HAN YI

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EDUCATION

University of North Carolina at Chapel Hill (UNC)   Aug. 2024 - Present
Ph.D. Student in Computer Science
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
Bachelor of Science in Mathematics and Applied Mathematics
GPA: 3.7 / 4.0 (88.89%), Ranking: 13% (12 / 90)

RESEARCH INTEREST

I'm broadly interested in advanced Computer Vision and Multi-modal Learning, with a particular emphasis on generative AI for video and 3D content. I also specialize in developing and optimizing foundation models, including Large Language Models (LLMs) and Vision Language Models (VLMs), to enhance the understanding and generation of dynamic visual content.

PUBLICATIONS

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

2. **Progressive Text-to-3D Generation for Automatic 3D Prototyping.**
   Han Yi, Zhedong Zheng, Xiangyu Xu, Tat-seng Chua
   arXiv: 2309.14600, 2023

3. **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*

4. **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)*

5. **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**)*

RESEARCH EXPERIENCE

Structured Video Generation for Basketball Games   Aug. 2024 - Jan. 2025
UNC at Chapel Hill   *Advisor: Prof. Gedas Bertasius*

- Fine-Grained Basketball Video Generation: Developed a diffusion-based video generation model to simulate realistic basketball game sequences, capturing multi-player interactions and motion dynamics.
- Multi-Modal Conditioning: Enhanced video generation fidelity by integrating bounding boxes, segmentation masks, 2D poses, and player positions to guide the model.
- Diffusion Model Adaptation: Fine-tuned CogVideoX with domain-specific annotations, introducing conditioning layers to improve spatial and temporal coherence in generated sequences.

Progressive Text-to-3D Generation for Automatic 3D Prototyping   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.

Image Deblurring with Image Blurring
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.
- Synthesized 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.

LED Visible Light Positioning Algorithm
July. 2021 - Sep. 2021

Tsinghua University
Advisor: Prof. Hao Zhang

- Programmed LED lights on the ceiling with Manchester coding.
- Utilized **Solvepnp** algorithm from **OpenCV** to localize the relative position against the LED lights.
- Improved the algorithm from reducing the number of LED lights required, solving problems such as special positions, turning angle problems, etc.
- Introduced **Malformation Matrix** to fix the real-world error to further boost the accuracy.

INTERNSHIPS

Tencent Games
Jan. 2024 - Jun. 2024

Remote Research Intern

- 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 2025, ACM MM 2024 (Outstanding Reviewer Award)

HONORS

Mar. 2020 Meritorious Winner of 2020 Mathematical Contest in Modeling (MCM) by COMAP
Nov. 2019 The 2nd Prize Award in the university scholarship in the academic year of 2018-2019

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

STANDARD TESTS

TOEFL: 109 (L-26, S-25, R-30, W-28)
GRE: 326 (Verbal: 157 / 75%, Quantitative: 169 / 94%, Analytical Writing: 3.5 / 38%)