YUJUN CAI

Homepage ‖ Google Scholar ‖ Linkedin
◇ Research Scientist in Meta Reality Lab, Redmond, USA.
◇ Email: yujun001@e.ntu.edu.sg

EDUCATION

Doctor of Philosophy in Computer Science Aug. 2017 - Dec. 2021
Nanyang Technological University, Singapore

Bachelor of Engineering in Information Technology Aug. 2013 - Jun. 2017
Southeast University, China, **G**PA: 4.341/4.8, Rank: 1/229

Exchange Program in Information Technology Jan. 2017 - Jun. 2017
Monash University, Australia

RESEARCH INTEREST

I'm interested in artificial intelligence via multi-modal signal processing.

PROFESSIONAL EMPLOYMENTS

Facebook Reality Lab Mar. 2022 - present
Full-time Research Scientist *Redmond, USA*

· Explore human perception for Metaverse devices.

Facebook Reality Lab Aug. 2020 - Dec. 2020
Research Intern *Redmond, USA*

· Investigate egocentric pose estimation for AR/VR devices.

Bytedance AI-Lab Dec. 2019 - Jul. 2020
Research Intern *Mountain View, USA*

· Work on pose prediction and motion synthesis for 3D human skeletons.

AWARDS & HONORS

Won the **Third** Place in the Million Challenge on 3D Hand Pose Estimation. Nov. 2017

Interdisciplinary Graduate School Premium Scholarship, NTU. 2017-2021

Meritorious Winner of the Interdisciplinary Contest in Modeling (ICM). **(7%)** Apr. 2016

National Scholarship. **(Top 2%)** Oct. 2016

Outstanding student in Southeast University. **(Top 1%)** Oct. 2015

Texas Instruments Scholarship. **(Top 3%)** Apr. 2015

National Scholarship. **(Top 2%)** Oct. 2014

PUBLICATIONS

1. **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, Nadia Magnenat Thalmann "A Unified 3D Human Motion Synthesis Model via Conditional Variational Auto-Encoder", in *Proc. Int'l Conf. on Computer Vision* (ICCV 2021).

2. **Yujun Cai**, Lin Huang, Yiwei Wang, Tat-Jen Cham, Jianfei Cai, Junsong Yuan, Jun Liu, Xu Yang, Yiheng Zhu, Xiaohui Shen, Ding Liu, Jing Liu, Nadia Magnenat Thalmann, "Learning Progressive Joint Propagation for Human Motion Prediction", in *Proc. European Conf. on Computer Vision* (ECCV 2020).

3. **Yujun Cai**, Liuhao Ge ,Jianfei Cai, Nadia Magnenat Thalmann and Junsong Yuan. "3D Hand Pose Estimation Using Synthetic Data and Weakly Labeled RGB Images", in *IEEE Trans. on Pattern Analysis and Machine Intelligence* (T-PAMI 2020).

4. **Yujun Cai**, Liuhao Ge, Jun Liu, Jianfei Cai, Tat-Jen Cham, Junsong Yuan, Nadia Magnenat Thalmann, "Exploiting Spatial-temporal Relationships for 3D Pose Estimation via Graph Convolutional Networks", in *Proc. Int'l Conf. on Computer Vision* (ICCV 2019).

5. **Yujun Cai**, Liuhao Ge ,Jianfei Cai, Junsong Yuan," Weakly-supervised 3D Hand Pose Estimation from Monocular RGB Images", in *Proc. European Conf. on Computer Vision*(ECCV 2018 **Oral**) Oral presentation

6. Yiwei Wang*, **Yujun Cai***, Muhao Chen, Yuxuan Liang, Bryan Hooi," Primacy Effect of ChatGPT", in *Empirical Methods in Natural Language Processing* EMNLP 2023 (* equal contribution)

7. Haoxuan Qu, Zhuoling Li, Hossein Rahmani, **Yujun Cai**, Jun Liu, "DisC-GS: Discontinuity-aware Gaussian Splatting", in *Advances in Neural Information Processing Systems* (NeurIPS 2024)

