Dr Bruce X.B. Yu

CONTACT INFORMATION

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AREAS OF RESEARCH EXPERTISE

Artificial intelligence, computer vision, transfer learning, etc.

PERSONAL INTRODUCTION

Dr. Bruce X.B. Yu joined ZJU-UIUC Institute as an Assistant Professor in January 2024. Before joining the institute, he served as a Post-doc Fellow with the Department of Computing at the Hong Kong Polytechnic University where he earned his Ph.D. in September 2020. His research expertise spans across big data analytics, artificial intelligence, and image/video processing. His primary research topic is vision-based human behavior understanding, leading to publications on top venues such as TPAMI, Pattern Recognition, ICCV, AAAI, and IJCAI. His research outcomes also get international recognition such as best paper and best presentation awards. He has been actively conducting interdisciplinary research through various application-oriented projects, leading to publications on top venues such as IEEE Transactions on Automation Science and Engineering, and Tourism Management. Besides application-driven research, he also works on fundamental research problems such as 3D human pose reconstruction, multimodal data/sensor fusion, and efficient transfer learning.

EDUCATION AND QUALIFICATIONS

- Ph.D. in Computer Science   2016/9 - 2020/9
  Advisor: Dr. Yan Liu and Prof. Keith C.C. Chan
  Department of Computing, The Hong Kong Polytechnic University (PolyU), Hong Kong SAR.

- M.Sc. in Information Technology   2013/9 - 2015/1
  Advisor: Prof. Keith C.C. Chan
  Department of Computing, PolyU, Hong Kong SAR.

- B.Eng. in Computer Science   2008/9 - 2012/6
  Zhejiang Chinese Medical University, Hangzhou, Zhejiang, China

AWARDS AND HONORS

- Best Paper Award, IEEE International Conference on Teaching, Assessment, and Learning for Engineering, 2022
  Work: Conversational System for Clinical Communication Training Supporting User-defined Tasks

- Outstanding Award, PolyU Student Entrepreneurial POC Funding Scheme, 2022
  Project title: Cloud-based GIS-enabled Smart Crane Layout Solution for MiC (Team Member)

- Best Presentation Award, International Conference on Digital Health and Care, 2020
  Work: Vision Based Daily Routine Recognition for Healthcare with Transfer Learning

- First Runner Up, COMP Annual Research Day COMP, Venture Competition, 2019
  Project title: Mental Health Management Platform (Team Coordinator)

- Champion, COMP Annual Research Day, Smart Robotics in Fintech, 2018
  Project title: Fin-eco: A Reliable, Efficient and Intelligent Finance Eco-system (Team Member)

- Advanced individual in social practice, Chinese Medical Zhejiang University, 2010

- Sports Scholarship, Chinese Medical Zhejiang University, 2009 and 2010

WORKING EXPERIENCES

- Assistant Professor   2024/1 - Present
  ZJU-UIUC Institute, Zhejiang University, China

- Visiting Scholar   2024/8 - 2024/12
  Department of Electrical and Computer Engineering, UIUC, USA

- Research Associate   2021/3 - 2023/12
  Department of Computing, PolyU, Hong Kong SAR.

- Research Assistant   2020/9 - 2021/3
  Department of Computing, PolyU, Hong Kong SAR.

- Assistant IT Officer   2015/3 - 2016/9
  PolyU, Hong Kong SAR.

TEACHING EXPERIENCES

- ECE 3070 Medical Image Processing   24SP and 25SP
- ECE 220 Computer Systems & Programming   24SP and 25SP
- Big Data Analytics, Teaching Assistant (TA)   2018/9 - 2018/12
- Web Application and Management, TA   2018/3 - 2018/6
- Programming Language, TA   2017/9 - 2017/12

PUBLICATIONS AND MANUSCRIPTS (* indicates first co-author)

[Journal publications]

- Hengyun Li, Jingbo Xi, Cathy HC Hsu, **Bruce X.B. Yu**, Xiang Kevin Zheng, Generative artificial intelligence in tourism management: An integrative review and roadmap for future research, *Tourism Management, p. 105179, October 2025*

- **Bruce X.B. Yu***, Jianlong Chang*, Haixin Wang, Lingbo Liu, Shijie Wang, Zhiyu Wang, Junfan Lin, Lingxi Xie, Haojie Li, Zhouchen Lin, Qi Tian, Chang Wen Chen, Visual Tuning, *ACM Computing Surveys, April 2024*

