

Beyond Interfaces: Unpacking our Research in Human-Computer Interaction at the HCI group at the University of St. Gallen in 2023

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Summary of the key research papers published by the Human-Computer Interaction group within the School of Computer Science at the University of St. Gallen in 2023.

1 INTRODUCTION

In 2023, our research delved into various themes within human-computer interaction (HCI). The exploration of **emerging technologies in HCI** is still a central focus, investigating the profound impact of technology on user experiences. In this process, we developed design considerations for novel technologies [9, 10]. Additionally, our papers undertook user studies, evaluating the effectiveness of these technologies from diverse perspectives and within extreme environments such as space habitats [14, 15].

1.1 Broader Implications of Technological Interventions on Society

Furthermore, our research offered insights into the broader implications of technological interventions on society, emphasising the responsibility of designers to consider not only usability but also the broader social consequences of their creations [1, 2]. In a larger study, we examined social reference cues' role in reducing misinformation sharing on social media through experimental studies [2]. In another smaller study, we assessed the impact of "Green Apps" on community engagement for sustainable HCI, emphasising technology's potential to foster environmental awareness [4].

1.2 Spatial exploration and gamification

Spatial exploration and gamification emerged as another thematic area within our research, as our SNF project supports this area. We explored how spatial design and gamified elements contribute to user engagement and overall experience in HCI [5]. This focus highlighted the potential for innovative approaches to enhance user interactions in virtual spaces.

1.3 Accessibility in Virtual Reality

Lastly, our papers addressed the theme of accessibility in virtual reality (VR) [3, 7, 11]. Recognising the importance of ensuring technology is accessible to all, we provided recommendations for designing inclusive interfaces and promoting diversity within the HCI research community. Lessons from Second Life inform accessibility considerations [3], while inclusive design for children with ADHD [8]. Additional studies focus on emotion regulation in VR and fostering intergenerational connectedness through smart toy bricks [6], collectively emphasising inclusivity in virtual environments [12, 13].

In summary, our 2023 research papers contribute to the overarching themes of emerging technologies in HCI, human-computer interaction and social impact, spatial exploration and gamification, accessibility and inclusivity in VR. Collectively, these themes underscore the need for a comprehensive understanding of technology's impact on human experiences and the necessity of considering diverse perspectives in the design and development of interactive systems.

REFERENCES

- [1] Daniel Diethel, Ashley Colley, Julian Wienert, and Johannes Schöning. 2022. Different Length, Different Needs: Qualitative Analysis of Threads in Online Health Communities. In *2022 IEEE 10th International Conference on Healthcare Informatics (ICHI)*. IEEE, 348–356.
- [2] Christopher Martin Jones, Daniel Diethel, Johannes Schöning, Rehana Shrestha, Tina Jahnel, and Benjamin Schütz. 2021. Social reference cues can reduce misinformation sharing behaviour on social media. (2021).
- [3] Annika Kaltenhauser and Johannes Schöning. 2023. Reawakening the Ghosts from the Past? Accessibility Lessons Learned from Second Life. In *Workshop: Towards an Inclusive and Accessible Metaverse*.
- [4] Adrian Preussner and Johannes Schöning. 2023. Examining the Role of "Green Apps" in Fostering Community Engagement for Sustainable HCI. (2023).
- [5] Eve Schade, Gian-Luca Savino, Jasmin Niess, and Johannes Schöning. 2023. MapUncover: Fostering Spatial Exploration through Gamification in Mobile Map Apps. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–13.
- [6] Evropi Stefanidi, Julia Dominiak, Marit Bentvelzen, Paweł W Woźniak, Johannes Schöning, Yvonne Rogers, and Jasmin Niess. 2023. MagiBricks: Fostering Intergenerational Connectedness in Distributed Play with Smart Toy Bricks. In *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference*. 239–252.
- [7] Evropi Stefanidi, Johannes Schöning, Sebastian S Feger, Paul Marshall, Yvonne Rogers, and Jasmin Niess. 2022. Designing for Care Ecosystems: a Literature Review of Technologies for Children with ADHD. In *Interaction Design and Children*. 13–25.
- [8] Evropi Stefanidi, Johannes Schöning, Yvonne Rogers, and Jasmin Niess. 2023. Children with ADHD and their Care Ecosystem: Designing Beyond Symptoms. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*. 1–17.
- [9] Carolin Stellmacher, Michael Bonfert, Ernst Kruijff, and Johannes Schöning. 2022. Triggermuscle: Exploring Weight Perception for Virtual Reality Through Adaptive Trigger Resistance in a Haptic VR Controller. *Frontiers in Virtual Reality* 2 (2022), 173.
- [10] Carolin Stellmacher, Jette Ternieten, Daria Soroko, and Johannes Schöning. 2022. Escaping the Privacy Paradox: Evaluating the Learning Effects of Privacy Policies With Serious Games. *Proceedings of the ACM on Human-Computer Interaction* 6, CHI PLAY (2022), 1–20.
- [11] Yu Sun, Carolin Stellmacher, Annika Kaltenhauser, Nadine Wagener, Daniel Neumann, and Johannes Schöning. 2023. Alt Text and Alt Sense in VR: Engaging Screen Reader Users within the Metaverse Through Multisenses. (2023).
- [12] Nadine Wagener, Jasmin Niess, Yvonne Rogers, and Johannes Schöning. 2022. Mood Worlds: A Virtual Environment for Autonomous Emotional Expression. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems*. 1–16.
- [13] Nadine Wagener, Johannes Schöning, Yvonne Rogers, and Jasmin Niess. 2023. Letting It Go: Four Design Concepts to Support Emotion Regulation in Virtual Reality. In *2023 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*. IEEE, 763–764.
- [14] Conrad Zeidler, Matthias Klug, Gerrit Woeckner, Urte Clausen, and Johannes Schöning. 2023. ARCHIE 2: An Augmented Reality Interface with Plant Detection for Future Planetary Surface Greenhouses. In *2023 IEEE International Symposium on Mixed and Augmented Reality (ISMAR)*. IEEE, 601–610.
- [15] Conrad Zeidler, Lennart Kuhr, Jordan Callahan, and Johannes Schöning. 2023. Mobile Plant Health Visualizer based on SI-NDVI Imaging and Augmented Reality Visualization for Space Greenhouses. (2023).