# Xianfeng Wu

incoming Ph.D. student@HKUST

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## EDUCATION

**Ph.D.**  Individualized Interdisciplinary Program (Computer Graphics and Intelligent Generation), HKUST, HK, 2025-present
advisors: Assistant Prof. Harry Yang and Assistant Prof. Anyi Rao

**B.E.**  Artificial Intelligence, Jianghan University, Wuhan, China, 2020-2024
(Bingling Honours Degree)
advisor: Associate Prof. Zhongyuan Lai

## RESEARCH EXPERIENCE

**Academy of Interdisciplinary Studies, Hong Kong University of Science and Technology**  Clear Water Bay, HK
RA  July 2024 – Feb.2025

Advisor: Assistant Prof. Harry Yang

**Department of Computer Science and Engineering, University at Buffalo, State University of New York**  NY, USA
Intern  Jan 2023 – June 2024

Advisor: Prof. Junsong Yuan & Dr. Tianyu Luan

**School of Engineering, Westlake University**  Hangzhou, China
Summer Research Intern  June 2023 – Oct 2023

Advisor: Assistant Prof. Tailin Wu

**School of Information Sciences, University of Illinois Urbana-Champaign**  IL, USA
Remote Intern  Dec 2022 – May 2023

Advisor: Assistant Prof. Haohan Wang

**Institute of Data Science, The University of Hong Kong**  Pokfulam, HK
Remote Intern  Nov 2022 – May 2023

Advisor: Assistant Prof. Liangqiong Qu

**School of Cyber Science and Engineering, Wuhan University**  Wuhan, China
Intern  June 2022 – Dec 2022

Advisor: Prof. Libing Wu

**Institute for Interdisciplinary Research, Jianghan University**  Wuhan, China
Undergraduate Researcher  Oct 2020 – May 2022

Advisor: Associate Prof. Zhongyuan Lai

## RESEARCH AREAS

**Multi-modal Foundation model**

**Computer Vision**: 3D reconstruction, generation

**AI4Science**

## SELECTED PUBLICATIONS

### Journal Articles

2023    Zhuangzhuang Zhang, Libing WL, Debiao He, Jianxin Li, Shuqin Cao, and Xianfeng Wu. "Communication-Efficient and Byzantine-Robust Federated Learning for Mobile Edge Computing Networks." In: *IEEE Network* 37.4 (2023), pp. 112–119. DOI: `10.1109/MNET.006.2200651`

2023    Fudong Ding, Libing Wu, Zhuangzhuang Zhang, Xianfeng Wu, Chao Ma, and Qin Liu. "A Low-Overhead Auditing Protocol for Dynamic Cloud Storage Based on Algebra." In: *Security and Communication Networks* 2023 (2023). DOI: `https://doi.org/10.1155/2023/5477738`. URL: `https://www.hindawi.com/journals/scn/2023/5477738/`

2022    Xianfeng Wu, Xinyi Liu, Junfei Wang, Zhongyuan Lai, Jing Zhou, and Xia Liu. "Point cloud classification based on transformer." In: *Computers and Electrical Engineering* 104 (2022), p. 108413. ISSN: 0045-7906. DOI: `https://doi.org/10.1016/j.compeleceng.2022.108413`. URL: `https://www.sciencedirect.com/science/article/pii/S0045790622006309`

### Conference Proceedings

2024    $XianzuWu^+$, **Xianfeng Wu**$^+$, Tianyu Luan, Yajing Bai, Zhongyuan Lai*, Junsong Yuan*, FSC: Few-point Shape Completion, Conference on Computer Vision and Pattern Recognition (CVPR24') (CCF A co-first author)

## PATENT

2024    **Xianfeng Wu**, et al., 2024, Object classification method based on point cloud and related equipment, CNPatent, CN115456064B, filed Sep. 05 2022 and issued Feb. 02 2024.

2024    Zhongyuan Lai, Hui Xiong, Fengchun Zhou, **Xianfeng Wu**, Yajing Bai, et al., 2024, RGB image-based 3D hand pose estimation method, device and processing equipment, CN117953545B, filed Mar. 27 2024 and issued Jun. 21 2024.

## SOFTWARE COPYRIGHT

2024    Rate-distortion optimal shape coding and decoding software based on polygon approximation V5.0, 2024SR0163092, January 25th, 2024.

