings*, 57, pp. 1975-1984, Elsevier, 2022.
- H. P. Singh, S. Arora, A. Jain, N. Arora, A. Singh, R. Pal, “Systematic study of indian railways subnetwork: Zone specific analysis”, 11, pp. 151-161, 2022.
- H. P. Singh, S. K. Bhatia, R. Jain and Y. Bahri, “A Study on the effect of optimal control strategies: An SIR model with delayed logistic growth”, *Advances in Intelligent Systems and Computing (Soft Computing: Theories and Applications)*, pp. 1-11, Springer, 2021.
- P. Kumari, S. Singh and H. P. Singh, “Bifurcation and stability analysis of glucose-insulin regulatory system in the presence of β -cells”, *Iranian Journal of Science and Technology, Transactions A: Science*, Springer, 45, pp. 1743-1756, 2021.
- S. Kumar, A. Sharma and H. P. Singh, “Convergence and global stability analysis of fractional delay block boundary value methods for fractional differential equations with delay”, *Chaos Solitons & Fractals*, Elsevier, 2021.
- P. Kumari, H. P. Singh, S. Singh, “SEIAQRDT model for the spread of novel coronavirus (COVID-19) : A case study in India”, *Applied Intelligence*, DOI: 10.1007/s10489-020-01929-4, Springer, 2020.
- S. Arora, H. P. Singh, L. Sahota, M. K. Arora, R. Arya, S. Singh, A. Jain and A. Singh, “Performance and cost analysis of photovoltaic thermal (PVT) compound parabolic concentrator (CPC) collector integrated solar still using CNT-water based nanofluids”, *Desalination*, 495, 114595, Elsevier, 2020.

- L. Sahota, S. Arora, H. P. Singh and G. Sahoo, “Thermo-physical characteristics of passive double slope solar still loaded with MWCNTs and Al₂O₃-water based nanofluid”, *Materials Today: Proceedings*, <https://doi.org/10.1016/j.matpr.2020.01.600>, Elsevier, 2020.
- H. P. Singh, A. Jain, A. Singh and S. Arora, “Influence of absorber plate shape factor and mass flow rate on the performance of the PVT system”, *Applied Thermal Engineering*, 156, pp. 692-701, Elsevier, 2019.
- M. Rani, N. Kumar and H. P. Singh, “Motion/force control scheme for electrically driven cooperative multiple mobile manipulators,” *Control Engineering Practice*, 88, pp. 52-64, Elsevier, 2019.
- M. Rani, N. Kumar and H. P. Singh, “Force/motion control of constrained mobile manipulators including actuator dynamics”, *International Journal of Dynamics and Control*, <https://doi.org/10.1007/s40435-019-00523-y>, Springer, 2019.
- S. Kumar, C. Piciarelli and H. P. Singh, “Reconfiguration of PTZ camera network with minimum resolution”, *Harmony Search and Nature Inspired Optimization Algorithms*, pp. 869-878, Springer, 2019.
- Nilam Rathi, H. P. Singh, Surendra Kumar, “Modeling of a neural network based controller for vibration suppression of a building structure”, *AIP Conference Proceedings*, 1975, pp. , 2018.
- Manju Rani, Naveen Kumar and H. P. Singh, “Efficient position/force control of constrained mobile manipulators”, *International Journal of Dynamics and Control*, pp. 1-10, <https://doi.org/10.1007/s40435-018-0401-7>, Springer, 2018.
- Pradeep, Akanshu Mahajan, Varun Bharti, H. P. Singh, Lalita Josyula and Pravesh Kumar, “Construction of a 3D map of indoor environment”, *Procedia Computer Science*, 125, pp. 124-131, Elsevier, 2018.
- H. P. Singh, Surendra Kumar, Pravesh Kumar and Akanshu Mahajan, “Virtual experimental analysis of redundant robot manipulators using neural networks”, *Soft Computing: Theories and Applications. Advances in Intelligent Systems and Computing*, 584, pp. 21-30, Springer, 2018.
- Pravesh Kumar, Millie Pant and H. P. Singh, “Solving nonlinear optimization problems using IUMDE algorithm”, *Soft Computing: Theories and Applications. Advances in Intelligent Systems and Computing*, 584, pp. 245-254, Springer, 2018.
- Pravesh Kumar, Millie Pant, Musrrat Ali and H. P. Singh, “Enhanced DE with weighted base vector for unconstrained global optimization”, *Indian Journal of Science and Technology*, 10, pp. 1-16, 2017.
- Akanshu Mahajan, H. P. Singh and N Sukavanam, “An unsupervised learning based neural network approach for a robotic manipulator”, *International Journal of Information Technology*, 9, pp. 1-6, Springer, 2017.

