Han Yi

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Education

University of North Carolina at Chapel Hill (UNC) Aug. 2024 - Present
Ph.D. Student in Computer Science, GPA: 4.0 / 4.0
Advisor: *Prof. Gedas Bertasius*

National University of Singapore (NUS) Aug. 2022 - Jun. 2024
Master of Computing (Computer Science)
Advisor: *Prof. Tat-Seng Chua*

East China University of Science and Technology (ECUST) Sep. 2018 - June. 2022
B.S in Mathematics and Applied Mathematics, GPA: 3.7 / 4.0, Rank: Top 10%

Research Interest

I'm broadly interested in Computer Vision and Video Understanding, with a focus on both the fine-grained understanding and generation of complex human actions. I also work on leveraging foundation models (LLMs, VLMs, etc.) to solve multiple video understanding tasks.

Publications

1. **SVI-Bench: A Dynamic Microworld for Strategic Video Intelligence**
   Yulu Pan*, **Han Yi***, Seongsu Ha*, Md Mohaiminul Islam*, Benjamin Zhang, Lorenzo Torresani, Gedas Bertasius
   arxiv 2026

2. **ExAct: A Video-Language Benchmark for Expert Action Analysis**
   Han Yi, Yulu Pan, Feihong He, Xinyu Liu, Benjamin Zhang, Oluwatumininu Oguntola, Gedas Bertasius
   NeurIPS 2025

3. **Progressive Text-to-3D Generation for Automatic 3D Prototyping**
   Han Yi, Zhedong Zheng, Xiangyu Xu, Tat-seng Chua
   ACM TOMM 2026

4. **Single image deraindrop leveraging luminance priors and context aggregation**
   Yi Liu, Zhi Gao, Tiancan Mei, **Han Yi**
   Neurocomputing 2024

5. **Image Deblurring with Image Blurring**
   Ziyao Li, Zhi Gao, **Han Yi**, Yu Fu, Boan Chen.
   *IEEE Transactions on Image Processing (**TIP 2023**) DOI: 10.1109/TIP.2023.3321515*

6. **A hierarchical geometry-to-semantic fusion GNN framework for earth surface anomalies detection**
   Boan Chen, Aohan Hu, Mengjie Xie, Zhi Gao, Xuhui Zhao, **Han Yi**
   *International Conference On Brain-Inspired Cognitive Systems (**BICS 2023**) (**Best Student Paper**)*

7. **How Challenging is a Challenge for SLAM? An Answer from Quantitative Visual Evaluation**
   Xuhui Zhao, Zhi Gao, Hao Li, Chenyang Li, Jingwei Chen, **Han Yi**
   *International Conference On Brain-Inspired Cognitive Systems (**BICS 2023**)*

Academic Experience

Research Assistant Aug. 2024 - Present
UNC at Chapel Hill *Advisor: Prof. Gedas Bertasius*

- Proposed **SVI-Bench**, a unified benchmark for evaluating the full cognitive stack of video intelligence — perception, reasoning, simulation, and agency. Built on 35,000 hours of broadcast basketball, soccer, and hockey footage, it shows that while models handle perception well, reasoning, simulation, and agency are where current systems break down. (arxiv 2026) paper link
- Proposed **ExAct**, a new video–language benchmark for expert-level understanding of skilled human activities; revealed large human–model performance gaps and enabled rigorous evaluation of fine-grained skill reasoning. (NeurIPS 2025) paper link
- Developing diffusion-based **fine-grained sports video generation** models for basketball and soccer, incorporating motion-based control signals (player trajectories and camera motion) to synthesize realistic multi-player interactions.

Research Assistant Dec. 2022 - Sep. 2023
NExT++ Research Center, National University of Singapore *Advisor: Prof. Tat-seng Chua*

- Proposed a **Multi-Scale Triplane Network (MTN)** to gradually create the 3D model in a bottom-up style, effectively alleviating the optimization issue; proposed a **progressive learning** strategy that simultaneously reduces the camera radius and time step t in diffusion to refine details of the 3D model in a coarse-to-fine manner; achieved high-resolution outputs that align closely with natural language descriptions. (ACM TOMM) paper link

Research Assistant Nov. 2021 - Oct. 2022
Wuhan University *Advisor: Prof. Zhi Gao*

- Proposed a novel **motion deblurring** framework that uniquely integrates both **image blurring** and **deblurring** processes, enhancing performance and robustness; built a blur-sharp paired blur dataset **Rear-Blur-COCOmini** to bridge the gap between the training dataset and real-world blur images; obtained state-of the-art deblurred results on multiple datasets and introduced the Variance of Laplacian edge detection (VL) to quantitatively evaluate the effect on datasets without ground truth. (TIP 2023) paper link
- Developed a recurrent **single-image raindrop removal** network leveraging luminance priors and contextual feature aggregation; two-stage raindrop detection and removal achieved superior performance and generalization on synthetic and real data. (Neurocomputing 2024) paper link

Research Assistant July. 2021 - Sep. 2021
Tsinghua University *Advisor: Prof. Hao Zhang*

- Programmed ceiling-mounted LED lights using Manchester coding; applied **OpenCV SolvePnP** for relative pose estimation; reduced the required number of LEDs and handled challenging camera geometries (e.g., extreme angles); introduced a **malformation matrix** calibration to correct real-world distortions and improve localization accuracy.

Industry Experience

Research Intern Jan. 2024 - Jun. 2024
Tencent Games

- Developed a **controllable** high-quality 3D asset generation pipeline from a few input images using **NeRF** (Neural Radiance Fields).
- Focused on **multi-view** image inputs to enhance reconstruction quality, enabling more controllable 3D synthesis.

Services

Conference reviewer: ICLR 2026, ICLR 2025, ACM MM 2025, ACM MM ASIA 2025, ACM MM 2024 (Outstanding Reviewer Award)

Skills

Programming: Python, C/C++, JavaScript, SQL, HTML5, CSS3, Bash
Library/Framework: Pytorch, Tensorflow, Keras, Pandas, Numpy, Scikit-learn, Seaborn, Vue, Echarts, Django
Tool: Docker, Spark, Hadoop, Git