Dhwanil Chauhan

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EXPERIENCE

Center of Innovation through Visualization and Simulation, Purdue University — Indiana, USA
Graduate Research Assistant — January 2025 – Present

- Built a mono-to-binaural audio generation pipeline using **VGGT 3D visual features**, reaching AV-NeRF–level spatial audio quality.
- Designed a **video-conditioned spatial audio model** that uses depth and geometry cues from monocular video to improve direction-of-arrival accuracy
- Developed a **DPT-based visual head** predicting mask_mix and mask_diff for more stable, geometry-aware binaural synthesis.
- Evaluated VGGT vs. DPT conditioning to measure impacts on **binaural accuracy**, **localization**, and **smoothness**.

Untapped Ventures — California, USA
AI Venture Analyst Intern — July 2025 – Present

- Developed a **rubric-based founder evaluation GPT**, improving analyst scoring consistency by **~45%**.
- Built an automated pipeline that triggers scheduling for qualified founders, reducing screening time by **~50%**.
- Created a prototype **LLM + RAG intake system** using FAISS to produce rubric-aligned founder summaries.

PROJECTS

Benchmarking Test-Time Adaptation on VLMs | Personal Project — November 2025

- Benchmarked **TDA, LoRA-TTA, TEA, Hybrid-TTA, SSAM** on CLIP and BLIP-2 under COCO to COCO-C shifts using Recall@K
- Introduced **AE**, **LTA**, and **SI** metrics to analyze accuracy–speed–stability trade-offs in real-time adaptation

AI Hazard Recognition Module| Purdue University — June 2025

- Built a **4-camera hazard detection system** for full-area industrial coverage.
- Implemented **occlusion-aware multi-view fusion** to improve detection reliability in cluttered environments.

AI-Assisted Accident Investigation System | Published in AISTech — January 2025

- Developed an **LLM-based investigation tool** that extracts structured incident fields, reducing review workload by **40%**
- Integrated **FAISS + RAG** to retrieve historical cases and provide context-aware field suggestions.

AI-Powered Lip-Reading Model | Personal Project — January 2024

- Trained a lip-reading model on the **GRID dataset**, achieving **85.4% accuracy** on unseen samples.
- Built a **3D CNN + sequence model** with CTC loss, improving recognition efficiency by **~40%** over a phoneme baseline.

Intrusion Detection System| Published in IEEE — March 2023

- Built an IoT IDS using RF, DT, and SVM on **CICIDS-17**, achieving **96.6% accuracy**.
- Outperformed traditional IDS techniques in anomaly detection for IoT security.

SKILL

- **Machine Learning**: Supervised/Unsupervised Learning, Deep Learning, Computer Vision, Multimodal Models, Test-Time Adaptation (TTA), Representation Learning
- **Neural Architectures**: CNNs, RNN/LSTM, Transformers, 3D CNNs, Vision–Language Models (CLIP, BLIP)
- **LLMs & NLP**: GPT models, RAG, Vector Search, Prompt Engineering
- **Spatial & Audio ML**: 3D Scene Understanding, Spatial Audio, Binaural Synthesis, Depth Estimation
- **Tools & Frameworks**: PyTorch, TensorFlow, OpenCV, FastAPI, Streamlit, LangChain
- **Databases:** FAISS, ChromaDB, PostgreSQL, SQLite
- **Cloud & DevOps:** AWS, GCP, Docker, Git
- **Programming:** Python, JavaScript, SQL
- **Other:** Data Pipelines, Model Evaluation, Experiment Tracking, MLOps basics

EDUCATION

Purdue University | Indiana, USA — May 2026
Master of Science, Computer Science | 3.78/4
Relevant Coursework: Machine Learning, Cybersecurity, Data Structures & Algorithms, Deep Learning

PUBLICATION

I have published multiple papers in the field of **Artificial Intelligence, Machine Learning, Deep Learning** and **Cyber Security**. Here is the link to my publications at Google Scholar.