

Chuanxia Zheng

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Research Interests

My research interests focus on computer vision and machine learning, especially for scene understanding and synthesis. I have done a wide range of work on 2D image generation, completion, and translation, 3D scene reconstruction, translation and interpretation, with the goal of *synthesizing a photorealistic virtual world*.

Education

Nanyang Technological University Ph.D. in Computer Science, SCSE Thesis: <i>Synthesizing Photorealistic Images with Deep Generative Learning</i> Advisor: Tat-Jen Cham and Jianfei Cai	2017.08–2021.06
Beihang University MA.E. in Automation Science Thesis: <i>Context-based Indoor Scene Understanding for Mobile Robot</i> Advisor: Jianhua Wang and Weihai Chen	2014.09–2017.03
Beijing Jiaotong University B.E. in Electronic and Information Engineering Ranked 2nd out of 100, Class of 2014	2010.09–2014.07

Employment

Monash University Research Fellow at Monash Research Institute of Science and Technology <i>Research interests:</i> 2D image generation and 3D generation	2021.08–2022.08
Huawei Research Research assistant at Noah's Ark Lab <i>Research interests:</i> face recognition and generation	2017.01–2017.06
Tencent Research Research Intern at Fundamental Research Center of Tencent Work on news recommendation	2016.05–2016.09

Awards & Honors

NTU Presidential Postdoctoral Fellowship	2022
NTU Outstanding PhD Thesis Award	2022
TMM Outstanding Reviewer Award	2021
NTU Research Scholarship	2017
First Prize Scholarship for Excellent Student	2015, 2016
Outstanding Graduate of Beijing	2014
National Second Prize of the National Electronic Design Contest of China (Best one in Beijing)	2013
Hanergy Scholarship Award (Top 1%)	2012
Siemens Scholarship Award (Top 1%)	2011

Press Coverage

Phys.org : Researchers unravel cell biology through artificial intelligence	2022
NTU News : NTU SCSE Outstanding PhD Thesis Award 2022	2022
Zhuanzhi : How to create photorealistic images? Ph.D. Thesis by Dr. Zheng	2022
kknews , Sohu , NetEase : AgileGAN — a new tool for creating stylized portraits	2021

Research Experience

VinAI , <i>The national AI research Lab of Vietnam</i> , Vietnam, Prof. Hung Bui Cooperator on high quality image generation and data compression one papers accepted by NeurIPS(1)	2021.11–2022.08
Department of Data Science & AI , <i>Monash University</i> , Australia, Prof. Jianfei cai <i>Research interests</i> : nature scene generation and completion three papers accepted by CVPR(1) , ECCV(2) , one paper submitted to TPAMI	2021.08–2022.08
Mechanobiology Institue (MBI) , <i>NUS</i> , Singapore, Prof. Lim Chwee Teck Cooperator on cell nuclear generation one paper accepted by Plos one(1)	2020.01–2021.10
Institute for Media Innovation (IMI) , <i>NTU</i> , Singapore, Prof. Nadia Thalmann <i>Research interests</i> : photorealistic image generation seven papers accepted by CVPR(2) , ECCV(1) , ICCV(1) , SIGGRAPH(1) and IJCV(2)	2017.08–2021.06
IR&MCT Lab , <i>Beihang University</i> , China, Prof. Weihai Chen <i>Research interests</i> : secne understanding and segmentation	2014.09–2017.03

Publications

- CVPR(3), ECCV(3), ICCV(1), NeurIPS(1), IJCV(2), SIGGRAPH(1)
- [17] **Chuanxia Zheng**, Long Tung Vuong, Jianfei Cai, and Dinh Phung. Movq: Modulating quantized vectors for high-fidelity image generation. In *Thirty-sixth Conference on Neural Information Processing Systems (NeurIPS)*, 2022.
 - [16] Jyothsna Vasudevan*, **Chuanxia Zheng***, James G. Wan, Tat-Jen Cham, Lim Chwee Teck, and Javier G. Fernandez. From qualitative data to correlation using deep generative networks: Demonstrating the relation of nuclear position with the arrangement of actin filaments. *PloS one*, 17(7):e0271056, 2022.
 - [15] Qianyi Wu, Xian Liu, Yuedong Chen, Kejie Li, **Chuanxia Zheng**, Jianfei Cai, and Jianming Zheng. Object-compositional neural implicit surfaces. In *Proceedings of the European Conference on Computer Vision (ECCV)*, 2022.
 - [14] Yuedong Chen, Qianyi Wu, **Chuanxia Zheng**, Tat-Jen Cham, and Jianfei Cai. Sem2nerf: Converting single-view semantic masks to neural radiance fields. In *Proceedings of the European Conference on Computer Vision (ECCV)*, 2022.
 - [13] **Chuanxia Zheng**, Tat-Jen Cham, Jianfei Cai, and Dinh Phung. Bridging global context interactions for high-fidelity image completion. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 11512–11522, June 2022.
 - [12] **Chuanxia Zheng**, Duy-Son Dao, Guoxian Song, Tat-Jen Cham, and Jianfei Cai. Visiting the invisible: Layer-by-layer completed scene decomposition. *International Journal of Computer Vision (IJCV)*, 129(12):3195–3215, 2021.
 - [11] Yujun Cai, Yiwei Wang, Yiheng Zhu, Tat-Jen Cham, Jianfei Cai, Junsong Yuan, Jun Liu, **Chuanxia Zheng**, Sijie Yan, Henghui Ding, Xiaohui Shen, Ding Liu, and Nadia Magnenat Thalmann. A unified 3d human motion synthesis model via conditional variational auto-encoder. In *Proceedings of the International Conference on Computer Vision (ICCV)*, pages 11645–11655, 2021.
 - [10] **Chuanxia Zheng**, Tat-Jen Cham, and Jianfei Cai. Pluralistic free-form image completion. *International Journal of Computer Vision (IJCV)*, 129(10):2786–2805, 2021.
 - [9] Guoxian Song, Linjie Luo, Jing Liu, Wan-Chun Ma, Chunpong Lai, **Chuanxia Zheng**, and Tat-Jen Cham. Agilean: stylizing portraits by inversion-consistent transfer learning. *ACM Transactions on Graphics (TOG)*, 40(4):1–13, 2021.
 - [8] **Chuanxia Zheng**, Tat-Jen Cham, and Jianfei Cai. The spatially-correlative loss for various image translation tasks. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 16407–16417, 2021.
 - [7] **Chuanxia Zheng**, Tat-Jen Cham, and Jianfei Cai. Pluralistic image completion. In *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 1438–1447, 2019.

