

# Yapeng TIAN

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APPOINTMENT	Assistant Professor Department of Computer Science University of Texas at Dallas Richardson, TX	2022 - Present
RESEARCH INTERESTS	My research interests center around solving core <b>computer vision</b> and <b>audition</b> problems and applying the developed learning approaches to broad AI applications, such as <i>multisensory perception, computational photography, AR/VR, and HCI</i> .	
RESEARCH AREA	Computer Vision   Computer Audition   Multimodal Learning   AI	
EDUCATION	<b>University of Rochester</b> , Rochester, USA • <i>PhD student</i> in the Department of Computer Science • Advisor: <i>Prof. Chenliang Xu</i> <b>Tsinghua University</b> , Beijing, China • <i>M.E.</i> in the Department of Electronic Engineering <b>Xidian University</b> , Xi'an, China • <i>B.E.</i> in Intelligence Science and Technology (School of Electronic Engineering)	Sep. 2017 – June 2022  Sep. 2014 – July 2017  Aug. 2009 – July 2013
WORK EXPERIENCE	<b>Facebook</b> • <i>Research Intern</i> in the Facebook Reality Lab • Mentor: <i>Dr. Alexander Richard</i> <b>Adobe Research</b> • <i>Research Intern</i> in the Creative Intelligence Lab • Mentors: <i>Dr. Dingzeyu Li</i> and <i>Prof. Alexei A. Efros</i> <b>Adobe Research</b> • <i>Research Intern</i> in the Creative Intelligence Lab • Mentor: <i>Dr. Dingzeyu Li</i>	Sep. 2021 – Jan. 2022  May 2021 – Aug. 2021  May 2019 – Nov. 2019
RESEARCH EXPERIENCE	<b>CS, University of Rochester</b> • <i>Research Assistant</i> with <i>Prof. Chenliang Xu</i> <b>EE, Tsinghua University</b> • <i>Research Assistant</i> with <i>Prof. Wenming Yang</i> <b>SIAT, Chinese Academy of Sciences</b> • <i>Visiting Student</i> with <i>Prof. Yu Qiao</i>	Aug. 2017 – Present  Mar. 2015 – Aug. 2017  Nov. 2016 – May 2017

## PUBLICATIONS

CVPR, ICCV, ECCV, and AAAI are premier Artificial Intelligence (AI) conferences. According to Google Scholar Metrics, as of 2022, CVPR has h5-index 356, ECCV 197, ICCV 184, and AAAI 157. CVPR is also ranked 1st of all journals and conferences in Engineering and Computer Science and 4th when considering everything else. Citations: 5153, h-index: 15, i10-index: 16 by Google Scholar, 8/2022.

### Conference Papers (7 CVPR, 3 ECCV, 2 ICCV, 2 AAAI, 1 MICCAI, 1 BMVC)

- 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.
- Jun Lyu, Bin Sui, Chengyan Wang, **Yapeng Tian**, Qi Dou, and Jing Qin. DuDoCAF: 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.
- 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*)
- 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)

- 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.
- **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 Conference 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*. (*\*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*.
- Yiyang Su\*, **Yapeng Tian\***, and Chenliang Xu. Separating Invisible Sounds toward Universal Audio-Visual Scene-Aware Sound Separation, *Work in Progress*. (*\*Equal contribution.*)
- Rohan Sharma\*, **Yapeng Tian\***, and Chenliang Xu. Cooperative Audio-Visual Video Parsing and Captioning, *Work in Progress*. (*\*Equal contribution.*)

## TEACHING EXPERIENCE

### Instructor

- *Virtual Reality*, 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	• CVPR Doctoral Consortium	2022
	• 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	<b>Organizing Committee</b>	
	• <i>Audio-Visual Scene Understanding Tutorial</i> at CVPR	June 2021
	• <i>Audio-Visual Scene Understanding Tutorial</i> at WACV	Jan. 2021
	<b>Talks and Seminars</b>	
	• <i>Audio-Visual Scene Understanding Towards Unified, Explainable, and Robust Multisensory Perception</i>	
	University of Texas at Dallas	Mar. 2022
	George Mason University	Feb. 2022
	Dartmouth College	Feb. 2022
	KTH Dive-Deep Seminar	Dec. 2021
	RIT PhD Colloquium Series	Oct. 2021
	• <i>Audio-Visual Video Understanding</i> , IIAI Seminar	Sep. 2021
	• <i>The Future of Audio-Visual Research Panel Discussion</i> , VALSE Webinar	Nov. 2020
	<b>Program Committee/Conference Reviewer</b>	
	• 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	2020-2022
	• 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	2021-2022
	• WACV: Winter Conference on Applications of Computer Vision	2020-2021
	• ACCV: Asian Conference on Computer Vision	2021
	<b>Journal Reviewer</b>	
	• TPAMI: IEEE Transactions on Pattern Analysis and Machine Intelligence	2021
	• TMLR: The Transactions on Machine Learning Research	2021-2022
	• TIP: IEEE Transactions on Image Processing	2021-2022
	• TNNLS: IEEE Transactions on Neural Networks and Learning Systems	2021
	• TMM: IEEE Transactions on Multimedia	2019-2022
	• TCSVT: IEEE Transactions on Circuits and Systems for Video Technology	2019-2022
	• Scientific Reports – Nature	2021

	<ul style="list-style-type: none"> <li>• IEEE Access 2019-2021</li> <li>• SPIC: Signal Processing: Image Communication 2018-2021</li> <li>• CVIU: Computer Vision and Image Understanding 2020</li> <li>• CGF: Computer Graphics Forum 2020</li> </ul>
UNIVERSITY SERVICES	<ul style="list-style-type: none"> <li>• CS Graduate and PhD Admission's Committee, UT Dallas 2022-</li> <li>• CS PhD Admission's Committee, University of Rochester 2018-2022</li> <li>• ASE Conference Travel Funding Grant Reviewer, University of Rochester 2018</li> </ul>
STUDENT ADVISING	<p><b>MS Students</b></p> <ul style="list-style-type: none"> <li>• Rohan Sharma (Data Science, UofR → PhD student at SUNY Buffalo) 2020-2021 Project: <i>audio-visual scene-aware captioning</i></li> <li>• Shurui Zhang (Optics, UofR) 2018 Project: <i>video super-resolution</i></li> </ul> <p><b>Undergraduates</b></p> <ul style="list-style-type: none"> <li>• Sizhe Li (Computer Science, UofR → Research Intern at MIT CSAIL) 2019-2021 Project: <i>sounding object visual localization</i> → <i>BMVC 2021</i></li> <li>• Yiyang Su (Computer Science, UofR → PhD student at MSU) 2020-2021 Project: <i>separating invisible sounds</i></li> <li>• Chenxiao Guan (Xerox Fellow at UofR → Master student at CMU) Summer 2018 Project: <i>audio-visual video captioning</i> → <i>CVPR Workshop 2019</i></li> <li>• Justin Goodman (UMD, REU at UofR → Master student at UMD) Summer 2018 Project: <i>audio-visual data collection</i> → <i>CVPR Workshop 2019</i></li> <li>• Marc Moore (Mississippi State University, REU at UofR) Summer 2018 Project: <i>audio-visual data collection</i> → <i>CVPR Workshop 2019</i></li> </ul>
SKILLS	<ul style="list-style-type: none"> <li>• Languages: English, Mandarin (native).</li> <li>• Programming: Python, Pytorch, Keras, MATLAB, <math>\LaTeX</math>.</li> </ul>