Xinbo Yu (Bruce)

CONTACT INFORMATION

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RESEARCH INTERESTS

My research interests include big data analytics, artificial intelligence, and image/video processing. I have been working on developing various deep classification and regression models for intelligent healthcare, such as evaluating rehabilitation exercises and monitoring Alzheimer's progression. Besides application-driven research, I also work on fundamental research problems of 3D human pose reconstruction and multimodal data/sensor fusion.

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, 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 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

- Research Associate 2021/3 - present
  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
  The Hong Kong Polytechnic University, Hong Kong SAR.
- Software Developer 2012/9 - 2013/9
  Xuanyao IT Limited Company, Hangzhou, Zhejiang, China

TEACHING EXPERIENCES

- 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
- Web Development Technology, TA 2017/3 - 2017/6
- Big Data Analytics, TA 2016/9 - 2016/12

PUBLICATIONS AND MANUSCRIPTS

[Journal and conference publications]

- **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-22)*
- **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, *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2022
- 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)*
- 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)*
- **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*
- **Bruce X.B. Yu**, Yan Liu, Keith C.C. Chan, Multimodal Fusion via Teacher-Student Network for Indoor Action Recognition, *35th AAAI Conference on Artificial Intelligence (AAAI-2021)*
- **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 Journal of Biomedical and Biological Engineering 14 (7), 178-186 (International Conference on Digital Health and Care, 2020)*

- Bo Lu, **X.B. Yu**, JW Lai, KC Huang, Keith CC 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*
- **Bruce X.B. Yu**, Keith C.C. Chan, Discovering Knowledge by Behavioral Analytics for Elderly Care, *IEEE International Conference on Big Knowledge (ICBK), 284-289, 2017*

[Manuscripts under review]

- **Bruce X.B. Yu**, Zhi Zhang, Yongxu Liu, Sheng-hua Zhong, Yan Liu, S-AGCN: Strided Adaptive Graph Convolutional Network for 3D Human Pose Estimation from Monocular Video, *International Journal of Computer Vision*
- **Bruce X.B. Yu**, Yan Liu, Changwen Chen, EGCN++: Revisiting Ensemble-based Learning for Effective Skeleton-based Rehabilitation Exercise Assessment, *IEEE Transactions on Pattern Analysis and Machine Intelligence*
- **Bruce X.B. Yu**, Yan Liu, Sensor-based Human Activity Analysis for the Diagnosis and Therapies of NCDs: A Survey, *Proceedings of the IEEE*
- 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*

OPEN SOURCE PROJECTS

- Effective Skeleton-based Rehabilitation Exercise Assessment with Ensemble-based Graph Convolutional Networks, 2021
  Code: https://github.com/bruceyo/EGCN
- AGCN: Strided Adaptive Graph Convolutional Network for 3D Human Pose Estimation from Monocular Video, 2021
  Code: https://github.com/bruceyo/S-AGCN
- MMNet: A Model-based Multimodal Network for Human Action Recognition in RGB-D Videos, 2020
  Code: https://github.com/bruceyo/MMNet
- Multimodal Fusion via Teacher-Student Network for Indoor Action Recognition, 2020
  Code: https://github.com/bruceyo/TSMF

REVIEWER FOR JOURNALS & CONFERENCES

[Journals]

- IEEE Transactions on Multimedia, IEEE Transactions on Cybernetics, IEEE Transactions on Fuzzy Systems, IEEE Sensors, IEEE Access

[Conferences]

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

OTHER SERVICES

- Postgraduate Research Student Association Chair of the Department of Computing, PolyU, 2018
- MC of the COMP Annual Research Day in the Department of Computing, PolyU, 2018
- Demo representative in the Department of Computing, PolyU, 2016-2020
- Tutor in the residential hall, Homantin Halls, PolyU, 2017-2022