Jai Prakash Veerla

Google Student Researcher, Ph.D. Candidate,
The University of Texas at Arlington

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▬▬▬ Education

2022–Present **Ph.D. in Computer Science**, *University of Texas at Arlington*, TX
Computer Science & Engineering @ UTA, **GPA:- 3.91/4.0**
Advisor: Dr. Jacob Luber
Dissertation: "Enhancing Cancer Imaging: Spatial Visualization, 3D Pathology, Model Trustworthiness, with Immersive Technology"

2021–2022 **M.S. in Computer Science**, *University of Texas at Arlington*, TX
Computer Science & Engineering @ UTA, **Converted to Ph.D.**

2016–2020 **B.Tech. in Computer Science & Engineering *First Class with Distinction***,
JNTUH, ACE Engineering College, Hyderabad, IN

▬▬▬ Relevant Experiences

July 2024 - Present **Student Researcher**, *Google Research*, Mountain View, CA, 94043,
Safety of Gemini Foundational Models & Responsible AI

Nov 2021 - Present **Graduate Research Assistant**, *The University of Texas at Arlington*, TX, 76010
1. Developed Digital Pathology Viewer on **Apple Vision Pro** to visualize Whole Slide Images (WSI) integrated with Deep Learning Pathology Search Engine for Similar Patient Search by utilizing Core ML to inference on Apple Silicon of iPad, iPhone & Apple Vision Pro to perform Image Segmentation and Object Detection from the pathologists workflow utilizing the camera sensors to perform image search **(Submitting for ACM CHI 2025)**

2. Demonstrated Adversarial Attacks against Multi-modal Vision Language Models for Pathology Imaging and achieved **100% success rate** in misclassifiying the state of the art Pathology VLMs like **PLIP (Stanford Group), BioMedClip (Microsoft Reserach), etc.** raising the need for Trustworthiness & Interpretability of Foundational Models in healthcare with emphasis on Safety & Responsible AI

3. Investigating interpretability of Vision Language Models using **Google PaliGemma** by utilizing **KAN** for medical images in order to enhance the interpretability *(On Going)*

4. Developing **Pathology AI Agent on Apple Vision Pro** with voice based interaction in the AR/VR space by utilizing Pathology Vision Language model to assist pathologists perform better diagnosis with integration of 3D Pathology Data *(On Going)*

5. Developed **SpatialVisVR:** An immersive, multiplexed medical image viewer with contextual similar-patient search

6. Analyzed lack of concordance between the proteome and transcriptome in paired scrna-seq and multiplexed spatial proteomics

Oct 2020 - Feb 2021	**Data Analyst**, *Vamstar* Hyderabad, IN
Jan 2020 - Sept 2020	**Research Scientist Intern**, *Defence Research and Development Organisation (DRDO)* Hyderabad, IN, RCMA (Missiles)
Sept 2019 - Jan 2020	**Machine Learning Research Intern**, *Risk Edge Solutions* Hyderabad, IN
May 2019 - Aug 2019	**Research Intern**, *The International Institute of Information Technology Hyderabad (IIIT Hyderabad)*, Hyderabad, IN, Language Technologies Research Center (LTRC)

Proficiencies

Languages and Technologies

Python (numpy, pandas, scipy, matplotlib, sklearn, pytorch, pytorch lightning), Machine Learning libraries, Deep Learning architectures, Computer Vision, MLOPs, C++, CUDA, CoreML, MLX Framework, Xcode, Swift, R (ggplot, shiny), bash, MySQL, LATEX, Git, Linux, HPC (slurm), Abode Creative Cloud (Illustrator, Photoshop, Premiere Pro, etc.), HTML5, CSS, Docker, Kubernetes, Unity, Tableau, AWS (EC2, load balancing, etc.)

Publications

(* denotes co-first authors)

1. **Jai Prakash Veerla**, Partha Sai Guttikonda, Amir Hajighasemi, Jillur Rahman Saurav, Aarti Darji, Cody T Reynolds, Mohamed Mohamed, Mohammad S Nasr, Helen H Shang, and Jacob M Luber. Spatialvisvr: An immersive, multiplexed medical image viewer with contextual similar-patient search. *arXiv preprint arXiv:2401.02882*, 2024.

2. **Jai Prakash Veerla***, Poojitha Thota*, Partha Sai Guttikonda, Mohammad S Nasr, Shirin Nilizadeh, and Jacob M Luber. Demonstration of an adversarial attack against a multimodal vision language model for pathology imaging. *arXiv preprint arXiv:2401.02565*, 2024.

3. **Jai Prakash Veerla**, Jillur Rahman Saurav, Michael Robben, and Jacob M Luber. Analyzing lack of concordance between the proteome and transcriptome in paired scrna-seq and multiplexed spatial proteomics. *arXiv preprint arXiv:2307.00635*, 2023.

