Prasad Kanhegaonkar

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Brief Bio

Prasad Kanhegaonkar is a Ph.D. researcher in the Department of Computer Science and Engineering at IIT Indore and serves as an Assistant Professor in the Department of Computer Science and Engineering at Shri Guru Gobind Singhji Institute of Engineering and Technology, Nanded. His research centers on deep learning for medical image analysis, with a particular emphasis on skin lesion classification for the early detection of dermatological diseases. His work is directed toward building computationally efficient, real-time AI systems suitable for deployment in resource-constrained clinical settings.

His research addresses key challenges in medical image analysis, including class imbalance, high intra- and inter-class lesion variability, and the presence of imaging artifacts. To overcome these issues, he investigates advanced methodologies such as attention mechanisms, contrastive learning, domain adaptation, meta-learning, and lightweight CNN architectures. He actively works with large-scale dermatology datasets to improve model robustness, generalizability, and practical clinical relevance.

In addition to research, he has significant experience in teaching and mentoring undergraduate and postgraduate students. He has published in reputed international conferences and journals and regularly serves as a reviewer for leading venues in artificial intelligence and medical imaging. His academic interests further include trustworthy and interpretable AI, with a focus on developing ethical, secure, and reliable machine learning solutions for healthcare. He is committed to translating AI research into clinically meaningful tools that enhance diagnostic accuracy and patient outcomes.

Research Interests

Computer Vision, **Medical Image Analysis**, **Machine Learning**, **Deep Learning & Parallel Computing**

Current Research Activities

- **Ph.D. Thesis Work** Dec 2021 – Present
  Title: Analysis of Lesion Images for the Diagnosis of Skin Diseases
  Thesis Supervisor: **Dr. Surya Prakash**, Professor, CSE, IIT, Indore, India
  Keywords: Medical Image Analysis, Skin Lesion Classification, Deep Learning, Tensorflow, PyTorch
  - **Problem Statement:** Development of efficient algorithms for skin lesion classification, optimized for real-time deployment in resource-constrained environments.

Academic Projects

- **M.E. Thesis** July 2011 – June 2012
  Title: A Novel Image Steganographic Method using Octa-Way Pixel-Value Differencing
  Thesis Supervisor: **Dr. Avinash Gulve**, Associate Professor, MCA, GEC, Aurangabad, India
  Keywords: Information Security, Image Steganography, Pixel Value Differencing, Matlab
  - **Problem Statement:** Development of a secure, imperceptible, and robust image steganographic method for concealing secret data within images.

- **B.Tech. Major Project** Dec 2008 – Apr 2009
  Title: Sachet: An Anomaly Based Network Intrusion Detection System
  Thesis Supervisor: **Dr. U V Kulkarni**, Professor, CSE, SGGSIE&T, Nanded, India
  Keywords: Java, JPCAP, Matlab, Neural Networks, DARPA
  - **Problem Statement:** Development of Secure & Robust Anomaly Based Network Intrusion Detection System.

Technical Skills

- **Languages**: MATLAB, Python, C, Shell Script
- **Packages**: PyTorch, Keras, Scikit-Learn, Numpy, LaTeX
- **Selected Subjects**: Data Structures, Algorithms, Operating Systems, Parallel Computing, Digital Image Processing, Computer Vision, Machine Learning, Deep Learning, Algorithmic Graph Theory, Bandit Algorithms

Education

- Ph.D. in Computer Science & Engineering — Dec 2021 – Pursuing
  Indian Institute of Technology Indore, Indore, India — **CGPA: 8.75**
- Post Graduate Diploma in Financial Management — Aug 2012 – Jul 2014
  Indira Gandhi National Open University, New Delhi, India — **CGPA: 3.28/5.00**
- M.E. in Computer Science & Engineering — Sept 2010 – Jun 2012
  Government Engineering College, Aurangabad, India — **CGPA: 8.33**
- B.Tech. in Computer Science & Engineering — Aug 2005 – May 2009
  SGGSIE&T, Nanded, India — **CGPA: 6.91**
- Higher Secondary, 12^{th} — Jul 2004 – Jun 2005
  MH State Board, Aurangabad, India — **Marks: 87.33%**
- High School, 10^{th} — Jul 2002 – Jun 2003
  MH State Board, Aurangabad, India — **Marks: 82.66%**