- [6] Tianyi Zhang, Jingyi Yang, **Chuanxia Zheng**, Guosheng Lin, Jianfei Cai, and Alex C Kot. Task-in-all domain adaptation for semantic segmentation. In *2019 IEEE Visual Communications and Image Processing (VCIP)*, pages 1–4. IEEE, 2019.
- [5] **Chuanxia Zheng**, Tat-Jen Cham, and Jianfei Cai. T2net: Synthetic-to-realistic translation for solving single-image depth estimation tasks. In *Proceedings of the European Conference on Computer Vision (ECCV)*, pages 767–783, 2018.
- [4] **Chuanxia Zheng**, Jianhua Wang, Weihai Chen, and Xingming Wu. Multi-class indoor semantic segmentation with deep structured model. *The Visual Computer (TVCJ)*, 34(5):735–747, 2018.
- [3] Jianhua Wang, **Chuanxia Zheng**, Weihai Chen, and Xingming Wu. Learning aggregated features and optimizing model for semantic labeling. *The Visual Computer (TVCJ)*, 33(12):1587–1600, 2017.
- [2] **Chuanxia Zheng**, Jianhua Wang, Weihai Chen, and Xingming Wu. Semantic segmentation based on aggregated features and contextual information. In *2016 IEEE International Conference on Robotics and Biomimetics (ROBIO)*, pages 862–867. IEEE, 2016.
- [1] Jianhua Wang, **Chuanxia Zheng**, Weihai Chen, and Xingming Wu. Learning contextual information for indoor semantic segmentation. In *2016 IEEE 11th Conference on Industrial Electronics and Applications (ICIEA)*, pages 1639–1644. IEEE, 2016.

Preprints

- [3] Long Tung Vuong, Trung Le, He Zhao, **Chuanxia Zheng**, Mehrtash Harandi, Jianfei Cai, and Dinh Phung. Wasserstein vector quantization auto-encoder. *Under reviewer*.
- [2] Yuzhu Ji, **Chuanxia Zheng**, and Tat-Jen Cham. One-shot human motion transfer via occlusion-robust flow prediction and neural texturing. *Under reviewer*.
- [1] **Chuanxia Zheng**, Guoxian Song, Tat-Jen Cham, Jianfei Cai, Linjie Luo, and Dinh Phung. High-quality pluralistic image completion via code sharing. *Under reviewer*.

Academic Services

Journal Reviewer	
IEEE Transactions on Pattern Analysis and Machine Intelligence	TPAMI
International Journal of Computer Vision	IJCV
IEEE Transactions on Image Processing	TIP
IEEE Journal of Automatica Sinica	JAS
IEEE Transactions on Multimedia (Outstanding Reviewer Award, 2021)	TMM
IEEE Transactions on Circuits and Systems for Video Technology	TCSVT
Computer Vision and Image Understanding	CVIU
The Visual Computer	TVCJ
Neural Computing and Applications	NCAA
Conference Reviewer	
Computer Vision and Pattern Recognition Conference (CVPR)	2020, 2021, 2022
European Conference on Computer Vision (ECCV)	2020, 2022
International Conference on Computer Vision (ICCV)	2019, 2021
International Conference on Learning Representations (ICLR)	2021, 2022, 2023
Conference on Neural Information Processing Systems (NeurIPS)	2022
Conference on Neural Information Processing Systems (SIGGRAPH)	2021, 2022
International Joint Conference on Artificial Intelligence (IJCAI)	2022
ACM Multimedia (ACMMM)	2021, 2022
International Conference on Intelligent Robots and Systems (IROS)	2022

Talks

Synthesizing Photorealistic Scenes , SCSE Graduate Chat Series Discussion, NTU	2022.09
Synthesizing Photorealistic Scenes , Computer Vision & Geometry Group, ETH	2022.06
Synthesizing Photorealistic Scenes , Graphics & Geometric Computing Laboratory, USTC	2022.01
Pluralistic Image Completion , <i>Institute of Media Innovation</i> , NTU	2019.11
Depth Estimation from Single 2D Image , <i>Institute of Media Innovation</i> , NTU	2018.06

Teaching

Teaching Assistant , <i>Advanced Digital Image Processing</i> , Graduate, NTU	2018–2020
Teaching Assistant , <i>Human-Computer Interaction</i> , Undergraduate, NTU	2018–2020
Teaching Assistant , <i>Engineering Mathematics</i> , Undergraduate, NTU	2018–2019