Junsong Yuan

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CURRENT

State University of New York at Buffalo, Buffalo, NY, USA

Professor, CSE Department, Aug. 2021 - Present
Director of Graduate Admissions, CSE Department, Aug. 2022 - Present
Director of Visual Computing Lab, CSE Department, March 2018 - Present

PREVIOUS

State University of New York at Buffalo, Buffalo, NY, USA

Associate Professor, CSE Department, March 2018 - Aug. 2021
Director of Visual Computing Lab, CSE Department

Nanyang Technological University, Singapore

Associate Professor, School of EEE, Sept. 2015 - March 2018
Nanyang Assistant Professor, School of EEE, Sept., 2009 - Aug. 2015

EDUCATION

Northwestern University, Evanston, Illinois, USA

Doctor of Philosophy in Electrical and Computer Engineering, August, 2009

Thesis: Mining Image and Video Data (*Outstanding EECS PhD Thesis Award*)

National University of Singapore, Singapore

Master of Engineering in Electrical and Computer Engineering, January, 2005

Thesis: Robust Short Clip Representation and Fast Search through Large Video Collections

Huazhong University of Science and Technology, Wuhan, P.R.China

Special Program for the Gifted Young

Bachelor of Engineering, Communication Engineering, July, 2002

RESEARCH INTERESTS

Computer Vision and Pattern Recognition
Video Analytics
Human Action and Gesture Analysis
Large-Scale Visual Search and Mining
Biomedical Image Analysis and Applications

INDUSTRY RESEARCH EXPERIENCE

Microsoft Research, Redmond, Washington, USA
Research Intern   **June - September, 2008**

Kodak Research Laboratory, Rochester, New York, USA
Research Intern   **June - September, 2007**

Motorola Laboratory, Schaumburg, Illinois, USA
Research Intern   **June - September, 2006**

Institute for Infocomm Research, Singapore
Research Scholar   **January 2003 - December, 2004**

<table>
<tr><td>Teaching
Experience</td><td>

Coursera Course: Computer Vision Basics (with Radhakrishna Dasari) [1]
Over 80,000 enrollment by 2025
First course of this specialization
Received a 4.2/5.0 rating

CSE Department, University at Buffalo, USA

Lecture
CSE473/573 Computer vision and Image Processing, 2018-2025
CSE 610 Advanced Multimedia Systems, 2022

Seminar
CSE707 Selected Topics in Computer Vision, 2018-2022, 2025

School of EEE, Nanyang Technological University, Singapore

Lecture
EE4476/IM4476 Image Processing, 2011-2015 1st semester
EE4483/IM4483 Artificial Intelligence and Data Mining, 2011-2017 1st semester

Tutorial
EE2010/IM2010 Signals and Systems, 2015-2017 2nd semester
EE4483/IM4483 Artificial Intelligence and Data Mining, 2011-2017 1st semester
EE4476/IM4476 Image Processing, 2012-2015 1st semester

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GRANTS

PI: Hand Object Interaction and Video Generation, Ant Research, USA, Oct. 2025 - Oct. 2026, $ 100,000

PI: US-Southeast Asia Regional Workshop on responsive artificial intelligence, National Science Foundation (NSF), USA, Aug. 2024 - Aug. 2025, $ 99,941

PI: Chain-of-Look Video Reasoning for Openset Human Object Interaction Detection, SONY Faculty Innovation Award, USA, Sept. 2024 - Aug. 2025, $ 100,000

PI: Multi-modal visual analytics, Wormpex AI Research, USA, Jan. 2023 - Dec. 2023, $ 15,000

Collaborator: NSF AI Institute for Transforming Education for Children with Speech and Language Processing Challenges, National Science Foundation (NSF), USA, Jan. 2023 - Dec. 2027, $20,000,000

PI: Hand Object Interaction Modeling, Meta Reality Labs, USA, Jan. 2022 - June 2022, $ 25,000

PI: Video Object Detection and Segmentation, Amazon Go, USA, Nov. 2021 - May. 2022, $ 15,000 and $ 7,000 AWS credit

PI: Digital Virtual Human, InnoPeak Technology, USA, March 2021 - March 2022, $ 50,000

Co-PI: Scaling Up Human-Action Analysis Systems, Amazon Faculty Award, USA, April 2021 - April 2022, $ 57,000 and $10,000 AWS Promotional Credits (with Changyou Chen as PI)

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[1] https://www.coursera.org/learn/computer-vision-basics

PI: SCC-PG: Towards cybernetic buildings: integrated intelligent sensing to create responsive environments, National Science Foundation (NSF), USA, Oct. 2020 - Sept. 2021, $150,000

Co-PI: Multi-media Analytics Leading to Intent and Semantic Evidence (MALISE), DARPA project, USA, July 2020 - June 2024, $1,300,000 (with David Doermann as PI)

PI: Hand Gesture Analysis, Kwai Research, USA, Jan. 2020 - Dec. 2020, $ 50,000

PI: Tutorial Video Analytics, Adobe Research, USA, April 2018 - April 2019, $ 12,000

PI: Video Captioning, Snap Research, USA, April 2018 - Dec. 2018, $ 25,000

PI: Video Analytics for Autonomous Driving, Horizon Robotics Inc., USA Oct. 2018-Oct. 2020, $ 360,000

PI: Start-up funds, University at Buffalo, March 2018 - March 2021, $ 200,000

PI: Towards More Social Robots: Understanding Human Behaviours with 2D and 3D Sensors, Microsoft Research Asia, Dec. 2016 - Dec. 2017, S$ 40,233, unrestricted gift [2]

PI: Towards More Social Robots: Understanding Human Behaviours with 2D and 3D Sensors, Microsoft Azure credits, Dec. 2016 - Dec. 2017, US$ 5,000

PI: A Vision-based Solution for Egocentric Hand Motion Analysis on Wearable Devices, Singapore Ministry of Education (MoE) Tier-2 Grant, July 2016 - June 2019, S$509,040

PI: Exploring Visual Relevance to Construct a Holistic Picture of Online News, Singapore Ministry of Education (MoE) Tier-1 Grant, Nov. 2014 - Oct. 2017, S$149,200

