

Stuttgart Center for Simulation Science (SimTech)

Perceptual User Interfaces Group

Computational Biophysics and Biorobotics Group

University of Stuttgart, Germany

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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 # Equal contribution

1. Haodong Yan#, **Zhiming Hu**#, Syn Schmitt, Andreas Bulling. GazeMoDiff: Gaze-guided Diffusion Model for Stochastic Human Motion Prediction. Pacific Conference on Computer Graphics and Applications, 2024. (CCF B)
2. Guanhua Zhang, **Zhiming Hu***, Andreas Bulling. DisMouse: Disentangling Information from Mouse Movement Data via Diffusion Models. ACM Symposium on User Interface Software and Technology, 2024. (CCF A)
3. **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)
4. **Zhiming Hu***, Syn Schmitt, Daniel Haeufle, Andreas Bulling. GazeMotion: Gaze-guided Human Motion Forecasting. Proceedings of the 2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2024. (CCF C, Oral)
5. **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)
6. Yao Wang, Yue Jiang, **Zhiming Hu**, Constantin Ruhdorfer, Mihai Băce, Andreas Bulling. VisRecall++: Analysing and Predicting Visualisation Recallability from Gaze Behaviour. Proc. ACM on Human-Computer Interaction (PACM HCI), 8 (ETRA), 2024.
7. 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.
8. Guanhua Zhang, **Zhiming Hu***, Mihai Băce, Andreas Bulling. Mouse2Vec: Learning Reusable Semantic Representations of Mouse Behaviour. ACM SIGCHI Conference on Human Factors in Computing Systems, 2024. (CCF A)
9. Yao Wang, Weitian Wang, Abdullah Abdelhafez, Mayar Elfares, **Zhiming Hu***, Mihai Băce, Andreas Bulling. SalChartQA: Question-driven Saliency on Information Visualisations. ACM SIGCHI Conference on Human Factors in Computing Systems, 2024. (CCF A)
10. Chuhan Jiao, **Zhiming Hu***, Mihai Băce, Andreas Bulling. SUPREYES: SUPER Resolution for EYES Using Implicit Neural Representation Learning. ACM Symposium on User Interface Software and Technology, 2023. (CCF A)
11. Guanhua Zhang, Matteo Bortoletto, **Zhiming Hu***, Lei Shi, Mihai Băce, 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
12. 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.

13. **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**)
14. 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**)
15. **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.
16. **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.
17. **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
18. **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.
19. **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**)
20. **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.
21. **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**)