

# Jianben HE

Ph.D Candidate  
Department of Computer Science & Engineering  
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My research interests lie in the intersection of data visualization (VIS), human-computer interaction (HCI), and multimodal learning. I design and develop interactive visual interfaces following a human-centered design process to promote human-machine collaboration for multimodal data (e.g., videos) exploration, understanding and analytics. Recently, I have focused on 1) facilitating efficient multimodal video content digestion and analysis for real-world applications such as online education and tax service. 2) support ML practitioners in understanding and steering multimodal models to align with their knowledge.

## EDUCATION

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**The Hong Kong University of Science and Technology, Hong Kong** 2019 - present  
PhD candidate in Computer Science and Engineering  
Advisors: Prof. Huamin Qu & Prof. Qian Zhang

**Huazhong University of Science and Technology, Wuhan, China** 2015 - 2019  
Selected to the Outstanding Engineer Class (top 2%, on basis of outstanding academic performance)  
B.Eng (graduated with Deans' Honor) in Electronic and Information Electrical Engineering

**Stanford University, California, US** Winter 2017  
Took courses and attended lectures about innovation leadership, AI, and entrepreneurship  
Finish the project of writing a business proposal for a technology product  
Our team won the first prize in the final presentation evaluated by professors

**University of Hong Kong** Summer 2016  
School of Mathematics  
Took Mathematical Laboratory and Modelling Course (Grade:4.3/4.3)  
Received the Excellent Student Scholarship

## PUBLICATIONS

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- **VideoPro: A Visual Analytics Approach for Interactive Video Programming**  
Jianben He, Xingbo Wang, Kam Kwai Wong, Xijie Huang, Changjian Chen, Zixin Chen, Fengjie Wang, and Huamin Qu  
*Accepted to present at IEEE VIS Conference 2023*
- **Engager: A Visual Analytics System for Multi-person and Multimodal Engagement Analysis in Online Teaching Videos**  
Jianben He, Rui Sheng, Xingbo Wang, Kam Kwai Wong, Xinhuan Shu, and Huamin Qu  
*Under review of IEEE TVCG journal*
- **Anchorage: Visual Analysis of Satisfaction in Customer Service Videos via Anchor Events**  
Kam Kwai Wong, Xingbo Wang, Yong Wang, Jianben He, Rong Zhang, and Huamin Qu  
*IEEE Transactions on Visualization and Computer Graphics (TVCG) 2023*
- **M<sup>2</sup>Lens: Visualizing and Explaining Multimodal Models for Sentiment Analysis.**  
Xingbo Wang, Jianben He, Zhihua Jin, Muqiao Yang, Yong Wang, Huamin Qu  
*IEEE Transactions on Visualization and Computer Graphics (TVCG) 2022*  
**Best Paper Honorable Mention@VIS'21 🏆**

## SELECTED PROJECTS

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- AI-Powered Audience Engagement Analysis for Virtual Communication** 2021 - 2023  
Collaborator: OwnTheRoom Company - a global professional speaking training company
- Proposed a visual analytics approach to support flexible and scalable video programming to exploit model training and steering process with reduced human efforts. The paper is accepted to present at *IEEE VIS Conference 2023*.

- Worked on multimodal engagement analysis during multi-party virtual communication (e.g., video conferencing). Built models and a visual analytics system to analyze the emotional, behavioral, and speech features of individual students, as well as their engagement dynamics. The paper is currently under review by the *IEEE TVCG journal*.
- Applied ML models for analyzing students' text response content such as sentiment, reply and question-raising frequency.

### Jockey Club Self-Directed Learning in STEM

2020 - 2021

Collaborator: Prof. Nancy Law - *Faculty of Education, The University of Hong Kong, China*

- Conducted data analytics to support a quick overview of student performance and learning behaviors
- Participated in designing and building the prototype of the visualizations for learning analytics on Moodle (an open-source learning platform)

## SELECTED AWARDS AND HONORS

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- **IEEE VIS Doctoral Colloquium, IEEE VIS** 2023
- **Best Paper Honorable Mention, IEEE VIS** 2021
- Outstanding Graduate of HUST (Top 1%) 2019
- Outstanding Undergraduate in Terms of Academic Performance (Top 1%) 2018
- China National Scholarship (Top 2%) 2018
- Merit Student Honor (Top 2%) 2018
- GOODIX Student Scholarship (10% National Scholarship Winners) 2018
- China National Scholarship (Top 2%) 2017
- Merit Student Honor (Top 2%) 2017
- Public Service Scholarship (Top 5%) 2016
- New Student Scholarship (Top 5%) 2016

## TEACHING EXPERIENCE

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- **Teaching Assistant**, COMP3721 - Theory of Computation, HKUST Fall 2023
  - The topics covered include finite automata and regular languages, Turing machines, undecidability, P and NP, NP-completeness.
  - Leading weekly tutorials
  - Grading assignments and exam papers
- **Teaching Assistant**, COMP2611 - Computer Organization, HKUST Spring 2021, Fall 2021, Fall 2022
  - An undergraduate-level course with more than 200 students
  - Designing and grading assignments
  - Creating and leading coding labs

## TECHNICAL SKILLS

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**Programming:** Python, Javascript, Matlab, C/C++

**Machine Learning:** PyTorch, Scikit-Learn, TensorFlow/Keras

**Web Development:** Flask, VueJs, D3Js