PI: Real-time Automated Analysis of Soccer Videos, Advanced Digital Sciences Center (ADSC), Singapore, Jan. 2016 - Jan. 2019, S$155,000

PI: Discriminative Action States Discovery for On-line Action Recognition, Defense Science Organization (DSO) National Labs, Aug. 2016 - July 2018, S$ 199,525

PI: Mining and Identifying Abnormal and Suspicious Activities, Singapore Defence Research and Technology Office (DRTech), Dec. 2015 - Dec. 2018, S$ 308,000

PI: Towards The Reality of 3D Imaging and Display: Multi-Layered Computational Display, Singapore National Research Foundation (NRF), April 2014 - March 2019, S$1,003,541

PI: General Object Recognition by Big Data Retrieval, Omron Inc., Japan, July 2015 - June 2016, S$ 99,000

PI: Media Analytics, Singapore Media Development Authority (MDA), Dec. 2012 - Nov. 2017, S$ 1,000,000

Joint-PI: Scene Understanding Through Bottom-up and Top-down Processing, Singapore National Research Foundation (NRF), July 2015 - June 2018, S$ 643,600

Joint-PI: Sensor Fusion Frameworks for Objects Classification, Terrain Classification and Localization, Singapore National Research Foundation (NRF), July 2015 - June 2017, S$ 489,000

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[2] 1 S$ is around 0.70 US$

Joint-PI: Autonomous Virtual Humans and Social Robot for Tele-presence, Singapore Media Development Authority (MDA), Feb. 2012 - March 2016, S$ 1,512,000

PI: Abnormal Video Event Detection for Traffic Safety, NTU-JSPS Joint Research Projects, April 2012 - March 2014, S$ 76,000

PI: Video object discovery, Adobe Systems, USA, Dec. 2013 - Aug. 2014, US$ 26,000, unrestricted gift

PI: Hand gesture recognition using depth camera, Microsoft Research Redmond, USA, Dec. 2011 - Dec. 2012, US$ 15,000, unrestricted gift

PI: Real-time Object Retrieval in Large Scale Video Data, Singapore Infocomm Development Authority (IDA), April - Dec. 2013, S$430,000

PI: Fusion of Velodyne and Image Detection Modules, Defense Science Organization (DSO) National Labs, Feb 2012 - July 2012, S$ 37,383

PI: Cognitive Approach for Activity Learning, Defense Science Organization (DSO) National Labs, Dec. 2012 - Nov. 2014, S$ 160,080

PI: Towards the reality of autonomous vehicles, College of Engineering Seed Grant, NTU, Oct. 2012 - March 2013, S$ 46,000

PI: Integrating a User within a group or a crowd using Computer Vision and Synthetic Vision, IMI Seed Grant, Institute for Media Innovation, NTU, Dec. 2012 - June 2014, S$ 89,000

PI: Mining Image and Video Data, Nanyang Assistant Professorship, NTU, Sept. 2009 - Aug. 2012, S$ 1,000,000

Co-PI: Towards Reality of Integrated 3D Imaging and Display, EEE Seed Grant, NTU, Oct. 2012 - March 2013, S$ 50,000

Co-PI: NTU-MGH Programme on Clinical Neurotechnologies, EEE Seed Grant, NTU, Oct. 2012 - March 2013, S$ 48,000

Collaborator: Towards 3D nanoscope with super spatial resolution, Ministry of Education Tier-2 Grant, April 2013- March 2016, S$723,500

Collaborator: Low Power Frame-less Image Sensor for High Speed Object Tracking, Ministry of Education Tier-1 Grant, Nov. 2014- Oct 2017, S$215,500

HONORS AND
AWARDS

Distinguished Lecturer, IEEE Signal Processing Society, 2026-2027
Faculty Innovation Award, SONY, 2024
SUNY Chancellor's Award for Excellence in Scholarship and Creative Activities, 2022
Fellow of Institute of Electrical and Electronics Engineers (IEEE), 2021
Fellow of Asia-Pacific Artificial Intelligence Association (AAIA), 2021
UB CSE Senior Researcher of the Year Award, 2020
Fellow of International Association of Pattern Recognition (IAPR), 2018
Best Paper Award, IEEE Trans. on Multimedia, 2016
Tan Chin Tuan Exchange Fellowship, Nanyang Technological University, 2013
Outstanding EECS PhD Thesis Award, Northwestern University, USA, 2010
Nanyang Assistant Professorship, Nanyang Technological University, 2009
Doctoral Spotlight Award, IEEE Conf. Computer Vision and Pattern Recognition, 2009
National Outstanding Student, Ministry of Education, China, 2001
Hu Chunan Fellowship, Ministry of Education, China, 2001 (100 from entire China)
Model of Outstanding Students, Huazhong Univ. of Sci. and Tech., China, 2000 (20 out of 30,000)

BOOKS

1. Hongxing Wang, Chaoqun Weng, and Junsong Yuan, Visual Pattern Discovery and Recognition, by Springer, 2017

2. Nadia Magnenat Thalmann, Junsong Yuan, Daniel Thalmann, Bum-Jae You, Context Aware Human-Robot and Human-Agent Interaction, by Springer, 2015

3. Gang Yu, Junsong Yuan, and Zicheng Liu, Human Action Analysis with Randomized Trees, by Springer, 2015

4. Junsong Yuan, Discovering visual patterns in image and video data: concepts, algorithms, experiments, by VDM Verlag Dr. Muller, April 2011

BOOK CHAPTERS

1. Junwu Weng, Xudong Jiang, Junsong Yuan, "NBNN-Based Discriminative 3D Action and Gesture Recognition," Intelligent Scene Modeling and Human-Computer Interaction, Springer, 2021

2. Hui Liang and Junsong Yuan, "Random Forests with Optimized Leaves for Hough-Voting," Intelligent Scene Modeling and Human-Computer Interaction, Springer, 2021

3. Liuhao Ge and Junsong Yuan, "Hand Pose Estimation," invited book chapter in *Computer Vision: A Reference Guide*, Springer, 2020

