

LAKSHMIKAR REDDY POLAMREDDY

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I'm an AI/ML Research Scientist and PhD candidate specializing in Computer Vision, Deep Learning, and Multimodal Learning, with multiple first-author publications in top-tier venues, and expertise in developing state-of-the-art AI models for image segmentation, image generation, and visual reasoning across healthcare and broader computer vision domains.

EDUCATION

Yeshiva University | **PhD in Mathematics and Computer Science** | New York, USA Jan 2024 - Dec 2026 (Expected)
Yeshiva University | **Master of Science in Artificial Intelligence** | New York, USA Dec 2023
Sri Venkateswara University | **Bachelor of Technology in Mechanical Engineering** | Tirupati, India May 2007

SKILLS

Programming & Data: Python, SQL, PyTorch, NumPy, Pandas, Matplotlib, Seaborn, Plotly
Computer Vision: CNNs, Transformers, Diffusion Models, GANs, Mamba/State-Space Models, Image Classification, Image Segmentation, Visual Reasoning, Object Recognition, Image Synthesis
Multimodal AI & Research: LLMs, VLMs, LoRA, RAG, Prompt Engineering, Model Evaluation
Platforms & Analytics: Snowflake, Streamlit, Tableau, ETL Pipelines, Statistical Analysis, Data Visualization

INDUSTRY EXPERIENCE

Data Scientist | *Quantegy Analytics Inc.* | New York, USA Jun 2025 – Aug 2025 & Jun 2026 – Aug 2026

- Engineered a comprehensive Correctional Health Care analytics product featuring 60+ interactive reports covering patient census, medication management, laboratory services, chronic care, PPD screening, and staff productivity, with facility-level role-based access control to support clinical and operational decision-making.
- Developed an end-to-end Sales, Inventory & Operations Planning (SIOP) analytics product for a global endurance sports organization, integrating automated ETL pipelines, multi-year athlete registration data, and predictive forecasting models to support sales forecasting, event capacity planning, and inventory optimization.
- Built scalable data pipelines and interactive analytics platforms using Python, Pandas, SQL, Snowflake, and Streamlit, integrating heterogeneous data sources, standardizing complex datasets, and delivering actionable business and healthcare insights.

AI Intern | *Modali Consulting* | New York, USA Sep 2023 – Dec 2023

- Developed an AI plugin for dynamic form creation using LLMs, APIs, and prompting techniques, with a chat interface built in Streamlit to update forms based on user input.

Technical Leader | *Cyient Ltd* | Hyderabad, India Feb 2014 – Jun 2022

- Developed interactive Tableau dashboards to monitor and analyze departmental KPIs (first-time-right, on-time delivery, and utilization), enabling weekly performance tracking and data-driven decision-making.
- Leveraged Python libraries, including Pandas, NumPy, Matplotlib, and Seaborn, for data preprocessing, EDA, and visualization to identify trends, uncover actionable insights, and support operational performance analysis.

Customer Interface Engineer | *Cyient Ltd* | Villeneuve, Switzerland Mar 2019 – Mar 2020

Onsite Coordinator | *Cyient Ltd* | Goerlitz, Germany Sep 2014 – Oct 2016

Senior Design Engineer | *Tech Mahindra* | Hyderabad, India Jan 2011 – Jun 2013

Senior Design Engineer | *Infotech Enterprises Ltd.* | Hyderabad, India Jun 2007 – Aug 2010

RESEARCH & ACADEMIC EXPERIENCE

Research Assistant | *Yeshiva University* | New York, USA Jan 2024 – Present

- Developed multimodal architectures combining vision-language models, lightweight encoder-decoder networks, and geometric representations for reasoning-guided 2D and 3D medical image segmentation.
- Researched medical image synthesis using diffusion models, Transformers, and Mamba architectures, focusing on high-quality generation and computational efficiency.
- Introduced a positional reasoning (PR) score for evaluating spatial reasoning text and visual-text consistency; developed a W-Net diffusion architecture incorporating Mamba blocks.
- Investigated information-theoretic limits of diffusion models and the distinction between diverse and out-of-distribution samples; developed the MedNet dataset and a medical image generation framework.