8. Sasha Salter, Richard Warren, Collin Schlager, Adrian Spurr, Shangchen Han, Rohin Bhasin, **Yujun Cai**, Peter Walkington, Anuoluwapo Bolarinwa, Robert Wang, Nathan Danielson, et al., "emg2pose: A Large and Diverse Benchmark for Surface Electromyographic Hand Pose Estimation", in *Advances in Neural Information Processing Systems* (NeurIPS 2024)

9. Yihong Luo, Siya Qiu, Xingjian Tao, **Yujun Cai**, Jing Tang, "Energy-Calibrated VAE with Test Time Free Lunch", in *Proc. European Conf. on Computer Vision* (ECCV 2024)

10. Haoxuan Qu, **Yujun Cai**, Jun Liu, "LLMs are Good Action Recognizers", in *Proc. IEEE Conf. on Computer Vision and Pattern Recognition* (CVPR 2024)

11. Li Xu, Haoxuan Qu, **Yujun Cai**, Jun Liu, " 6D-Diff: A Keypoint Diffusion Framework for 6D Object Pose Estimation", in *Proc. IEEE Conf. on Computer Vision and Pattern Recognition* (CVPR 2024)

12. Kenrick Kin, Chengde Wan, Ken Koh, Andrei Marin, Necati Cihan Camgöz, Yubo Zhang, **Yujun Cai**, Fedor Kovalev, Moshe Ben-Zacharia, Shannon Hoople, Marcos Nunes-Ueno, et al. "STMG: A Machine Learning Microgesture Recognition System for Supporting Thumb-Based VR/AR Input", in *Proc. CHI Conference on Human Factors in Computing Systems* (CHI 2024)

13. Yihong Luo, Siya Qiu, Xingjian Tao, **Yujun Cai**, Jing Tang "Energy-based Calibrated VAE with Test Time Free Lunch", in *Proc. CHI Conference on Human Factors in Computing Systems* (ECCV 2024)

14. Haoxuan Qu, Xiaofei Hui, **Yujun Cai**, Jun Liu, "LMC: Large Model Collaboration with Cross-assessment for Training-Free Open-Set Object Recognition", in *Advances in Neural Information Processing Systems* (NeurIPS 2023)

15. Yiwei Wang, Bryan Hooi, Fei Wang, **Yujun Cai**, Yuxuan Liang, Wenxuan Zhou, Jing Tang, Manjuan Duan, Muhao Chen, "How Fragile is Relation Extraction under Entity Replacements¿', in *ACL's Special Interest Group on Natural Language Learning* (CoNLL 2023)

16. Julian Tanke, Linguang Zhang, Amy Zhao, Chengcheng Tang, **Yujun Cai**, Lezi Wang, PO-CHEN WU, Jürgen Gall, Cem Keskin "Social Diffusion: Long-term Multiple Human Motion Anticipation", in *Proc. Int'l Conf. on Computer Vision* (ICCV 2023).

17. Haoxuan Qu, **Yujun Cai**, Lin Geng Foo, Ajay Kumar, Jun Liu, "A Characteristic Function-based Method for Bottom-up Human Pose Estimation", in *Proc. IEEE Conf. on Computer Vision and Pattern Recognition* (CVPR 2023).

18. Shangchen Han, Po-chen Wu, Yubo Zhang, Beibei Liu, Linguang Zhang, Zheng Wang, Weiguang Si, Peizhao Zhang, **Yujun Cai**, Tomas Hodan, Randi Cabezas, Luan Tran, Muzaffer Akbay, Tsz-Ho Yu, Cem Keskin, Robert Wang, "UmeTrack: Unified multi-view end-to-end hand tracking for VR", in *Special Interest Group on Computer Graphics and Interactive Techniques*(Siggraph Asia 2022).

19. Mingfei Chen, Jianfeng Zhang, Xiangyu Xu, Lijuan Liu, **Yujun Cai**, Jiashi Feng, Shuicheng Yan "Geometry-guided progressive nerf for generalizable and efficient neural human rendering", in *Proc. European Conf. on Computer Vision* (ECCV 2022).

20. Haoxuan Qu, Li Xu, **Yujun Cai**, Lin Geng Foo, Jun Liu. "Heatmap Distribution Matching for Human Pose Estimation", in *Advances in Neural Information Processing Systems* (NeurIPS 2022)

21. Chi Zhang, **Yujun Cai**, Guosheng Lin and Chunhua Shen, "Deepemd: Differentiable earth mover's distance for few-shot learning", in *IEEE Trans. on Pattern Analysis and Machine Intelligence* (T-PAMI 2022).

