

Yapeng TIAN

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RESEARCH INTERESTS My research interests center around solving core **computer vision** and **audition** problems and applying the developed learning approaches to broad AI applications, such as *multisensory perception, computational photography, AR/VR, and HCI*.

RESEARCH AREA Computer Vision Computer Audition Multimodal Learning AI

EDUCATION **University of Rochester**, Rochester, USA Sep. 2017 – Exp. 2022

- *PhD student* in the Department of Computer Science
- Advisor: *Prof. Chenliang Xu*

Tsinghua University, Beijing, China Sep. 2014 – July 2017

- *M.E.* in the Department of Electronic Engineering
- GPA: 90.55/100 (Rank: 3/52)

Xidian University, Xi'an, China Aug. 2009 – July 2013

- *B.E.* in Intelligence Science and Technology (School of Electronic Engineering)

WORK EXPERIENCE **Facebook** Sep. 2021 – Jan. 2022

- *Research Intern* in the Facebook Reality Lab
- Mentor: *Dr. Alexander Richard*

Adobe Research May 2021 – Aug. 2021

- *Research Intern* in the Creative Intelligence Lab
- Mentors: *Dr. Dingzeyu Li* and *Prof. Alexei A. Efros*

Adobe Research May 2019 – Nov. 2019

- *Research Intern* in the Creative Intelligence Lab
- Mentor: *Dr. Dingzeyu Li*

RESEARCH EXPERIENCE **CS, University of Rochester** Aug. 2017 – Present

- *Research Assistant* with *Prof. Chenliang Xu*

EE, Tsinghua University Mar. 2015 – Aug. 2017

- *Research Assistant* with *Prof. Wenming Yang*

SIAT, Chinese Academy of Sciences Nov. 2016 – May 2017

- *Visiting Student* with *Prof. Yu Qiao*

PUBLICATIONS

CVPR, ICCV, and ECCV are premier computer vision conferences. According to Google Scholar Metrics, as of 11/2021, CVPR has h5-index 356, ECCV 197, and ICCV 184. CVPR is also ranked 1st of all journals and conferences in Engineering and Computer Science and 4th when considering everything else. Citations: 3656, h-index: 13, i10-index: 15 by Google Scholar, 11/2021.

Conference Papers (7 CVPR, 2 ECCV, 2 ICCV, 2 AAAI, 1 BMVC)

- Guangyao Li*, Yake Wei*, **Yapeng Tian***, Di Hu, Chenliang Xu, and Ji-Rong Wen. Learning to Answer Questions in Dynamic Audio-Visual Scenarios. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.
- Guangyuan Li, Jun Lv, **Yapeng Tian**, Qi Dou, Chengyan Wang, Chenliang Xu, and Jing Qin. Transformer-empowered Multi-scale Contextual Matching and Aggregation for Multi-contrast MRI Super-resolution. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022.
- Bin Xia, **Yapeng Tian**, Yucheng Hang, Wenming Yang, Qingmin Liao, and Jie Zhou. Coarse-to-Fine Embedded PatchMatch and Multi-Scale Dynamic Aggregation for Reference-based Super-Resolution. *The AAAI Conference on Artificial Intelligence (AAAI)*, 2022.
- Bin Xia*, Yucheng Hang*, **Yapeng Tian**, Wenming Yang, Qingmin Liao, and Jie Zhou. Efficient Non-Local Contrastive Attention for Image Super-Resolution. *The AAAI Conference on Artificial Intelligence (AAAI)*, 2022. (**Equal contribution.*)
- Sizhe Li*, **Yapeng Tian***, and Chenliang Xu. Space-Time Memory Network for Sounding Object Localization in Videos. *The British Machine Vision Conference (BMVC)*, 2021. (**Equal contribution.*)
- Tiantian Wang, Sifei Liu, **Yapeng Tian**, Kai Li, and Ming-Hsuan Yang. Video Matting via Consistency-Regularized Graph Neural Networks. *IEEE/CVF International Conference on Computer Vision (ICCV)*, 2021.
- **Yapeng Tian**, and Chenliang Xu. Can audio-visual integration strengthen robustness under multimodal attacks? *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.
- **Yapeng Tian**, Di Hu, and Chenliang Xu. Cyclic Co-Learning of Sounding Object Visual Grounding and Sound Separation. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2021.
- **Yapeng Tian**, Dingzeyu Li, and Chenliang Xu. Unified Multisensory Perception: Weakly-Supervised Audio-Visual Video Parsing. *European Conference on Computer Vision (ECCV)*, 2020. (**Spotlight**, top 5%)
- **Yapeng Tian**, Yulun Zhang, Yun Fu, and Chenliang Xu. TDAN: Temporally-Deformable Alignment Network for Video Super-Resolution. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020.
- Xiaoyu Xiang*, **Yapeng Tian***, Yulun Zhang, Yun Fu, Jan Allebach, and Chenliang Xu. Zooming Slow-Mo: Fast and Accurate One-Stage Space-Time Video Super-Resolution. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020. (**Equal contribution.*)
- Wei Wang*, Ruiming Guo*, **Yapeng Tian**, and Wenming Yang. CFSNet: Toward a Controllable Feature Space for Image Restoration. *IEEE/CVF International Conference*

on Computer Vision (ICCV), 2019. (**Equal contribution.*)