Experience

- Shri Guru Gobind Singhji Institute of Engineering & Technology — **Aug 2016 - Present**
  Assistant Professor — Nanded, India
- GES R H Sapat College of Engineering, Management Studies & Research — **Jul 2012 - Aug 2016**
  Assistant Professor — Nashik, India
- Government Polytechnic — **Sept 2009 - Sept 2010**
  Lecturer — Hingoli, India

Achievements

- Received fellowship from AICTE under QIP Program for pursuing PhD (Jan 2022 - Dec 2024)
- Qualified in GATE Exam (2011, 2020)

Publications

Google Scholar ORCID Vidwan

Conference Publications

[1] Avani Tiwari, **Prasad Kanhegaonkar**, Surya Prakash, "*One Shot Learning to Select Data Augmentations for Skin Lesion Classification,*" In: Proc. of the International Conference on Computer Vision & Image Processing **(CVIP)**, Nov 3-5, 2023, IIT Jammu, India

[2] **Prasad Kanhegaonkar**, Sruthi Ponugoti, Surya Prakash, "*Skin Lesion Classification using CNN & Transformer Networks for Computer Assisted Diagnosis,*" In: Proc. of the International Conference on Smart Systems & Advanced Computing **(SYSCOM)**, Dec 30-31, 2022, Macau, China (Virtual)

[3] **Prasad Kanhegaonkar**, Avinash Gulve, "*A Novel Image Steganographic Method using Octa-Way Pixel-Value Differencing,*" In: Proc. of International Conference on Computer Science & Information Technology **(CSIT)**, Jul 8, 2012, Bhopal, India

[4] **Prasad Kanhegaonkar**, Avinash Gulve, "*Review of Pixel Value Difference Methods in Steganography,*" In: Proc. of International Conference on Recent Technologies **(I-CORT)**, Feb 9-11, 2012, Institute of Knowledge College of Engineering, Pune, India

Book Chapters

[1] **Prasad Kanhegaonkar**, Surya Prakash, "*Federated Learning for Healthcare Applications,*" Data Fusion Techniques & Applications for Smart Healthcare, Elsevier, 2023

[2] Rahul Chaurasia, Anirban Sengupta, **Prasad Kanhegaonkar**, "*Secured Integrated Circuit (IC/IP) Design Flow,*" Nanoelectronics for Next-Generation Integrated Circuits, pp. 257-274, CRC Press, 2022

Teaching

Courses Taught at SGGSIE&T Nanded [Aug 2016 - Present]

- UCS101: Introduction to Computers & Programming, Aug16-Dec16, UG
- CS329: Unix System Programming, Dec16-May17 & Dec17- May18, UG
- CS335B: Combinatorics, Probability & Statistics, Dec16-May17 & Dec20- May21, UG
- CS441A: Machine Learning, Jul17-Dec17 & Jul18- Dec18, UG
- PEC-CS103,ESC107: Programming for Problem-Solving, Dec18-May19, Dec25-May26, UG
- PCC-NS516: Number Theory & Cryptography, Dec18-May19, PG
- PCC-CS202: Data Structures, Jul19-Dec19 & Jul21-Dec21, UG
- PCC-CS207: Design & Analysis of Algorithms, Dec19-May20, UG
- CS441I: Bandit Algorithm (Online Machine Learning), July20-Dec20, UG
- PEC-NS531: Deep Learning, May21-Sept21, PG
- PEC-CS416: Computer Vision, Jul25-Dec26, UG