4. Helen H. Shang, Mohammad Sadegh Nasr, **Jai Prakash Veerla**, Jillur Rahman Saurav, Amir Hajighasemi, Parisa Malidarreh, Manfred Huber, Chace Moleta, Jitin Makker, and Jacob M. Luber. Histopathology slide indexing and search — are we there yet? *NEJM AI*, 1(5):Alcs2300019, 2024.

5. Michael Robben, Amir Hajighasemi, Mohammad Sadegh Nasr, **Jai Prakash Veerla**, Anne M Alsup, Biraaj Rout, Helen H Shang, Kelli Fowlds, Parisa Boodaghi Malidarreh, Paul Koomey, et al. The state of applying artificial intelligence to tissue imaging for cancer research and early detection. *arXiv preprint arXiv:2306.16989*, 2023.

6 Michael Robben, Mohammad Sadegh Nasr, Avishek Das, **Jai Prakash Veerla**, Manfred Huber, Justyn Jaworski, Jon Weidanz, and Jacob Luber. Comparison of the strengths and weaknesses of machine learning algorithms and feature selection on kegg database microbial gene pathway annotation and its effects on reconstructed network topology. *Journal of Computational Biology*, 30(7):766–782, 2023.

7 Amir Hajighasemi*, MD Saurav*, Mohammad S Nasr, **Jai Prakash Veerla**, Aarti Darji, Parisa Boodaghi Malidarreh, Michael Robben, Helen H Shang, and Jacob M Luber. Multimodal pathology image search between h&e slides and multiplexed immunofluorescent images. *arXiv preprint arXiv:2306.06780*, 2023.

8 Neel R Vora*, Amir Hajighasemi*, Cody T Reynolds, Amirmohammad Radmehr, Mohamed Mohamed, Jillur Rahman Saurav, Abdul Aziz, **Jai Prakash Veerla**, Mohammad S Nasr, Hayden Lotspeich, et al. Real-time diagnostic integrity meets efficiency: A novel platform-agnostic architecture for physiological signal compression. *arXiv preprint arXiv:2312.12587*, 2023.

9 Parisa Boodaghi Malidarreh*, Biraaj Rout*, Mohammad Sadegh Nasr*, Priyanshi Borad*, Jillur Rahman Saurav*, **Jai Prakash Veerla**, Kelli Fenelon, Theodora Koromila, and Jacob M Luber. Predicting future states with spatial point processes in single molecule resolution spatial transcriptomics. *arXiv preprint arXiv:2401.02564*, 2024.

Honors and Awards

Spring 2024	**Nooyi Gift Scholarship**, *RAJ AND INDRA NOOYI, University of Texas at Arlington*
Fall 2023	**Apple**, *Project Shortlisted for Apple Vision Pro Developer Labs Early Access*
Fall 2023	**Nooyi Gift Scholarship**, *RAJ AND INDRA NOOYI, University of Texas at Arlington*
Fall 2021	**Lonestar Scholarship**, *University of Texas at Arlington*
Fall 2021	**Silverstar Scholarship**, *University of Texas at Arlington*
Fall 2020	**First Class with Distinction**, *JNTUH*

Social Media and Code

LinkedIn, *https://www.linkedin.com/in/jai-prakash-veerla/*

Google Scholar, *https://scholar.google.com/citations?user=0EHcHsgAAAAJhl=en*

Github, *https://github.com/jaiprakash1824*

Twitter, *https://twitter.com/jp_veerla*

Relevant Coursework

Completed @ University of Texas at Arlington
Special Topics in Advanced Multimedia Graphics, & Image Processing, Special Topics in Advanced Computer Science, Machine Learning, Bioinformatics, Artificial Intelligence, Numerical Methods, Design and Analysis of Algorithms, Data Analysis & Modeling Techniques, Computer Architecture, Distributed Systems, Computer Vision (Audited), Neural Networks (Audited)

Teaching

TA Spring 2024 @ UTA Department of Computer Science, *College of Engineering*
Bioinformatics (CSE 5370)

TA Fall 2021 @ UTA Department of Physics, *College of Science*
Python for Data Science (DATA 3402)

Conference Presentations, Posters, and Invited Talks

1 Jai Prakash Veerla, Poojitha Thota, Partha Sai Guttikonda, Mohammad S Nasr, Shirin Nilizadeh, and Jacob M. Luber.
Demonstration of an adversarial attack against a multimodal vision language model for pathology imaging. *IEEE ISBI 2024*, May 2024. Athens, GR.

2 Jai Prakash Veerla, Jillur Rahman Saurav, Michael Robben, and Jacob M. Luber.
Analyzing lack of concordance between the proteome and transcriptome in paired scrna-seq and multiplexed spatial proteomics. *IEEE CIBCB 2023*, August 2023. Eindhoven, NL.