Stuttgart Center for Simulation Science (SimTech)
Perceptual User Interfaces Group
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Ph.D.

Zhiming Hu

Curriculum Vitae

Research Interests

My research interests include virtual reality, human-computer interaction, eye tracking, and human-centred artificial intelligence. The long-term research goal is to develop a human-centred intelligent interactive system that can accurately model human behaviours, e.g. human eye movements and human body movements, in activities of daily living.

Academic Positions

- **Post-doctoral Researcher** 2022.08-now
  Perceptual User Interfaces Group, Led by Prof. Andreas Bulling
  Computational Biophysics and Biorobotics Group, Led by Prof. Syn Schmitt
  Stuttgart Center for Simulation Science (SimTech)
  University of Stuttgart

Education

- **Ph.D.** in Computer Software and Theory 2017.09-2022.07
  Graphics & Interactive Lab., **Peking University**, Supervised by Prof. Guoping Wang
- **B.Eng.** in Optical Engineering 2013.09-2017.07
  School of Optics and Photonics, **Beijing Institute of Technology**

Awards & Honours

- Best Doctoral Student Paper Award Nominees at INTERACT 2023
- SimTech Postdoctoral Fellowship, 2022
- National Scholarship (top 2%), 2021
- TVCG Best Journal Award Nominees at IEEE VR 2021 (top 2%, first time for Chinese researchers)
- CSC (China Scholarship Council) Scholarship, 2020
- Chancellor's Scholarship (top 2%), 2020
- Leo KoGuan Scholarship (top 5%), 2019
- Leader Scholarship (top 0.2%, 7 out of over 3800 students), 2017
- National Scholarship (top 2%), 2016

- National Scholarship (top 2%), 2014

Research Projects

- Study on mechanisms of human visual attention in mixed reality, supported by National Natural Science Foundation of China (General project, rank **3/9**)

Professional Activities & Talks

Reviewing

- Journals: TVCG, IMWUT, TiiS, TMM, IJHCI, MTAP, VR, BRM
- Conferences: SIGGRAPH, CVPR, ICCV, ECCV, CHI, UIST, IEEE VR, ISMAR, ETRA

Organizing Committee

- International Program Committee for PETMEI 2024
- Virtualization Chair for ETRA 2024
- Associate Chair for MuC 2023
- Technical Program Committee member for iWOAR 2023

Invited Talks

- Towards Human-centred Artificial Intelligence. Nanjing University 11th Chengyao Youth Forum, China, December, 2023.
- Towards Human-aware Intelligent User Interfaces. Peking University Fifth Youth Forum on the Next Generation Computer Sciences, China, December, 2023.
- Towards the Coordination of Eye, Body and Context in Daily Activities. Beijing Institute of Technology 10th Teli Forum, China, Hosted by Prof. Guoren Wang, November, 2023.
- The Coordination of Digital Humans. Peking University Career Talk on Computer Science, China, November, 2022.
- Analysis and Prediction of Human Visual Attention in Virtual Reality. Southeast University, China, Hosted by Prof. Ding Ding, June, 2022.
- Recognizing User Tasks from Eye and Head Movements in Immersive Virtual Reality. IEEE VR 2022, Hosted by Prof. Kiyoshi Kiyokawa, March, 2022.
- Forecasting Eye Fixations in Task-Oriented Virtual Environments. GAMES Webinar 2021, Hosted by Prof. Xubo Yang, September, 2021.
- Eye-Head Coordination Model for Real-time Gaze Prediction. 2019 International Conference on VR/AR and 3D Display, Hosted by Prof. Feng Xu, June 2019.

Teaching

- Machine Perception and Learning, University of Stuttgart, 2022, Lecturer
- Computer Graphics, Peking University, 2018, Teaching Assistant
- Image and Video-Based 3D Reconstruction, Peking University, 2018, Teaching Assistant
- Programming Basics, Peking University, 2018, Teaching Assistant

