

Anmol Agarwal

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EDUCATION

Indian Institute of Science, Education and Research, Bhopal

Bachelor of Science, Electrical Engineering and Computer Science

Bhopal, Madhya Pradesh

Sept. 2023 – May 2027

PUBLICATIONS

COMBAT: Conditional World Models for Behavioral Agent Training

Accepted

1st Workshop on Reliable and Interactive World Model in Computer Vision (RIWM), ICCV 2025 Non Archival Oct 2025

- Paper presents COMBAT, a conditional world model learning a reactive opponent's tactical policy as an emergent property by training a real-time diffusion model on a fighting game.
- The model is trained on the complex 1v1 fighting game Tekken 3 and demonstrates the ability to simulate an opponent that reacts to player actions.
- Co-authored with Pranay Meshram, Sumer Singh, Saurav Suman, Andrew Lapp, Shahbuland Matiana, Louis Castricato, and Spencer Frazier.

EXPERIENCE

Member of Technical Staff, Pretraining Team

Oct 2025 – Present

Wayfarer Labs

Rhode Island, US

- Training foundational Interactive Video Models
- Scaling up and optimizing data and inference pipelines for custom and pre-trained open source Video Diffusion Models

Research Intern

Dec 2024 – Aug 2025

Vision and AI Lab, Indian Institute of Science

Bangalore

- Creating a dataset for Object Relighting using BlenderProc API using procedural camera poses and Environment lighting maps.
- Literature Survey of ICCV2026 and CVPR2025 papers on Video Relighting and Video Diffusion models.
- Efficient LoRA finetuning of WanVideo 1.3B model on custom dataset using Diffusion-Pipe and inference using Huggingface Diffusers
- Exhaustive Literature Survey on SOTA Video Diffusion models and their applications.
- Ran and compared three state-of-the-art models (Hunyuan by Tencent, Mochi1, and CogVideoX) on server-grade hardware, utilizing pipelines such as HuggingFace Diffusers, ComfyUI, and xDiT for multi-GPU inference.

PROJECTS

DreamLab - Latent Diffusion Transformer based model for Text2Video Generation | *Python, Flask, React, PostgreSQL*

- Experimented with multiple autoencoder architectures, eventually trained a model which used a combination of perceptual and reconstruction loss to get minimal quality loss.
- Studied research papers such as DDPM, LDM, VAE, VQ-VAE, Vision Transformer, Diffusion Transformer
- Implemented denoising using DiT architecture for images without text conditioning
- Creating a DiT denoising model with spatio-temporal attention and text conditioning using CLIP embeddings, trained on a custom Minecraft gameplay dataset as a proof of concept.

Sim3D - Realtime Cloth Simulation and Physics Engine from Scratch | *GitHub Link*

- Developed a 3D physics simulation engine in C++ using OpenGL, featuring textured cloth simulation with mass-spring systems.
- Implemented advanced lighting, including Phong shading, texture mapping for realistic rendering, and batch rendering for efficient GPU utilization
- Particle system with efficient collision detection using Uniform grid partitions.
- Interactive scene editor using ImGui for easy configuration and gizmos for intuitive scene manipulation.
- Applied OOP concepts to abstract and integrate different engine components, improving engine design.

TECHNICAL SKILLS

Languages: C++, C, Java, GLSL (shading Language), Python, MATLAB

Developer Tools: Visual Studio, Git, Github, Linux

Libraries and APIs: HuggingFace Diffusers, PyTorch, OpenGL, DearImGUI, NumPy, Matplotlib

Soft Skills: Presentation skills, Teamwork, Quick Learner

Coursework: Linear Algebra, Single Variable Calculus, Introduction to Programming in C

Areas of Interest: Computer Vision, GenAI, Diffusion Models, Transformers, Graphics Programming, Simulation