4. Liuhao Ge, Junsong Yuan, and Nadia Thalmann, "Real-time Hand Pose Estimation Using Depth Camera," invited book chapter in *RGB-D Image Analysis and Processing*, Springer, 2019

5. Gangqiang Zhao and Junsong Yuan, "Automatic Visual Pattern Discovery via Cohesive Subgraph Mining," invited book chapter in *Mobile Cloud and Visual Media Computing*, Springer, 2016

6. Yang Cong, Ji Liu, Junsong Yuan, and Jiebo Luo, "Low Rank Online Metric Learning", invited book chapter in *Low-Rank and Sparse Modeling for Visual Analysis*, Springer, 2014

7. Hui Liang and Junsong Yuan, "Hand Parsing and Gesture Recognition with a Commodity Depth Camera", invited book chapter in *Computer Vision and Machine Learning with RGB-D Sensors*, Springer, 2014

8. Zhu Li, Yun Fu, Junsong Yuan, Ying Wu, A. K. Katsaggelos and Thomas S. Huang, "Multimedia Data Indexing", invited book chapter in *Semantic Mining Technologies for Multimedia Databases*, Idea Group Inc., 2010

9. Junsong Yuan and Ying Wu, "Common pattern discovery in multimedia data mining", invited book chapter in *Encyclopedia of Data Warehousing and Mining (2nd Edition)*, Idea Group Inc., 2008

JOURNAL
PUBLICATIONS

1. Tianyu Luan, Yuanhao Zhai, Jingjing Meng, Zhong Li, Zhang Chen, Yi Xu, Junsong Yuan, "Scalable High-Fidelity 3D Hand Shape Reconstruction via Graph-Image Frequency Mapping and Graph Frequency Decomposition," *IEEE Trans. Pattern Anal. Mach. Intell.* 47(7): 5832-5846 (2025)

2. Chongshou Li, Yuheng Liu, Xinke Li, Yuning Zhang, Tianrui Li, Junsong Yuan, "Deep Hierarchical Learning for 3D Semantic Segmentation," *International Journal of Computer Vision* 133(7): 4420-4441 (2025)

3. Jiaxin Li, Hongxing Wang, Jiawei Tan, Zhilong Ou, Junsong Yuan, "Aligning Instance-Semantic Sparse Representation Towards Unsupervised Object Segmentation and Shape Abstraction With Repeatable Primitives," *IEEE Trans. Vis. Comput. Graph.* 31(10): 6884-6898 (2025)

4. Shiwen Zhang, Shuang Chen, Wei Liang, Kuanching Li, Arcangelo Castiglione, Junsong Yuan, "PFLIC: A novel personalized federated learning-based iterative clustering," *Comput. Sci. Inf. Syst.* 22(3): 945-970 (2025)

5. Xuelu Feng, Yunsheng Li, Dongdong Chen, Mei Gao, Mengchen Liu, Junsong Yuan, Chunming Qiao, "Benchmarking large and small MLLMs," *Machine Vision and Applications* 36(6): 137 (2025)

6. Zhigang Tu, Zhengbo Zhang, Zitao Gao, Chunluan Zhou, Junsong Yuan, Bo Du, "FADE: A Dataset for Detecting Falling Objects Around Buildings in Video," *IEEE Trans. Inf. Forensics Secur.,* 20: 9746-9759 (2025)

7. Miao Liao, Ruixin Yang, Yuqian Zhao, Wei Liang, Junsong Yuan, "FocalTransNet: A Hybrid Focal-Enhanced Transformer Network for Medical Image Segmentation," *IEEE Trans. on Image Processing* (T-IP), 34: 5614-5627 (2025)

8. Jun Wen, Yufeng Chen, Ruiqi Shi, Wei Ji, Menglin Yang, Difei Gao, Junsong Yuan, Roger Zimmermann, "HOVER: Hyperbolic Video-Text Retrieval," *IEEE Trans. on Image Processing* (T-IP), 34: 6192-6203 (2025)

9. Yuting Tang, Dafang Zhang, Kuan-Ching Li, Junsong Yuan, "Uncovering Malicious Accounts in Online Social Networks Using XGBoost and Graph Convolution Networks," *IEEE Trans. Consumer Electron,* 71(2): 6489-6498 (2025)

10. Huixin Zhu, Zhili Zhang, Junyang Zhao, Hui Duan, Yao Ding, Xiongwu Xiao, Junsong Yuan, "Scene reconstruction techniques for autonomous driving: a review of 3D Gaussian splatting," *Artificial Intelligence Review* 58(1): 30 (2025)

11. Xuelu Feng, Yunsheng Li, Dongdong Chen, Chunming Qiao, Junsong Yuan, Lu Yuan, Gang Hua, "Pluralistic Salient Object Detection," *IEEE Trans. on Image Processing* (T-IP), 34: 2325-2337 (2025)

12. Huilin Lai, Ye Luo, Bo Li, Jianwei Lu, Junsong Yuan, "Bilateral Proxy Federated Domain Generalization for Privacy-Preserving Medical Image Diagnosis," *IEEE J. Biomed. Health Informatics*, 29(4): 2784-2797 (2025)

13. Xingyu Tong, Yang Xiao, Bo Tan, Jianyu Yang, Zhiguo Cao, Joey Tianyi Zhou, Junsong Yuan, "You Will Never Walk Alone: One-Shot 3D Action Recognition With Point Cloud Sequence," *IEEE Trans. Circuits Syst. Video Technol.* (T-CSVT) 34(11): 11464-11477 (2024)

14. Bo Tan, Yang Xiao, Yancheng Wang, Shuai Li, Jianyu Yang, Zhiguo Cao, Joey Tianyi Zhou, Junsong Yuan, "Beyond Pattern Variance: Unsupervised 3-D Action Representation Learning With Point Cloud Sequence," *IEEE Trans. Neural Networks Learn. Syst.* (T-NNLS) 35(12): 18186-18199 (2024)

