

Xiao (Brandon) Han

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Research Interests

I am broadly interested in the field of Deep Learning. My current research interest lies in the intersection between Computer Vision and Natural Language Processing (*i.e.*, vision-language). My research goal is to build multi-modal AI systems that can be used in real-world applications. My expertise includes but is not limited to vision-language pre-training and (parameter-efficient) adaptation, many vision-language tasks (*e.g.*, cross-modal retrieval, text-guided image retrieval, image captioning, text-based/guided 2D/3D contents generation/editing), and some specific tasks (*e.g.*, person ReID).

Education

University of Surrey

PH.D. STUDENT

- Major in Vision and Signal Processing at Centre for Vision, Speech and Signal Processing (CVSSP)
- Supervisors: Prof. Tao Xiang (principal) and Prof. Yi-Zhe Song
- Fully funded by University of Surrey FEPS/iFlyTek Ph.D. Scholarship
- Thesis Title (tentative): Fine-Grained Multimodal Deep Learning

Guildford, UK
Jan. 2021 - Present

Zhejiang University

BACHELOR OF ENGINEERING

- Major in Information Engineering at College of Information Science and Electronic Engineering (ISEE)
- Cumulative GPA: 3.92 / 4.00 (88.13 / 100), Third-year GPA: 3.94 / 4.00 (89.46 / 100)
- Thesis Title: Deep Learning-Based Features Prediction for Mass Spectrometry of Protein

Hangzhou, China
Sep. 2016 - Jun. 2020

Non-Degree Academic Experiences:

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|--------------|--|---------------------|
| 2020 (09-11) | Visiting student with Dr. Li Zhang at ZVG, Fudan University | Shanghai, China |
| 2019 (10-05) | Research assistant with Dr. Changbin Yu at AiR, Westlake University | Hangzhou, China |
| 2019 (07-10) | Visiting student with Prof. L. Jay Guo at EECS, University of Michigan | Ann Arbor, MI, USA |
| 2018 (08-09) | Exchange student with iESR program at University of Notre Dame | South Bend, IN, USA |

Work Experiences

Noah's Ark Lab

RESEARCH INTERN (PT)

- Mentor: Jiankang Deng
- Project: Text-based 2D/3D contents generation/editing via Diffusion Models

London, UK
Dec. 2022 - Present

PixelShift.AI

COMPUTER VISION ALGORITHM INTERN (FT)

- Mentors: Zhiming Ma and Meng Zhang
- Project: Immersive AR application (Google MediaPipe) and deployment of generative models (TFLite)

Shanghai, China
May 2020 - Sep. 2020

Publications

Conference

HeadSculpt: Crafting 3D Head Avatars with Text

Xiao Han*, Yukang Cao*, Kai Han, Xiatian Zhu, Jiankang Deng, Yi-Zhe Song, Tao Xiang[†], Kwan-Yee K. Wong[†]

Under Review
Nov. 2023

Controllable Person Image Synthesis with Pose-Constrained Latent Diffusion

Xiao Han, Jiankang Deng, Xiatian Zhu, Yi-Zhe Song, Tao Xiang

Under Review
Oct. 2023

FAME-ViL: Multi-Tasking Vision-Language Model for Heterogeneous Fashion Tasks (Highlight, Top 2.5%)

Xiao Han, Xiatian Zhu, Licheng Yu, Li Zhang, Yi-Zhe Song, Tao Xiang

CVPR 2023
Jun. 2023

FashionViL: Fashion-Focused Vision-and-Language Representation Learning

Xiao Han, Licheng Yu, Xiatian Zhu, Li Zhang, Yi-Zhe Song, Tao Xiang

ECCV 2022
Oct. 2022

UIGR: Unified Interactive Garment Retrieval
Xiao Han, Sen He, Li Zhang, Yi-Zhe Song, Tao Xiang

