

Dr. Yuzhu Ji

Senior Member, IEEE

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Research Interests

My research interests primarily focus on computer vision and machine learning, particularly in the area of visual intelligence that perceives, represents, reasons, and interacts with the physical world. Our main goal is to transform pixels/voxels into actionable physical and spatial intelligence. In particular, on topics: **Human-centric multi-modal video analysis and synthesis, 6D Object Pose Estimation, Visual Saliency Reasoning and Grounding, Medical Image Segmentation, and Embodied AI.**

Professional Experience

- 2023–present **Associate Professor, School of Computer Science & Technology, Guangdong University of Technology (GDUT), China.**
- ◇ Teaching Computer Vision, Machine Learning, and Artificial Intelligence.
 - ◇ Supervising master's and undergraduate students on research topics related to vision and learning.
 - ◇ **Research area:** Video analysis and synthesis, 6D Pose estimation, Image segmentation, Human motion transfer, Deep clustering, Medical image analysis, Computer vision, Embodied AI.
- 2022–2023 **Lecturer, School of Computer Science & Technology, Guangdong University of Technology (GDUT), China.**
- ◇ Responsible for teaching and conducting research in computer vision and AI.
 - ◇ Participated in discipline development and student mentorship.
 - ◇ **Research area:** Video Analysis and synthesis, Image segmentation, Human motion transfer, Deep clustering, Medical image analysis, Computer vision
- 2020–2022 **PostDoc Research Fellow, School of Computer Science & Engineering (SCSE), Nanyang Technological University (NTU), Singapore.**
- ◇ Research on human motion transfer, human geometry and appearance modeling, and video synthesis for AR/VR applications.
 - ◇ Contributed to projects on photo-realistic avatar animation and motion-driven video generation.
 - ◇ **Research area:** Video analysis and synthesis for augmented & virtual reality, human motion transfer, Image animation, Computer vision

Education

- 2015–2019 : **Doctor of Philosophy (PhD), Department of Computer Science and Technology, Harbin Institute of Technology (Shenzhen), China.**
- 2012–2014 : **Master of Engineering in Computer Science, Department of Computer Science and Technology, Harbin Institute of Technology (Shenzhen), China.**
- 2007–2011 : **Bachelor of Science in Computer Science, Department of Computer Science and Technology, PLA Information Engineering University (Zhengzhou), China.**

Research Experience

Nanyang Technological University, NTU

- Dec. 2020 **Human motion transfer, Video analysis and synthesis for augmented and virtual reality**,
–Mar. 2022 **Postdoctoral Research Fellow**, SCALE Lab.

Developed a human motion transfer framework with occlusion-robust flow prediction and neural texturing for accurate appearance preservation and motion transfer.

Advisor : **Prof. Cham Tat-Jen**, *College of Computing and Data Science*, NTU ([Personal Web-page](#))

Harbin Institute of Technology (Shenzhen), HIT

- Nov. 2019 **Video Salient Object Detection, Small objects detections in UAV and power grid surveil-**
–Dec. 2020 **lance scenarios**, **Research Assistant**, ICES Lab.

Analyzed different local-to-global context-aware feature augmentation strategies for salient object detection. Improved the Mask R-CNN model for intrusive object detection and small object detection for UAV images.

Advisor : **Prof. Haijun Zhang**, *Department of Computer Science & Technology*, HIT ([Personal Web-page](#))

Harbin Institute of Technology (Shenzhen), HIT

- Mar. 2015 **Image and Video Salient Object Detection**, PhD Student.
–Oct. 2019
 - ◇ Analyzed top-down and bottom-up architectures for salient object detection, including a multi-scale attention CNN, an improved conditional adversarial image-to-image network, a graph-based method propagating multiple features under a manifold ranking framework.
 - ◇ Designed a deep CNN-based video advertising system for similar item recommendation by integrating multiple computer vision technologies, including object detection, face detection, face verification, and image retrieval.
 - ◇ Worked on a fashion-oriented cross-domain clothing matching by integrating conditional adversarial network under an image-to-image translation framework.