Graduate Adjunct Instructor | *Yeshiva University* | New York, USA May 2025 – July 2025 & Jul 2026 – Aug 2026

- Delivered undergraduate-level instruction in statistical methods, including descriptive and inferential statistics, probability, and hypothesis testing, emphasizing real-world applications in healthcare and research.

- Facilitated hands-on statistical analysis using R, RStudio, and Microsoft Excel, guiding students through data visualization, experimental design, statistical modeling, and interpretation of research findings.
- Designed and administered student assessments, including quizzes, laboratory exercises, assignments, and examinations, evaluating statistical proficiency and strengthening students' problem-solving skills.

Graduate Teaching Assistant | Yeshiva University | New York, USA Sep 2025 – Dec 2025 & Jan 2026 – May 2026

- Evaluated graduate-level coursework in Deep Learning and Neural Networks for master's students in the AI program, assessing assignments, projects, and students' understanding of advanced AI concepts.
- Conducted teaching assistant sessions to clarify complex deep learning concepts, troubleshoot technical challenges, and guide students in designing experiments and evaluating model performance.

Adjunct Faculty | Yeshiva University | New York, USA

May 2024 – Aug 2024

- Mentored graduate students in the Master's in Artificial Intelligence program, guiding the development of innovative AI applications, including VetMed GPT, generative image models, and RAG chatbots.
- Provided technical guidance on designing, developing, fine-tuning, and optimizing custom AI/ML models, emphasizing performance evaluation and benchmarking against state-of-the-art methods.
- Supervised research projects through weekly progress reviews, providing technical feedback, evaluating experimental results, and mentoring students in scientific writing and research paper preparation.

SELECTED PUBLICATIONS

Polamreddy, L. R., & Ma, M. (2026). CG-Reasoner: Centroid-Guided Positional Reasoning Segmentation for Medical Imaging with a Robust Visual-Text Consistency Metric. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition* (pp. 1472-1481) ([CVPR'26](#)).

Polamreddy, L. R., Li, J., & Zhang, Y. (2025). The deficit of new information in diffusion models: A focus on diverse samples. *Information Fusion*, 103857 ([Information Fusion Journal'25](#)).

Zhang, S., Polamreddy, L., & Zhang, Y. (2025). Confident pseudo-labeled diffusion augmentation for canine cardiomegaly detection. In *Proceedings of the Winter Conference on Applications of Computer Vision* (pp. 269-278) ([WACV'25](#)).

Polamreddy, L., Roy, K., Yueh, S. H., Zhang, Y., Kuppli, S., Li, J., & Mahato, D. (2025, June). Leapfrog latent consistency model (llcm) for medical images generation. In *Proceedings of the ACM/IEEE International Conference on Connected Health: Applications, Systems and Engineering Technologies* (pp. 430-435) ([CHASE'25](#)).

Polamreddy, L. R., & Zhang, Y. (2023, October). LaksNet: an end-to-end deep learning model for self-driving cars in Udacity simulator. In *Proceedings of the Future Technologies Conference* (pp. 1-13). Cham: Springer Nature Switzerland. ([FTC'23](#)).

ACCEPTED PUBLICATIONS

WD-Mamba: A W-Mamba Diffusion Model for Enhancing Image Synthesis. International Conference on Neural Information Processing (ICONIP'26), accepted.

MedNet and U²-ViT: A Nested Vision Transformer Diffusion Framework for Diverse Medical Images Generation. IEEE International Conference on E-health Networking, Application & Services (Healthcom'26), accepted.

PUBLICATIONS UNDER REVIEW

MeshGuideSeg: 3D Mesh-Guided Geometry-aware Learning for Medical Image Segmentation via Attentive State-Space Modeling - submitted to *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP'27)*.

3DMuseReasoner: 3D Multimodal Shape-Aware Reasoning Segmentation for Medical Images - submitted to *Association for the Advancement of Artificial Intelligence (AAAI'27)*.

PEER REVIEW

Served as a peer reviewer for leading conferences and journals - *NeurIPS, ICLR, BMVC, Healthcom, ICASSP, and Knowledge-Based Systems*.

AWARDS

Received the **Best Emerging Research Award** at the *Future Technologies Conference (FTC)*, 2023.