- H. P. Singh, A. Mahajan and N. Sukavanam, V. Budhraj, S. Singh, A. Kumar, A. Vashisht, “Control of an autonomous industrial fire fighting mobile robot”, DU Journal of Undergraduate Research and Innovation, 1, pp.124-130, 2015.
- H. P. Singh “Simulation of Neural Network based Adaptive Compensator Control Scheme for Multiple Mobile Manipulators with Uncertainties”, International Journal of Nonlinear Sciences and Numerical Simulation, 15, pp. 1-8, De Gruyter, 2014.
- H. P. Singh and N. Sukavanam, “Stability analysis of robust adaptive hybrid position/force controller for robot manipulators using neural network with uncertainties”, Neural Computing and Applications, 22, pp. 1745-1755, Springer, 2013.
- H. P. Singh and N. Sukavanam, “Neural network based control scheme for redundant robot manipulators subject to multiple self-motion criteria”, Mathematical and Computer Modelling, 55, pp. 1275-1300, Elsevier, 2012.
- H. P. Singh and N. Sukavanam, “Simulation and stability analysis of neural network based control scheme for switched linear systems”, ISA Transactions, 51, pp. 105-110, Elsevier, 2012.
- H. P. Singh and N. Sukavanam, “Intelligent robust adaptive trajectory and force tracking control for holonomic constrained nonholonomic mobile manipulators”, Advanced Science Letters, 16, pp. 313-321, American Scientific Publishers, 2012.
- H. P. Singh and N. Sukavanam, “Control of robot manipulators in task-space under uncertainties using neural network”, International Journal of Intelligent Engineering Informatics, 1, pp. 142-155, Inderscience, 2011.
- H. P. Singh and N. Sukavanam, “Neural network based adaptive compensator for motion/force control of constrained mobile manipulators with uncertainties”, in proceeding of IEEE HIS-2011, Malacca, Malaysia, 5-8 December 2011.
- H. P. Singh, N. Sukavanam and Vikas Panwar, “Neural network based compensator for robustness to the robot manipulators with uncertainties” in proceeding of IEEE ICMET- 2010, Singapore during 10-12 September, pp. 444-448, 2010.
- H. P. Singh and N. Sukavanam, “Uncertain bound estimation for robustness to robot manipulators using feedforward neural network” in proceeding of International Conference on Computational Intelligence and Communication Networks (IEEE CICN- 2010), Bhopal during 26-28 November, pp. 133-138, 2010.

Research Projects (Major Grants/Research Collaboration)

- Faculty Research Programme Grant 2022-2023. Funding Agency: Institution of Eminence (IoE), University of Delhi
- Faculty Research Programme Grant 2021-2022. Funding Agency: Institution of Eminence (IoE), University of Delhi
- Faculty Research Programme Grant 2020-2021. Funding Agency: Institution of Eminence (IoE), University of Delhi
- Start-Up Research Grant 2016-18, University Grants Commission (UGC)
- Innovation project entitled “Translating “Lilavati of Bhaskara” in the realm of present mathematics curriculum”, 2015-16. Funding Agency: University of Delhi
- Research & Development Grant 2015-16. Funding Agency: University of Delhi
- Innovation project entitled “Mathematical modeling and simulation of neural network based controllers for robots”, 2013-2015. Funding Agency: University of Delhi

