Jatin Nainani

NainaniJatinZ | nainani.jatin.0@gmail.com | nainanijatinz.github.io

Education

University of Massachusetts Amherst **Aug 2023 – May 2025**
Master of Science in Computer Science *GPA: 4.0/4*
Coursework: Advanced Machine Learning, Research Methods in Empirical CS, Advanced NLP

K. J. Somaiya College of Engineering, Mumbai, India **Aug 2019 – May 2023**
Bachelor of Technology in Electronics and Telecommunication Engineering *CGPA: 9.51/10*

Technical Skills

- Languages: Python, C, C++, MATLAB
- Machine Learning: PyTorch, TensorFlow, HuggingFace
- Frameworks: Django, Flask, Streamlit
- Comp Bio: py3Dmol, biotite, esm
- Domains: Mechanistic Interpretability, Computational Biology, Transformers, Diffusion, Robotics, NLP.

Experience

NVIDIA **May 2024 – Current**
VLSI CAD Intern *Santa Clara, CA*

- **Developed** a novel hierarchical, multi-agent framework utilizing LLMs to automate the analysis of complex hardware reports, significantly reducing debugging time across multiple reports.
- **Implemented** a variation of Agentic RAG, leveraging LLMs to retrieve relevant timing information and distill it into a debug relation graph, achieving 98% accuracy on single report benchmarks and a 90% pass rate for multi-report benchmarks.
- **Implemented** a tree search-based documentation explorer agent, enabling efficient retrieval of information from hardware tool documentation, enhancing user experience and reducing search times.

Amazon **Feb 2024 – May 2024**
Graduate Student Researcher *Amherst, MA*

- **Led** a research project exploring the limits of Language Learning Models (LLMs) in creative writing and code generation, focusing on how increasing prompt specificity impacts their performance.
- **Developed** and **tested** hypotheses on prompt constraints in LLMs, employing methods like few-shot in-context learning to analyze and enhance the efficiency of AI in complex, long-form content creation.

Publications

- Nainani, Jatin*, Sankaran Vaidyanathan*, A. J. Yeung, Kartik Gupta, and David Jensen. **Adaptive Circuit Behavior and Generalization in Mechanistic Interpretability.** [arXiv link] [Under review in ICLR 2025 conference]
- Atmakuru, Anirudh*, Jatin Nainani*, Rohith Siddhartha Reddy Bheemreddy, Anirudh Lakkaraju, Zonghai Yao, Hamed Zamani, and Haw-Shiuan Chang. **CS4: Measuring the Creativity of Large Language Models Automatically by Controlling the Number of Story-Writing Constraints.** [arXiv link] [Accepted at AAAI 2025 workshop]
- Nainani, Jatin. **Evaluating Brain-Inspired Modular Training in Automated Circuit Discovery for Mechanistic Interpretability.** [arXiv link] (2024).
- Pawar, Anish, Jatin Nainani, Priyanka Hotchandani, and Gayatri Patil. **Smartphone based tactile feedback system providing navigation and obstacle avoidance to the blind and visually impaired.** In 2022 5th International Conference on Advances in Science and Technology (ICAST), pp. 236-242. IEEE, 2022.
- Nainani, Jatin, Nirman Taterh, Md Ausaf Rashid, and Ankit Khivasara. **Feature-Rich Long-term Bitcoin Trading Assistant.** In International Conference on Intelligent Vision and Computing, pp. 431-442. Cham: Springer Nature Switzerland, 2022.