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# #SociallyAcceptableHCI: Social Acceptability of Emerging Technologies and Novel Interaction Paradigms

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**Abstract.** The spread of information and communication technologies (ICTs) in all aspects of our lives increases the range and scale of potential issues with social acceptance. In the HCI community there is a growing interest and recognition of social acceptability issues with emerging technologies and novel interaction paradigms. This workshop builds on the success of the CHI 2018 workshop on social acceptability by bringing together academics and practitioners to discuss what social acceptance and acceptability mean in the context of various emerging technologies and modern human-computer interaction. We aim to bring the concept of social acceptability in line with the current technology landscape, as well as to identify relevant research steps for making it more useful, actionable and researchable with well-operationalized metrics. The intended outcome of the workshop is two-fold: first, we will continue the efforts to provide an actionable conceptualization of social acceptability in HCI. Second, we will start a collection of best practices and practical examples to be brought together as a continuously updated “case book” of social acceptability in HCI.

**Keywords:** Social Computing · Social Acceptability · Social Acceptance · Technology Acceptance · Emerging Technologies.

## 1 Introduction and Background

Technology-wise, we are living in exciting times: novel interactive technologies and applications enrich our lives and allow us to tackle challenges previously considered unsolvable. Examples include head-mounted-displays and smart personal devices for ubiquitous assistance, deep neural networks enabling the first true applications of artificial intelligence, or autonomous vehicles for increased

comfort and safety. New interface technologies are the core of HCI and how they will be used in social situations is crucial to the field. Simultaneously, the very same technologies introduce new threats, raise new societal concerns, and can increase social tension between users and non-users. For example, unconventional interface technologies can face resistance from bystanders and can potentially cause embarrassment when used in public places. Increasing autonomy of agents can raise broader ethical and societal discussion on the roles and purposes of technology (c.f., [3, 19]).

In light of this, we believe that HCI needs to account for how the social and cultural aspects of technology use are critical factors in successful innovation. The influence of ICTs upon not only the primary user but also their social networks and any surrounding public has opened up many new pitfalls to social acceptance – or non-acceptance, as it may be. As a consequence, research on social aspects of technology usage, particularly social acceptability (which had been named as part of system acceptability already in 1994 [13]) has drawn increasing interest from various areas of HCI and beyond. Nevertheless, research systematically studying “social acceptance” or “social acceptability” is rare. More often social acceptance considerations emerge as a by-product of studies or are discovered by accident, far too late in development processes, i.e., just before or even after a product is shipped. Only a few authors (e.g., Montero et al. [12]) have attempted to conceptualize social acceptability in HCI so far. In addition, there are no agreed upon best practices, or heuristics for designing socially acceptable interfaces, which has also been noted as a key research area during our CHI 2018 workshop on social acceptability [8, 7].

Social acceptance is, however, a timely issue as everyday interfaces are becoming increasingly ubiquitous. For example, the acceptability of “performing” human-machine interactions in front of others has drawn HCI researchers’ attention. Most prominent areas of interest include human-robot-interaction [18], mobile, gestural and on-body interfaces [1, 12, 16, 17]. The advent of commercially available voice user interfaces (e.g., Amazon’s Alexa or Google Home) also brought speech interfaces, their social acceptance [5, 6], and their use in social context [14] to attention. The question of how to design for social acceptability has been taken up in the areas of wearable computing [10], drones [2, 22], recording technologies [4, 9], gaming [11], as well as accessibility [15, 20].

This workshop will continue the efforts started at CHI 2018 and intends to foster critical re-thinking of social aspects in the adoption and creation of novel, interactive technologies. It will contribute to the conceptualization of social acceptability in HCI research; particularly how it is understood, encountered, evaluated and measured in the HCI community and beyond. In contrast to 2018, we aim for more tangible outcomes, namely a more mature conceptualization, and a collection of best practices. In light of this, we view INTERACT 2019 to be the ideal venue for this workshop.

