

Mohsin Furkh Dar

PhD Candidate in Computer Science

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Education

Doctor of Philosophy (PhD) in Computer Science Nov 2020 – 2025

University of Hyderabad, India

Thesis: Advances in Deep Learning for Medical Image Segmentation and Classification

Thesis Submitted

Advisor: Dr. Avatharam Ganivada

Master of Philosophy (M.Phil.) in Computer Science Sep 2017 – Mar 2019

Mewar University

Thesis: Performance Comparison of Face Detection and Recognition Algorithms

Master of Computer Applications (MCA) Mar 2013 – Jun 2016

University of Kashmir

Project: SMS Intimation System for Online Leave Management

Bachelor of Science (BSc) Mar 2010 – Jan 2013

University of Kashmir

Majors: Mathematics, Physics, Information Technology

Research Experience & Key Contributions

Doctoral Research – Deep Learning for Medical Image Analysis 2020 – Present

- **EfficientU-Net:** Developed parameter-optimized architecture achieving 13x parameter reduction (1.31M vs. 17.27M) with 97.905% accuracy in tumor classification
- **UMA-Net:** Advanced U-Net variant with residual connections, attention mechanisms, and dynamic ensemble loss function for superior generalization across five breast ultrasound datasets
- **Fuzzy Rough Set Loss:** Novel loss function based on fuzzy rough set theory for enhanced boundary precision in medical image segmentation
- **Saliency-Guided AttentionNet (SGAN):** Dual-branch architecture achieving 90.51% accuracy with 87.95% F1-score across multi-center validation
- **GA-based Ensemble Model:** Unified approach integrating MobileNet, Genetic Algorithms, and ensemble classification for optimized feature selection

Professional Experience

Full Stack Web Developer 2022 – Present

Freelance, Remote

- Developed ShifaAI: AI-powered healthcare platform with automated medical image analysis
- Created UGC NET CS HUB and GoalTrackr applications using Next.js, TensorFlow, and modern web technologies
- Integrated APIs including Google Gemini AI, OpenAI, and custom backend services

Teaching Assistant Jan 2022 – Dec 2024

University of Hyderabad, India

- Assisted in MTech and Integrated MTech courses; conducted laboratory sessions for graduate students
- Mentored 10+ students in Deep Learning and Computer Vision projects

System Administrator Jan 2021 – Dec 2022

Artificial Intelligence Lab, University of Hyderabad

- Managed computing resources and optimized software environments for AI research projects

Assistant Professor 2019

Government Degree College Uri, Baramulla, J&K, India

- Taught Discrete Mathematics and Data Structures for undergraduate Computer Science students

Publications

Journal Articles

1. **Dar, M.F.**, Ganivada, A. (2025). Adaptive ensemble loss and multi-scale attention in breast ultrasound segmentation with UMA-Net. *Medical & Biological Engineering & Computing*. DOI: [10.1007/s11517-025-03301-5](https://doi.org/10.1007/s11517-025-03301-5)
2. **Dar, M.F.**, Ganivada, A. (2024). Deep learning and genetic algorithm-based ensemble model for feature selection and classification of breast ultrasound images. *Image and Vision Computing*, 146, 105018. DOI: [10.1016/j.imavis.2024.105018](https://doi.org/10.1016/j.imavis.2024.105018)
3. **Dar, M.F.**, Ganivada, A. (2023). EfficientU-Net: A Novel Deep Learning Method for Breast Tumor Segmentation and Classification in Ultrasound Images. *Neural Processing Letters*, 55, 10439-10462. DOI: [10.1007/s11063-023-11333-x](https://doi.org/10.1007/s11063-023-11333-x)
4. Alhaj, A.N., Patel, N.D., Singh, A., Bondugula, R.K., **Dar, M.F.**, Ahamed, J. (2024). Design and analysis of a robust security layer for a software-defined network framework. *International Journal of Sensor Networks*, 46(1), 1-14. DOI: [10.1504/IJSNET.2024.141613](https://doi.org/10.1504/IJSNET.2024.141613)
5. Mukhtar, S., **Dar, M.F.**, Kaur, A. (2022). Latent fingerprint enhancement and matching using intuitionistic type-2 fuzzy. *International Journal of Artificial Intelligence and Soft Computing*, 7(4), 313-328. DOI: [10.1504/IJAISC.2022.130558](https://doi.org/10.1504/IJAISC.2022.130558)
6. **Dar, M.F.**, Dixit, S. (2019). Performance Comparison of Face Detection and Recognition Algorithms. *International Journal of Science and Research (IJSR)*, 8(1), 986-994. DOI: [10.21275/ART20194439](https://doi.org/10.21275/ART20194439)

Conference Papers

1. **Dar, M.F.**, Ganivada, A. (2025). Dynamic Weight Adjusted Ensemble Loss for Enhanced Medical Image Segmentation. In *Proceedings of Fourth International Conference on Computing and Communication Networks*. Springer Nature Singapore.

Technical Skills

Programming Languages: Python, C/C++, JavaScript, TypeScript

Deep Learning & ML: TensorFlow, Keras, PyTorch, Scikit-learn, NumPy, Pandas, SciPy

Web Technologies: React, Next.js, Node.js, HTML5, CSS3, Tailwind CSS, RESTful APIs

Medical Imaging: CT, MRI, X-ray, Ultrasound analysis, DICOM processing, Image segmentation

Databases: MongoDB, PostgreSQL, MySQL, Firebase

Tools & Others: Git, Docker, LaTeX, Jupyter, PyCharm, Mendeley, Zotero

Awards & Honors

- **UGC NET+JRF (Computer Science & Application)** – December 2019, All India Rank: 53
- **State Rank 3rd and District Rank 1st** in Programmer J&K Under Samagra Shiksha, 2017

Professional Activities

- **Conference Presenter:** "Dynamic Weight Adjusted Ensemble Loss for Enhanced Medical Image Segmentation" at ICCNet-2024, Manchester, UK, 2024
- **Workshop Participant:** "MRI and EEG data analysis" at IIIT Hyderabad, 2024; "Hands-On Natural Language Processing," Machine Learning India (MLI), 2021
- **Student Mentorship:** Guided research assistants in Fuzzy Rough Kernel-Based Extreme Learning Machine and Mineral Prospectivity Classification using Deep CNNs