15. Jiaxu Zhang, Zhigang Tu, Junwu Weng, Junsong Yuan, Bo Du, "A Modular Neural Motion Retargeting System Decoupling Skeleton and Shape Perception," *IEEE Trans. Pattern Anal. Mach. Intell.* (T-PAMI) 46(10): 6889-6904, 2024

16. Jiaxin Li, Hongxing Wang, Jiawei Tan, Junsong Yuan, "Shared Latent Membership Enables Joint Shape Abstraction and Segmentation With Deformable Superquadrics," *IEEE Trans. Image Process.* (T-IP) 33: 3564-3577, 2024

17. Zhiyu Wang, Chao Yang, Bin Jiang, Junsong Yuan, "A Dual Reinforcement Learning Framework for Weakly Supervised Phrase Grounding," *IEEE Trans. on Multimedia* (T-MM), 26: 394-405, 2024

18. Jiawei Tan, Hongxing Wang, Junsong Yuan, "Characters Link Shots: Character Attention Network for Movie Scene Segmentation," *ACM Trans. Multim. Comput. Commun. Appl.* (ACM TOMM) 20(4): 94:1-94:23, 2024

19. Zachary Steever, Kyle Hunt, Mark Karwan, Junsong Yuan, Chase C. Murray, "A Graph-Based Approach for Relating Integer Programs," in INFORMS Journal on Computing (JOC), 2024

20. Jiyang Li, Lin Huang, Siddharth Shah, Sean J. Jones, Yincheng Jin, Dingran Wang, Adam Russell, Seokmin Choi, Yang Gao, Junsong Yuan, Zhanpeng Jin, "SignRing: Continuous American Sign Language Recognition Using IMU Rings and Virtual IMU Data," *Proc. ACM Interact. Mob. Wearable Ubiquitous Technol.* (IMWUT) 7(3): 107:1-107:29, 2023

21. Yuanhao Zhai, Le Wang, Wei Tang, Qilin Zhang, Nanning Zheng, David S. Doermann, Junsong Yuan, Gang Hua, "Adaptive Two-Stream Consensus Network for Weakly-Supervised Temporal Action Localization," *IEEE Trans. Pattern Anal. Mach. Intell.* (T-PAMI) 45(4): 4136-4151, 2023

22. Zhigang Tu, Zhisheng Huang, Yujin Chen, Di Kang, Linchao Bao, Bisheng Yang, Junsong Yuan, "Consistent 3D Hand Reconstruction in Video via Self-Supervised Learning," *IEEE Trans. Pattern Anal. Mach. Intell.* (T-PAMI) 45(8): 9469-9485, 2023

23. Wenzheng Zeng, Yang Xiao, Guilei Hu, Zhiguo Cao, Sicheng Wei, Zhiwen Fang, Joey Tianyi Zhou, Junsong Yuan, "Eyelid's Intrinsic Motion-Aware Feature Learning for Real-Time Eyeblink Detection in the Wild," *IEEE Trans. Inf. Forensics Secur.* (T-IFS) 18: 5109-5121, 2023

24. Zhigang Tu, Yuanzhong Liu, Yan Zhang, Qizi Mu, Junsong Yuan, "DTCM: Joint Optimization of Dark Enhancement and Action Recognition in Videos," *IEEE Trans. Image Process.* (T-IP) 32: 3507-3520, 2023

25. Xuan Gong, Liangchen Song, Rishi Vedula, Abhishek Sharma, Meng Zheng, Benjamin Planche, Arun Innanje, Terrence Chen, Junsong Yuan, David S. Doermann, Ziyan Wu, "Federated Learning With Privacy-Preserving Ensemble Attention Distillation," *IEEE Trans. Medical Imaging* (T-MI) 42(7): 2057-2067, 2023

26. Zhigang Tu, Jiaxu Zhang, Hongyan Li, Yujin Chen, Junsong Yuan, "Joint-Bone Fusion Graph Convolutional Network for Semi-Supervised Skeleton Action Recognition," *IEEE Trans. Multim.* (T-MM) 25: 1819-1831, 2023

27. Liangchen Song, Anpei Chen, Zhong Li, Zhang Chen, Lele Chen, Junsong Yuan, Yi Xu, Andreas Geiger, "NeRFPlayer: A Streamable Dynamic Scene Representation with Decomposed Neural Radiance Fields," *IEEE Trans. Vis. Comput. Graph.* (T-VCG), 29(5): 2732-2742, 2023

28. Zhigang Tu, Hongyan Li, Wei Xie, Yuanzhong Liu, Shifu Zhang, Baoxin Li, Junsong Yuan, "Optical flow for video super-resolution: a survey," *Artificial Intelligence Review* (AIR) 55(8): 6505-6546, 2022

29. Zachary Steever, Chase C. Murray, Junsong Yuan, Mark H. Karwan, Marco E. Lübbecke, "An Image-Based Approach to Detecting Structural Similarity Among Mixed Integer Programs," *INFORMS J. Comput.* 34(4): 1849-1870, 2022

30. Nan Xi, Jingjing Meng, Junsong Yuan, "Forest Graph Convolutional Network for Surgical Action Triplet Recognition in Endoscopic Videos," *IEEE Trans. Circuits and Systems for Video Technology* (T-CSVT), 32(12): 8550-8561, 2022

31. Koteswar Rao Jerripothula, Prerana Mukherjee, Jianfei Cai, Shijian Lu, Junsong Yuan, "AppFuse: An Appearance Fusion Framework for Saliency Cues," *IEEE Trans. Circuits and Systems for Video Technology* (T-CSVT), 32(12): 8261-8274, 2022

32. Yuanzhong Liu, Junsong Yuan, Zhigang Tu, "Motion-Driven Visual Tempo Learning for Video-Based Action Recognition," in *IEEE Trans. Image Processing* (T-IP) 31: 4104-4116, 2022

33. Zhiwen Fang, Zhiguo Cao, Yang Xiao, Kaicheng Gong, Junsong Yuan, "MAT: Multianchor Visual Tracking With Selective Search Region," in *IEEE Trans. Cybernetics* (T-CYB) 52(7): 7136-7150, 2022

