Sehajdeep Singh

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I am a Master of Computer Science (Advanced Entry) student at University of Sydney. My research interest lies in 3D, Computer Vision and Diffusion models. I have academic research experience at IIIT-Delhi as well as 3+ years of industry AI development. I am particularly interested in exploring how generative models capture data distribution entropy and investigating whether explicit entropy modeling can improve cross-modal understanding.

EDUCATION

- **Master of Computer Science (Advanced Entry), University of Sydney** — Aug 2025 - Aug 2027
- **B.Tech in Computer Science, Manipal Institute of Technology** — July 2017 - July 2021

EXPERIENCE

- **IIIT-Delhi** — *July 2024 - July 2025*
  Research Associate — Delhi, India
  - 3D Vision and Generative AI Research - Focused on single-image novel view synthesis: predicting geometrically consistent new viewpoints of a scene from a single input image.
  - Proposed diffusion model driven methods exploiting DDIM inversion for view translation, addressing challenges of occlusion, reasoning and high-fidelity generation.
  - Investigated DDIM behavior, noise statistics, and novel conditioning strategies for single-image novel view synthesis, leading to a first-author submission at a top-tier AI conference.

- **HP Inc** — Bangalore, India
  Software Engineer 2 — *Dec 2022 – July 2024*
  - Designed and implemented all-in-one dockerized framework/web app for streamlined dataset management, version control, and test execution across various applications on multiple platforms.
  - Integration of CI/CD pipeline with the framework for effective one-click regression testing.
  - Reduced Software Delivery Turnaround Time by 40%.

  Software Engineer 1 — *July 2021 – Dec 2022*
  - Onboarded and enabled test teams with novel AI tool created during internship for UI automation with results showing 30-40% increase in AI assisted automated tests being run.
  - Vision+Language - contextual caption generation for UI icons using Transformers.
  - Used CNNs for classification and image feature extraction,and transformer encoder-decoder to generate conditioned and context aware captions to be used as keywords for autonomous UI testing.

  Research Intern — *Feb 2021 - July 2021*
  - Computer Vision Research - Developed CV based intelligent UI Testing tool for HP desktop apps and web applications.
  - Used a combination of old legacy image processing algorithms and deep learning models.

PUBLICATIONS

[1] **Sehajdeep Singh**, A V Subramanyam. "Novel View Synthesis using DDIM Inversion." arXiv preprint arXiv:2508.10688, 2025.

PROJECTS

- **Latent Diffusion Model with Perceptual Loss** — *Jan 2024 - Mar 2024*
  - Built Latent Diffusion models to generate Church images at reduced training times.
  - Trained ImageNet latent space classifier to add perceptual loss.
  - Outcome : Increased visual fidelity for the object with addition of perceptual loss.
  - Project Blog : Link.

- **Dockerized Imaging Ops** — *Feb 2023-Jan 2024*
  - All-in-one dockerized framework/web app.
  - Streamlined dataset management, version control, and test execution.
  - Platform agnostic.

SKILLS

Tools and Languages	Python, JavaScript, C++, LaTeX, Git
FrameWork	Pytorch, Tensorflow, FastAI
Web Development	FastAPI, React, MongoDB
Communication	English,Hindi,Punjabi

BLOG POSTS

Homepage: https://sehajsasan.github.io/sehaj-notepad/