



# Jimut Bahan Pal

Research Fellow

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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

2022 – **Ph.D.** Centre for Machine Intelligence and Data Science, *Indian Institute of Technology Bombay*

2019 – 2021 **M.Sc. in Computer Science**, *Ramakrishna Mission Vivekananda Educational and Research Institute*, Belur, Howrah.

o Thesis – **Instance Segmentation of Peripheral Blood Smear and Refining Classification via Domain Adaptation.**

2016 – 2019 **B.Sc. (Hons.) Computer Science** *St. Xavier's College*, Park Street, Kolkata.

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

## Awards & Accolades

2025 Won the Google Cloud "Arcade Champion"

2024 MICCAI-2024 **RISE Registration Grant**

2024 Awarded the 1st runner up for Generative AI Art Competition at [ICIP-2024](#)

Oct 2023 **Prime Minister's Research fellowship (PMRF)** as a Lateral Fellow of Cycle 11.

June 2022 **C-MInDS fellowship** for securing **highest scores in C-MInDS**, IIT Bombay

## Publications

### Refereed Journal Publications

Core-B, **Pal, J. B.**, Bhattacharyea, A., Banerjee, D., & Maharaj, B. T. (2024). Advancing instance Segmentation and WBC classification in peripheral blood smear through domain adaptation: IF: 8.5 A study on PBC and the novel RV-PBS datasets. *Expert Systems with Applications*, 123660.

Scopus-Q2, **Pal, J. B.**, & Mj, D. (2023). Improving multi-scale attention networks: Bayesian optimization for segmenting medical images. *The Imaging Science Journal*, Vol. 71 (1), pp. 33-49.

### Refereed Full-Length Conference Publications

- 2025, Core-A **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, 2025 IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), Tucson, AZ, USA, 2025, pp. 9364-9373, doi: 10.1109/WACV61041.2025.00907.
- 2024, Core-A **Pal, J. B.**, & Awate, S. (2024). Convex Segments for Convex Objects Using DNN Boundary Tracing and Graduated Optimization. In International Conference on Medical Image Computing and Computer-Assisted Intervention, pp. 91-101.
- 2024, Core-B **Pal, J. B.**, & Awate, S. (2024). A hard convex-shape constraint in DNNs for object segmentation. IEEE International Conference on Image Processing, pp. 2074-2080.
- 2022 **Pal, J. B.**, & Paul, N. (2022). Classifying Chest X-Ray COVID-19 images via Transfer Learning. In 2021 Ethics and Explainability for Responsible Data Science (EE-RDS) (p. 1-8). doi: [10.1109/EE-RDS53766.2021.9708580](https://doi.org/10.1109/EE-RDS53766.2021.9708580)

### Refereed Workshop Papers

- 2022 / MICCAI Workshop **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, Cham. [https://doi.org/10.1007/978-3-031-09002-8\\_49](https://doi.org/10.1007/978-3-031-09002-8_49)

### Preprints

- 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., Weru, V., Tizabi, M. D., Isensee, F., Adler, T. J.,. . . **Pal, J.B.**,... Maier-Hein, L. (2022). Biomedical image analysis competitions: The state of current participation practice. arXiv. Retrieved from <https://arxiv.org/abs/2212.08568> doi: 10.48550/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 . Retrieved from <https://arxiv.org/abs/2002.05886>

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## Teaching

- 2025 [CS/BDA 411: Applications of Computer Vision and Deep Learning \(2025- 3 credits\), RKMVERI](#)
- 2024 [CS/BDA 411: Applications of Computer Vision and Deep Learning \(2024 - 3 credits\), RKMVERI](#)
- 2023 **Teaching Assistant** - DS 203: Programming for Data Science (2023 - 6 credits) IIT Bombay
- March – **Computer Application teacher**, RKMVERI, Belur, Howrah.
- April, 2020 Taught the class of PGDY (2020-21) comprising 12 students about computer applications. Guided students to research on independent projects and develop communication skills.

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## Professional Activities

- 2025 Guest lecture on [Convolutional Neural Networks](#) for [CS772 DL-NLP, IIT Bombay](#) [[Demo of Multiclass segmentation](#)] [[Code accompanying the slide](#)] [[recorded lecture](#)]  
**Conference Reviews:** International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2025  
**Journal Reviews:** Multimedia Tools and Applications
- 2024-Present Committee Member of **Internal Quality Assurance Cell (IQAC), RKMVERI**  
April 2024 Member of Interview Panel-6 for MSR admissions at C-MInDS, IIT Bombay, with Prof. Pushpak Bhattacharyya

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## Experience

- Jan – March, 2019 **Project Intern**, *Data Sutram*, Rabindra Sarovar, Kolkata.  
Analyzed, visualized and gained valuable insights from data.
- Sep., 2018 **Key-note Speaker**, (sponsored by **Google**), *MLCC-SXC, St. Xavier's College, Kolkata*.  
*Created course work and delivered lectures for Machine Learning Crash Course seminars.*
- Nov. 2017 – Jan. 2018 **Developer**, [Xavotsav 2018 Website](#), Designed a website for the cultural fest of St. Xavier's College, Kolkata, with our team.

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## Selected Open Source Softwares

- Feb 2019 **Jimutmap** *A tool to download satellite images and road maps with ease.*  
o Used for testing deep learning algorithms. Over **Over 20K total downloads from python3-pip package.**
- Jan. 2019 **Jimner** *Create ASCII Art writing for terminal.*  
o Generated banner of **314 samples** of styles using Python-3.
- Nov. 2018 **Management Information System: A CRUD (Create Read Update Delete) system built using Python3 and Tkinter from scratch.**

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## Leadership

- Aug. 2018 – Jan. 2019 **Coordinator & Teacher**, [National Service Scheme \(NSS\)](#) – Coordinated and organized tours (four times) for educating the unprivileged in a nearby village. This was part of curriculum (social work) at St. Xavier's College, Kolkata.
- Feb 2019 **Event Head** of [ENIGMA](#) – Planned, organized and executed the annual coding event of Science Association, St. Xavier's College, Kolkata.
- July – Sep., 2018 **Head of Graphics Design Team**, [Analytica \(Dept. of Mathematics\)](#) – Lead and planned a team of 5 highly motivated designer to create and design all the graphics content that were used at the event in St. Xavier's College, Kolkata.

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## Online Specializations

- Dec. 2019 **Deep Learning Specialization**, *DeepLearning.AI*, Coursera - License: TUKRVHKG2SJW.
- March 2019 **TensorFlow in Practice Specialization**, *DeepLearning.AI*, Coursera - License: 88P8SNTEFTH.
- Sep. 2018 **Applied Data Science Specialization**, *IBM*, Coursera - License: K36A43C6J3N7.
- Jan. 2018 **Python for Everybody Specialization**, *University of Michigan*, Coursera - License: RQHE57YQZ2ZW.

## Miscellaneous

- June 2019 – Documented [blogs](#) during free time. Maintained a page for PDF writings.
- 2017 – 2018 Created several [games](#) during B.Sc. in St. Xaviers College. The games can be played online from Projects page.
- Jan. 2016 Selected in the second phase of [Service Selection Board \(SSB\)](#), Indian Army.