2024    Rate-distortion optimal shape coding and decoding software based on polygon approximation V2.4, 2024SR0220675, February 2nd, 2024

2024    Rate-distortion optimal shape coding and decoding software based on polygon approximation V4.1, 2024SR0296480, February 22th, 2024.

2023    Rate-distortion optimal shape coding and decoding software based on polygon approximation V4.0, 2023SR1263030, October 19th, 2023.

2023    Rate-distortion optimal shape coding and decoding software based on polygon approximation V3.1, 2023SR1286413, October 24th, 2023.

2023    Rate-distortion optimal shape coding and decoding software based on polygon approximation V2.3. 2023SR1184145, October 10th, 2023.

2022    Rate-distortion optimal shape coding and decoding software based on polygon approximation V3.0. 2022SR0373977. March 22, 2022.

2022    2D shape skeleton extraction software V1.1. 2022SR0347060. March 15, 2022.

2022    Rate-distortion optimal shape coding and decoding software based on polygon approximation V2.1. 2022SR0102715. January 17, 2022.

2021    Polygon Evolution Software for Planar Digital Contours V1.0. 2021SR1647057. November 5th, 2021.

2021    Rate-distortion optimal shape coding and decoding software based on curve approximation V1.0. 2021SR1536129. October 20th, 2021.

2021    Rate-distortion optimal shape coding and decoding software based on polygon approximation V2.0. 2021SR1536127. October 20th, 2021.

2021    Rate-distortion optimal shape coding and decoding software based on polygon approximation V1.0. 2021SR0785371. May 28th, 2021.


## AWARDS

### Awards and Honors

2024    ASC World Student Supercomputer Competition Second Prize

2023    President Scholarship (top scholarship in Jianghan University; **<0.1%** student), Jianghan University

2023    Wuhan Government Scholarship (top scholarship in Wuhan)

2023    Second Prize in Hubei Contest District in China Undergraduate Mathematical Contest in Modeling

2022    Second Prize in Hubei Contest District in China Undergraduate Mathematical Contest in Modeling

2022    ASC World Student Supercomputer Competition Second Prize


## EXTERNAL AND INTERNAL FUNDING

### A. MODERATOR

1    Sparse Point Cloud 3D Reconstruction Based on Point-Nerf and Diffusion Model
National College Students' innovation and entrepreneurship training program (No.202311072004)
2023/05-2024/05 RMB 10000

2        An Encoder-Decoder network-based point cloud completion method
The second batch of student research sub-focus projects of Jianghan University 2021 (No. 2021Bczd006)
2021/10-2022/10 RMB 5000

## B. Participation

1        Privacy and security research of point cloud information processing for autonomous vehicles based on federated learning
National College Students' innovation and entrepreneurship training program (No.202311072010)
2023/05-2024/10 RMB 10000

2        Machine vision-based assessment of infant motor development
Jianghan University School-level Research Project (No. 2022SXZX16)
2022/11-2024/11: RMB 70,000

3        Machine vision-based blast rock detection and trajectory prediction
State Key Laboratory of Precision Blasting 2022 Exploratory Project of Independent Subjects (No. PBSKL2022201)
2022/05-2024/05: RMB 200,000

4        Research on the Detection Method of Weakly Perceived Point Cloud Targets in Complex Scenes
National Natural Science Foundation of China (No. 62106086)
RMB 300,000

5        Research on weak perceptual target detection method based on deep attention-guided completion
Nature Science Foundation of Hubei Province (No. 2021CFB564)
RMB 80,000

6        Machine vision-based recognition of abnormal human postures and rehabilitation movements
Key Research and Development program projects of Hubei Province (No. 2020BCB054)
2020/09-2022/12: RMB 300,000

## TEACHING

2023        Teaching Assistant: Digital Image Processing

2021        Teaching Assistant: Object Oriented Programming (C++)

## SERVICE

**Academic Journal and Conference Reviewer**

Neurocomputing

Computers and Electrical Engineering (CAEE)

**Membership in Professional Societies**

China Society of Image and Graphics (CSIG) Student Member

**SKILLS**

| | |
|---|---|
| Programming | Python, Matlab, C/C++, Java, LaTex, R |
| Deep Learning | PyTorch, TensorFlow |