22. Yiwei Wang, **Yujun Cai**, Yuxuan Liang, Henghui Ding, Changhu Wang, and Bryan Hooi. Time-Aware Neighbor Sampling on Temporal Graphs, *The 2022 International Joint Conference on Neural Networks* (IJCNN 2022).

23. Yiwei Wang, Muhao Chen, Wenxuan Zhou, **Yujun Cai**, Yuxuan Liang, Dayiheng Liu, Baosong Yang, Juncheng Liu, and Bryan Hooi. Should We Rely on Entity Mentions for Relation Extraction? Debiasing Relation Extraction with Counterfactual Analysis, *Annual Conference of the North American Chapter of the Association for Computational Linguistics 2022*(NAACL 2022).

24. Yiwei Wang, Muhao Chen, Wenxuan Zhou, **Yujun Cai**, Yuxuan Liang, and Bryan Hooi. GraphCache: Message Passing as Caching for Sentence-Level Relation Extraction, *Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL) Findings 2022*.

25. Tao Wang, Jianfeng Zhang, **Yujun Cai**, Shuicheng Yan, Jiashi Feng. "Direct Multi-view Multi-person 3D Pose Estimation", in *Advances in Neural Information Processing Systems* (NeurIPS 2021)

26. Yiwei Wang, **Yujun Cai**, Yuxuan Liang, Henghui Ding, Changhu Wang, Siddharth Bhatia, Bryan Hooi. "Adaptive data augmentation on temporal graphs", in *Advances in Neural Information Processing Systems* (NeurIPS 2021)

27. Yiwei Wang, Wei Wang, Yuxuan Liang, **Yujun Cai** and Bryan Hooi. "Mixup for Node and Graph Classification", in *TheWebConf* (WWW 2021)

28. Yiwei Wang, Wei Wang, Yuxuan Liang, **Yujun Cai** and Bryan Hooi. "CurGraph: Curriculum Learning for Graph Classification", in *TheWebConf* (WWW 2021)

29. Yiwei Wang, Wei Wang, **Yujun Cai**, Bryan Hooi, Beng Chin Ooi. "Detecting Implementation Bugs in Graph Convolutional Network based Node Classifiers". in *International Symposium on Software Reliability Engineering* (ISSRE 2020)

30. Chi Zhang, **Yujun Cai**, Guosheng Lin and Chunhua Shen, "DeepEMD: Few-Shot Image Classification with Differentiable Earth Mover's Distance and Structured Classifiers", in *Proc. IEEE Conf. on Computer Vision and Pattern Recognition* (CVPR 2020 **Oral)**. Oral presentation

31. Yiwei Wang, Wei Wang, Yuxuan Liang, **Yujun Cai**, Juncheng Liu, Bryan Hooi. "NodeAug: Semi-Supervised Node Classification with Data Augmentation.", in *26th SIGKDD Conference on*

Knowledge Discovery and Data Mining (SIGKDD 2020).

32. Yiwei Wang, Wei Wang, Yuxuan Liang, **Yujun Cai**, Bryan Hooi. "Progressive Supervision for Node Classification.", in *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases* (ECML-PKDD 2020).

33. Liuhao Ge, **Yujun Cai**, Junwu Weng and Junsong Yuan, "Hand PointNet: 3D Hand Pose Estimation using Point Sets", in *Proc. IEEE Conf. on Computer Vision and Pattern Recognition* (CVPR 2018 **Spotlight**). Spotlight presentation

TECHNICAL SKILLS

Computer Languages	Python, C++, MATLAB.
Software & Tools	Pytorch, Tensorflow, LaTeX.

TEACHING SERVICES

Teaching Assistance	NTU DM6190: Recent Advance on Image Segmentation and Its Applications NTU CZ Engineering Mathematics II NTU CE 7491: Digital Image Processing

MENTOR EXPERIENCE

Haoxuan Qu	PhD. student in Singapore University of Technology and Design, Singapore
Muchen Li	Research Intern in Meta, PhD. in University of British Columbia, Vancouver.
Julian Tanke	Research Intern in Meta, PhD. in University of Bonn.