- **Yapeng Tian**, Jing Shi, Bochen Li, Zhiyao Duan, and Chenliang Xu. Audio-Visual Event Localization in Unconstrained Videos. *European Conference on Computer Vision (ECCV)*, 2018.
- Yulun Zhang, **Yapeng Tian**, Yu Kong, Bineng Zhong, Yun Fu. Residual Dense Network for Image Super-Resolution. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2018. (**Spotlight**, top 5%)
- Xuesen Shang, Wenming Yang, Shuifa Sun, **Yapeng Tian**, Hai Chen, Kaiquan Chen. Adaptive Anchor-Point Selection for Single Image Super-Resolution. *IEEE International Conference on Visual Communications and Image Processing (VCIP)*, 2017.
- **Yapeng Tian**, Fei Zhou, Wenming Yang, Xuesen Shang and Qingmin Liao. Anchored Neighborhood Regression based Single Image Super-Resolution from Self-Examples. *IEEE International Conference on Image Processing (ICIP)*, 2016.
- Wenming Yang, **Yapeng Tian**, Fei Zhou, Tingrong Yuan, Xuesen Shang and Qingmin Liao. Single-Image Super-Resolution Using Clustering-Based Global Regression and Propagation Filtering. *Asian Conference on Pattern Recognition (ACPR)*, 2015. (**Oral**, top 8%)

Journal Papers (1 TPAMI, 1 TIP, 2 TMM)

- Yulun Zhang, **Yapeng Tian**, Yu Kong, Bineng Zhong, Yun Fu. Residual Dense Network for Image Restoration. *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 2020.
- Wenming Yang, Xuechen Zhang, **Yapeng Tian**, Wei Wang, Jing-Hao Xue, Qingmin Liao. LCSCNet: Linear Compressing Based Skip-Connecting Network for Image Super-Resolution. *IEEE Transactions on Image Processing (TIP)*, 2019.
- Wenming Yang, Xuechen Zhang, **Yapeng Tian**, Wei Wang, Jing-Hao Xue, Qingmin Liao. Deep Learning for Single Image Super-Resolution: A Brief Review. *IEEE Transactions on Multimedia (TMM)*, 2019.
- Wenming Yang, **Yapeng Tian**, Fei Zhou, Qingmin Liao, Hai Chen and Chenglin Zheng. Consistent Coding Scheme for Single-Image Super-Resolution Via Independent Dictionaries. *IEEE Transactions on Multimedia (TMM)*, 2016.

Workshop Papers (6 CVPR Workshop)

- **Yapeng Tian**, Chenliang Xu, Dingzeyu Li. Deep Audio Prior: Learning Sound Source Separation from a Single Audio Mixture. *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPR Workshop)*, 2020.
- **Yapeng Tian***, Di Hu*, Chenliang Xu. Co-Learn Sounding Object Visual Grounding and Visually Indicated Sound Separation in A Cycle. *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPR Workshop)*, 2020. (**Equal contribution.*)
- **Yapeng Tian**, Dingzeyu Li, and Chenliang Xu. Weakly-Supervised Audio-Visual Video Parsing Toward Unified Multisensory Perception. *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPR Workshop)*, 2020.
- **Yapeng Tian**, Chenxiao Guan, Goodman Justin, Marc Moore, and Chenliang Xu. Audio-Visual Interpretable and Controllable Video Captioning. *IEEE/CVF Confer-*

ence on Computer Vision and Pattern Recognition Workshops (CVPR Workshop), 2019.

- **Yapeng Tian**, Jing Shi, Bochen Li, Zhiyao Duan, and Chenliang Xu. Audio-Visual Event Localization in the Wild. *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPR Workshop)*, 2019. (**Oral**, 1/10)
- Timofte *et al.* NTIRE 2017 Challenge on Single Image Super-Resolution: Methods and Results. *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPR Workshop)*, 2017.