Advisor : **Prof. Haijun Zhang**, *Department of Computer Science & Technology*, HIT ([Personal Web-page](#))

Tencent AI Lab (Shenzhen), Tencent

- Mar. 2018 **Weakly supervised semantic segmentation**, Research Intern.
–Oct. 2018 Explored weakly supervised semantic segmentation methods by using saliency. Achieved Top 6% performance in **iMaterialist (Furniture) Challenge** at the Fifth Workshop on **Fine-Grained Visual Categorization (FGVC5) 2018** (Rank: 26/436)

Advisor : **Dr. Zequn Jie**, *Expert Researcher*, *Computer Vision Center*, Tencent AI Lab ([Personal Web-page](#))

Publications

Journal Articles

- 2025 Yiqun Zhang, Zhanpei Huang, Mingjie Zhao, Chuyao Zhang, Yang Lu, **Yuzhu Ji**, Fangqing Gu, and An Zeng. Learning unbiased cluster descriptors for interpretable imbalanced concept drift detection. *IEEE Transactions on Emerging Topics in Computational Intelligence*, page Early Access, 2025.
- 2025 Yiqun Zhang, Sen Feng, Pengkai Wang, Zexi Tan, Xiaopeng Luo, **Yuzhu Ji**, Rong Zou, and Yiu-Ming Cheung. Learning self-growth maps for fast and accurate imbalanced streaming data clustering. *IEEE Trans. Neural Networks Learn. Syst.*, volume 36, pages 16049–16061, 2025.
- 2025 Chuyao Zhang, Xinxin Chen, Zexi Tan, Fangqing Gu, **Yuzhu Ji**, and Yiqun Zhang. Towards clustering of incomplete mixed-attribute data. *Expert Syst.*, volume 42, 2025.
- 2025 **Yuzhu Ji**, Chuanxia Zheng, and Tat-Jen Cham. One-shot human motion transfer via occlusion-robust flow prediction and neural texturing. *IEEE Trans. Multim.*, volume 27, pages 3939–3952, 2025.
- 2025 **Yuzhu Ji**, Wei Hu, Guoji Gan, Zhiqian Long, Yiqun Zhang, An Zeng, and Haijun Zhang. Smacnet: A unified framework for one-shot talking head synthesis via subtle motion and appearance compensation. *IEEE Trans. Consum. Electron.*, pages 1–13, Early Access, 2025.

- 2022 **Yuzhu Ji**, Haijun Zhang, Feng Gao, Haofei Sun, Haokun Wei, Nan Wang, and Biao Yang. Lgcnet: A local-to-global context-aware feature augmentation network for salient object detection. *Inf. Sci.*, volume 584, pages 399–416, 2022.
 - 2021 Haijun Zhang, Mingshan Sun, Qun Li, Linlin Liu, Ming Liu, and **Yuzhu Ji**. An empirical study of multi-scale object detection in high resolution UAV images. *Neurocomputing*, volume 421, pages 173–182, 2021.
 - 2021 **Yuzhu Ji**, Haijun Zhang, Zhao Zhang, and Ming Liu. Cnn-based encoder-decoder networks for salient object detection: A comprehensive review and recent advances. *Inf. Sci.*, volume 546, pages 835–857, 2021.
 - 2021 **Yuzhu Ji**, Haijun Zhang, Zequn Jie, Lin Ma, and Q. M. Jonathan Wu. Casnet: A cross-attention siamese network for video salient object detection. *IEEE Trans. Neural Networks Learn. Syst.*, volume 32, pages 2676–2690, 2021.
 - 2021 Feng Gao, Qun Li, **Yuzhu Ji**, Shengchang Ji, Jie Guo, Haofei Sun, Yang Liu, Simeng Feng, Haokun Wei, Nan Wang, Biao Yang, and Haijun Zhang. Ewnet: An early warning classification framework for smart grid based on local-to-global perception. *Neurocomputing*, volume 443, pages 199–212, 2021.
 - 2021 Feng Gao, Shengchang Ji, Jie Guo, Qun Li, **Yuzhu Ji**, Yang Liu, Simeng Feng, Haokun Wei, Nan Wang, and Biao Yang. Id-net: an improved mask R-CNN model for intrusion detection under power grid surveillance. *Neural Comput. Appl.*, volume 33, pages 9241–9257, 2021.
 - 2020 Haijun Zhang, Donghai Li, **Yuzhu Ji**, Haibin Zhou, Weiwei Wu, and Kai Liu. Toward new retail: A benchmark dataset for smart unmanned vending machines. *IEEE Trans. Ind. Informatics*, volume 16, pages 7722–7731, 2020.
 - 2020 Haijun Zhang, Han Guo, Xinghao Wang, **Yuzhu Ji**, and Q. M. Jonathan Wu. Clothescounter: A framework for star-oriented clothes mining from videos. *Neurocomputing*, volume 377, pages 38–48, 2020.
 - 2019 **Yuzhu Ji**, Haijun Zhang, Kuo-Kun Tseng, Tommy W. S. Chow, and Q. M. Jonathan Wu. Graph model-based salient object detection using objectness and multiple saliency cues. *Neurocomputing*, volume 323, pages 188–202, 2019.
 - 2019 Linlin Liu, Haijun Zhang, **Yuzhu Ji**, and Q. M. Jonathan Wu. Toward AI fashion design: An attribute-gan model for clothing match. *Neurocomputing*, volume 341, pages 156–167, 2019.
 - 2018 **Yuzhu Ji**, Haijun Zhang, and Q. M. Jonathan Wu. Salient object detection via multi-scale attention CNN. *Neurocomputing*, volume 322, pages 130–140, 2018.
 - 2018 **Yuzhu Ji**, Haijun Zhang, and Q. M. Jonathan Wu. Saliency detection via conditional adversarial image-to-image network. *Neurocomputing*, volume 316, pages 357–368, 2018.
 - 2017 Haijun Zhang, Jingxuan Li, **Yuzhu Ji**, and Heng Yue. Understanding subtitles by character-level sequence-to-sequence learning. *IEEE Trans. Ind. Informatics*, volume 13, pages 616–624, 2017.
 - 2016 Haijun Zhang, **Yuzhu Ji**, Jingxuan Li, and Yunming Ye. A triple wing harmonium model for movie recommendation. *IEEE Trans. Ind. Informatics*, volume 12, pages 231–239, 2016.
- [In Conference Proceedings](#)
- 2025 **Yuzhu Ji**, Mingshan Sun, Jianyang Shi, Xiaoke Jiang, Yiqun Zhang, and Haijun Zhang. Seqpose: An end-to-end framework to unify single-frame and video-based RGB category-level pose estimation. In *Proceedings of the Thirty-Fourth International Joint Conference on Artificial Intelligence, IJCAI 2025, Montreal, Canada, August 16-22, 2025*, pages 1224–1232. ijcai.org, 2025.
 - 2025 Wei Hu, **Yuzhu Ji**, An Zeng, Dan Pan, Yiqun Zhang, and Haijun Zhang. Smartnet: One-shot talking head synthesis via subtle motion and appearance compensation. In *2025 IEEE International Conference on Acoustics, Speech and Signal Processing, ICASSP 2025, Hyderabad, India, April 6-11, 2025*, pages 1–5. IEEE, 2025.