## 2 Topics of Interests and Workshop Objectives

We aim for a highly interdisciplinary workshop, bringing together designers, researchers, and practitioners from different domains of HCI to generate a shared understanding of “social acceptance” and “social acceptability”, and to discuss the implications of this for the HCI community. The first workshop of this series, at CHI 2018, attracted 11 submissions by 24 authors from different technology domains (AI, data science, wearables, extended reality) as well as from different epistemological standpoints (empirical reports, hypothesizing and argumentation papers, and preliminary theorizations). By bringing the workshop to INTERACT and Europe, we aim to broaden participation by reaching out to researchers and practitioners with different backgrounds, including various design disciplines, and social sciences. To help ensure strong participation from industry, we will also explicitly target practitioners through industry bodies and discussion groups and personalized invitations through our own networks.

During the workshop we will discuss which problems and challenges regarding social acceptance are being faced during research and design activities, along with solution strategies for mitigating risks of social non-acceptance of new HCI technologies and artifacts. In the interest of establishing a research community, we aim to maintain and extend the discourse about which methods and metrics are suitable to comprehensively measure the social acceptability of an interactive system. We believe INTERACT 2019 to be the ideal venue for this workshop as INTERACT invites an interdisciplinary dialogue and has a long tradition in critically discussing social and societal aspects of technology usage.

The workshop will provide a platform for presenting and discussing open issues and challenges as well as novel ideas on how to design for social acceptability. Its topics of interest include, but are not limited to (1) Design/system contributions, i.e., interactive systems that provide socially (more) acceptable qualities, provocative designs or breaching experiments. (2) User Studies about social aspects of technology acceptance, usage of human-machine interfaces in social context, or similar. (3) Experiences, case studies, and lessons learned from designing (not) socially acceptable interactive systems, and (4) Formal and theoretical approaches to social acceptability, e.g., conceptualizations, evaluation measures, design considerations, or heuristics.

The practical objectives of the proposed 2019 workshop are to distill what is already known in terms of best-practices and heuristics, and start a collection of design patterns for socially acceptable interfaces and interactions (to be included in a “case book”, c.f. [21]). We furthermore aim to initiate a discourse about which methods and metrics are suitable to comprehensively measure the social acceptability of an interactive system. As reflected in the mixed background of workshop organizers, a priority is to bridge theoretical and practitioner perspectives. Thus we seek to produce a working definition and models that are both academically robust but also relevant and actionable for commercial development teams. Finally, we aim to put those theories in context through hands-on experiences (field trip in the second half of the workshop) and through design examples and the collection of best practices (“case book”).

### 3 Target Audience and Expected Interest

Social acceptance is an element that often becomes apparent in user studies, whether it was purposefully studied or not. For this reason the workshop aims to include both those that are studying, tackling and working on social acceptability, and those that stumble across social acceptability issues when testing prototypes or deploying their products in the wild. We believe that the social acceptability of emerging technologies is of direct interest to all designers, researchers and practitioners who design, study or use (novel) interactive systems. The workshop has ties to various areas in HCI, including mobile, wearable and ubiquitous computing; interaction in public spaces; on-body interfaces; intelligent personal assistants and HRI; interactive and provocative design; and social software. The workshop is also intended to attract attendees having more socio-scientific interests, such as computer ethics, social computing, or any psycho-social dynamics of HCI.

### 4 Organizers

**Marion Koelle** is a research associate at the University of Oldenburg. She is currently pursuing her doctoral dissertation on designing body-worn cameras that intelligently adapt to social contexts. Her research on the social acceptability of emerging technologies and novel interaction paradigms was published at NordiCHI, MobileHCI, CHI, and TEL.

**Ceenu George** is a PhD student and research associate at LMU Munich. Her work focuses on interactions between HMD users and people not wearing HMD devices (bystanders). In the context of mixed presence collaboration, she is interested in the social acceptability of HMD devices for bystanders, usable security considerations between these two collaborators and in enabling a communication channel whilst maintaining presence in both realities.

