Xu Han

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"Make it count."

Education

King Abdullah University of Science and Technology (KAUST) — *Kingdom of Saudi Arabia*

Visiting Student, CEMSE — *Jun. 2025 - Dec. 2025*

- Supervised by **Prof. Peter Wonka**.
- Conducting research on integrating physically-based rendering (PBR) principles into generative visual models to achieve photorealistic, physically consistent, and controllable illumination.

Huazhong University of Science and Technology (HUST) — *Wuhan, China*

Master of Science (M.Sc.), Computer Science, School of Computer Science and Technology — *Sep. 2023 - Jun. 2026 (expected)*

- Supervised by **Prof. Xianzhi Li**.
- **GPA: 3.91** (3/166), **National Scholarship**, **First Prize Scholarship**, **Tencent Scholarship**, **Innovation Scholarship**, **BYD Scholarship**.

Shandong University (SDU) — *Qingdao, China*

Bachelor of Engineering (B.Eng.), Artificial Intelligence, School of Computer Science and Technology — *Sep. 2019 - Jun. 2023*

- Supervised by **Prof. Mengbai Xiao**, Institute of Intelligent Computing.
- **GPA: 3.87** (88.7), **Honours Degree** (1/52), **National Scholarship** (Top 0.2% nationwide), **Outstanding Thesis** (Top 6 grads in CS, 2%).

Research Interest

My research passion lies at the intersection of computer vision, computer graphics, and deep learning, with a focus on learning powerful representations and generating high-quality visual content. My current interests include:

1. **Generative Visual Computing**
2. **(Efficient) Representation Learning**
3. **Photorealistic World Models**
4. **(Generative) Neural Rendering**
5. **Creative AI & Generative Models**

My aspiration is to design principled and photorealistic world models that leverage inductive biases and generative priors to rigorously perceive, reconstruct, and simulate reality, while enabling the creation of controllable digital art, cinematic visuals, and vivid sci-fi worlds.

Publication

[1] MoST: Efficient Monarch Sparse Tuning for 3D Representation Learning — *CVPR 2025*

Xu Han, Yuan Tang, Jinfeng Xu, Xianzhi Li — *Paper GitHub*

- We introduce Monarch Sparse Tuning (MoST), the first reparameterization-based parameter-efficient fine-tuning (PEFT) method tailored for 3D point cloud representation learning.

[2] Mamba3D: Enhancing Local Features for 3D Point Cloud Analysis via State Space Model — *ACM MM 2024*

Xu Han*, Yuan Tang*, Zhaoxuan Wang, Xianzhi Li (*equal contribution) — *Paper GitHub*

- We present Mamba3D, a state space model tailored for point cloud learning. Mamba3D surpasses existing methods in multiple tasks, achieving multiple SoTA, with only linear complexity.

[3] More Text, Less Point: Towards 3D Data-Efficient Point-Language Understanding — *AAAI 2025*

Yuan Tang*, **Xu Han***, Xianzhi Li†, Qiao Yu, Jinfeng Xu, Yixue Hao, Long Hu, Min Chen (*equal contribution, †corresponding author) — *Paper GitHub*

- We introduce a new task, 3D Data-Efficient Point-Language Understanding. Our proposed GreenPLM uses text data to compensate for the lack of 3D data, achieving superior 3D understanding with only 12% or even without 3D data.

[4] PointDreamer: Zero-Shot 3D Textured Mesh Reconstruction From Colored Point Cloud — *TVCG 2025*

Qiao Yu, Xianzhi Li, Yuan Tang, **Xu Han**, Jinfeng Xu, Long Hu, Yixue Hao, Min Chen — *Paper GitHub*

- We propose PointDreamer, a framework that adapts 2D diffusion models to 3D point clouds via a novel project–inpaint–unproject pipeline, achieving superior texture quality over prior text- or image-driven methods.

[5] Fancy123: One Image to High-Quality 3D Mesh Generation via Plug-and-Play Deformation *CVPR 2025*

Qiao Yu, Xianzhi Li, Yuan Tang, **Xu Han**, Jinfeng Xu, Long Hu, Yixue Hao, Min Chen *Paper GitHub*

- We propose a SOTA framework for single-image-to-3D-mesh, leveraging 2D deformation, 3D deformation, and unprojection to resolve multiview inconsistency, low fidelity, and blurry coloration.

