

Jimut Bahan Pal

Research Fellow

Centre for Machine Intelligence and Data Science (C-MInDS)
Indian Institute of Technology Bombay

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Research Interests

Conducting research in Deep Learning methodologies for medical image segmentation, with a focus on developing statistically grounded and interpretable supervised algorithms. My work emphasizes model robustness under constraints such as limited data availability, incorporation of mathematical priors, low computational budgets, and the presence of outliers across diverse imaging modalities.

Currently, my research explores the integration of visual data and Natural Language Processing (NLP) of clinical reports to develop unified diagnostic systems that enhance accuracy and provide deeper clinical insights.

Education

Ph.D. in Machine Intelligence and Data Science

2022 – Present

Indian Institute of Technology Bombay, Mumbai

M.Sc. in Computer Science

2019 – 2021

Ramakrishna Mission Vivekananda Educational and Research Institute, Belur, Howrah

Thesis: [Instance Segmentation of Peripheral Blood Smear and Refining Classification via Domain Adaptation](#)

B.Sc. (Hons.) Computer Science

2016 – 2019

St. Xavier's College, Kolkata

Dissertation: [Wisp: A Preference Based Location Finder Application](#)

Awards & Honors

Prime Minister's Research Fellowship (PMRF)

October 2023

Awarded as a Lateral Fellow of Cycle 11

C-MInDS Fellowship

June 2022

For securing highest scores in C-MInDS entrance, IIT Bombay

MICCAI-2024 RISE Registration Grant

2024

Travel grant for international conference participation

1st Runner Up - Generative AI Art Competition

ICIP 2024

International Conference on Image Processing

Google Cloud Arcade Champion

2025

Google Cloud competition winner

Google TPU Builders award

June 2026

Awarded \$1000 TPU Cloud credits

Publications

Refereed Journal Publications

- **[MELBA]** Pal, J. B., & Awate, S. (2026). Learning a Sampling-Free Variational DNN Plugin from Tiny Training Sets to Refine OOD Segmentation With Uncertainty Estimation. *Machine Learning for Biomedical Imaging*, pp 327–358.
- **[Core-B, Q1, IF: 8.5]** Pal, J. B., Bhattacharyea, A., Banerjee, D., & Maharaj, B. T. (2024). Advancing instance segmentation and WBC classification in peripheral blood smear through domain adaptation: A study on PBC and the novel RV-PBS datasets. *Expert Systems with Applications*, 123660.
- **[Q2, IF: 1.175]** Pal, J. B., & Mj, D. (2023). Improving multi-scale attention networks: Bayesian optimization for segmenting medical images. *The Imaging Science Journal*, 71(1), 33-49.

Refereed Conference Publications

- **[Core-A, WACV 2025]** Pal, J. B., Welling, S., Saini, H., & Awate, S. (2025). Reviving Poor Object Segmentations in OOD Medical Images using Variational Deep-PCA Modeling on Segmentation Maps with Sampling-Free Learning. *IEEE/CVF Winter Conference on Applications of Computer Vision*, 9364-9373.
- **[Core-A, MICCAI 2024]** Pal, J. B., & Awate, S. (2024). Convex Segments for Convex Objects Using DNN Boundary Tracing and Graduated Optimization. *International Conference on Medical Image Computing and Computer-Assisted Intervention*, 91-101.
- **[Core-B, ICIP 2024]** Pal, J. B., & Awate, S. (2024). A hard convex-shape constraint in DNNs for object segmentation. *IEEE International Conference on Image Processing*, 2074-2080.
- **[IEEE 2022]** Pal, J. B., & Paul, N. (2022). Classifying Chest X-Ray COVID-19 images via Transfer Learning. *Ethics and Explainability for Responsible Data Science*, 1-8.

Workshop Papers & Preprints

- **[MICCAI Workshop 2022]** Pal, J. B. (2022). Holistic Network for Quantifying Uncertainties in Medical Images. In: Crimi, A., Bakas, S. (eds) *Brainlesion: Glioma, Multiple Sclerosis, Stroke and Traumatic Brain Injuries. BrainLes 2021. Lecture Notes in Computer Science*, vol 12963. Springer.
- **[2024]** Bran, H., ... Pal, J. B., ... Menze, B. (2024). QUBIQ: Uncertainty Quantification for Biomedical Image Segmentation Challenge. *CoRR*, abs/2405.18435.
- **[2022]** Eisenmann, M., Reinke, A., ... Pal, J. B., ... Maier-Hein, L. (2022). Biomedical image analysis competitions: The state of current participation practice. *arXiv:2212.08568*.
- **[2020]** Pal, J. B. (2020). How to cluster nearest unique nodes from different classes using jjcluster in wisp application? *CoRR*, abs/2002.05886.

