Title	Dr.	**First Name**	Harendra Pal	**Last Name**	Singh	**Photograph**
Designation		Assistant Professor				
Address		Room No.-207, Second Floor, Rugby Sevens Building, G.C. Narang Marg, University Stadium, Cluster Innovation Centre, University of Delhi, Delhi-110007.				
Phone No Office		+9111-27666706				
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Web-Page						

Educational Qualifications

Degree	Institution	Year
B.Sc.	C.C.S. University	2003
M.Sc. (Mathematics)	C.C.S. University (Campus)	2005
Ph.D. (Mathematics)	I.I.T. Roorkee	2013

Career Profile

Cluster Innovation Centre, University of Delhi, Delhi-110007. 2015 – Onwards.

Administrative Assignments

- Programme Coordinator, M.Sc. Mathematics Education, Cluster Innovation Centre, University of Delhi, India

- Member of Departmental Purchase Committee
- Member of Infrastructure and Space Committee
- Member of IQAC and Annual report Committee
- Member of Admission 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

- Rashi, H. P. Singh, Suruchi Singh "Effect of fear with saturated fear cost and harvesting on aquatic food chain model (plankton-fish model) in the presence of nanoparticles" Mathematics and Computers in Simulation, 226, Page No.: 283-305, 2024.
- S. Rani, A. Kumar, N. Kumar, H. P. Singh "Adaptive robust motion/force control of constrained mobile manipulators using RBF neural network", International Journal of Dynamics and Control, 2024. https://doi.org/10.1007/s40435-024-01418-3
- S. Arora, H. P. Singh, L. Sahota, M. K. Arora, S. Singh, R. Arya, A. Prashar "Energy matrices, enviro-economic and characteristic equation-based performance analyses of photovoltaic thermal compound parabolic concentrator (PVT-CPC) coupled solar still equipped with heat exchanger using SWCNTs and MWCNTs–water nanofluids" International Journal of Ambient Energy, 45, Taylor & Francis, 2024.

- 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, 2024.

- P. Kumari, H. P. Singh, S. Singh, "Global stability of novel coronavirus model using fractional derivative", Computational and Applied Mathematics, Springer, 2023. Accepted

- 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. Budhraja, 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 2024-2025. Funding Agency: Institution of Eminence (IoE), University of Delhi
- Faculty Research Programme Grant 2023-2024. Funding Agency: Institution of Eminence (IoE), University of Delhi
- 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)

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)
- Soft Computing (Springer)
- Results in Control and Optimization (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

- Participated in two weeks Refresher Course on "Advanced Research Methodology" (26 April - 09 May, 2024) organized by Ramanujan College, University of Delhi.
- 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

Dr. Harendra Pal Singh