Yao (Marc) Wang

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Research Interest

I am a PhD student at the University of Stuttgart, supervised by **Professor Andreas Bulling**. I work on visual attention modeling for optimization of information visualizations, which belongs to SFB-TRR 161 `https://www.sfbtrr161.de/research/project_a07/`. My first research goal is acquiring large-scale human visual attention data on visualizations, using crowdsourcing approaches such as webcam or mouse-clicking data. My second goal is to computationally model human visual behavior (saliency maps, visual scanpaths) under different viewing conditions (bottom-up, top-down). My third goal is to develop a toolbox using visual attention as feedback to assist designers in optimizing visualizations.

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 25^{th} 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

Reviewing

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

Organizing & Volunteering

- ETRA 2024 – Workshop Chair
- PETMEI 2023 – ETRA Workshop
- CHI 2023 – Student Volunteer
- ETRA 2022 – Student Volunteer

♡ AWARDS & HONORS

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

SKILLS

- Programming Languages: Python, MATLAB, C++, JavaScript, bash, git
- Languages: Mandarin (native), English (C1), German (B1)
- Other skills: Drum, Billiard