

# Krishna Sri Ipsit Mantri

<https://ipsitmantri.github.io>

Google Scholar 

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## Education

**Purdue University**, West Lafayette, IN, United States  
Master of Science in Computer Science  
Specialization: Machine Learning  
GPA: 3.74/4.0

August 2023 - Present  
Graduation: May 2025

**Indian Institute of Technology Bombay**, Mumbai, India  
Bachelor of Technology in Electrical Engineering  
GPA: 9.36/10.0  
Minor Degrees: (1) Computer Science and Engineering (2) Artificial Intelligence and Data Science

Jul 2018 - May 2022

## Publications

**Krishna Sri Ipsit Mantri**, Carola-Bibiane Schönlieb, Bruno Ribeiro, Chaim Baskin, Moshe Eliasof. *DiTASK: Multi-Task Fine-Tuning with Diffeomorphic Transformations*. Under Review at CVPR, 2025

**Krishna Sri Ipsit Mantri**, Xinzhi Wang, Carola-Bibiane Schönlieb, Bruno Ribeiro, Beatrice Bevilacqua, Moshe Eliasof. *DiGRAF: Diffeomorphic Graph-Adaptive Activation Function*. Accepted at The 38th Annual Conference on Neural Information Processing Systems (NeurIPS), 2024 [arXiv]

**Krishna Sri Ipsit Mantri**, Moshe Eliasof, Carola-Bibiane Schönlieb, Bruno Ribeiro. *Rethinking Fine-tuning Through Geometric Perspective*. Accepted In UniReps: 2nd Edition of the Workshop on Unifying Representations in Neural Models at NeurIPS 2024[OpenReview]

Nevasini Sasikumar, **Krishna Sri Ipsit Mantri**, STAGCN: Spatial-Temporal Attention Based Graph Convolutional Networks for COVID-19 Forecasting, accepted for oral presentation at the 2023 ICLR First Workshop on Machine Learning & Global Health. [OpenReview]

Pritish Chakraborty, Sayan Ranu, **Krishna Sri Ipsit Mantri**, Abir De, *Learning and Maximizing Influence in Social Networks Under Capacity Constraints*, accepted for publication at the 16th ACM International Web Search and Data Mining Conference (WSDM), 2023. [ACM]

## Industry Experience

**Sony AI**  
Research Scientist Intern

May 2024 - August 2024  
Tokyo, Japan



(a) Initial View      (b) Novel View 1      (c) Novel View 2      (d) Novel View 3      (e) Novel View 4

Figure 1: 3D Scene Reconstruction: Initial view and generated novel views.

- Developed a deterministic zoom-enhancement system to generate sparse views from a single image, preserving fine details without using diffusion models
- Applied diffeomorphic transformations to simulate camera pose shifts, creating realistic viewpoint diversity from one image
- Integrated the framework with MVSplat to render high-quality 3D scenes within 15 seconds, achieving a 120× speed improvement over traditional single-image novel view synthesis
- Addressed challenges in single-image 3D reconstruction for complex scenes, providing a scalable solution for real-time applications like PlayStation games with limited multi-view data

## Texas Instruments

Software Enginner, Power Interfaces Firmware Team

July 2022 - July 2023  
Bangalore, India

- Worked on FW validation of Power over Ethernet Power Sourcing Equipment controller TPS23881
- Used Pytest and Jenkins automation framework to detect and validate correct state machine execution and automated legacy manual tests bumping up the coverage by 20%.

<b>Microsoft</b>	Software Engineer Intern, Defensive Search @ Bing	May 2021 – July 2021 Hyderabad, India	
	<ul style="list-style-type: none"> <li>Automated the query expansion pipeline for Bing Safe Search using C#, enhancing the detection and filtering of racially inappropriate and derogatory content</li> <li>Implemented sampling techniques to reduce query processing time by 62%, significantly lowering crowdsourcing costs and integrated it to a workflow manager.</li> </ul>		
Projects	<b>PropertyManager.ai – GenAI Solution for House Inspection</b> February 2024 – March 2024 Hacklytics 2024   Demo    Website    Code		
	<ul style="list-style-type: none"> <li>Developed a multi-modal Generative AI solution to assess property damages and expedite insurance claims processing</li> <li>Created a custom dataset through web scraping to fine-tune the BLIP text-to-image model for damage identification and detailed reporting</li> <li>Implemented few-shot prompting with GPT-4 to provide personalized solutions aligned with specific insurance policies</li> </ul>		
	<b>Diagnosing Supply Chain Optimization Problems using LLMs</b> August 2023 – May 2024 Graduate Assistantship under Prof. Can Li		
	<ul style="list-style-type: none"> <li>Developed a GPT-4-powered chatbot to solve industry-scale supply chain optimization problems using Mixed Integer Programming</li> <li>Integrated advanced features like infeasibility troubleshooting, sensitivity analysis, and counterfactual reasoning</li> <li>Proposed and implemented a proof-of-concept leveraging code generation and Retrieval Augmented Generation (RAG) for enhanced capabilities</li> </ul>		
	<b>Code Review Automation using LLMs and RAG</b> January 2024 – May 2024 CS 592 - AI-Assisted Software Engineering Seminar with Prof. Tianyi Zhang - Code		
	<ul style="list-style-type: none"> <li>Developed a novel multi-stage code review generation framework leveraging Retrieval Augmented Generation (RAG) and off-the-shelf Large Language Models (LLMs)</li> <li>Evaluated the framework's effectiveness across LLMs of varying capacities, including GPT-3.5, Mistral 7B, and Llama 3 70B</li> <li>Deployed the framework as a GitHub App for automated code reviews of pull requests, enhancing code quality and developer productivity</li> </ul>		
	<b>xkcd-style Comic Generation using T2I Models</b> January 2024 – May 2024 CS 587 - Foundations of Deep Learning with Prof. Raymond Yeh - Code		
	<ul style="list-style-type: none"> <li>Fine-tuned a Stable Diffusion using LoRA on 2,240 comics to generate xkcd-style illustrations</li> <li>Enhanced text coherence in generated comics by training a ResNet-18 reward model and applying Direct Preference Optimization</li> </ul>		
Other Experience	Computer Systems Bootcamp, <i>Teaching Assistant for OS</i> IITB CS 419M Introduction to Machine Learning, <i>Head Teaching Assistant</i> IITB MA 108 Ordinary Differential Equations, <i>Teaching Assistant</i>	Summer 2022 Spring 2022 Fall 2021	
Scholastic Achievements	2024 NeurIPS Travel Award 2023 Accepted to The Cornell, Maryland, Max Planck Pre-doctoral Research School 2022 Achieved perfect GPA of 10.0/10.0 in the 8th semester at IIT Bombay 2018 Secured All India Rank of 242 in JEE Advanced among 0.2 million candidates 2016 KVPY Fellowship (Declined) by Department of Science and Technology, Government of India		
References	<b>Prof. Bruno Ribeiro</b> Department of Computer Science, Purdue University	<b>Dr. Moshe Eliasof</b> Department of Applied Mathematics, University of Cambridge	<b>Prof. Chaim Baskin</b> School of ECE, Ben-Gurion University of the Negev