34. Jun Wen, Junsong Yuan, Qian Zheng, Risheng Liu, Zhefeng Gong, Nenggan Zheng, "Hierarchical domain adaptation with local feature patterns," in *Pattern Recognition* (PR), 124: 108445, 2022

35. Yunpeng Chang, Zhigang Tua, Wei Xie, Bin Luo, Shifu Zhang, Haigang Sui, and Junsong Yuan, "Video anomaly detection with spatio-temporal dissociation," in *Pattern Recognition* (PR), 2022

36. Jialian Wu, Liangchen Song, Qian Zhang, Ming Yang, Junsong Yuan, "ForestDet: Large-Vocabulary Long-Tailed Object Detection and Instance Segmentation," in *IEEE Trans. Multimedia* (T-MM), 24: 3693-3705, 2022

37. Sudhir Yarram, Junsong Yuan, Ming Yang, "Adversarial structured prediction for domain-adaptive semantic segmentation," in *Machine Vision and Applications* (MVA), 33(5): 67, 2022

38. Yujun Cai, Liuhao Ge, Jianfei Cai, Nadia 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), 2021

39. Sheng Liu, Zhou Ren, and Junsong Yuan, "SibNet: Sibling Convolutional Encoder for Video Captioning," in *IEEE Trans. on Pattern Analysis and Machine Intelligence* (T-PAMI), 43(9): 3259-3272, 2021

40. Jing Tang, Xueyan Tang, Andrew Lim, Kai Han, Chongshou Li, Junsong Yuan, "Revisiting Modified Greedy Algorithm for Monotone Submodular Maximization with a Knapsack Constraint," In Proc. ACM Meas. Anal. Comput. Syst. 5(1): 08:1-08:22, 2021

41. Yujin Chen, Zhigang Tu, Di Kang, Ruizhi Chen, Linchao Bao, Zhengyou Zhang, Junsong Yuan, "Joint Hand-Object 3D Reconstruction From a Single Image With Cross-Branch Feature Fusion," inin *IEEE Trans. Image Processing* (T-IP), 30: 4008-4021 2021

42. Koteswar Rao Jerripothula, Jianfei Cai, Jiangbo Lu, Junsong Yuan, "Image Co-Skeletonization via Co-Segmentation," in *IEEE Trans. Image Processing* (TIP) 30: 2784-2797, 2021

43. Tan Yu, Jingjing Meng, Ming Yang, Junsong Yuan, "3D Object Representation Learning: A Set-to-Set Matching Perspective," in *IEEE Trans. on Image Processing* (T-IP), 30: 2168-2179, 2021

44. Jianyu Yang, Wu Liu, Junsong Yuan, and Tao Mei, "Hierarchical Soft Quantization for Skeleton-Based Human Action Recognition," in *IEEE Trans. on Multimedia* (T-MM), 2021

45. Liangchen Song, Gang Yu, Junsong Yuan, Zicheng Liu, "Human pose estimation and its application to action recognition: A survey," J. Vis. Commun. Image Represent. (JVCI), 76: 103055, 2021

46. Lin Huang, Boshen Zhang, Zhilin Guo, Yang Xiao, Zhiguo Cao, Junsong Yuan, "Survey on depth and RGB image-based 3D hand shape and pose estimation," in *Virtual Reality and Intelligent Hardware* 3(3): 207-234, 2021

47. Weixiang Hong, Xueyan Tang, Jingjing Meng, and Junsong Yuan, "Asymmetric Mapping Quantization for Nearest Neighbor Search," in *IEEE Trans. on Pattern Analysis and Machine Intelligence* (T-PAMI), 42(7): 1783-1790, 2020

48. Tan Yu, Jingjing Meng, Chen Fang, Hailin Jin, and Junsong Yuan, "Product Quantization Network for Fast Visual Search," in *International Journal of Computer Vision* (IJCV), 128(8): 2325-2343, 2020

49. Zhenzhen Wang, Weixiang Hong, Yap-Peng Tan, and Junsong Yuan, "Pruning 3D Filters For Accelerating 3D ConvNets," IEEE Trans. on Multimedia (T-MM), 22(8): 2126-2137, 2020

50. Junwu Weng, Xudong Jiang, Junsong Yuan, and Wei-Long Zheng, "Early Action Recognition with Category Exclusion using Policy-based Reinforcement Learning," *IEEE Trans. on Circuits and Systems for Video Technology* (T-CSVT), 30(12): 4626-4638 2020

51. Chunluan Zhou and Junsong Yuan, "Occlusion Pattern Discovery for Partially Occluded Object Detection," in *IEEE Trans. on Circuits and Systems for Video Technology* (T-CSVT), 30(7): 2067-2080, 2020

52. Bin Jiang, Wenxuan Tu, Chao Yang, and Junsong Yuan, "Context-Integrated and Feature-Refined Network for Lightweight Object Parsing," in *IEEE Trans. Image Processing* (T-IP), 29: 5079-5093, 2020

53. Long Tian, Zhigang Tu, Dejun Zhang, Jun Liu, Baoxin Li, Junsong Yuan, "Unsupervised Learning of Optical Flow With CNN-Based Non-Local Filtering," in *IEEE Trans. Image Processing* (T-IP) 8429-8442 2020

54. Guilei Hu, Yang Xiao, Zhiguo Cao, Lubin Meng, Zhiwen Fang, Joey Tianyi Zhou, and Junsong Yuan, "Towards Real-time Eyeblink Detection in The Wild: Dataset, Theory and Practices," IEEE Trans. on Information Forensics and Security (T-IFS), 15: 2194-2208, 2020

55. Mengjia Yan, Jingjing Meng, Chunluan Zhou, Zhigang Tu, Yap-Peng Tan, and Junsong Yuan, "Detecting Spatiotemporal Irregularities in Videos via a 3D Convolutional Autoencoder," in Journal of Visual Communication and Image Representation (JVCI), 67: 102747, 2020

56. Xiaohan Tu, Cheng Xu, Siping Liu, Guoqi Xie, Jing Huang, Renfa Li, Junsong Yuan, "Learning Depth for Scene Reconstruction Using an Encoder-Decoder Model," IEEE Access 8: 89300-89317, 2020

