Chenyao Diao

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EDUCATION

2017 - 2021 **M.Sc. in Media Technology (GPA: 90/100)**
Technische Universität Ilmenau, Thuringia, Germany

2010 - 2014 **B.Eng. in Informatics Engineering (GPA: 83/100)**
Communication University of China, Beijing, China

RESEARCH EXPERIENCE

2021 - 2024 **Research Assistant**

Co-Presence of Humans and Interactive Companions for Seniors

Funded by Carl-Zeiss-Foundation ("Breakthroughs 2020" program)

This research project focuses on exploring technology-supported social co-presence through videoconferencing, augmented and mixed reality (AR/MR), and robot-based telepresence techniques to improve immersive interactions for elderly users.

- Led the design and development of a conversational subjective test-bed for videoconferencing systems, as a baseline for comparisons with social AR and robotic telepresence systems.
- Developed prototypes for non-verbal cues extraction using computer vision and machine learning methods for facial expressions, eye gaze, eye blink rate, body and head movement, speech activity, turn-taking behaviour, etc.
- Conducted in-depth literature reviews using PRISMA on conversational scenarios, avatar appearance types, and rendering styles, identifying research gaps and proposing innovative ideas for further exploration.
- Collaborated with interdisciplinary teams to design user studies and refine testing protocols.
- Performed comprehensive data analysis using Python and R, uncovering significant insights into the impact of system parameters on user perceived conversational quality.
- Performed thematic content analysis using MAXQDA on interview recordings and authored a detailed analysis report.

2022 - 2023 **Project Co-worker**

Computational Model used as a QoE/QoS Monitor to Assess Video Telephony Service

Organised by International Telecommunication Union (ITU) Study Group 12

- Participated in a collaborative project involving five laboratories across South America, Europe, and Asia to develop ITU-T recommendation standards for QoE/QoS in video telephony services.
- Contributed to the implementation of a test prototype and the design of test parameters.
- Conducted pre-tests with 20 participants under 15 distinct conditions, utilizing two conversational tasks to evaluate system setup and optimize test parameters.
- Collected and processed multimodal data, including in-person and videoconferencing conversation audiovisual recordings, survey responses, and network traces from servers.
- Performed detailed analysis of survey data, audiovisual recordings, and network traces, providing insights into key factors affecting QoE/QoS for video telephony services.

WORK EXPERIENCE

2021 - 2024 **Teaching Assistant**

Department: Audiovisual Technology Group | Technische Universität Ilmenau

- Supervised student thesis at both bachelor's and master's levels, having bi-weekly meeting with students and providing guidance on research design, data analysis, and academic writing.
- Developed and delivered lecture materials (e.g., slides, codes) and oversaw seminars for two courses on Image, Video and Perception, and Video System Technology.
- Supported oral and written exams by preparing questions, supervising exams, evaluating responses, and assisting in the grading process.

2014 - 2017 **Broadcast and Media System Engineer**

Organization: 3rd Production Center | China Central Television

- Managed the design, implementation, and monitoring of TV production workflows.
- Analyzed and trained on workflow models to optimize production efficiency.
- Measured and ensured the technical quality of audio and video for broadcasting.

SKILLS

Language: Chinese (Native), English (Advanced, IELTS 7.5).

Programming and Frameworks: Proficient in Python, R, C#, TensorFlow, PyTorch, Scikit-learn, OpenCV, FFmpeg, Linux, Unity, MAXQDA, Latex, and Git.

Research Skills: Expertise in conducting literature reviews, user study design and implementation, administering subjective tests, interviews, content analysis, academic writing and publishing.

PUBLICATIONS

[1] **C. Diao**, S. A. Arboleda and A. Raake. Nonverbal Dynamics in Dyadic Videoconferencing Interaction: The Role of Video Resolution and Conversational Quality. In Proceedings of the 26th International Conference on Multimodal Interaction (ICMI '24). Association for Computing Machinery, New York, NY, USA, 387–396. https://doi.org/10.1145/3678957.3685733.

[2] **C. Diao**, S. A. Arboleda and A. Raake. Effects of Delay on Nonverbal Behavior and Interpersonal Coordination in Video Conferencing. 2024 IEEE 26th International Workshop on Multimedia Signal Processing (MMSP), West Lafayette, IN, USA, 2024, pp. 1-6, doi: 10.1109/MMSP61759.2024.10743300.

[3] S. A. Arboleda, S. Fischedick, **C. Diao**, K. Richter, H. -M. Gross and A. Raake. An exploratory study on the impact of varying levels of robot control on presence in robot-mediated communication. 2024 33rd IEEE International Conference on Robot and Human Interactive Communication (ROMAN), Pasadena, CA, USA, 2024, pp. 83-88, doi: 10.1109/RO-MAN60168.2024.10731330.

[4] F. Weidner, J. Hartbrich, S. A. Arboleda, C. Kunert, C. Schneiderwind, **C. Diao**, C. Gerhardt, T. Surdu, W. Broll, S. Werner, and A. Raake. Eyes on the Narrative: Exploring the Impact of Visual Realism and Audio Presentation on Gaze Behavior in AR Storytelling. In Proceedings of the 2024 Symposium on Eye Tracking Research and Applications (ETRA '24). Association for Computing Machinery, New York, NY, USA, Article 11, 1–7. https://doi.org/10.1145/3649902.3653344.

[5] S. A. Arboleda, C. Kunert, J. Hartbrich, C. Schneiderwind, **C. Diao**, C. Gerhardt, T. Surdu, W. Broll, S. Werner, and A. Raake. Beyond Looks: A Study on Agent Movement and Audiovisual Spatial Coherence in Augmented Reality. 2024 IEEE Conference Virtual Reality and 3D User Interfaces (VR), Orlando, FL, USA, 2024, pp. 502-512, doi: 10.1109/VR58804.2024.00071.

[6] **C. Diao**, L. Sinani, R. R. Ramachandra Rao and A. Raake. Revisiting Videoconferencing QoE: Impact of Network Delay and Resolution as Factors for Social Cue Perceptibility. 2023 15th International Conference on Quality of Multimedia Experience (QoMEX), Ghent, Belgium, 2023, pp. 240-243, doi: 10.1109/QoMEX58391.2023.10178483.

[7] F. Weidner, G. Boettcher, S. A. Arboleda, **C. Diao**, L. Sinani, C. Kunert, C. Gerhardt, W. Broll, and A. Raake. A Systematic Review on the Visualization of Avatars and Agents in AR & VR displayed using Head-Mounted Displays. In IEEE Transactions on Visualization and Computer Graphics, vol. 29, no. 5, pp. 2596-2606, May 2023, doi: 10.1109/TVCG.2023.3247072.