Manuscripts Under Review

- **[MELBA]** Pal, J. B., et al. Segmenting convex and near-convex objects using hard geometric constraints within deep Markov-chain boundary model.

Teaching Experience

Instructor: CS/BDA 411 Applications of Computer Vision and Deep Learning (3 credits), RKMVERI Course Websites: 2026 2025 2024	<i>2024 – 2025</i>
Teaching Assistant: CS 736 Medical Image Computing (6 credits), IIT Bombay	<i>2026</i>
Teaching Assistant: CS 663 Digital Image Processing (6 credits), IIT Bombay	<i>2025, 2026</i>
Teaching Assistant: DS 203 Programming for Data Science (6 credits), IIT Bombay	<i>2023</i>

Computer Application Teacher

2020

[RKMVERI, Belur, Howrah](#)

Taught PGDY (2020-21) class of 12 students about computer applications

Professional Activities

Guest Lecturer

2025

[Convolutional Neural Networks for CS772 DL-NLP, IIT Bombay](#)

Resources: [Slides](#) | [Recording](#) | [Demo](#) | [Code](#)

Conference Reviewer

2025

International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2025

Journal Reviewer

Multimedia Tools and Applications

Committee Member

2024 – Present

Internal Quality Assurance Cell (IQAC), RKMVERI

Interview Panel Member

April 2024

MSR admissions at C-MInDS, IIT Bombay, with Prof. Pushpak Bhattacharyya

Professional Experience

Project Intern

Jan – March 2019

[Data Sutram, Kolkata](#)

Analyzed, visualized and gained valuable insights from data

Key-note Speaker

September 2018

[Machine Learning Crash Course \(Google Sponsored\), St. Xavier's College, Kolkata](#)

Created coursework and delivered lectures for ML seminars

Developer

Nov 2017 – Jan 2018

[Xavotsav 2018 Website, St. Xavier's College, Kolkata](#)

Designed website for cultural fest of St. Xavier's College, Kolkata

Leadership & Volunteering

Coordinator & Teacher, NSS

Aug 2018 – Jan 2019

[National Service Scheme, St. Xavier's College](#)

Coordinated and organized educational tours for underprivileged communities

Event Head

February 2019

[ENIGMA Coding Event, Science Association, St. Xavier's College](#)

Planned, organized and executed the annual coding event

Head of Graphics Design Team

July – Sep 2018

[Analytica, Department of Mathematics, St. Xavier's College](#)

Led team of 5 designers to create graphics content for the event

Open Source Contributions

Jimutmap

February 2019

Python tool for downloading satellite images and road maps

Over 20K total downloads from PyPI

Jimner

January 2019

Python library for creating ASCII art in terminal
314 unique text styling samples

Management Information System

November 2018

CRUD system built using Python3 and Tkinter from scratch

Technical Skills

Programming: Python, LaTeX, Java, C/C++
Deep Learning: PyTorch, Keras, TensorFlow, Computer Vision, Medical Imaging
Tools: Linux, Git
Web Development: HTML, CSS, JavaScript, Jekyll

Certifications & Specializations

Probabilistic Graphical Models 2026

Stanford University, Coursera

C Programming for Everybody 2026

University of Michigan, Coursera

Mathematics for Machine Learning 2026

Imperial College London, Coursera

Deep Learning Specialization 2019

DeepLearning.AI, Coursera

TensorFlow in Practice Specialization 2019

DeepLearning.AI, Coursera

Applied Data Science Specialization 2018

IBM, Coursera

Python for Everybody Specialization 2018

University of Michigan, Coursera

Additional Information

- **Research Blog:** Maintain active technical blog at jimut123.github.io/blog.html
- **Projects Portfolio:** Developed several [interactive games and applications](#)
- **Misc:** Selected in second phase of [Service Selection Board \(SSB\)](#), Indian Army (2016)
- **Social Work:** Participant in NSS, organizing educational tours for underprivileged communities
- **Academic Networks:** Erdős Number: 4, Dijkstra Number: 4