Awards and Distinctions

- GATE (2008) AIR-147
- CSIR-JRF (2008)
- Travel Award by DST for visiting Technical University Malacca Malaysia, 2011.
- Award of Travel Fellowship by INSA

Association with Professional Bodies

- Member of International Association of Computer Science and Information Technology (IACSIT)
- Member of International Association of Engineers (IAENG)
- Member of MIR Labs

Conferences/Technical Sessions/Workshops Organize

- Member of Organizing Team of International Conference (SOCTA 2020)
- Member of Organizing and Chairing a Technical Session in MMCITRE - 2022
- Member of Organizing Team of Workshop on Game Development 2022
- Member of Organizing Team of National Seminar (Innovation in Higher Education through PPP Model, March, 2023)

Other Activities

Reviewer of Journals/Conferences

- Alexandria Engineering Journal (Elsevier)
- BigMM 2020
- Mathematical Reviews/MathSciNet (American Mathematical Society)
- International Journal of Intelligent and Robotic Systems (Springer)
- IEEE Transactions on Systems, Man and Cybernetics: Systems
- Advances in Mechanical Engineering (Sage)
- IEEE Conferences

Seminars/Workshops/Webinar

- Attended hands on session on STATCRAFT - R & STATCRAFT - Python, June 2023.
- Participated in two weeks online FDP on “BIOMATHEMATICS” (15th October - 28th October, 2020) organized by Department of Mathematics, P.G.D.A.V. College, University of Delhi in collaboration with Mahatma Hansraj Faculty Development Centre Hansraj College, University of Delhi.
- Successfully completed two weeks online Faculty Development Program on ICT BASED NEW PARADIGMS OF E-TEACHING AND E-LEARNING: DIGITAL PEDAGOGY organized by University of Delhi from September 15- September 30, 2020 and obtained a grade A+.
- Attended International online FDP on Nature Inspired Algorithms-II organized by SCRS, New Delhi from August 05, 2020 to August 09, 2020.
- Participated in one week online FDP on SCTA 2020 organized by the Department of Mathematics of Jaypee Institute of Information Technology, Noida from July 13, 2020 to July 18, 2020.
- Attended webinar on “DU-CIC admissions” on 7, July, 2020.
- Attended webinar on “Modelling the Impact of Nationwide BCG Vaccine Recommendations on COVID-19 Transmission, Severity and Mortality” organized by Department of Mathematics, SRM University, Haryana, May 10, 2020.
- Participated in Refresher Course held at CPDHE University of Delhi from 31st May 2019 to 14th June 2019 (Grade-A).
- Successfully completed UGC-Sponsored Orientation Programme with “A” grade at CPDHE, University of Delhi, during May 31- June 28, 2017.
- Participated in workshop on “Building Mathematical Ability” held at University of Delhi, during June 24-26, 2013.

- Participated in “International Conference on Soft Computing for Problem Solving” held at I.I.T. Roorkee during December 20-22, 2011.
- Tutorial participant in “Hybrid Intelligent Systems (IEEE HIS-2011)”, Malaysia during 5-8 December 2011.
- Participated and presented a paper in “International Congress of Mathematicians (ICM- 2010)” held at Hyderabad during 19-27 August, 2010.
- Participated in “Study Group Meeting on Industrial Problems” held at the Department of Mathematics, I.I.T. Roorkee during March 16-21, 2009.

Research Guidance

- Research Scholar: Three

Invited Lectures/Talks

- Invited as resource person and delivered a talk on “Use of MATLAB in engineering applications II: Robotics and Control Theory” in the FDP "Applications of MATLAB for Scientific & Engineering Computations" conducted by Faculty of Science & Humanities, SRM University, Delhi-NCR, Haryana, Nov. 22, 2019.

Judging:

- Shri Niamat Rai Mathematical Investigatory Project Competition, Spring Dales School, Pusa Road, Delhi, Dec., 2019



Signature of Faculty Member