

SHIVAM

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SUMMARY

Ph.D. candidate specializing in Generative AI, multimodal foundation models, and model alignment. Experienced in developing and adapting vision-language models, diffusion-based text-to-image and text-to-video systems, and large language models. First author of multiple papers on sparse model steering, mechanistic interpretability, machine unlearning, and concept editing, and named inventor on two U.S. patent applications in generative video. Brings both rigorous research expertise and end-to-end experience building, evaluating, optimizing, and deploying generative AI systems as a startup co-founder.

EDUCATION

West Virginia University, Morgantown, WV, USA Ph.D. Candidate in Computer Science Expected Dec 2026	Jan 2022 - Present
Savitribai Phule Pune University, India Bachelor of Engineering in Computer Engineering	July 2017 - July 2021

EXPERIENCE

West Virginia University, Morgantown, WV Graduate Research & Teaching Assistant - Developed neuron-level and sparse-representation methods for concept unlearning and editing in foundation models. - Designed privacy-preserving representation-erasure algorithms for biometric recognition systems. - Built and evaluated model-steering methods for CLIP, Stable Diffusion, and multimodal foundation models. - Teaching Assistant for CS 111 (Data Structures), CS 474/574 (Responsible AI), and CS 480/481 (Capstone); led labs and mentored undergrad student projects, providing technical and research guidance.	Jan 2022 - Present
EFREI Paris Research Intern - Worked on healthcare projects using generative AI, notably MRI tumor analysis using diffusion models. - Collaborated with hospitals and academic researchers on AI integration in medical research.	June 2024 - Aug 2024
Co-Founder, Valoi - Built an AI-powered text-to-video tool converting educational texts into videos for dyslexic learners. - Designed advanced LLM-driven reasoning and scene-planning techniques alongside novel diffusion-based text-to-video methods, integrating both into a unified generative video system underlying two U.S. patent applications. (patent approved).	Jan 2024 - Present

RESEARCH PUBLICATIONS AND PATENTS

- “CURE: Centroid-guided Unsupervised Representation Erasure for Facial Recognition,” **IEEE IJCB 2025**
- “Segmentation of Maya Hieroglyphs through Fine-Tuned Foundation Models,” **IEEE ICMLA 2024**
- “NEST: Fine-Grained Concept Unlearning via Neuron-Level Targeted Editing,” Under Review, **IEEE T-BIOM**
- “Towards Responsible AI: Concept-Level Steering in VLMs via Sparse Mechanistic Representations,” **IEEE WETICE 2026**
- “Counterfactual Feature Steering for Adjacency-Preserving Identity Unlearning,” Under Review, **NeurIPS 2026**
- “A Custom Transformer-based Model for Eye Rubbing Detection in Diagnosed Keratoconus,” Under Review, **IEEE ICDH (co-author)**
- “Feature Selection for Palmprint Verification Using an Improved Binary Sand Cat Swarm Optimization Algorithm,” Under Review, **IEEE IJCB (co-author)**
- Inventor**, approved **U.S. Patent** on “Text-to-Video Conversion,” Publication No: US-2025-0336199-A1.
- Inventor**, “Compliance-Adaptive System and Method for Structured Multi-Scene Text-to-Generative Video Transformation,” **U.S. Patent (under review)** — Atty. Dkt. No. VLAI/0003USL.

SKILLS, AWARDS & LEADERSHIP

- Skills:** Generative AI (LLMs, VLMs, foundation models, diffusion models, prompt engineering, text-to-image and text-to-video generation); ML Engineering (model training and fine-tuning, evaluation, inference optimization, embeddings, RAG, computer vision); Infrastructure & Deployment (AWS EC2, Secrets Manager, FastAPI, Docker, CUDA, Linux, SQL, Git); Responsible AI (machine unlearning, model steering, concept editing, data deletion, bias mitigation); Python, PyTorch, TensorFlow.
- Awards:** Best Poster Award (Graduate Poster Symposium 2024); 2nd Prize Research Poster Competition WVU Lane Dept. of Computer Science & Electrical Engineering (2026); Research Travel Grant (2024, 2025); 2nd Place at Fordham Foundry Pitch Challenge.
- Honors & Leadership:** IEEE Student Member; Mentored CS 480/481 Capstone teams; President Indian Students Association (WVU); Reviewer for IEEE conferences/journals, including DEMI 2026; Organizing Committee, IEEE WETICE-2023 Conference.