Publications

* Corresponding author

1. **Zhiming Hu***, Zheming Yin, Daniel Haeufle, Syn Schmitt, Andreas Bulling. HOIMotion: Forecasting Human Motion During Human-Object Interactions Using Egocentric 3D Object Bounding Boxes. IEEE Transactions on Visualization and Computer Graphics (ISMAR 2024 Journal-track), 2024. (**CCF A**, conditionally accepted)
2. **Zhiming Hu***, Jiahui Xu, Syn Schmitt, Andreas Bulling. Eye-body Coordination during Daily Activities for Gaze Prediction from Full-body Poses. IEEE Transactions on Visualization and Computer Graphics, 2024. (**CCF A**)
3. Yao Wang, Yue Jiang, **Zhiming Hu**, Constantin Ruhdorfer, Mihai Bâce, Andreas Bulling. VisRecall++: Analysing and Predicting Visualisation Recallability from Gaze Behaviour. Proc. ACM on Human-Computer Interaction (PACM HCI), 8 (ETRA), 2024.
4. Mayar Elfares, Pascal Reisert, **Zhiming Hu**, Wenwu Tang, Ralf Küsters, Andreas Bulling. PrivatEyes: Appearance-based Gaze Estimation Using Federated Secure Multi-Party Computation. Proc. ACM on Human-Computer Interaction (PACM HCI), 8 (ETRA), 2024.
5. Guanhua Zhang, **Zhiming Hu***, Mihai Bâce, Andreas Bulling. Mouse2Vec: Learning Reusable Semantic Representations of Mouse Behaviour. ACM SIGCHI Conference on Human Factors in Computing Systems, 2024. (**CCF A**)
6. Yao Wang, Weitian Wang, Abdullah Abdelhafez, Mayar Elfares, **Zhiming Hu***, Mihai Bâce, Andreas Bulling. SalChartQA: Question-driven Saliency on Information Visualisations. ACM SIGCHI Conference on Human Factors in Computing Systems, 2024. (**CCF A**)
7. Chuhan Jiao, **Zhiming Hu***, Mihai Bâce, Andreas Bulling. SUPREYES: SUPer Resolution for EYES Using Implicit Neural Representation Learning. ACM Symposium on User Interface Software and Technology, 2023. (**CCF A**)
8. Guanhua Zhang, Matteo Bortoletto, **Zhiming Hu***, Lei Shi, Mihai Bâce, Andreas Bulling. Exploring Natural Language Processing Methods for Interactive Behaviour Modelling. Proc. IFIP TC13 Conference on Human-Computer Interaction, 2023.
   Best Doctoral Student Paper Award Nominees
9. Mayar Elfares, **Zhiming Hu**, Pascal Reisert, Andreas Bulling, Ralf Küsters. Federated Learning for Appearance-based Gaze Estimation in the Wild. Annual Conference on Neural Information Processing Systems. PMLR, 2023.
10. **Zhiming Hu**, Andreas Bulling, Sheng Li, Guoping Wang. EHTask: Recognizing User Tasks from Eye and Head Movements in Immersive Virtual Reality. IEEE Transactions on Visualization and Computer Graphics, 2023, 29(4): 1992-2004. (**CCF A**)
11. Zehui Lin, Xiang Gu, Sheng Li, **Zhiming Hu**, Guoping Wang. Intentional Head-Motion Assisted Locomotion for Reducing Cybersickness. IEEE Transactions on Visualization and Computer Graphics, 2022, 29(8): 3458-3471. (**CCF A**)
12. **Zhiming Hu**, Sheng Li, Meng Gai. Research progress of user task prediction and algorithm analysis (in Chinese). Journal of Graphics, 2021, 42(3): 367-375.

13. **Zhiming Hu**. Eye Fixation Forecasting in Task-Oriented Virtual Reality. Proceedings of the 2021 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops, 2021: 707-708.
14. **Zhiming Hu**, Andreas Bulling, Sheng Li, Guoping Wang. FixationNet: Forecasting Eye Fixations in Task-Oriented Virtual Environments. IEEE Transactions on Visualization and Computer Graphics (IEEE VR 2021 Journal-track), 2021, 27(5): 2681-2690. (**CCF A**)
    TVCG Best Journal Award Nominees
15. **Zhiming Hu**. Gaze Analysis and Prediction in Virtual Reality. Proceedings of the 2020 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops, 2020: 543-544.
16. **Zhiming Hu**, Sheng Li, Congyi Zhang, Kangrui Yi, Guoping Wang, Dinesh Manocha. DGaze: CNN-Based Gaze Prediction in Dynamic Scenes. IEEE Transactions on Visualization and Computer Graphics (IEEE VR 2020 Journal-track), 2020, 26(5): 1902-1911. (**CCF A**)
17. **Zhiming Hu**, Sheng Li, Meng Gai. Temporal continuity of visual attention for future gaze prediction in immersive virtual reality. Virtual Reality & Intelligent Hardware, 2020, 2(2): 142-152.
18. **Zhiming Hu**, Congyi Zhang, Sheng Li, Guoping Wang, Dinesh Manocha. SGaze: A Data-Driven Eye-Head Coordination Model for Realtime Gaze Prediction. IEEE Transactions on Visualization and Computer Graphics (IEEE VR 2019 Journal-track), 2019, 25(5): 2002-2010. (**CCF A**)