CVPRW 2022
Jun. 2022

Text-Based Person Search with Limited Data
Xiao Han, Sen He, Li Zhang, Tao Xiang

BMVC 2021
Nov. 2021

Preprint

Large-Scale Product Retrieval with Weakly Supervised Representation Learning
Xiao Han*, Kam Woh Ng*, Sauradip Nag, Zhiyu Qu

arXiv
Aug. 2022

Journal

Inverse Design of Metasurface Optical Filters using Deep Neural Network with High Degrees of Freedom
Xiao Han*, Ziyang Fan*, Zeyang Liu*, Chao Li, and L. Jay Guo

InfoMat
Jun. 2020

Open-sourced Projects

FashionMMF: A codebase for fashion-related vision-and-language research (based on Meta AI MMF)

- <https://github.com/BrandonHanx/mmf> and <https://github.com/BrandonHanx/FAME-ViL>
- Implementation and extension of our paper *FashionViL (ECCV 2022)* and *FAME-ViL (CVPR 2023)*

eBayChallenge: A modularized codebase for large-scale product retrieval (based on PyTorch Lightning and Hydra)

- <https://github.com/01BB01/eBayChallenge>
- Implementation of our solution for *eBay eProduct Visual Search Challenge - FGVC9 (CVPR2022)*

CompFashion: A modularized codebase for text-guided image retrieval (based on vanilla PyTorch)

- <https://github.com/BrandonHanx/CompFashion>
- Implementation and extension of our paper *UIGR: Unified Interactive Garment Retrieval (CVPRW 2022)*

TextReID: A modularized codebase for text-based person search (based on vanilla PyTorch)

- <https://github.com/BrandonHanx/TextReID>
- Implementation and extension of our paper *Text-Based Person Search with Limited Data (BMVC 2021)*

Honors & Awards

2022	2 nd Place, eBay eProduct Visual Search Challenge - FGVC9 (CVPR2022)	eBay, USA
2021-2024	Faculty of Engineering and Physical Sciences/iFlytek Scholarship	University of Surrey/iFlytek, UK
2019	Chunzhen International Exchange Scholarship	Zhejiang University, China
2017-2019	3 rd Prize, Academic & Outstanding Student Scholarship	Zhejiang University, China
2018	Yongping Scholarship	Zhejiang University, China
2018	3 rd Prize, National Talent Training Base Scholarship	Zhejiang University, China
2018	Honorable Mention Prize, Mathematical Contest in Modeling (MCM)	COMAP, USA
2017	3 rd Prize, Physics Innovation Competition in Zhejiang Province (Theory Part)	Zhejiang Physical Society, China

Services

Conference reviewer

- Conference on Neural Information Processing Systems (NeurIPS 2023)
- 6th CVPR Workshop on Computer Vision for Fashion, Art, and Design (CVFAD) 2023
- International Conference on Computer Vision (ICCV) 2023
- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2023
- AAAI Conference on Artificial Intelligence (AAAI) 2023
- European Conference on Computer Vision (ECCV) 2022
- ACM International Conference on Multimedia (ACM MM) 2022
- IEEE International Conference on Multimedia and Expo (ICME) 2022

Journal reviewer

- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)

Teaching assistant / Demonstrator at University of Surrey

- EEEM071 (2023 Spring) - Advanced Topics in Computer Vision and Deep Learning (under Prof. Yi-Zhe Song and Dr. Xiatian Zhu)
- Responsible for the final coursework design (Vehicle ReID) and lab tutorial preparation
- Responsible for demonstrating in lab sessions with 145+ PG/T students with mixed backgrounds
- Responsible for marking the experimental reports and examination papers

Project tutor at University of Surrey

- EEEM004 (2023 Spring) - 60 Credit Standard Project (under Dr. Xiatian Zhu)
- Responsible for guiding PG/T final projects “Zero-/Few-shot learning with language supervision”

Skills

Programming Languages	Python, C/C++, MATLAB, Verilog, JavaScript/TypeScript, HTML/CSS
Frameworks and Tools	PyTorch, PyTorch Lightning, TensorFlow, Git, Docker, W&B
Codebases	Meta AI MMF, HuggingFace Pipeline (<i>e.g.</i> , Transformers/Diffusers), Google MediaPipe, timm
Languages	普通话 Mandarin (native), English (fluent), 한국어 Korean (beginner)

References

Will be provided upon request