- 2025 Dan Fu, Wai Keung Wong, Lunke Fei, Tingting Chai, **Yuzhu Ji**, and Qinghua Zhu. Coarse-to-fine graph reasoning for 3d hand mesh reconstruction. In *IEEE International Conference on Multimedia and Expo, ICME 2025, Nantes, France, June 30 - July 4, 2025*, pages 1–6. IEEE, 2025.
- 2025 Sen Feng, Mingjie Zhao, Zhanpei Huang, **Yuzhu Ji**, Yiqun Zhang, and Yiu-Ming Cheung. Robust qualitative data clustering via learnable multi-metric space fusion. In *2025 IEEE International Conference on Acoustics, Speech and Signal Processing, ICASSP 2025, Hyderabad, India, April 6-11, 2025*, pages 1–5. IEEE, 2025.
- 2024 **Yuzhu Ji**, Mingshan Sun, Yiqun Zhang, and Haijun Zhang. Cpnet: 3d semantic relation and geometry context prior network for multi-organ segmentation. In *ECAI 2024 - 27th European Conference on Artificial Intelligence, 19-24 October 2024, Santiago de Compostela, Spain - Including 13th Conference on Prestigious Applications of Intelligent Systems (PAIS 2024)*, volume 392 of *Frontiers in Artificial Intelligence and Applications*, pages 153–160. IOS Press, 2024.
- 2024 Xiaopeng Luo, Yiqun Zhang, **Yuzhu Ji**, Peng Liu, and Taoting Xiao. Efficient topology-driven clustering for imbalanced streaming biomedical data analysis. In *IEEE International Conference on Bioinformatics and Biomedicine, BIBM 2024, Lisbon, Portugal, December 3-6, 2024*, pages 2262–2267. IEEE, 2024.
- 2024 Qingsheng Chen, Mingjie Zhao, **Yuzhu Ji**, Xiaopeng Luo, Yiqun Zhang, and Yue Zhang. MGOD: multi-granular outlier detection with clustlier analysis. In *IEEE International Conference on Bioinformatics and Biomedicine, BIBM 2024, Lisbon, Portugal, December 3-6, 2024*, pages 3105–3110. IEEE, 2024.
- 2024 Junyang Chen, **Yuzhu Ji**, Rong Zou, Yiqun Zhang, and Yiu-ming Cheung. QGRL: quaternion graph representation learning for heterogeneous feature data clustering. In *Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining, KDD 2024, Barcelona, Spain, August 25-29, 2024*, pages 297–306. ACM, 2024.
- 2023 Mingjie Zhao, Yiqun Zhang, **Yuzhu Ji**, and Yang Lu. Unsupervised concept drift detection via imbalanced cluster discriminator learning. In *Pattern Recognition and Computer Vision - 6th Chinese Conference, PRCV 2023, Xiamen, China, October 13-15, 2023, Proceedings, Part III*, volume 14427 of *Lecture Notes in Computer Science*, pages 31–43. Springer, 2023.
- 2023 Zhipeng Zhang, Yiqun Zhang, An Zeng, Dan Pan, **Yuzhu Ji**, Zhipeng Zhang, and Jing Lin. Time-series data imputation via realistic masking-guided tri-attention bi-gru. In *ECAI 2023 - 26th European Conference on Artificial Intelligence*, volume 372 of *Frontiers in Artificial Intelligence and Applications*, pages 3074–3082. IOS Press, 2023.
- 2023 Shiting He, **Yuzhu Ji**, Yiqun Zhang, An Zeng, Dan Pan, Jing Lin, and Xiaobo Zhang. Cfnet: A coarse-to-fine framework for coronary artery segmentation. In *Pattern Recognition and Computer Vision - 6th Chinese Conference, PRCV 2023, Xiamen, China, October 13-15, 2023, Proceedings, Part V*, volume 14429 of *Lecture Notes in Computer Science*, pages 431–442. Springer, 2023.
- 2022 Lang Zhao, Yiqun Zhang, **Yuzhu Ji**, An Zeng, Fangqing Gu, and Xiaopeng Luo. Heterogeneous drift learning: Classification of mix-attribute data with concept drifts. In *9th IEEE International Conference on Data Science and Advanced Analytics, DSAA 2022, Shenzhen, China, October 13-16, 2022*, pages 1–10. IEEE, 2022.
- 2018 Haijun Zhang, **Yuzhu Ji**, Wang Huang, and Linlin Liu. Sitcom-stars oriented video advertising via clothing retrieval. In *Database Systems for Advanced Applications - 23rd International Conference, DASFAA*, volume 10828 of *Lecture Notes in Computer Science*, pages 638–646. Springer, 2018.

