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Yunhao Liu

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in/yunhao-liu-cs

Education

Georgia Institute of Technology — Atlanta, GA
Master of Science in Computer Science — *May 2028 (Expected)*

Dalian University of Technology — Dalian, China
Bachelor of Engineering in Computer Science and Technology; GPA: 3.9/4.0 (91.1/100) — *Sep. 2025*

Technical University of Munich — Munich, Germany
Exchange Program in Informatics — *Sep. 2024*

Technical Skills

Programming Languages: Python, C/C++, JavaScript, HTML/CSS, Verilog, SQL
Machine Learning & Computer Vision: PyTorch, nvdiffrast, OpenCV, Transformers, YOLOv5, YOLOX
Systems & Tools: Git, Linux/Shell, AirSim, Unreal Engine, MS Office, Vim

Experience

Research Intern — Jul. 2023 – Mar. 2024
UC Merced — *Merced, CA*
- Built a dual-branch PyTorch adapter fusing degraded and restored faces with nested Transformer attention
- Adapted pretrained recognition models to low-quality imagery in Python without retraining the backbone
- Improved ArcFace verification by 0.6, 1.4, and 1.5 points on three benchmarks under 20K turbulence

AI Development Intern — May 2023 – Jun. 2023
Court of Ganjingzi District — *Dalian, China*
- Built an AI-assisted Python workflow converting unstructured court records into structured review fields
- Benchmarked BERT, ALBERT, and TextCNN classifiers to tag case text across 5 protection dimensions
- Countered severe label imbalance across the 5 dimensions by training with Focal Loss in Python
- Built a user-friendly front-end web page with JavaScript, HTML, and CSS to visualize classification results

Research Intern — Jul. 2021 – Jan. 2022
Dalian University of Technology — *Dalian, China*
- Built an underwater object-detection pipeline in Python and PyTorch for small, overlapping objects
- Selected the detection backbone by benchmarking DetectoRS for accuracy against YOLOX for inference speed
- Expanded training scene diversity using Mosaic, MixUp, and multi-scale training to improve robustness

Research Intern — Mar. 2021 – Jun. 2021
Dalian University of Technology — *Dalian, China*
- Detected ring obstacles in real time on an F450 UAV using YOLOv5 and OpenCV on a Linux-based Jetson NX
- Estimated autonomous traversal paths through detected rings in Python for onboard flight control
- De-risked flight testing by validating the pipeline in Unreal Engine before flying the physical UAV

Projects

Multi-View Stereo via Inverse Rendering — Nov. 2023 – Feb. 2024
Technical University of Munich — *Munich, Germany*
- Built an inverse-rendering pipeline in Python, using nvdiffrast to reconstruct scene appearance from multi-view imagery
- Implemented the camera model, coordinate transforms, and Phong lighting to complete the rendering pipeline
- Outperformed published baselines on synthetic and real-world data by jointly optimizing lighting and materials

Assessing the Factuality of System-Generated Feedback — Jul. 2023 – Aug. 2023
NC State University — *Remote*
- Built a Python filter to catch hallucinated statements in AI-generated educational feedback
- Owned the team's seq2seq approach, using BART to decode a binary factual label from source and feedback
- Improved accuracy and F1 on a curated multi-domain feedback dataset with ground-truth factuality labels

Autonomous Obstacle Avoidance of UAV Based on Q-Learning — Sep. 2022 – Dec. 2022
Dalian University of Technology — *Dalian, China*
- Planned collision-free routes past 12 obstacles by training five per-router Q-tables over 10,000 episodes
- Confirmed robustness by retraining under randomized obstacle layouts, with the UAV still reaching every router
- Designed reward matrices from elevation angle and line-of-sight probability to favor high-data-rate paths
- Implemented the simulator in C++17 with an abstract environment class, Fastor tensors, and AirSim in Unreal Engine

Selected Publications

- **Yunhao Liu**, Lu Qi, Yu-Ju Tsai, Xiangtai Li, Kelvin C.K. Chan, and Ming-Hsuan Yang. "Effective Adapter for Face Recognition in the Wild." *arXiv preprint*, 2024.