Rahul Hans, Ph.D.

Associate Professor | Department of Computer Science and Engineering, DAV University, Jalandhar, India

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# Summary

• Associate Professor in the Department of Computer Science and Engineering at DAV University, Jalandhar, India.  
• Ph.D. from Guru Nanak Dev University, Amritsar, specializing in Nature-Inspired Metaheuristic Algorithms for Feature Selection in Machine Learning.  
• International collaboration with Prof. Uwe Aickelin (University of Melbourne) on Optimizing Diabetic Retinopathy Diagnosis.  
• Research interests: Machine Learning, Deep Learning, Metaheuristics, and Medical Image Analysis.

# Education

Ph.D. (2017–2021) – Guru Nanak Dev University, Amritsar, Punjab, India  
Thesis: Study and Design of Improved Nature-Inspired Metaheuristic Algorithms for Feature Selection  
Supervisor: Dr. Harjot Kaur  
CGPA: 9.60 (Pre-Ph.D. Coursework)

M.Tech. (2010–2012) – Guru Nanak Dev University, Amritsar, Punjab, India  
Thesis: Integrating Checkpointing with Dynamic Shadow Approach for Fault Tolerance in Mobile Agents System  
Supervisor: Er. Ramandeep Kaur

B.Tech. (2005–2009) – Punjab Technical University, Jalandhar, Punjab, India  
Major: Computer Science and Engineering

# Teaching Experience

Associate Professor, DAV University, Jalandhar (July 2022 – Present)

Assistant Professor, DAV University, Jalandhar (Aug 2014 – July 2022)

Assistant Professor, DAV Institute of Engg. & Tech., Jalandhar (2012 – 2014)

# Major Roles & Responsibilities

\*\*Teaching\*\*  
• Preparation and delivery of lectures  
• Career guidance & placement preparation  
• Course planning, content updating, and remedial classes  
• Exam preparation, evaluation, and outcome assessment  
• Research guidance for PG & Ph.D. students  
• Organizing workshops and seminars

\*\*Department Coordinator\*\*  
• Departmental timetable and examination scheduling  
• Conducting faculty meetings and smooth conduct of classes  
• Academic leadership and departmental performance management

\*\*Deputy Director IQAC\*\*  
• Quality assurance in teaching and learning  
• Organizing institutional workshops and seminars  
• Documentation of academic activities  
• Gathering and analyzing feedback from stakeholders

# Research Summary

• SCI/SCIE Indexed Journals: 11 papers  
• ESCI/Scopus Indexed Journals: 03 papers  
• International Conferences: 13 papers  
• Cumulative Impact Factor: 63.2  
• Citations (Google Scholar): 689  
• H-index: 12  
• M.Tech. Dissertations Guided: 12  
• Ph.D. Scholars under Supervision: 03

# Research Interests & Technical Expertise

• Deep Learning: MATLAB, PyTorch, Keras  
• Machine Learning: MATLAB, TensorFlow  
• Nature-Inspired Metaheuristics: Algorithm Design & Optimization  
• Medical Image Analysis: Diagnostic model development using MATLAB

