

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 in multisensory perception, computational photography, AR/VR, and HCI.

RESEARCH AREA Computer Vision Computer Audition Machine Learning AI HCI

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)
- Outstanding Graduate of Tsinghua University Award (Top 1%)

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 09/2021, 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. Google Scholar Profile.

2021

[23] Sizhe Li*, **Yapeng Tian***, Chenliang Xu. Space-Time Memory Network for Sounding Object Localization in Videos. *The British Machine Vision Conference (BMVC)*, 2021.

[22] 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.

[21] **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.

[20] **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.

2020

[19] **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%)

[18] **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.

[17] 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.** ⁺**Equal advising**)

[16] 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.

[15] **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.

[14] **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.**)

[13] **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.

2019

- [12] 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.*)
- [11] **Yapeng Tian**, Chenxiao Guan, Goodman Justin, Marc Moore, and Chenliang Xu. Audio-Visual Interpretable and Controllable Video Captioning. *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPR Workshop)*, 2019.
- [10] **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**, top 1%)
- [9] 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.
- [8] 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.

2018

- [7] **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.
- [6] 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%)

2017 and before

- [5] 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.
- [4] 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.
- [3] 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. (**First student author**)
- [2] **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.
- [1] 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 Computer Vision (ACCV)*, 2015. (**Oral**, top 8%; **First student author**)

WORK IN PROGRESS	<ul style="list-style-type: none"> • 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, <i>submitted to an HCI conference</i>, 2021. • Yapeng Tian, Alexei A. Efros, Chenliang Xu, and Dingzeyu Li. HelpDescribe: Accelerating Audio Description Creation with Human-in-the-loop Recommendation, <i>submitted to an HCI conference</i>, 2021. 	
TEACHING EXPERIENCE	Teaching Assistant <ul style="list-style-type: none"> • CSC249/449: <i>Machine Vision</i>, University of Rochester Spring 2019 • CSC577: <i>Advanced Topics in Computer Vision</i>, University of Rochester Fall 2018 • CSC249/449: <i>Machine Vision</i>, University of Rochester Spring 2018 • <i>Digital Image Processing and Its Applications</i>, Tsinghua University Fall 2016 • <i>Practice of Digital Image Processing</i>, Tsinghua University Spring 2016 Guest Lecturer <ul style="list-style-type: none"> • CSC577: <i>Advanced Topics in Computer Vision</i>, University of Rochester Spring 2021 • CSC249/449: <i>Machine Vision</i>, University of Rochester Fall 2020 	
HONORS AND AWARDS	<ul style="list-style-type: none"> • Top 10% of High-Scoring Reviewers for NeurIPS 2020 • Amazon Graduate Student Symposium, Seattle, USA (invited) 2019 • Outstanding Graduate of Tsinghua University (Top 1%) 2017 • Outstanding Master Thesis Award, Tsinghua University 2017 • National Scholarship (Top 2%), Tsinghua University 2016 • Second-class Scholarship, Tsinghua University 2015 	
PROFESSIONAL ACTIVITIES	Organizing Committee <ul style="list-style-type: none"> • Co-organizing <i>Audio-Visual Scene Understanding Tutorial</i> at CVPR June 2021 • Co-organizing <i>Audio-Visual Scene Understanding Tutorial</i> at WACV Jan. 2021 Talks and Seminars <ul style="list-style-type: none"> • <i>Audio-Visual Scene Understanding</i>, IIAI Seminar Sep. 2021 • <i>The Future of Audio-Visual Research Panel Discussion</i>, VALSE Webinar Nov. 2020 Program Committee/Conference Reviewer <ul style="list-style-type: none"> • IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2019-2022 • IEEE/CVF International Conference on Computer Vision (ICCV) 2019-2021 • European Conference on Computer Vision (ECCV) 2020 • Conference on Neural Information Processing Systems (NeurIPS) 2020-2021 • International Conference on Learning Representations (ICLR) 2021-2022 • AAAI Conference on Artificial Intelligence (AAAI) 2020-2022 • International Conference on Machine Learning (ICML) 2021 	

- Winter Conference on Applications of Computer Vision (WACV) 2020-2021
- Asian Conference on Computer Vision (ACCV) 2021

Journal Reviewer

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

Attended Conferences and Symposiums

- CVPR, Virtual Conference June 2021
- ECCV, Virtual Conference Aug. 2020
- CVPR, Virtual Conference June 2020
- CVPR, Long Beach, USA June 2019
- Amazon Graduate Student Symposium, Seattle, USA Mar. 2019
- ECCV, Munich, Germany Sep. 2018
- ICIP, Phoenix, America Sep. 2016
- ACPR, Kuala Lumpur, Malaysia Nov. 2015

UNIVERSITY SERVICES

- CS PhD Admission 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
Worked on audio-visual scene-aware captioning
- Shurui Zhang (Optics, UofR) 2018
Worked on video super-resolution

Undergraduates

- Sizhe Li (Computer Science, UofR → Research Intern at MIT CSAIL) 2019-2021
Worked on sounding object visual localization → BMVC 2021
- Yiyang Su (Computer Science, UofR → PhD student at MSU) 2020-2021
Worked on separating invisible sounds
- Chenxiao Guan (Xerox Fellow at UofR → Master student at CMU) Summer 2018
Worked on audio-visual video captioning
- Justin Goodman (UMD, REU at UofR → Master student at UMD) Summer 2018
Worked on audio-visual event localization and video captioning data collection

- Marc Moore (Mississippi State University, REU at UofR) Summer 2018
Worked on audio-visual event localization and video captioning data collection

SKILLS

- Languages: English, Mandarin (native).
- Programming: Python, Pytorch, Keras, MATLAB, L^AT_EX.