MAYUKHMALA JANA

AI for Cancer Research | Immuno-Oncology | Computational Pathology

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Research profile

AI researcher in immuno-oncology and computational pathology, with first-author research in medical imaging and nearly three years of production machine-learning experience at Accenture. I develop computational methods and work with pathologists and oncologists to investigate cancer biology, prognosis and treatment response.

Education

PhD, Biomedical Engineering | Georgia Tech and Emory University
August 2024–present; expected August 2029. Wallace H. Coulter Department of Biomedical Engineering. Adviser: Anant Madabhushi.

BTech, Electronics and Communication Engineering | University of Calcutta
2017–2021. CGPA: 9.70/10; ranked 1st in a cohort of 40.

Research and engineering experience

PhD Researcher | Madabhushi Lab, Georgia Tech–Emory | August 2024–present

- Co-developed and validated **VISTA**, a published AI method for virtual immune-cell staining. As second author, contributed model development, experiments, validation, survival analysis and writing.
- Led analyses and scientific interpretation for **first-author ASCO and ESMO meeting abstracts** on cancer prognosis and immunotherapy response.
- Designed computational analyses of the ovarian cancer immune environment; tested outcome associations in an independent cohort. Presented at Rivkin/OCRA 2026; presented at Winship, November 2, 2026.
- Developing multimodal models that connect tissue images with spatial molecular measurements, with ongoing evaluation against biological assays.

Core Computational Pathology Team Member | HistoRisk AI | August 2025–present. Contribute computational analysis, model development and validation to a breast-cancer research team funded through the Emory Innovation Challenge FY2026.

Machine Learning Engineering Analyst | Accenture | August 2021–June 2024

Built, deployed and monitored production machine-learning workflows for entity matching, data mastering and data quality using Python, TAMR and Azure DevOps. Received **Exemplify Client-Centricity recognition**.

Research and teaching | University of Calcutta | 2020–2024

Led medical-image fusion methods and experiments, resulting in a **first-author IEEE Transactions on Instrumentation and Measurement paper** and IEEE conference publications. Contributed to DST-SERB project SUR/2022/005169 and taught Digital Image Processing.

Earlier research: Visiting Researcher, Jadavpur University (2018–2019); IIT Kharagpur internships; DRDO tracking and image-enhancement research.

Peer-reviewed journal articles

Jana M, Das A. Multimodal Medical Image Fusion Using Two-Stage Decomposition Technique to Combine the Significant Features of Spatial Fuzzy Plane and Transformed Frequency Plane. IEEE Transactions on Instrumentation and Measurement. 2023;72:5005910. DOI: 10.1109/TIM.2023.3240222.

Aggarwal A, **Jana M**, et al. Artificial intelligence-based virtual staining platform for identifying tumor-associated macrophages from hematoxylin and eosin-stained images. European Journal of Cancer. 2025;220:115390. DOI: 10.1016/j.ejca.2025.115390.

Aggarwal A, Madill M, **Jana M**, et al. STAR (Stroma-Tumor AI Risk) assessment: association of AI-derived tumor-stroma proportion with patient survival provides added prognostic value beyond KELIM in epithelial ovarian cancer. BJC Reports. 2026. DOI: 10.1038/s44276-026-00205-1.

Additional publications and presentations

Five first-author IEEE conference papers (2021–2023): Multimodal image fusion, low-light enhancement and target tracking; ICCCMLA, ICORT, DELCON and UPCON. **Four public code implementations** accompany this research on GitHub.

First-author meeting abstracts: VAIP, multi-cancer prognosis (ASCO 2026, #3118); **VIPER**, immunotherapy response in head-and-neck cancer (ESMO 2025, #1405P); collagen architecture and breast-cancer risk (USCAP 2025, #171).

First-author poster: “AI-Derived Macrophage-Wall Architecture Around Tumor Nests on H&E Stratifies Disease-Free Survival in HGSOC.” Presented, Rivkin/OCRA, Philadelphia, October 16–18, 2026, P140. Presented, Winship Scientific Symposium, Atlanta, November 2, 2026.

Oral presentation: immune aging and immunotherapy outcomes in NSCLC, Georgia Tech Immunoengineering Symposium, November 5, 2026.

Technical capabilities

AI and imaging: Deep learning, multimodal learning, computer vision, graph models and foundation-model evaluation.
Computational cancer research: Whole-slide imaging, virtual staining, spatial transcriptomics and proteomics, biomarker evaluation and survival analysis.
Scientific software and ML systems: Python, R, MATLAB, PyTorch, TensorFlow, scikit-learn, OpenCV, Git, Docker, Linux/HPC, TAMR and Azure DevOps.

Teaching, mentoring and professional service

Georgia Tech teaching assistant: Biomedical Systems and Modeling (2025; approximately **140 students**) and Intro to Bioinformatics (2026; approximately **44 students**). Delivered modeling lectures and supported computational coursework. Mentor undergraduate and high-school researchers.

Journal reviewer: Cancer Cell; The Lancet Digital Health; IEEE Transactions on Instrumentation and Measurement; Expert Systems with Applications. Current AACR Associate Member. Winship Cancer Institute trainee member (2026). IEEE and IEEE Photonics student-chapter involvement.

Selected media coverage

Winship highlighted my ASCO research and presentation. Research I coauthored was covered by Emory News, the University of Minnesota, Medical Xpress, OncoDaily and The Cancer Letter. Sources: https://mayukhmalajana.github.io/#media