[6] SASep: Saliency-Aware Structured Separation of Geometry and Feature for Open Set Learning on Point Clouds *CVPR 2025*

Jinfeng Xu, Xianzhi Li, Yuan Tang, **Xu Han**, Qiao Yu, Yixue Hao, Long Hu, Min Chen *GitHub*

- We introduce Saliency-Aware Structured Separation (SASep), an open-set recognition method on 3D point cloud.

[7] MiniGPT-3D: Efficiently Aligning 3D Point Clouds with Large Language Models using 2D Priors *ACM MM 2024*

Yuan Tang, **Xu Han**, Xianzhi Li†, Qiao Yu, Yixue Hao, Long Hu, Min Chen († corresponding author) *Paper GitHub*

- We present MiniGPT-3D, an efficient and powerful 3D-LLM that aligns 3D points with LLMs using 2D priors. It has only 47.8 M learnable parameters and is trained in just 26.8h on a single RTX 3090.

[8] patchDPCC: A Patchwise Deep Compression Framework for Dynamic Point Clouds *AAAI 2024*

Zirui Pan, Mengbai Xiao†, **Xu Han**, Dongxiao Yu, Guanghui Zhang, Yao Liu († corresponding author) *Paper*

- We propose patchDPCC to compress each frame of the point cloud video by divides frames into patch groups, and incorporate a feature transfer module to refine the feature quality.

Experience

King Abdullah University of Science and Technology (KAUST) *Saudi Arabia*

Student Researcher, supervised by **Prof. Peter Wonka**. *Jun. 2025 - Now*

- My research focuses on photorealistic content generation, specifically on physically-based PBR maps generation, in collaboration with Prof. Peter Wonka, Dr. Biao Zhang, and Dr. Xiangjun Tang. We develop scalable methods for material generation, leveraging physically-based principles to advance photorealistic and generative visual content, with potential applications in photorealistic world models, 3D assets and beyond.

Institute of Intelligent Computing, Shandong University *Qingdao, China*

Research Assistant, supervised by **Prof. Mengbai Xiao**. *Oct. 2020 - Jun. 2023*

- We propose a dynamic point cloud upsampling model to reduce the bandwidth consumption of point cloud video streaming. To accelerate inference, we propose reducing inter-frame redundancy by aligning adjacent frames in feature space. This research won the **Outstanding Graduation Thesis Award** from Shandong University. We also applied this method to point cloud video compression, improving the quality of point cloud features, which is accepted by **AAAI 2024**.

Honors & Awards

Scholarships

10/2025	**National Scholarship**, Highest honor for postgraduates, top 0.2% nationwide	*Wuhan, China*
03/2025	**Tencent Scholarship**, HUST	*Wuhan, China*
01/2025	**BYD Scholarship**, The only one in Dept. of CS, HUST	*Wuhan, China*
10/2024	**Xiaomi Scholarship Nomination**, HUST	*Wuhan, China*
10/2024	**Research & Innovation Scholarship**, HUST	*Wuhan, China*
04/2024	**Tencent Scholarship**, HUST	*Wuhan, China*
11/2023	**First Prize Scholarship**, HUST	*Wuhan, China*
10/2022	**National Scholarship**, Highest honor for undergraduates, top 0.2% nationwide	*Qingdao, China*
2021,2022	**Huawei Scholarship**, Two-year continuous	*Qingdao, China*
10/2022	**Second Prize Scholarship**, Top 10% in Department of Computer Science	*Qingdao, China*
10/2022	**Research & Innovation Scholarship**, Shandong University	*Qingdao, China*

Awards

01/2025	**Best Paper Award, HUST School of CS Annual Conference**, Top 10 in School of CS	*Wuhan, China*
07/2023	**Outstanding Graduation Thesis Award**, Top 6 graduates in Department of Computer Science	*Qingdao, China*
06/2023	**Honours Bachelor Degree**, 1/52	*Qingdao, China*
06/2023	**Outstanding Graduates Award**, Shandong University	*Qingdao, China*
2021,2022	**Huawei-MOE (Ministry of Education) Future Star Award**, Two-year continuous	*Qingdao, China*
11/2021	**First Prize in China Undergraduate Mathematical Contest in Modeling**, Top 0.6% in 45K teams	*Qingdao, China*