Xinghao Chen

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EDUCATION

University of Washington - Seattle | M.S. Electrical & Computer Engineering September 2024 – March 2026

- Relevant Coursework: Computer Vision, Large Language Models, Virtual Reality Technologies
- GPA: 4.0/4.0

Henan University | B.E. Computer Engineering (Automation) | GPA: 3.6/4.0 September 2020 – June 2024

- Relevant Coursework: Data Structures and Algorithms, Linear Algebra, Signals and Systems, Linux Systems
- GPA: 3.6/4.0

RESEARCH EXPERIENCE

University of Washington Applied Physics Laboratory December 2024 - Present

Intelligent Coastal Erosion Monitoring and Early Warning System Development

- Designed and implemented a ViT-based image classification model to effectively screen user-uploaded coastal images, improving downstream data quality
- Trained image segmentation models based on DeepLabV3+ and EfficientNet for multi-class semantic segmentation, achieving 93% IoU accuracy
- Utilized perspective correction algorithms to convert shoreline images into standardized overhead views, eliminating perspective differences in analysis results
- Built a temporal change detection system that combines historical satellite data with ground-collected images for precise quantification and visualization of coastal erosion trends
- Developed community-oriented early warning services and visualization platforms that automatically generate risk assessment reports and protection recommendations based on erosion prediction models

Texas A&M University TACO Laboratory December 2024 - Present

Video Generation Research for Rare Autonomous Driving Scenarios

- Researched data generation to address the scarcity of training data for autonomous driving systems in rare scenarios
- Developed a DiT architecture simulator output conditional transformation model that converts CARLA simulator outputs into more realistic conditional representations
- Trained multimodal ControlNet for video generation models like CogVideo, achieving high-quality transfer from simulation data to real-world scenarios
- Generated realistic autonomous driving scene videos to provide rich visual data for testing and training
- Researched cross-frame semantic consistency and physical plausibility to enhance the realism of generated videos in extreme conditions

COMPETITION EXPERIENCE

University of Washington LLM 2025 Semantic Retrieval Competition | Top 3 February 2025

- Fine-tuned text embedding models to calculate cosine similarity between query statements and corpus documents, returning the most relevant documents, sorting the results by cosine similarity score in descending order
- Outperformed large parameter models like OpenAI text-embedding-3-large, achieving higher domain-specific performance with a compact 1.5B parameter model, saving computing resources required for semantic retrieval using large language models

PROJECT EXPERIENCE

Diffusion Model-Based Line Art Colorization Workflow December 2024

- Developed an end-to-end line art colorization workflow combining style transfer and detail preservation techniques
- Implemented LoRA-based efficient model fine-tuning methods using minimal training data to preserve specific character features and image styles

- Designed multi-layered ControlNet conditional constraints to ensure structural consistency between generated and original images

Multi-Agent Retrieval Augmented Generation Dialogue System March 2025

- Designed and implemented a multi-agent architecture with four core components: central controller, safety filter, document retrieval, and answer generation
- Utilized OpenAI Embeddings API and Pinecone vector database for document retrieval by converting user queries into vector searches
- Developed a Streamlit interactive interface supporting multiple conversation styles and deployed demonstrations to Hugging Face

SKILLS

Technical Skills: Python, C, Java, PyTorch, TensorFlow, MATLAB, Git, Docker

English Proficiency: GRE score 322, TOEFL score 97