**Valentin Schwind** is post-doctoral researcher at the University of Regensburg. His research is dedicated to improving extended reality systems that enabling immersive experiences. In his work, he also explores multimodal and social interaction with avatars in virtual reality, as well as social implications of using extended reality devices. He has experience as a committee member for international conferences and in organizing workshops.

**Daniel Perry** is research scientist at North Inc. where he conducts research on applications for wearable computing. He is interested in the social acceptability of wearable interfaces, games for work and learning, and visual analytics. He was previously a Data Science postdoctoral scholar at UC Berkeley. He has organized several workshops on STEM games at the University of Washington.

**Yumiko Sakamoto** is a psychologist and a research associate at the University of Manitoba, Canada. With her psychology background, she focuses on various types of HCI research involving human perception and behaviors.

**Khalad Hasan** is an assistant professor at the University of British Columbia (Okanagan), Canada. His research focus is on developing and studying novel interactions with mobile and wearable devices. More specifically, he is interested in exploring users’ needs and making an impact in their lives when it concerns efficient and socially acceptable mobile interactivity. He was previously a post-doctoral fellow at the University of Waterloo, Canada. He also has experience serving in committees at international conferences.

**Robb Mitchell** is associate professor at University of Southern Denmark, and academic mentor for UX at Beijing Normal University. He is a graduate of Environmental Art at Glasgow School of Art and has a PhD in facilitation. He has led hands-on workshops at TEI, DRS, Participatory Innovation, and Service Design conferences. In addition, he organized many creative interdisciplinary gatherings for New Media Scotland, The Electron Club, and The Chateau, Glasgow.

**Thomas Olsson** is associate professor at Tampere University, focusing on the experiential and social implications of information technology and research through design. His research interests include designing socially aware and acceptable information technology, enhancing social interaction with the help of emerging ICT, Big Social Data analytics, and extended reality technologies. He has organized several interdisciplinary workshops in the field of HCI.

## 5 Expected Outcomes

In addition to the workshop contributions, which will be part of the adjunct proceedings, we will propose a discussion piece (e.g. Interactions magazine), where we intend to discuss the workshop outcomes along with recent research and future perspectives. On the practical side, we will start a collection of examples, case studies, and best practices for evaluating social acceptability, which will be brought together as a continuously updated “case book” of social acceptability in HCI (c.f. [21]), which we will publish online.

## References

1. Alallah, F., Neshati, A., Sheibani, N., Sakamoto, Y., Bunt, A., Irani, P., Hasan, K.: Crowdsourcing vs Laboratory-Style Social Acceptability Studies?: Examining the Social Acceptability of Spatial User Interactions for Head-Worn Displays. In: CHI '18. pp. 310:1–310:7. ACM (2018). <https://doi.org/10.1145/3173574.3173884>
2. Avila Soto, M., Funk, M.: Look, a Guidance Drone! Assessing the Social Acceptability of Companion Drones for Blind Travelers in Public Spaces. In: ASSETS '18. pp. 417–419. ACM (2018). <https://doi.org/10.1145/3234695.3241019>
3. Courtland, R.: Bias Detectives: the Researchers Striving to make Algorithms Fair. *Nature* **558**(7710), 357 (2018)
4. Denning, T., Dehlawi, Z., Kohno, T.: In Situ with Bystanders of Augmented Reality Glasses: Perspectives on Recording and Privacy-mediating Technologies. In: CHI '14. pp. 2377–2386. ACM (2014). <https://doi.org/10.1145/2556288.2557352>
5. Easwara Moorthy, A., Vu, K.P.L.: Privacy Concerns for Use of Voice Activated Personal Assistant in the Public Space. *International Journal of Human-Computer Interaction* **31**(4), 307–335 (2015)