Training

Training Programs Organized

- *Machine Learning & Applications*, SGGSIE&T Nanded, 21-25 Jan 2019 (One Week FDP)
- *Probability & Statistics*, SGGSIE&T Nanded, 15 to 20 Mar 2019 (One Week FDP)
- *Fundamentals of Accelerated Computing using OpenMP & CUDA C*, SGGSIE&T Nanded, 27-29 Dec 2019

Invited Talks

- *Principal Component Analysis*, Data Mining using R, VNIT Nagpur, 27 Jun-2 Jul 2016 (One Week)
- *Basics of Machine Learning & its Applications*, Data Analytics & Machine Learning, Govt College of Engineering, Jalgaon, 25-29 Sept 2018 (One Week)
- *Introduction to R*, Probability & Statistics, SGGSIE&T Nanded, 15-20 Mar 2019 (One Week)

Training Programs Attended

- *Importance of Statistics & Design of Experiments in Engineering*, VNIT Nagpur, 18-22 Jan 2016 (One Week)
- *Data Mining using R*, VNIT Nagpur, 27 Jun-2 Jul, 2016
- *Coding Theory & Cryptography*, SGGSIE&T, Nanded, 26-31 Dec 2016 (One Week)
- *Deep Learning & Applications*, IIT Kanpur, 12-16 Jan 2017 (One Week)
- *Big Image Data Processing using ML Algorithms*, NIT Warangal, 11-16 Dec 2017 (One Week)
- *Quantum Computing*, MNIT Jaipur, 24-29 Aug 2020 (One Week)
- *Matrix Computations*, SGGSIE&T Nanded, 22-27 Feb 2021 (One Week)
- *Current Trends of Deep Learning in Various Research Domains*, VIT-APU Amaravathi - NIT Warangal, 20-24 Sept 2021 (One Week)
- *Advanced Instructional School on Algorithmic Graph Theory*, Advanced Training in Mathematics Schools (Supported by National Board for Higher Mathematics), Jun 26-Jul 15, 2023 (3 weeks)
- *Art of Scientific Writing for PhD Students*, ACM PhD Student Workshop, 29 Sept 2023

Services

Administrative

- Dept Placement Coordinator - Jul25-Jun26
- Dept Project Coordinator - Dec25-Jun26
- Member of DUGC, CSE Dept, SGGSIE&T, Nanded [Aug 2016 - Present]
- Coordinator for proposals submission to AICTE, DTE, NIRF [Aug 2016 - Jan 2022]

Professional Activities

Memberships

- IEEE Professional Member
- IEEE Young Professionals
- Life Member ISTE, New Delhi

Reviewer

- Sadhana, Indian Academy of Sciences, (Springer) (ISSN: 0973-7677)
- Neural Computing and Applications, (Springer) (ISSN: 1433-3058)
- Applied Intelligence, (Springer) (ISSN: 1573-7497)
- Expert Systems with Applications, (Elsevier) (ISSN: 1873-6793)
- Biomedical Signal Processing and Control, (Elsevier) (ISSN: 1746-8108)

Certificate Courses

- NVIDIA Deep Learning Institute:
  - Fundamentals of Accelerated Computing using CUDA Python, [Oct 2025]
  - Generative AI and LLMs, [Jan 2026]
- SWAYAM Platform (NPTEL):
  - Computer Vision, IIT Kharagpur [Dec 2025]
  - Responsible and Safe AI Systems, IIIT Hyderabad [Dec 2025]

Other

- Mentored UG & PG (MS by Research) students of IIT Indore & UG interns from the other institutes at IIT Indore.

Student Guidance

Core Areas

- Cryptography, Security, Image Processing, Computer Vision, Pattern Recognition, Machine Learning, Deep Learning, ERP Systems, [Android / PHP / Java / Python / JavaScript]

Masters Thesis

- ADAS : Automated Driver Assistance System, Kartik Bagade, 2019
- Face Recognition, Poonam Sable, 2020
- Plant Leaf & Disease Recognition using Deep Learning, Rohan Lone, 2021