Shivam Singh

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Permanent Resident: United States

Research Interests

- **Broad Interests:** Computer Vision, Generative Models, Multimodal Foundation Models
- **Specific Interests:** Latent space-controlled visual reasoning, Inference-time steering in diffusion/flow models, RL-alignment in visual generative models to human preferences.

Education

Arizona State University — Tempe, AZ
Ph.D. in Computer Science — August 2024 – Current
GPA: 4/4

Jadavpur University — Kolkata, India
Bachelors of Engineering in Computer Science — 2020 - 2024
GPA: 8.34/10 (First Class Distinction)

Publications & Presentations

Accepted

1. B. Pathiraja, M. Patel, **S. Singh**, C. Baral, Y. Yang, "RefEdit: A Benchmark and Method for Improving Instruction-based Image Editing Model for Referring Expression," *ICCV*, 2025. [ArXiv]

Under Review

1. **S. Singh**, Y. Chen, A. Chatterjee, A. Raj, J. Hays, C. Baral, Y. Yang, "Chimera: Composite Image Generation using Part based Concepting,", 2025. [Website]
2. S. Majumder, A. Halder, **S. Singh**, S. Chakraborty, M. Kundu, and R. Sarkar, "W2CU-Net: A Weibull and Weierstrass Functions with Cosine Similarity Based Network for Liver and Tumor Segmentation from CT Scans," submitted to *IEEE Transactions on Instrumentation and Measurement*, 2024.
3. **S. Singh**, A. Naskar, R. Sarkar, "Colon Disorder Classification using Altruistic Genetic Algorithm based Fused Deep Feature Selection Method," submitted to *Evolving Systems*, 2024.
4. **S. Singh**, A. Halder, R. Sarkar, "SEA-Unet: Attention guided lightweight network for Liver segmentation," submitted to *Evolving Systems*, 2024.

Experience

Graduate Research Assistant, Arizona State University – Tempe, AZ — August 2024 - Current

- Prepared a dataset and benchmark for referring expression - guided image editing to improve the visual reasoning and navigation capabilities of text-to-image editing models . Paper accepted at **ICCV 2025**
- Actively working on an **ICLR 2026** submission, exploring part-based personalization in text-to-image models to generate composite images from user-defined object parts, and developing a scalable prompting and evaluation pipeline to benchmark part-level fidelity and compositional accuracy.

Undergraduate Research Assistant, Jadavpur University – Kolkata, India — January 2023 - June 2024

- Involved in the domain of AI for medical image analysis, broadly using deep learning and optimization algorithms, contributing to advancements in the field.
- Focussed on developing lightweight ML architectures for medical imaging.
- Submitted 3 research papers to relevant journals, including Springer, Elvesier and IEEE transactions.

Data Analysis Intern, American Red Cross – Remote — July 2023 - November 2023

- Collaborated with the regional humanitarian teams (*Northern California*) to analyze donation and outreach data using Python (pandas, scikit-learn), SQL, and Tableau.

- Applied regression analysis and time-series forecasting to identify seasonal donation spikes and audience-specific engagement patterns, leading to redesigned campaigns that boosted volunteer sign-ups by *18%*.

Technical Skills

Programming Languages: Python, C/C++, Java, SQL, Javascript, HTML/CSS

Developer Tools: Git, SLURM, Google Cloud Platform, VS Code, Linux, Distributed Training, Latex

Libraries & Tools: Pytorch, TensorFlow, OpenCV, Pandas, NumPy, Matplotlib, OpenCV

Certifications

- **AWS Certified Machine Learning – Specialty**, Amazon Web Services (2023)

Awards and Achievements

- **Finalist – Smart India Hackathon**, Government of India (2022) – Developed an online platform to connect higher education institutes with funding agencies to facilitate smoother and more efficient funding opportunities.
  - Selected as 1 of 30 finalist teams out of 1500+ entries nationwide, competing in multiple qualifying rounds.
  - Applied technical skills in web development (React, Node.js, SQL) and cloud deployment to build a scalable prototype within the hackathon timeframe.
  - Presented the solution to a jury of academic and industry experts, receiving recognition for usability and impact potential.
- **Ranked Top 0.5%** out of 1.1 million applicants in Joint Entrance Examination (JEE), India's national-level engineering entrance exam (2020).

Teaching Experience

Graduate Teaching Assistant, Arizona State University – Tempe, AZ August 2024 – Current

- **Operating Systems (Upper-level Undergraduate, Fall 2024)** – Supported a class of 150+ students by holding exam review sessions, and guiding students on lab projects involving process management, synchronization, and memory allocation.
- **Object-Oriented Programming and Data Structures (First-year Undergraduate, Spring 2025)** – Assisted a class of 100+ students with coursework covering object-oriented design principles, data structures (lists, trees, graphs), and algorithms. Held office hours to clarify concepts and provide feedback on lab implementations.