57. Liuhao Ge, Hui Liang, Junsong Yuan, Daniel Thalmann, "Real-time 3D Hand Pose Estimation with 3D Convolutional Neural Networks," in *IEEE Trans. on Pattern Analysis and Machine Intelligence* (T-PAMI), 41(4): 956-970, 2019

58. Feng Zhao, Zhiguo Cao, Yang Xiao, Jing Mao, Junsong Yuan, "Real-time Detection of Fall from Bed using a Single Depth Camera ," in *IEEE Transactions on Automation Science and Engineering* (T-ASE), 16(3): 1018-1032, 2019

59. Hui Liang, Junsong Yuan, Jun Lee, Liuhao Ge, and Daniel Thalmann, "Spatially-Optimized Hough Forest for Robust Palm Pose Tracking with Arbitrary Hand Postures," in *IEEE Trans. on Cybernetics* (T-CYB), 49(2): 527-541, 2019

60. Zhigang Tu, Hongyan Li, Dejun Zhang, Justin Dauwels, Baoxin Li, Junsong Yuan, "Action-Stage Emphasized Spatiotemporal VLAD for Video Action Recognition," in *IEEE Trans. Image Processing* (T-IP), 28(6): 2799-2812, 2019

61. Zhi Gao, Yuwei Wu, Xingyuan Bu, and Yunde Jia, Tan Yu, Junsong Yuan, "Learning a Robust Representation via a Deep Network on Symmetric Positive Definite Manifolds,", in *Pattern Recognition* (PR), 92: 1-12, 2019

62. Chunluan Zhou and Junsong Yuan, "Multi-label Learning of Part Detectors for Occluded Pedestrian Detection," in *Pattern Recognition* (PR), 86: 99-111, 2019

63. Yuwei Wu, Feng Gao, Yicheng Huang, Jie Lin, Vijay Chandrasekhar, Junsong Yuan, Ling-Yu Duan, "Codebook-Free Compact Descriptor for Scalable Visual Search," in *IEEE Trans. Multimedia* (T-MM) 21(2), 388-401, 2019

64. Jiaqi Zhang, Zhenzhen Wang, Jingjing Meng, Yap-Peng Tan, and Junsong Yuan, "Boosting Positive and Unlabeled Learning for Anomaly Detection with Multi-features," in *IEEE Trans. on Multimedia* (T-MM), 21(5): 1332-1344, 2019

65. Bin Jiang, Xin Huang, Chao Yang, and Junsong Yuan, "SLTFNet: A spatial and language-temporal tensor fusion network for video moment retrieval," in *Information Processing and Management*, 56(6), 2019

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Membership	**Member**, IEEE Conf. on Multimedia (ICME) Steering Committee, 2018-2019
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	Member, IEEE Multimedia System and Applications Technical Committee (MSA-TC), 2014 - 2022
	Member, IEEE Visual Signal Processing and Communications Technical Committee (VSPC-TC), 2014 - 2020

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	Senior Editor, Journal of Selected Topics in Signal Processing (J-STSP), 2025 - present
	Associate Editor, Computer Vision and Image Understanding (CVIU), 2025 - present
	Associate Editor, IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI), 2023 - present
	Associate Editor, Machine Vision and Applications (MVA), 2020 - present
	Senior Area Editor, Journal of Visual Communications and Image Representation (JVCI), 2018 - 2024
	Associate Editor, IEEE Transactions on Image Processing (T-IP), 2016 - 2020
	Associate Editor, IEEE Trans. on Circuits and Systems for Video Technology (T-CSVT), 2016 - 2019
	Associate Editor, The Visual Computer Journal (TVC), 2013 - 2025
	Associate Editor, IPSJ Trans. on Computer Vision and Applications (CVA), 2015 - 2017
	Guest Editor[3], Journal of Selected Topics in Signal Processing (J-STSP), 2024-2025
	Guest Editor[4], ACM Transactions on Multimedia Computing, Communications, and Applications (ToMM), 2020-2021
	Guest Editor[5], International Journal of Computer Vision (IJCV), 2014-2015

Service for Refereed Conferences	**General Co-Chair**
	IEEE Conference on Multimedia Expo (ICME'24)
	Technical Program Co-Chair
	IEEE Conference on Acoustics, Speech, and Signal Processing (ICASSP'27)
	IEEE Conference on Multimedia Expo (ICME'18)
	IEEE Conference on Visual Communications and Image Processing (VCIP'15)
	Workshop Co-Organizer
	IEEE CVPR 2015 Workshop on Large-scale video search and mining (LSVSM'15)
	SIGGRAPH Asia 2014 Workshop on Autonomous Virtual Humans and Social Robot for Tele-presence
	IEEE ICCV 2013 Workshop on Large-scale video search and mining (LSVSM'13)
	IEEE CVPR 2013 Workshop on Human action understanding from 3D data (HAU3D'13)
	IEEE CVPR 2012 Workshop on Human action understanding from 3D data (HAU3D'12)
	IEEE CVPR 2012 Workshop on Large-scale video search and mining (LSVSM'12)
	Organizing Co-Chair
	Asian Conf. on Computer Vision (ACCV'14)
	Area Chair
	International Conference on Machine Learning (ICML'26)
	AAAI Conference on Artificial Intelligence (AAAI'26)
	Conference on Neural Information Processing Systems (NeurIPS'24)

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[3]Special Series on AI in Signal & Data Science - Toward Explainable, Reliable, and Sustainable Machine Learning
[4]Special Issue on Explainable AI on Multimedia Computing
[5]Special Issue on Human Activity Understanding from 2D and 3D Data

IEEE Conf. on Computer Vision and Pattern Recognition (CVPR'17'19'20'21'22'24'25'26)
IEEE Conf. on Computer Vision (ICCV'21'23'25)
European Conf. on Computer Vision (ECCV'22'24)
ACM Conf. on Multimedia (ACM MM'18)
IEEE Conf. on Image Processing (ICIP'17'18)
International Conf. on Pattern Recognition (ICPR'16'18)
Asian Conference on Computer Vision (ACCV'14'18'24)
IEEE Winter Conference on Applications and Computer Vision (WACV'14'19)
IEEE Conference on Multimedia Expo (ICME'14'15)