- **Bruce X.B. Yu**, Yan Liu, Keith C.C. Chan, Chang Wen Chen, EGCN++: A New Fusion Strategy for Ensemble Learning in Skeleton-based Rehabilitation Exercise Assessment, *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), vol: 46, no: 9, 2024*

- **Bruce X.B. Yu**, Yan Liu, Xiang Zhang, Keith C.C. Chan, MMNet: A Model-based Multimodal Network for Human Action Recognition in RGB-D Videos, *TPAMI, vol 45, no. 3, 2023*

- Hengyun Li, **Bruce X.B. Yu**, Gang Li, Huicai Gao, Restaurant survival prediction using customer-generated content: An aspect-based sentiment analysis of online reviews, *Tourism*

Management, vol. 96, p. 104707, 2023

- Yongxu Liu, Yan Liu, **Bruce X.B. Yu**, Shenghua Zhong, Zhejing Hu, Noise-robust Oversampling for Mixed-type and Multi-class Imbalanced Data Classification, *Pattern Recognition, vol. 133, p. 109008, 2023*

- Hengyun Li, Lingyan Zhang, Rui Gao, **Bruce X.B. Yu**, Information enhancement or hindrance? Unveiling the impacts of user-generated photos in online reviews, *International Journal of Contemporary Hospitality Management, ISSN: 0959-6119, 2022*

- **Bruce X.B. Yu**, Yan Liu, Keith C. C. Chan, Qintai Yang, Xiaoying Wang, Skeleton-based Human Action Evaluation Using Graph Convolutional Network for Monitoring Alzheimer's Progression, *Pattern Recognition, vol. 119, p. 108095, 2021*

- Bo Lu, **Bruce X.B. Yu**, JW Lai, KC Huang, Keith C.C. Chan, Henry K Chu, A Learning Approach for Suture Thread Detection with Feature Enhancement and Segmentation for 3-D Shape Reconstruction, *IEEE Transactions on Automation Science and Engineering 17 (2), 858-870, 2019*

[Conference publications]

- Zhejing Hu, Yan Liu, Gong Chen, **Bruce X.B. Yu**, Compose with Me: Collaborative Music Inpainter for Symbolic Music Infilling, *AAAI Conference on Artificial Intelligence (AAAI 2025)*, 1327-1335

- **Bruce X.B. Yu**, Zhi Zhang, Yongxu Liu, Sheng-hua Zhong, Yan Liu, Chang Wen Chen, GLA-GCN: Global-local Adaptive Graph Convolutional Network for 3D Human Pose Estimation from Monocular Video, *International Conference on Computer Vision (ICCV 2023), 8818-8829*

- Xiang Zhang, **Bruce X.B. Yu**, Yan Liu, George Wing-Yiu Ng, Nam-Hung Chia, Eric Hang-Kwong So, Sze-Sze So, Victor Kai-Lam Cheung, Conversational System for Clinical Communication Training Supporting User-defined Tasks, *IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE 2022), 396-403*

- **Bruce X.B. Yu**, Yan Liu, Xiang Zhang, Gong Chan, Keith C.C. Chan, EGCN: An Ensemble-based Learning Framework for Exploring Effective Skeleton-based Rehabilitation Exercise Assessment, *The 31st International Joint Conference on Artificial Intelligence (IJCAI 2022), 3681-3687*

- Xiang Zhang*, **Bruce X.B. Yu***, Yan Liu, George Wing-Yiu Ng, Nam-Hung Chia, Eric Hang-Kwong So, Sze-Sze So, Victor Kai-Lam Cheung, Intent-Aware Long Short-Term Memory for Intelligent Training of Clinical Handover, *The 7th International Conference on Computational Intelligence and Applications (ICCIA 2022), 11-16*

- Xiang Zhang, **Bruce X.B. Yu**, Yan Liu, George Wing-Yiu Ng, Nam-Hung Chia, Eric Hang-Kwong So, Sze-Sze So, Victor Kai-Lam Cheung, Heallo: Conversational System for Communication Training in Healthcare Professional Education, *The 10th International Conference on Information and Education Technology (ICIET 2022), 32-36*

- **Bruce X.B. Yu**, Yan Liu, Keith C.C. Chan, Multimodal Fusion via Teacher-Student Network for Indoor Action Recognition, *AAAI Conference on Artificial Intelligence (AAAI 2021)*, 3199-3207

- **Bruce X.B. Yu**, Yan Liu, Keith C.C. Chan, A Survey of Sensor Modalities for Human Activity Recognition, *12th International Conference on Knowledge Discovery and Information Retrieval (KDIR 2020), 282-294*