Grants

- 2024–present **National Natural Science Foundation of China (NSFC)**. “Salient Object Detection for High Dynamic and Uncertain Video”, PI.

- 2023–present : **Natural Science Foundation of Guangdong Province.** “Key Technologies for Organ Segmentation and Lesion Detection via Multimodal Medical Image Enhancement”, PI.
- 2024–present : **Guangzhou Basic and Applied Basic Research Foundation.** “Dynamic Spatial-Temporal Scene Graph for Video Saliency Object Detection”, PI.

Teaching Experience

- Fall, 2025 : **Artificial Intelligence**, GDUT, School of Computer Sciences and Technology.
- Spring, 2025 : **Computer Vision**, GDUT, School of Computer Sciences and Technology.
- Spring, 2025 : **Principles and Application of AI Chip**, GDUT, School of Computer Sciences and Technology.
- Spring, 2025 : **Artificial Intelligence**, GDUT, School of Computer Sciences and Technology.
- Fall, 2024 : **Machine Learning and Data Mining**, GDUT, School of Computer Sciences and Technology.
- Spring, 2024 : **Computer Vision**, GDUT, School of Computer Sciences and Technology.
- Spring, 2024 : **Principles and Application of AI Chip**, GDUT, School of Computer Sciences and Technology.
- Instructor for undergraduate and master’s students majoring in computer science, software engineering, artificial intelligence, and related disciplines., GDUT.**

Service to the Academic Community

- **Reviewer for international journals.** IEEE Transactions on Neural Networks and Learning Systems (TNNLS), IEEE Transactions on Multimedia (TMM), IEEE Transactions on Consumer Electronics (TCE), IEEE Transactions on Emerging Topics in Computational Intelligence (TETCI), Information Sciences, Pattern Recognition, Neural Networks, Journal of Industrial Information Integration, Neurocomputing.
- **Reviewer for international conferences.** IEEE Conference on Computer Vision and Pattern Recognition (CVPR), European Conference on Computer Vision (ECCV), International Conference on Computer Vision (ICCV), AAAI Conference on Artificial Intelligence (AAAI), ACM International Conference on Multimedia (ACM MM), European Conference on Artificial Intelligence (ECAI)