

Yapeng TIAN

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APPOINTMENT Assistant Professor Aug. 2022 - Present
Department of Computer Science
The University of Texas at Dallas
Richardson, TX

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, HCI, and healthcare.*

RESEARCH AREA Computer Vision Computer Audition Multimodal Learning AI

EDUCATION **University of Rochester**, Rochester, USA Sep. 2017 – June 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
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 – June 2022
• *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, ECCV, AAAI, ICLR, and NeurIPS are top Computer Vision, Machine Learning, and Artificial Intelligence conferences. According to Google Scholar Metrics, as of 2023, CVPR has h5-index 389, ECCV 186, ICCV 239, AAAI 157, ICLR 286, and NeurIPS 180. CVPR is also ranked 1st of all journals and conferences in Engineering and Computer Science and 4th when considering everything else. Citations: 7344, h-index: 18, i10-index: 24 by Google Scholar, 07/2023.

Conference:

10 CVPR, 3 ECCV, 5 ICCV, 2 ICLR, 2 AAAI, 1 NeurIPS, 2 MICCAI

- [C1] Weiguo Pian, Shentong Mo, Yunhui Guo, **Yapeng Tian**. Audio-Visual Class-Incremental Learning. *IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023.
- [C2] Shentong Mo, Weiguo Pian, **Yapeng Tian**. Class-Incremental Grouping Network for Continual Audio-Visual Learning. *IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023.
- [C3] Bin Xia, Yulun Zhang, Shiyin Wang, Yitong Wang, Xinglong Wu, **Yapeng Tian**, Wenming Yang, Luc Van Gool. DiffIR: Efficient Diffusion Model for Image Restoration. *IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023.
- [C4] Jiamiao Zhang, Yichen Chi, Jun Lyu, Wenming Yang, **Yapeng Tian**. Dual Arbitrary Scale Super-Resolution for Multi-Contrast MRI. *Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, 2023.
- [C5] Shentong Mo, **Yapeng Tian**. Audio-Visual Grouping Network for Sound Localization from Mixtures. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.
- [C6] Chao Huang, **Yapeng Tian**, Anurag Kumar, Chenliang Xu. Egocentric Audio-Visual Object Localization. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.
- [C7] Bin Xia, Jingwen He, Yulun Zhang, Yitong Wang, **Yapeng Tian**, Wenming Yang, Luc Van Gool. Structured Sparsity Learning for Efficient Video Super-Resolution. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023.
- [C8] Bin Xia, Yulun Zhang, Yitong Wang, **Yapeng Tian**, Wenming Yang, Radu Timofte, Luc Van Gool. Knowledge Distillation based Degradation Estimation for Blind Super-Resolution. *International Conference on Learning Representations (ICLR)*, 2023.
- [C9] Bin Xia, Yulun Zhang, Yitong Wang, **Yapeng Tian**, Wenming Yang, Radu Timofte, Luc Van Gool. Basic Binary Convolution Unit for Binarized Image Restoration Network. *International Conference on Learning Representations (ICLR)*, 2023.
- [C10] **Yapeng Tian**. Towards Unified, Explainable, and Robust Multisensory Perception. *The AAAI Conference on Artificial Intelligence (AAAI) (invited 1pg paper with AAAI New Faculty Highlights Program)*, 2023.
- [C11] Shentong Mo, **Yapeng Tian**. Multi-modal Grouping Network for Weakly-Supervised Audio-Visual Video Parsing. *The Conference on Neural Information Processing Systems (NeurIPS)*, 2022.
- [C12] Xiaoyu Xiang, **Yapeng Tian**, Vijay Rengarajan, Lucas Young, Bo Zhu, Rakesh

- Ranjan. Learning Spatio-Temporal Downsampling for Effective Video Upscaling. *European Conference on Computer Vision (ECCV)*, 2022.
- [C13] Jun Lyu, Bin Sui, Chengyan Wang, **Yapeng Tian**, Qi Dou, and Jing Qin. DuDo-CAF: Dual-Domain Cross-Attention Fusion with Recurrent Transformer for Fast Multi-contrast MR Imaging. *International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2022.
- [C14] Guangyao Li*, Yake Wei*, **Yapeng Tian***, Chenliang Xu, Ji-Rong Wen, and Di Hu. Learning to Answer Questions in Dynamic Audio-Visual Scenarios. *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2022. (***Equal contribution, Oral, top 5%**)
- [C15] 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.
- [C16] 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.
- [C17] 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.**)
- [C18] 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.**)
- [C19] 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.
- [C20] **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.
- [C21] **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.
- [C22] **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%**)
- [C23] **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.
- [C24] 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.**)