6. Efthymiou, C., Halvey, M.: Evaluating the Social Acceptability of Voice Based Smartwatch Search. In: *Information Retrieval Technology*, pp. 267–278. Springer (2016). [https://doi.org/10.1007/978-3-319-48051-0\\_20](https://doi.org/10.1007/978-3-319-48051-0_20)
7. Koelle, M., Olsson, T., Mitchell, R., Williamson, J., Boll, S.: What is (Un)Acceptable?: Thoughts on Social Acceptability in HCI Research. *Interactions* **26**(3), 36–40 (Apr 2019). <https://doi.org/10.1145/3319073>
8. Koelle, M., Olsson, T., Williamson, J., Profita, H., Kane, S., Mitchell, R., Boll, S.: (Un)Acceptable!?: Re-thinking the Social Acceptability of Emerging Technologies. In: *CHI EA '18*. pp. W03:1–W03:8. ACM (2018). <https://doi.org/10.1145/3170427.3170620>
9. Koelle, M., Wolf, K., Boll, S.: Beyond LED Status Lights - Design Requirements of Privacy Notices for Body-worn Cameras. In: *TEI '18*. pp. 177–187. ACM (2018). <https://doi.org/10.1145/3173225.3173234>
10. Lee, D., Lee, Y., Shin, Y., Oakley, I.: Designing Socially Acceptable Hand-to-Face Input. In: *UIST '18*. pp. 711–723. ACM (2018). <https://doi.org/10.1145/3242587.3242642>
11. Linehan, C., Bull, N., Kirman, B.: BOLLOCKS!! Designing Pervasive Games that Play with the Social Rules of Built Environments. In: *Advances in Computer Entertainment*, pp. 123–137. Springer (2013)
12. Montero, C.S., Alexander, J., Marshall, M.T., Subramanian, S.: Would You Do That?: Understanding Social Acceptance of Gestural Interfaces. In: *MobileHCI '10*. pp. 275–278. ACM (2010). <https://doi.org/10.1145/1851600.1851647>
13. Nielsen, J.: *Usability Engineering*. Elsevier (1994)
14. Porcheron, M., Fischer, J.E., Reeves, S., Sharples, S.: Voice Interfaces in Everyday Life. In: *CHI '18*. pp. 640:1–640:12. ACM (2018). <https://doi.org/10.1145/3173574.3174214>
15. Profita, H., Albaghli, R., Findlater, L., Jaeger, P., Kane, S.K.: The AT Effect: How Disability Affects the Perceived Social Acceptability of Head-Mounted Display Use. In: *CHI '16*. pp. 4884–4895. ACM (2016). <https://doi.org/10.1145/2858036.2858130>
16. Profita, H.P., Clawson, J., Gilliland, S., Zeagler, C., Starner, T., Budd, J., Do, E.Y.L.: Don't Mind Me Touching My Wrist: A Case Study of Interacting with On-body Technology in Public. In: *ISWC '13*. pp. 89–96. ACM (2013). <https://doi.org/10.1145/2493988.2494331>
17. Rico, J., Brewster, S.: Usable Gestures for Mobile Interfaces: Evaluating Social Acceptability. In: *CHI '10*. pp. 887–896. ACM (2010). <https://doi.org/10.1145/1753326.1753458>
18. Savela, N., Turja, T., Oksanen, A.: Social Acceptance of Robots in Different Occupational Fields: A Systematic Literature Review. *International Journal of Social Robotics* **10**(4), 493–502 (2018)
19. Shilton, K.: Values and Ethics in Human-Computer Interaction. *Foundations and Trends: Human-Computer Interaction* **12**(2), 107–171 (2018)
20. Shinohara, K.: *Design for Social Accessibility: Incorporating Social Factors in the Design of Accessible Technologies*. Ph.D. thesis, University of Washington (2017)
21. Waycott, J., Munteanu, C., Davis, H., Thieme, A., Moncur, W., McNaney, R., Vines, J., Branham, S.: Ethical Encounters in Human-Computer Interaction. In: *CHI EA '16*. pp. 3387–3394. ACM (2016). <https://doi.org/10.1145/2851581.2856498>
22. Yao, Y., Xia, H., Huang, Y., Wang, Y.: Privacy Mechanisms for Drones: Perceptions of Drone Controllers and Bystanders. In: *CHI '17*. pp. 6777–6788. ACM (2017). <https://doi.org/10.1145/3025453.3025907>