

Shivi Gupta

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EDUCATION

Carnegie Mellon University - GPA: 4.0/4.0

Pittsburgh, PA

Master of Science in Electrical and Computer Engineering

May 2025

- Courses: Computer Architecture, Parallel Computing, Distributed Optimization, Large Language Models, Visual Learning
- Graduate Teaching Assistant: Signals and Systems, Mathematical Foundations of Electrical Engineering

Indian Institute of Technology Kanpur - GPA: 9.2/10.0 (Distinction)

Kanpur, India

Bachelor of Technology in Electrical Engineering

May 2023

- Double Major: Physics, Minors: Computer Science - Machine Learning, English Literature
- Courses: Image Processing, Digital Signal Processing, Machine Learning for Signal Processing, Control Systems Analysis

SKILLS

Languages & Frameworks: C/C++, Python, JavaScript, MATLAB, TensorFlow, Keras, PyTorch, OpenCV, Networkx

Utilities: Git, Linux, LATEX, SQL, HTML/CSS, AWS, GCP, Docker, Azure, Gem5, Verilog, OpenGL, CUDA, Android Studio, Vulkan

INTERNSHIP EXPERIENCE

Schlumberger (SLB)

Cambridge, MA

Advanced Acoustics Intern

May 2024 - Aug 2024

- Advanced the capabilities of Epilogue, an acoustic barrier evaluation tool by integrating heterogeneities and introducing an uncertainty metric to generate high resolution ultrasonic-like features from lower resolution sonic data
- Designed pipelines in a domain generalization and ordinal regression methodology with a user-friendly interface by shell scripts and Python for Kubernetes deployed on Git and Docker containers, resulting in a 4% improvement in accuracy

Adobe

Bangalore, India

Research Intern

May 2021 - Aug 2021

- Collaborated with a team of four interns to migrate user profiles from cloud to edge servers, by leveraging sequence modeling, autoencoders, and multitask learning on user interaction data, producing low 16-dimensional universal vectors
- Filed a patent "Generating Concise and Common User Representations for Edge Systems from Event Sequence Data stored on Hub Systems" Adobe P10960-US as a co-inventor

RESEARCH

Electrical and Computer Engineering, Carnegie Mellon University

Pittsburgh, PA

Graduate Research Assistant

Jan 2025 - Present

- Designing a biologically-inspired Content-Addressable Memory (CAM) system using a top-down design approach in a neuromorphic computer architecture system to enhance associative data retrieval
- Optimizing a mouse-in-a-maze learning simulator as a foundational baseline in C++, later with PyTorch integration, leveraging a hierarchical reference frame methodology to improve memory access and drive faster computing paradigms

Electrical Engineering, Indian Institute of Technology Kanpur

Kanpur, India

Undergraduate Researcher

Jan 2021 - Apr 2021

- Developed an HTML experiment for data collection on color selection for emotion-inducing images, demonstrating a significant emotion-color association in humans with a correlation of 0.34 in pre-trained classification models
- Co-authored a paper "Emotion-Color Association in Biologically Inspired Deep Neural Networks" (Gupta, S., & Gupta, S. 2021), published in the Proceedings of the Annual Meeting of the Cognitive Science Society, 43rd edition

PROJECTS

Evaluating Persuasiveness of Large Language Models | Large Language Models, CMU

Sep 2024 - Dec 2024

- Designed language models for rating persuasiveness by instruction tuning and fine-tuning open-sourced language models on Anthropic Persuasion dataset, achieving a Cohen's Kappa of 0.3 for zero shot with human ratings
- Fine-tuned GPT models for generating persuasive arguments for given claims, resulting in a perplexity score of 2082 demonstrating complex and nuanced generations

Conditional Point Cloud Generation | Visual Learning and Recognition, CMU

Sep 2023 - Dec 2023

- Developed a model for generating point clouds from text prompts and Canny edge images using ControlNet integrated with a fine-tuned stable diffusion framework, achieving P-IS scores comparable to leading single modality baselines
- Optimized Stable Diffusion by implementing low-rank adaptation resulting in cleaner intermediate 2D images, feeding them to a Wonder-3D model to generate 3D meshes, subsequently sampled into point clouds

Self-Configuring Graph Convolution Networks | Graph Signal Processing, CMU

Sep 2023 - Dec 2023

- Introduced a novel configuration method for graph neural networks by incorporating node addition via K-means and edge reweighting through graph attention mechanism, resulting in 3% accuracy improvement on semi-supervised classification
- Conducted rigorous exploration of node and edge additions at various stages of the training pipeline, demonstrating performance comparable to existing methodologies