- [C25] 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.*)
- [C26] **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.
- [C27] 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%)
- [C28] 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.
- [C29] **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.
- [C30] 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: 1 TPAMI, 2 TIP, 2 TMM, 1 TNNLS

- [J1] Bin Xia, **Yapeng Tian**, Yulun Zhang, Yucheng Hang, Wenming Yang, Qingmin Liao. Meta-Learning based Degradation Representation for Blind Super-Resolution. *IEEE Transactions on Image Processing*. (*TIP*), 2023.
- [J2] Yichen Chi, Wenming Yang, **Yapeng Tian**. GDSSR: Toward Real-World Ultra-High-Resolution Image Super-Resolution. *IEEE Signal Processing Letters*. (*SPL*), 2023.
- [J3] Hai Wang, Xiaoyu Xiang, **Yapeng Tian**, Wenming Yang, Qingmin Liao. Stdan: deformable attention network for space-time video super-resolution. *IEEE Transactions on Neural Networks and Learning Systems*. (*TNNLS*), 2023.
- [J4] 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.
- [J5] 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.
- [J6] 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.
- [J7] 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

- [W1] Shentong Mo, Jing Shi, **Yapeng Tian**. DiffAVA: Personalized Text-to-Audio Generation with Visual Alignment. **CVPR Sight and Sound workshop**, 2023.
- [W2] Shentong Mo, **Yapeng Tian**. AV-SAM: Segment Anything Model Meets Audio-Visual Localization and Segmentation. **CVPR Sight and Sound workshop**, 2023.
- [W3] Susan Liang, Chao Huang, **Yapeng Tian**, Anurag Kumar, Chenliang Xu. AV-NeRF: Learning Neural Fields for Real-World Audio-Visual Scene Synthesis. **CVPR Sight and Sound workshop**, 2023.
- [W4] Zheng Ning, Zheng Zhang, Jerrick Ban, Kaiwen Jiang, Ruohong Gan, **Yapeng Tian**, Toby Jia-Jun Li. MIMOSA: Human-in-the-Loop Generation of Spatial Audio from Videos with Monaural Audio. **ECCV AV4D workshop**, 2022.
- [W5] Shentong Mo, **Yapeng Tian**. Semantic-Aware Multi-modal Grouping for Weakly-Supervised Audio-Visual Video Parsing. **ECCV AV4D workshop**, 2022.
- [W6] Chao Huang, **Yapeng Tian**, Anurag Kumar, and Chenliang Xu. Audio-Visual Object Localization in Egocentric Videos. *IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPR Workshop)*, 2022.
- [W7] **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.
- [W8] **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.*)
- [W9] **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.
- [W10] **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.
- [W11] **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)
- [W12] 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.

FUNDING

- | | |
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| [F1] Adobe Research Gift (PI: \$20,000) | 2023-2024 |
| [F2] Cisco Faculty Research Award (PI: \$90,000) | 2023-2024 |
| [F3] Undergraduate Research Apprenticeship Program (PI: \$4500) | Summer 2023 |
| [F4] Google Cloud Research Credit Grant (PI: \$5,000 in credits) | 2022-2023 |

TEACHING
EXPERIENCE

Instructor

- *Introduction to Computer Vision*, The University of Texas at Dallas Fall 2023
- *Computer Vision*, The University of Texas at Dallas Spring 2023
- *Virtual Reality*, The University of Texas at Dallas Fall 2022

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

- Undergraduate Research Apprenticeship Program (URAP) Award 2023
- Cisco Faculty Research Award 2023
- AAAI New Faculty Highlights 2023
- CVPR Doctoral Consortium 2022
- Outstanding Reviewer for NeurIPS 2020
- Outstanding Graduate of Tsinghua University 2017
- Outstanding Master Thesis Award, Tsinghua University 2017
- National Scholarship, Tsinghua University 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

- *Learning Semantic-aware Grouping for Weakly-Supervised Audio-Visual Scene Understanding*
CVPR Sight and Sound Workshop Jun. 2023
- UTD CS PhD Mixer Apr. 2023
- *Human-Multisensory AI Collaboration*, ECCV AV4D Workshop Oct. 2022
- UTD CS PhD Mixer Oct. 2022
- UTD New Faculty Research Symposium Oct. 2022
- *Audio-Visual Scene Understanding Towards Unified, Explainable, and Robust Multisensory Perception*
KTH Dive-Deep Seminar Dec. 2021
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

