

Mo Zhou

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EDUCATION

University of Colorado Boulder

Aug 2023 – May 2025

M.S. in Computer Science

GPA: 3.96/4.0

Nanjing University of Posts and Telecommunications

Aug 2018 - Jun 2022

B.S. in Information Security

GPA: 84/100

PUBLICATIONS

- **Mo Zhou**, Josh Myers-Dean, Danna Gurari, "PartStickers: Generating Parts of Objects for Rapid Prototyping", CVPR CVEU Workshop 2025

RESEARCH EXPERIENCE

PartStickers: Generating Parts of Objects for Rapid Prototyping

Jun 2024 - May 2025

IVC Group, University of Colorado Boulder; Advised by Danna Gurari

Developed a generative model **capable of generating object parts**, addressing a key gap in current research and establishing a foundation for **compositional generation**.

- Deployed and evaluated state-of-the-art conditioning T2I models including InstanceDiffusion, ControlNet, and GLIGEN on HPC clusters for object part generation; identified critical limitations including **inability to generate isolated parts, inclusion of irrelevant content, and low visual fidelity**;
- Investigated mainstream part-level datasets and selected **PartImageNet** for training and evaluation; performed **data cleaning and augmentation**, and assessed the impact of different preprocessing strategies on performance;
- Fine-tuned Stable Diffusion 1.5 using LoRA and studied the effect of LoRA rank on performance; Our model successfully addressed prior shortcomings and achieved a **state-of-the-art FID score of 39.52** (vs. **baseline SD1.5 FID: 81.93**) with **minimal parameter overhead**; generated parts on neutral grey background is ready for immediate downstream use;
- Reproduced Collage Diffusion and demonstrated the feasibility of compositional generation using extracted object parts from PartImageNet across different instances and species, **enabling the synthesis of novel composite objects**.

Scientific Paper Review System with LLMs

Jul 2024 - Aug 2024

Built a LLM-based system for automated scientific paper review. A leader agent parses the input paper and delegates tasks to downstream agents, which evaluate distinct aspects and communicate to produce a comprehensive assessment.

- Built the multi-agent architecture using **CrewAI** and **AWS Bedrock**, enabling autonomous and interactive evaluations across dimensions such as citations, novelty, methodology, and results;
- Conducted prompt engineering to improve agent performance; mitigated hallucinations by **grounding evaluations in referenced paragraphs**; resolved dialogue deadlocks during inter-agent communication;
- Integrated **Claude 3.5 Sonnet** to enhance overall accuracy; implemented **Semantic Scholar retrieval** based on title, abstract, and keywords to benchmark the target paper's novelty and academic impact.

ACADEMIC PROJECTS

Distracted Driver Detection | github.com/momoaolig/Distracted-Driver-Detection

Apr 2024

Trained different model architectures to detect driver actions and studied their performance discrepancy on multi-label classification tasks.

- Fine-tuned CNN(ResNet50, VGG16) and Transformer-based architectures(ViT, Swin) to classify driver actions;
- Constructed hybrid models by **replacing Transformer feature extractors with CNN layers**; evaluated against individual architectures to assess and compare performance;
- Achieved highest test accuracy with **ResNet50: 98.89%**, followed by **VGG16: 98.23%** and **ResNet+ViT: 98.03%**; concluded that CNNs remain highly effective on traditional tasks with limited data, while Transformers require larger datasets to fully leverage their capacity.

TECHNICAL SKILLS

Languages: Python, C/C++

Technologies: PyTorch, Linux, Distributed Learning, HPC, WandB, NumPy, Huggingface