Senior Area Chair
ACM Conf. on Multimedia (ACM MM'24'25)

Demo Co-Chair
IEEE International Joint Conference on Biometrics (IJCB'24)

Tutorial Chair
ACM Conference on Multimedia Retrieval (ICMR'15)

Workshop Co-Chair
Asian Conf. on Pattern Recognition (ACPR'19)

Panel Co-Chair
IEEE Conf. on Face and Gesture (FG'22)

Publication Co-Chair
IEEE Conf. on Multimedia Expo (ICME'16)

Publicity Co-Chair
ACM Conf. on Multimedia (ACM MM'24)

Web Chair
IEEE Conf. on Computer Vision and Pattern Recognition (CVPR'17)

Brave New Ideas Co-Chair
ACM Conf. on Multimedia (ACM MM'20)

Doctoral Symposium Co-Chair
ACM Conf. on Multimedia (ACM MM'18)

Senior Program Committee Member
AAAI Conference on Artificial Intelligence (AAAI'22'20)
International Joint Conference on Artificial Intelligence (IJCAI'18)

International Advisory Committee Member
International Conference on Image Processing and Machine Vision (IPMV'25)
IAPR International Conference on Computer Vision and Image Processing (CVIP'22'21)

CURRENT AND PREVIOUS GRADUATE STUDENTS

Zixin Zhu (Ph.D. student of UB)

Xuelu Feng (Ph.D. student of UB; co-supervise with Chunming Qiao)

Kairui Shi (Ph.D. student of UB)

Rishikesh Bhyri (M.S. student of UB)

Akhil Venkata Shiva Sai Gorugantu (M.S. student of UB)

Kamakoti Jagannath Chivukula (M.S. student of UB)

Tianyu Luan (Ph.D. of UB, 2025)
now: Scientist at Accenture, San Jose, USA

Nan Xi (Ph.D. of UB, 2025)
now: Researcher at Amazon, Seattle, USA

Sudhir Kumar (Ph.D. of UB, 2025)
now: Research Scientist at Adobe, Bangalore, India

Yuanhao Zhai (Ph.D. of UB, 2025; co-supervise with Dave Doermann)
now: Scientist at Meta, San Jose, USA

Liangchen Song (Ph.D. of UB, 2023)
now: Machine Learning Researcher at Apple, San Jose, USA

Lin Huang (Ph.D. of UB, 2023)
now: Research Engineer at NetEase, Seattle, USA

Jialian Wu (Ph.D. of UB, 2023)
now: Machine Learning Researcher at AMD, Seattle, USA

Sheng Liu (Ph.D. of UB, 2022)
now: Applied Scientist at Amazon, Seattle, USA

Suchen Wang (Ph.D. of NTU, 2022; co-supervise with Yap-Peng Tan and Kim-Hui Yap)
now: Applied Scientist at Amazon, Seattle, USA

Yujun Cai (Ph.D. of NTU, 2021; co-supervise with Jianfei Cai and Tat-Jen Cham)
Interdisciplinary Graduate School (IGS) Premium Scholarship
now: Assistant Professor at Queensland University, Australia

Zhenzhen Wang (Ph.D. of NTU, 2020; co-supervise with Yap-Peng Tan)
now: Scientist at Amazon, Seattle, USA

Junwu Weng (Ph.D. of NTU, 2019)
now: Scientist at Bytedance, Shenzhen, China

Tan Yu (Ph.D. of NTU, 2019)
Interdisciplinary Graduate School (IGS) Premium Scholarship
now: Scientist at NVidia, San Jose, USA

Chunluan Zhou (Ph.D. of NTU, 2018)
now: Scientist at Ant Group, Bei Jing, China

Kang Dang (Ph.D. of NTU, 2018)
now: Associate Professor at Xi'An Jiaotong Liverpool University, Suzhou, China

Liuhao Ge (Ph.D. of NTU, 2018)

Interdisciplinary Graduate School (IGS) Premium Scholarship
now: Scientist at Meta, San Jose, USA

Jiong Yang (Ph.D. of NTU, 2018)
Interdisciplinary Graduate School (IGS) Premium Scholarship
now: Researcher at Nutonomy Inc., Singapore

Jing Tang (Ph.D. of NTU, 2017; co-supervise with Xueyan Tang)
Interdisciplinary Graduate School (IGS) Premium Scholarship;
now: Assistant Professor at Hong Kong University of Science and Technology (HKUST), Guangzhou, China

Koteswar Rao Jerripothula (Ph.D. of NTU, 2017; co-supervise with Jianfei Cai)
Interdisciplinary Graduate School (IGS) Premium Scholarship;
now: Assistant Professor at Indian Institute of Technology (IIT) Kanpur, India

Chaoqun Weng (Ph.D. of NTU, 2017)
now: Researcher at Bytedance, Beijing, China

Hui Liang (Ph.D. of NTU, 2015)
now: Senior Applied Scientist at Amazon, Seattle, USA

Hongxing Wang (Ph.D. of NTU, 2015)
now: Professor at Chongqing University, Chongqing, China

Ye Luo (Ph.D. of NTU, 2014)
now: Associate Professor at Tongji University, Shanghai, China

Gang Yu (Ph.D. of NTU, 2014)
now: Principal Research Scientist at StepFun, Shanghai, China
Microsoft Research Asia Fellowship 2011

Jiaqi Zhang (M.Eng. of NTU, 2018)
now: Researcher at Tiktok, Singapore

Mengjia Yan (M.Eng. of NTU, 2018)
now: Engineer at Changan Automobile, Chongqing, China

Bo Hu (M.Eng. of NTU, 2017)
now: Data Science Manager at American Express, Singapore

Zhou Ren (M.Eng. of NTU, 2012)
now: Applied Science Manager, Amazon, Seattle, USA

CURRENT AND
PREVIOUS
RESEARCH STAFF

Dr. Zhiwen Fang (Post-Doc research fellow, Sept. 2017 - March 2018)
now: Associate Professor, Southern Medical University, Guangzhou, China