# Journal Publications

* Transfer Learning for Cancer Diagnosis in Medical Images: A Compendious Study. International Journal of Computational Intelligence Systems, Springer, 2025. Impact Factor: 3.0. DOI: https://doi.org/10.1007/s44196-025-00772-0
* Optimized deep k-nearest neighbour’s based diabetic retinopathy diagnosis (ODeep-NN) using retinal images. Health Information Science and Systems, Springer, 2024. Impact Factor: 3.4. DOI: https://doi.org/10.1007/s13755-024-00282-x
* An augmentation aided concise CNN based architecture for COVID-19 diagnosis in real time. Scientific Reports, Nature Portfolio, 2024. Impact Factor: 4.6. DOI: https://doi.org/10.1038/s41598-024-51317-y
* A Genetic algorithm aided hyperparameter optimization based ensemble model for respiratory disease prediction with Explainable AI. PLOS ONE, PLOS, 2024. Impact Factor: 3.7. DOI: https://doi.org/10.1371/journal.pone.0308015
* Hybrid Biogeography-Based Optimization and Genetic Algorithm for Feature Selection in Mammographic Breast Density Classification. International Journal of Image and Graphics, World Scientific, 2021. DOI: https://doi.org/10.1142/S0219467821400076
* Hybrid binary Sine Cosine Algorithm and Ant Lion Optimization (SCALO) approaches for feature selection problem. International Journal of Computational Materials Science and Engineering, World Scientific, 2020. DOI: https://doi.org/10.1142/S2047684119500210
* Binary Multi-Verse Optimization (BMVO) Approaches for Feature Selection. International Journal of Interactive Multimedia and Artificial Intelligence, UNIR, 2020. Impact Factor: 3.4. DOI: https://doi.org/10.9781/ijimai.2019.07.004
* Opposition-based Harris Hawks optimization algorithm for feature selection in breast mass classification. Journal of Interdisciplinary Mathematics, Taylor & Francis, 2020. DOI: https://doi.org/10.1080/09720502.2020.1721670
* Opposition-Based Enhanced Grey Wolf Optimization Algorithm for Feature Selection in Breast Density Classification. International Journal of Machine Learning and Computing, IJMLC, 2020. DOI: https://doi.org/10.18178/ijmlc.2020.10.3.957
* N-grams Based Supervised Machine Learning Model for Mobile Agent Platform Protection against Unknown Malicious Mobile Agents. International Journal of Interactive Multimedia and Artificial Intelligence, UNIR, 2017. Impact Factor: 3.4. DOI: https://doi.org/10.9781/ijimai.2017.03.013
* A Biological Immune System (BIS) inspired Mobile Agent Platform (MAP) security architecture. Expert Systems with Applications, Elsevier, 2017. Impact Factor: 8.5. DOI: https://doi.org/10.1016/j.eswa.2016.10.062

# Conference Publications

* Harnessing Machine Learning Classifiers as Fitness Functions in Metaheuristic-Based Feature Selection for Mammographic Breast Cancer Classification. ICCS 2025 (Accepted).
* Noise Reduction in Brain MRI Images: A Gaussian Filtering Approach to Enhance Deep Learning Models for Classification. EAIC 2025 (Published).
* Breast Mass Pattern Classification using Vision Transformers (ViTs) with varied Optimizers. ICHISS 2024 (Accepted).
* Machine Learning Algorithms for COVID-19 Prediction with Explainable AI. WCAIAA 2024 (Published).
* Performance Evaluation of Metaheuristic Algorithms for Feature Selection in Breast Mass Classification. CIET 2021 (Published).
* Improved Local Search Based Grey Wolf Optimization for Feature Selection. CIMS 2020 (Published).
* Quasi-opposition-based multi-verse optimization algorithm for feature selection. IC4S 2019 (Published).
* Feature Selection Using Metaheuristic Algorithms: Concept, Applications and Population Based Comparison. ComPE 2020 (IEEE, Published).

# Patent

Voice-Based Coding Platform for Visually and Physically Impaired. Application No.: 202211064276 A, Publication Date: 25/11/2022.

# International Collaboration

Worked with Prof. Uwe Aickelin, Dean, School of Computing & Information Systems, University of Melbourne, on Optimizing Diabetic Retinopathy Diagnosis.

# Ongoing Research

• Development of Enhanced Equilibrium Optimization Algorithms for Feature Selection in Breast Mass Classification using Mammogram Images.  
• Enhancement of Predictive Accuracy in Transfer Learning Models for Disease Classification in Medical Imaging.

# References

Prof. Uwe Aickelin, Dean, School of Computing & Information Systems, University of Melbourne, Australia  
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Dr. (Mrs.) Parminder Kaur, Professor, Department of Computer Science, Guru Nanak Dev University, Amritsar  
Email: parminder.dcse@gndu.ac.in

Dr. (Mrs.) Harjot Kaur, Assistant Professor, Department of Engineering & Technology, Guru Nanak Dev University, Regional Campus, Gurdaspur  
Email: harjotkaursohal@rediffmail.com