Shihao Zou 邹诗浩

Personal Data

Place and Date of Birth:	Nanchang Jiangxi	Feb 1 1995
Research interests:	computer vision, reinforcement learning, information retrieval
Homepage:	https://jimmyzou.github.io
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Education

Jan 2019-Aug 2023 (expected)
Doctor of Philosophy in Computer Engineering
University of Alberta, Canada (ARWU Rank 92)
GPA: 3.95/4.0
Supervisor: Prof. Li Cheng

Sept 2017-Sept 2018
Master of Research in Web Science and Big Data Analytics
University College London, UK (ARWU Rank 18)
GPA: Distinction (highest level in UK grading system)
Supervisor: Prof. Jun Wang

Sept 2013-June 2017
Bachelor of Science in Electronic Information Engineering
Beijing Institute of Technology, China
GPA: 90.81/100 RANK : 4/57 (**Honor Class**: elite program for top 10% students)
Supervisor: Prof. Huiqi Li

Fall 2016
Exchange in **Hong Kong University of Science and Technology**
GPA: 3.825/4.0

Research Experiences

Current
Jan 2019
Vision and Learning Lab, University of Alberta
Academic Supervisor: Prof. Li Cheng
- Constructed a multi-camera motion capture system and developed a 3D human pose and shape annotation pipeline. Captured and released three large scale datasets for human pose estimation from various cameras including RGBD cameras, polarization camera and event camera.
- Worked on a new problem of estimating human shape with details from single polarization images. This work has been published on ECCV 2020 and IEEE TMM 2022.
- Worked on human pose estimation from an event camera. This work has been published on ICCV 2021, and the following work using Spiking Neural Networks has been submitted to IEEE TPAMI in 2023.

Nov 2022
July 2022
Research Scientist Intern, Meta Reality Labs (previously Facebook Reality Labs)
Advisor: Dr. Yuanlu Xu
- Worked on the project, human motion estimation from point cloud sequences using self-supervised learning, which exceeds the performance of conventional motion tracking algorithm used in the team.

Dec 2021
May 2021
Research Intern, Meta Reality Labs (previously Facebook Reality Labs)
Advisor: Dr. Minh Vo, Dr. Yuanlu Xu, Dr. Chao Li and Dr. Lingni Ma
- Worked on Snipper, a spatiotemporal Transformer for simultaneous multi-person 3D pose estimation tracking and forecasting on a video snippet. This work has been published on IEEE TCSVT 2023.

Dec 2018
Sept 2018
Research Intern, Huawei 2012 Labs
Advisor: Dr. Zhonghua Li and Prof. Jun Wang
- Proposed a multi-agent reinforced ranking model. The paper has been published on ACM CIKM 2019.

Sept 2018
Sept 2017
Department of Computer Science, University College London
Academic Supervisor: Prof. Jun Wang
- Investigated an equilibrium theoretical framework in information retrieval tasks. This work has been published on ACM ICTIR 2018.
- Investigated the mutual modeling in contract bridge (a card game) bidding stage where the agent learns to infer other player's hands via its biddings under this imperfect information condition. This work has been published on AAAI 2020.

JUNE 2017 NOV 2015	Institute of Signal and Image Processing, Beijing Institute of Technology Academic Supervisor: Prof. Huiqi Li • Undergraduate Thesis: *Retinal Fundus Images Classification Using Deep Learning.* Implemented 4 kinds of CNN models to classify (filter) clinical retinal images into 4 quality levels. • Constructed an MRF model to recover accurate depth map from a single image. The depth information introduced in pedestrian detection increased the accuracy and efficiency. This work has been published on IEEE ICIEA 2016.