Senior Program Committee or Area Chair

- AAAI: AAAI Conference on Artificial Intelligence 2023-2024
- VALSE: Vision and Learning Seminar 2023

Session Chair

- AAAI: AAAI Conference on Artificial Intelligence
Multimodal Learning, Low-Level and Physics-based Vision 2023

Program Committee/Conference Reviewer

- CVPR: IEEE/CVF Conference on Computer Vision and Pattern Recognition 2019-2023
- ICCV: IEEE/CVF International Conference on Computer Vision 2019-2023
- ECCV: European Conference on Computer Vision 2020-2022
- NeurIPS: Conference on Neural Information Processing Systems 2020-2023
- ICLR: International Conference on Learning Representations 2021-2023
- AAAI: AAAI Conference on Artificial Intelligence 2020-2022
- ICML: International Conference on Machine Learning 2021-2023
- WACV: Winter Conference on Applications of Computer Vision 2020-2023
- ACCV: Asian Conference on Computer Vision 2021

Journal Reviewer

- TPAMI: IEEE Transactions on Pattern Analysis and Machine Intelligence 2021-2023
- TMLR: The Transactions on Machine Learning Research 2021-2023
- TIP: IEEE Transactions on Image Processing 2021-2023
- TNNLS: IEEE Transactions on Neural Networks and Learning Systems 2021-2023
- TMM: IEEE Transactions on Multimedia 2019-2023
- TCSVT: IEEE Transactions on Circuits and Systems for Video Technology 2019-2023
- 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 Graduate and PhD Admission’s Committee, UT Dallas Fall 2022-Present
- CS PhD Admission’s Committee, University of Rochester 2018-2022
- ASE Conference Travel Funding Grant Reviewer, University of Rochester 2018

PH.D. COMMITTEE

- Nathan Alexander Beck (UTD CS) Spring 2023-Present
- Chenxu Zhang (UTD CS) Graduated Spring 2023

STUDENT ADVISING

PhD Students

- Weiguo Pian (UTD CS) Fall 2023 - Present
- Saksham Singh Kushwaha (UTD CS) Summer 2023 - Present
- Shijian Deng (UTD CS) Spring 2023 - Present
- Harsh Singh (UTD CS) Spring 2023 - Present
- Siva Sai Nagender Vasireddy (UTD CS) Fall 2022 - Present

MS Students

- Yulang Wu (UTD CS) Spring 2023
- Rohan Sharma (UR DS → PhD student at SUNY Buffalo) 2020-2021
- Shurui Zhang (UR Optics) 2018

Undergraduates

- Sisi Aarukapalli (UTD CS) Summer 2023 - Present
- Sasha Kaplan (UTD CS) Spring 2023 - Present
- UTD ACM Research: Murtaza Ali Khan, Nivedh Koya, Benjamin Hall Bowers, Ompranay Yedluri, Saanvi N Bala (UTD CS) Spring 2023
- Sizhe Li (UR CS → PhD student at MIT CSAIL) 2019–2021
- Yiyang Su (UR CS → PhD student at MSU) 2020–2021
- Chenxiao Guan (Xerox Fellow at UR → Master student at CMU) Summer 2018
- Justin Goodman (UMD, REU at UR → Master student at UMD) Summer 2018
- Marc Moore (Mississippi State University, REU at UofR) Summer 2018

Student Collaborators

- Tanvir Mahmud (PhD student, UT Austin) Summer 2023 - Present
- Andong Deng (PhD student, UCF) Summer 2023 - Present
- Tianyu Yang (PhD student, University of Notre Dame) Spring 2023-Present
- Junhao Gu (PhD student, Tsinghua University) Fall 2022-Present
- Shentong Mo (PhD student, CMU) Fall 2021-Present
- Guangyao Li (PhD student, Renmin University of China) Spring 2021-Present
- Yiyang Nan (Graduate student, Brown University) Spring 2023-Present
- Yuxin Ye (Graduate student, Tsinghua University) Spring 2022-Present
- Yichen Chi (Graduate student, Tsinghua University) Fall 2022-Present
- Jiamiao Zhang (Graduate student, Tsinghua University) Fall 2022-Present

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- UTD CS Lab Summer Research: Jessica Xu, Darren Chan, Shruti Sunkara, Andrew Lin, Aaryan Tomar, Vedanth Venkatesh Summer 2023
- UTD/CAST STEM Bridge Summer Camp: Isaac Chen, Brice Jiang, Sophia Li, Matthew Wang, Michael Yang, Eddie Zhou, David Guo Summer 2023
- Zeke Barnett Spring 2023 - Present