Dr. Mengyuan Liu (Post-Doc research fellow, Aug. 2017 - March 2018)
now: Assistant Professor at Peking University, Shenzhen, China

Dr. Zhigang Tu (Post-Doc research fellow, Dec. 2016 - March 2018)
now: Professor at Wuhan University, Wuhan, China

Weixiang Hong (Research Assistant, Nov. 2015 - Dec. 2017)

now: Engineer at Meta, San Jose, USA

Dr. Shizheng Wang (Post-Doc research fellow, April 2014 - Aug. 2017)
now: Associate Professor at Chinese Academy of Science, Beijing, China
Chinese Academy of Science Hundred Talents Program (category C)

Dr. Anirban Chakraborty (Post-Doc research fellow, Nov. 2015 - Dec. 2016)
now: Associate Professor at Indian Institute of Science (IISc), Bangalore, India

Dr. Das Bhattacharjee Sreyasee (Post-Doc research fellow, Aug. 2014 - Nov. 2016)
now: Assistant Professor of Teaching at University at Buffalo, Buffalo, USA

Dr. Yuwei Wu (Post-Doc research fellow, Aug. 2014 - Aug. 2016)
now: Associate Professor at Beijing Institute of Technology, Beijing, China

Dr. Jianfeng Ren (Research Associate, Aug. 2010 - July 2015)
now: Associate Professor at University of Nottingham Ningbo, Ningbo, China

Dr. Jianyu Yang (Post-Doc research fellow, Jan. 2015 - July 2015)
now: Associate Professor at Soochow University, Suzhou, China

Dr. Gangqiang Zhao (Post-Doc research fellow, March 2010 - Sept. 2014)
now: Senior Research Scientist at Morpx Inc., Hangzhou, China

Dr. Yang Xiao (Post-Doc research fellow, Feb. 2013 - June 2014)
now: Professor at Huazhong University of Science and Technology (HUST), Wuhan, China

Yuning Jiang (Research Assistant, Aug. 2010 - May 2013)
now: Applied Science Manager at Alibaba, Beijing, China

Dr. Du Tran (Research Associate, April 2010 - July 2012)
now: Research Scientist at Google, San Jose, USA

Dr. Yang Cong (Post-Doc research fellow, May 2010 - April 2011)
now: Dean and Professor at South China University of Technology (SCUT), Guangzhou, China

Dr. Zhenzhong Chen (senior research scientist, Sept. 2011 - March 2012)
now: Professor at Wuhan University, Wuhan, China

KEYNOTES AND TUTORIALS

Keynote: Intelligent Hand Sensing and Augmented Interaction
International Conference on Image Processing and Machine Vision (IPMV 2025), Hong Kong, Dec. 2024

Distinguished Lecture: An Introspective on Statistical Pattern Recognition in the Age of Generative AI
McMaster University, ECE Department, Sept. 2024

Keynote: Intelligent Hand Sensing and Applications in Metaverse
Asian conference on Artificial Intelligence (ACAIT), Changzhou, China, Oct. 2022

Keynote: Hand Sensing for Interactive Augmentation
Computer Graphics International (CGI), Calgary, Canada, June 2019

Keynote: Towards More Intelligent Machines: Understanding Human Behaviors with 2D and 3D Sensors
Intl. Conf. on Internet Multimedia Computing and Services (ICIMCS), Nanjing, China, Aug. 2018

Tutorial: Towards Comprehensive Reasoning in Vision-Language Models
Invited Talk: Chain-of-Look Video Reasoning
Int. Conf. on Computer Vision (ICCV'25), Hawaii, USA, Oct. 2025

Tutorial: AcTion Localization And Segmentation in Untrimmed Videos (with Dr. Angela Yao, Dr. Fadime Sener, and Dr. Guodong Ding)
Eureopean Conf. on Computer Vision (ECCV'22), 2022

Tutorial: Human Pose Estimation and Action Recognition (with Dr. Gang Yu and Dr. Zicheng Liu)
IEEE Conf. on Image Processing (ICIP'19), Taipei, Taiwan, Sept. 2019

Tutorial: Mining Image and Video Data (with Dr. Ying Wu)
Asian Conf. on Computer Vision (ACCV'14), Singapore, Nov. 2014

Tutorial: Mining Image and Video Data
IEEE Conf. on Image Processing (ICIP'13), Melbourne, Australia, Sept. 2013

Tutorial: Understanding human actions with 2D and 3D sensors (with Dr. Zicheng Liu)
IEEE Conf. on Automatic Face and Gesture Recognition (FG'13), Shanghai, China, April 2013

Tutorial: Social Robots and Virtual Humans in 3D TelePresence (with Prof. Nadia Thalmann and Prof. Daniel Thalmann)
SIGGRAPH Intl. Conf. on Virtual-Reality Continuum and its Applications in Industry (VRCAI'12), Singapore, Dec. 2012

Tutorial: Human action analysis with 2D and 3D sensors (with Dr. Zicheng Liu)
IEEE Conf. on Multimedia Expo (ICME'12), Melbourne, Australia, July 2012

SERVICES AT UB   Director of Graduate Admission, CSE, University at Buffalo, 2022-2025
Member, Executive Committee, CSE, University at Buffalo, 2022-2025
Chair/Co-Chair, Tenure Track Hire Search Committee, CSE, University at Buffalo, 2021-2023
Chair, Learning Science Clustering Hire Search Committee, SEAS, University at Buffalo, 2021-2022
Senate of the University (50 elected members in total), Sept. 2021 - Aug. 2023
Member, SUNY Empire Innovation Program (EIP) faculty search committee, University at Buffalo (UB), 2019-2020 and 2020-2021
Member, CSE Distinguished Speaker committee, CSE, University at Buffalo, 2019-2021

SERVICES AT NTU   Senate of the University (50 elected members in total), July 2016 - March 2018
NTU Research Council member for Informatics and Mathematics, Dec. 2015 - March 2018
Program director of video analytics, School of EEE, Oct. 2011 - Sept. 2016