PUBLICATION

• **Shihao Zou**, Yuanlu Xu, Chao Li, Lingni Ma, Li Cheng and Minh Vo. *"Snipper: A Spatiotemporal Transformer for Simultaneous Multi-Person 3D Pose Estimation Tracking and Forecasting on a Video Snippet,"* IEEE Transactions on Circuits and Systems for Video Technology. IEEE TCSVT 2023. [PDF]

• **Shihao Zou**, Xinxin Zuo, Sen Wang, Yiming Qian, Chuan Guo, and Li Cheng. *"Human Pose and Shape Estimation from Single Polarization Images,"* IEEE Transactions on Multimedia. IEEE TMM 2022. [PDF]

• **Shihao Zou**, Chuan Guo, Xinxin Zuo, Sen Wang, Pengyu Wang, Xiaoqin Hu, Shoushun Chen, Minglun Gong and Li Cheng, *"EventHPE: Event-based 3D Human Pose Estimation,"* Proceedings of the IEEE International Conference on Computer Vision. ICCV 2021. [PDF]

• **Shihao Zou**, Yiming Qian, Sen Wang, Xinxin Zuo, Chi Xu, Minglun Gong, Li Cheng, *"3D Human Shape Reconstruction from a Polarization Image,"* Proceedings of the 16th European Conference on Computer Vision. ECCV 2020. [PDF]

• **Shihao Zou**, Zhonghua Li, Mohammad Akbari, Jun Wang, Peng Zhang, *"Multi-agent Reinforced Learning to Rank,"* Proceedings of the 28th ACM International Conference on Information and Knowledge Management. CIKM 2019. [PDF]

• **Shihao Zou**, Guanyu Tao, Jun Wang, Weinan Zhang and Dell Zhang, *"On the Equilibrium of Query Reformulation and Document Retrieval,"* Proceedings of the 8th ACM SIGIR International Conference on Theory of Information Retrieval. ICTIR 2018. [PDF]

• **Shihao Zou**, Yuxuan Mu, Xinxin Zuo, Sen Wang, Li Cheng, *"Event-based Human Pose Tracking by Spiking Spatiotemporal Transformer,"* submitted to IEEE Transactions on Pattern Analysis and Machine Intelligence. IEEE TPAMI [PDF]

• Chuan Guo, **Shihao Zou**, Xinxin Zuo, Sen Wang, Wei Ji, Li Cheng, *"Generating Diverse and Natural 3D Human Motions from Text,"* Proceedings of the IEEE International Conference on Computer Vision, CVPR 2022. [PDF]

• Chuan Guo, Xinxin Zuo, Sen Wang, Xinshuang Liu, **Shihao Zou**, Minglun Gong and Li Cheng, *"Action2video: Generating Videos of Human 3D Actions,"* International Journal of Computer Vision. IJCV 2021. [PDF]

• Chuan Guo, Xinxin Zuo, Sen Wang, **Shihao Zou**, Qingyao Sun, Annan Deng, Minglun Gong, Li Cheng, *"Action2Motion: Conditioned Generation of 3D Human Motions,"* Proceedings of the 28th ACM International Conference on Multimedia, MM 2020. [PDF]

• Zheng Tian, **Shihao Zou**, Ian Davies, Tim Warr, Lisheng Wu, Haitham Bou Ammar, Jun Wang, *"Learning to Communicate Implicitly By Actions,"* 34th AAAI Conference on Artificial Intelligence. AAAI 2020. *(spotlight)* [PDF]

• Zheng Tian, Ying Wen, Zhichen Gong, Faiz Punakkath, **<u>Shihao Zou</u>**, Jun Wang, *"A Regularized Opponent Model with Maximum Entropy Objective,"* Proceedings of the 28th International Joint Conference on Artificial Intelligence. IJCAI 2019. [PDF]

• Yali Guo, **<u>Shihao Zou</u>** and Huiqi Li, *"Depth estimation from a single image in pedestrian candidate generation,"* 2016 IEEE 11th Conference on Industrial Electronics and Applications. ICIEA 2016. [PDF]

Scholarships

Sept 2020	Alberta Innovates Graduate Student Scholarship for Data-Enabled Innovation (2 years)
Jan 2019	Doctoral Recruitment Scholarship (1 year)
Sept 2018	ACM Student Travel Grant
Sept 2014-2016	Excellent Undergraduate Student Scholarship (3 years)

Teaching Assistant

Winter 2023	ENGG 160 - Introduction to Engineering Design, Communication, and Profession
Winter 2022	ECE 492 - Computer Engineering Design Project
Winter 2021	ECE 442 - Introduction to Multimedia Signal Processing
Fall 2020 and 2021	TECE 440 - Digital Computer Processing of Images
Winter 2020	ENCMP 100 - Computer Programming for Engineers