WORK IN PROGRESS

- Zheng Zhang*, **Yapeng Tian***, Zheng Ning, Chenliang Xu, and Toby Jia-Jun Li. PEANUT: An Intelligent Human-AI Collaborative Tool for Annotating Audio-Visual Data, *Work in Progress*, 2021. (***Equal contribution.**)
- **Yapeng Tian**, Alexei A. Efros, Chenliang Xu, and Dingzeyu Li. HelpDescribe: Accelerating Audio Description Creation with Human-in-the-loop Recommendation, *Work in Progress*, 2021.
- Yiyang Su*, **Yapeng Tian***, and Chenliang Xu. Separating Invisible Sounds toward Universal Audio-Visual Scene-Aware Sound Separation, *Work in Progress*, 2021. (***Equal contribution.**)
- Rohan Sharma*, **Yapeng Tian***, and Chenliang Xu. Cooperative Audio-Visual Video Parsing and Captioning, *Work in Progress*, 2021. (***Equal contribution.**)

TEACHING EXPERIENCE

Teaching Assistant

- *Machine Vision*, University of Rochester Spring 2019
- *Advanced Topics in Computer Vision*, University of Rochester Fall 2018
- *Machine Vision*, University of Rochester Spring 2018
- *Advanced Image Processing and Its Applications*, Tsinghua University Fall 2016
- *Digital Image Processing*, Tsinghua University Spring 2016

Guest Lecturer

- *Advanced Topics in Computer Vision*, University of Rochester Spring 2021
- *Machine Vision*, University of Rochester Fall 2020

HONORS AND AWARDS

- Top 10% of High-Scoring Reviewers for NeurIPS 2020
- Invited attendee of Amazon Graduate Student Symposium, Seattle, USA 2019
- Outstanding Graduate of Tsinghua University (Top 1%) 2017
- Outstanding Master Thesis Award, Tsinghua University 2017
- National Scholarship, Tsinghua University (Top 2%) 2016
- Second-class Scholarship, Tsinghua University 2015

PROFESSIONAL ACTIVITIES

Organizing Committee

- *Audio-Visual Scene Understanding Tutorial* at CVPR June 2021
- *Audio-Visual Scene Understanding Tutorial* at WACV Jan. 2021

Talks and Seminars

- *Toward Unified, Explainable, and Robust Multisensory Perception*
KTH Dive-Deep Seminar Dec. 2021
- *Toward Unified, Explainable, and Robust Multisensory Perception*
RIT PhD Colloquium Series Oct. 2021
- *Audio-Visual Video Understanding*, IIAI Seminar Sep. 2021
- *The Future of Audio-Visual Research Panel Discussion*, VALSE Webinar Nov. 2020

Program Committee/Conference Reviewer

- CVPR: IEEE/CVF Conference on Computer Vision and Pattern Recognition 2019-2022
- ICCV: IEEE/CVF International Conference on Computer Vision 2019-2021
- ECCV: European Conference on Computer Vision 2020
- NeurIPS: Conference on Neural Information Processing Systems 2020-2021
- ICLR: International Conference on Learning Representations 2021-2022
- AAAI: AAAI Conference on Artificial Intelligence 2020-2022
- ICML: International Conference on Machine Learning 2021
- WACV: Winter Conference on Applications of Computer Vision 2020-2021
- ACCV: Asian Conference on Computer Vision 2021

Journal Reviewer

- TPAMI: IEEE Transactions on Pattern Analysis and Machine Intelligence 2021
- TNNLS: IEEE Transactions on Neural Networks and Learning Systems 2021
- TMM: IEEE Transactions on Multimedia 2019-2021
- TCSVT: IEEE Transactions on Circuits and Systems for Video Technology 2019-2021
- Scientific Reports – Nature 2021
- IEEE Access 2019-2021
- SPIC: Signal Processing: Image Communication 2018-2021
- CVIU: Computer Vision and Image Understanding 2020
- CGF: Computer Graphics Forum 2020

UNIVERSITY SERVICES

- CS PhD Admission's Committee, University of Rochester 2018-2021
- ASE Conference Travel Funding Grant Reviewer, University of Rochester 2018

STUDENT ADVISING

MS Students

- Rohan Sharma (Data Science, UofR → PhD student at SUNY Buffalo) 2020-2021
Project: *audio-visual scene-aware captioning*
- Purvanshi Mehta (Data Science, UofR → Data Scientist at Microsoft) Spring 2020
Project: *multimodal continual learning*
- Shurui Zhang (Optics, UofR) 2018
Project: *video super-resolution*

Undergraduates

- Sizhe Li (Computer Science, UofR → Research Intern at MIT CSAIL) 2019-2021

Project: *sounding object visual localization* → *BMVC 2021*

- Yiyang Su (Computer Science, UofR → PhD student at MSU) 2020–2021
Project: *separating invisible sounds*
- Chenxiao Guan (Xerox Fellow at UofR → Master student at CMU) Summer 2018
Project: *audio-visual video captioning* → *CVPR Workshop 2019*
- Justin Goodman (UMD, REU at UofR → Master student at UMD) Summer 2018
Project: *audio-visual data collection* → *CVPR Workshop 2019*
- Marc Moore (Mississippi State University, REU at UofR) Summer 2018
Project: *audio-visual data collection* → *CVPR Workshop 2019*

SKILLS

- Languages: English, Mandarin (native).
- Programming: Python, Pytorch, Keras, MATLAB, \LaTeX .