- **Bruce X.B. Yu**, Yan Liu, Keith C.C. Chan, Skeleton-Based Detection of Abnormalities in Human Actions Using Graph Convolutional Networks, *IEEE TransAI 2020, 131-137*

- **Bruce X.B. Yu**, Yan Liu, Keith C.C. Chan, Vision Based Daily Routine Recognition for Healthcare with Transfer Learning, *International Conference on Digital Health and Care (ICHDC 2020), 178-186*
- **Bruce X.B. Yu**, Keith C.C. Chan, Discovering Knowledge by Behavioral Analytics for Elderly Care, *IEEE International Conference on Big Knowledge (ICBK 2017), 284-289*

[Manuscripts under review]

- **Bruce X.B. Yu**, Yan Liu, Keith C.C. Chan, Sensor-based Human Activity Analysis for the Diagnosis and Therapies of NCDs: A Survey, *Proceedings of the IEEE*
- Lingbo Liu, Jianlong Chang, **Bruce X.B. Yu**, Qi Tian, Chang Wen Chen, Prompt-Matched Semantic Segmentation, *TPAMI (https://arxiv.org/abs/2208.10159)*
- **Bruce X.B. Yu**, Lingbo Liu, Jianlong Chang, Qi Tian, Chang Wen Chen, Towards a Unified View on Visual Parameter-Efficient Transfer Learning, *IJCV (preprint: https://arxiv.org/abs/2210.00788)*
- Jian Xu, **Bruce X.B. Yu***, Yuqing Wu, Hengyun Li, Jing Zhang, A Novel Multimodal Feature Fusion Approach for Hotel Review Helpfulness Prediction, *Tourism Management*

RESEARCH GRANTS AND PROJECT EXPERIENCE

- 浙江省自然科学基金，浙江省自然科学基金/青年基金项目，基于多智能体的驾驶行为分析方法和理论，2025-01 至 今，10 万元，在研，主持
- 浙江大学-香港理工大学联合中心，学科及学生发展支持基金,旅游企业生存分析与预测：基于多模式图神经网络的探索性研究，2024-12 至 今，20 万元，在研，共同主持
- 北交智慧（山东）智能技术有限公司，校企联合项目,基于多视角的交通系统异常人体行为检测研究，2024-06 至 今，500 万元，在研，子课题负责人
- "Investigation of Hierarchical Representation for Multi-Model Fusion", Huawei Technologies Co. Ltd. (Collaborative), 1/2022–8/2023. Role: Member, PI: Prof. Chang Wen Chen.
- "The Impact of Customer Generated Images on Customer Engagement and Product Rating: A Machine Learning and Panel Data Analysis", Hong Kong Research Grant Council (RGC) Direct Allocation Grant, 7/2021–7/2023. Role: Co-I. PI: Dr. Neil Li. Amount awarded: HK$200,000.
- "Posting Online Reviews with Photos: An Investigation of Motivation and Impact in the Restaurant Industry", Departmental General Research Funds of Hong Kong Polytechnic University, 10/2021–9/2023. Role: Co-I. PI: Dr. Neil Li. Amount awarded: HK$99,950.
- "Deliver Effective Training of Clinical Communication – A Multi-turn Customized Conversation System with Medical Knowledge Graph", Hong Kong Polytechnic University, Role: Research associate. PI: Dr. Yan Liu.
- "DaSAIL-Music Generation via Machine Composition", Hong Kong Polytechnic University, Role: Research associate. PI: Dr. Yan Liu.
- "Music Therapy for Dementia Prevention Using Algorithmic Composition", Hong Kong Polytechnic University. Role: Research associate. PI: Dr. Yan Liu.

REVIEWER FOR JOURNALS & CONFERENCES

[Journals]

- IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Multimedia, IEEE Transactions on Image Processing, IEEE Transactions on Neural Networks and Learning Systems

[Conferences]

- ICLR 2023, CVPR 2021, 2022, 2023, 2024; ICCV 2021, 2023; ACM Multimedia 2020, 2021, 2022; AAAI 2019; ICDM 2019, 2020; CIKM 2019

OTHER SERVICES

- Program Committee, AAAI 2026

- Session Chair of Machine Learning for Vision, IJCAI-22

- Tutor in the residential hall, Homantin Halls, PolyU, 2017-2022

- Demo representative in the Department of Computing, PolyU, 2016-2020

- Postgraduate Research Student Association Chair of the Department of Computing, PolyU, 2018