

YAO (MARC) WANG

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🔬 RESEARCH INTEREST

I am a PhD student at the University of Stuttgart since September 2020 and expected to graduate in November 2024. I will continue as a Postdoc researcher at the University of Stuttgart.

For my PhD study, I worked on visual attention modeling for optimization of information visualizations (https://www.sfbtrr161.de/research/project_a07/). My first research goal is acquiring large-scale humanlike attention data without eye tracking equipment on information visualizations. I turn to crowdsourcing approaches (webcam or mouse-clicking) or gaze data synthesis by generative models. My second research goal is to computationally model human visual behaviour (saliency map, scanpath) under different tasks (top-down) in information visualizations. My third research goal is to develop a task-driven computational model to optimize information visualisation by maximising metrics (e.g. recallability, gaze uncertainty).

🎓 EDUCATION

University of Stuttgart, Stuttgart, Germany Sept. 2020 – Now

Ph.D. student at Institute for Visualisation and Interactive System (VIS). Supervisor: Prof. Andreas Bulling

Aalto University, Espoo, Finland Jan. – Apr. 2023

Visiting Ph.D. at Department of Communications and Networking. Supervisor: Prof. Antti Oulasvirta

Peking University, Beijing, China 2020

M.Sc. in Computer Software and Technology, GPA **3.50 / 4.0**

- **Relevant Courses:** Image and Video Based 3D Reconstruction, Advanced Graphics Computing, Technique and Application of Deep Learning, Human-Computer Interaction: Theory and Techniques

Peking University, Beijing, China 2017

B.Sc. in Intelligence Science and Technology, GPA **3.34 / 4.0** (Ranking **8 / 35**)

- **Relevant Courses:** Introduction to Pattern Recognition, Digital Image Processing, Algorithm Design and Analysis, Introduction to Computer Systems, Data Structures and Algorithms, Web Software Technology

📄 HIGHLIGHTED PUBLICATIONS

- **Y. Wang**, W. Wang, A. Abdelhafez, M. Elfares, Z. Hu, M. Bâce, A. Bulling, “SalChartQA: Question-driven Saliency on Information Visualisations”, *Proc. ACM SIGCHI Conference on Human Factors in Computing Systems (CHI 2024)*.
- **Y. Wang**, Y. Jiang, Z. Hu, C. Ruhdorfer, M. Bâce, A. Bulling, “VisRecall++: Analysing and Predicting Recallability of Information Visualisations from Gaze Behaviour”, *Proceedings of ACM on Human-Computer Interaction (PACM HCI)*, 2024.
- **Y. Wang**§, Q. Dai§, M. Bâce, K. Klein, A. Bulling, “Saliency3D: a 3D Saliency Dataset Collected on Screen”, *2024 Symposium on Eye Tracking Research and Applications (ETRA)*, No. 18, pp. 1-9. (§: equal contribution)
- **Y. Wang**, M. Bâce, A. Bulling, “Scanpath Prediction on Information Visualisations”, *IEEE Transactions on Visualization and Computer Graphics*, pp. 1-15, *Early Access*, 2023.
- **Y. Wang**, C. Jiao, M. Bâce, A. Bulling, “VisRecall: Quantifying Information Visualisation Recallability via Question Answering”, *IEEE Transactions on Visualization and Computer Graphics*, vol. 28, no. 12, pp. 4995-5005, 1 Dec. 2022.
- **Y. Wang**§, M. Koch§, M. Bâce, D. Weiskopf, A. Bulling, “Impact of Gaze Uncertainty on AOIs in Information Visualisations”, in *2022 Symposium on Eye Tracking Research and Applications*, No. 60, pp. 1–6. (§: equal contribution)
- Y. Chen§, **Y. Wang**§, P. Lu, Y. Chen, G. Wang, Large-scale structure from motion with semantic constraints of aerial images. Chinese Conference on Pattern Recognition and Computer Vision. 2018: 347-359. (§: equal contribution)
- T. Hu, **Y. Wang**, Y. Chen, P. Lu, H. Wang, G. Wang, Sobel Heuristic Kernel for Aerial Semantic Segmentation. The 25th IEEE International Conference on Image Processing (ICIP). IEEE, 2018: 3074-3078.

TEACHING

Teaching Assistant

Digital Image Processing (Chinese), Peking University	2019
Machine Learning and Computer Vision for HCI (English), University of Stuttgart	2020, 2021
Mensch-Computer-Interaktion (English, German), University of Stuttgart	2021, 2022
Machine Perception and Learning (English), University of Stuttgart	2022, 2023

Student Thesis

Joint Learning Model for Saliency and Scanpath Prediction	2021
Multi-view 3D Saliency	2021
Predicting Recallability from Gaze Behaviour on InfoVis	2022
VQA through Attention Modelling with Curiosity-driven Reinforcement Learning	2022
Large-scale Information Visualization Saliency Dataset Collection	2023
GPT-4-based Visualization Reasoning Dataset	2023

SERVICES

Organizing & Volunteering

- Workshop and Tutorial Chair – ETRA 2025
- Workshop Chair – ETRA 2024
- Workshop Organiser – PETMEI@ETRA 2023
- Student Volunteer – CHI 2023, ETRA 2022

Reviewing

- CHI 2023, 2024
- Journal of Vision
- VIS 2023
- ISMAR 2023
- ETRA 2021, 2022, 2023, 2024
- PETMEI Workshop – ETRA 2023, 2024
- ETVIS Workshop – ETRA 2022, 2023
- Gaze Workshop – CVPR 2022

AWARDS & HONORS

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| • Merit Student | 2015, 2018 |
| • Merit Student Pacesetter | 2016 |
| • Schlumberger Scholarship (~\$1,600) | 2018 |
| • Graduate Scholarship (~\$3,300) | 2017 |
| • 2nd prize in 3D Reconstruction Challenge Group, China Virtual Reality and Visualization Industry Technology Innovation Strategic Alliance | Nov. 2019 |

SKILLS

- Languages: Mandarin (native), English (C1), German (B1)
- Programming Languages: Python (PyTorch, Keras), MATLAB, C++, JavaScript, Bash
- Knowledge bases: Eye Tracking, Deep Learning, Computer Vision, Information Visualization, Human-Computer Interaction, Natural Language Processing, Git, Agile software development
- Other skills: Drum, Billiard