



Editorial: Social touch

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Editorial on the Research Topic Social touch

Is social touch in crisis? According to [Jewitt et al.](#) the answer is affirmative. The decline in social touch over the past two decades (amplified during COVID-19) and inappropriate use of social touch are their main arguments. At the same time, we cannot afford to lose social touch, as it is central to relational, psychological, and physiological wellbeing ([Figure 1](#)). The crisis for *digital* (or mediated) social touch may even be deeper, as argued by the authors and illustrated by the playfully provocative statements in their “Manifesto for digital social touch in crisis”, some of which speak to the challenges raised by other authors who contribute to this Research Topic on Social Touch. These include challenges related to the loss of cultural variation, the socio-economic divide in access to digital social touch, and new social norms emerging from digital social touch, for instance on agency, control, and consent. These challenges require our attention as researchers, engineers, computer scientists, and designers.

Inspired by touch deprivation following COVID-19 restrictions, this issue aimed to collect multidisciplinary perspectives on social touch from theory to design. The flipside of COVID-19 restrictions may be that people’s views on mediated social touch changed. [Ipakchian, Huisman et al.](#) investigated this in a survey study with 277 participants conducted during the COVID-19 pandemic and found that touch deprivation may have instigated a new openness to using technology to mediate and support touch connections with close others. This finding was not modified by technology readiness and touch aversion. User needs evidently can shape the future development of digital social touch.

Meanwhile, [Della Longa et al.](#) notice that touch is often overlooked in the current digital transition. Their review confirms that losing social touch would increase social disconnection and loneliness, something we cannot risk. This concern is not hypothetical, given the increasing use of immersive Virtual Reality and immersive internet (e.g., the Metaverse) for social communication with their typical restrictions to vision and audition. This articles specifically tackle the question of whether digital social touch can help foster social connection when, for example, anorexia nervosa or autism come into play. They conclude that the digital transition brings new opportunities for digital touch, such as mediating social touch between (romantic) dyads separated by distance. Along these lines, [van Hattum et al.](#) studied romantic couples using a mediated social touch device over a period of 2 weeks, and saw how they compensated for the channel’s rudimentary quality and developed a dyad-specific haptic language to enrich their interaction. They documented how this in turn contributed to an increase in relationship salience, feelings of closeness, and contact quality. Even after prolonged use, the signal could (still) startle a user, underlining the importance of topics like agency, control, and consent.



FIGURE 1

Covid-19 restrictions and the notice of skin hunger have sparked the research efforts on the importance of social touch and solutions to mediate social touch. See: <https://www.shutterstock.com/image-photo/elderly-asian-women-wearing-face-mask-1889789962>.

Social touch in crisis may also mean that we may need to reconsider the theoretical framework(s) we apply to (mediated) social touch. Current approaches based on theorizing or simulating others' mental states, for example, do not adequately account for touch being an active sense (contrary to for instance vision and audition). [Huisman](#) suggests Interaction Theory, a theoretical approach that accounts for embodiment and interaction, as a framework for investigation. [Huisman](#) also argues that the crisis in digital touch is amplified by the low implementation and acceptance rate of technology supporting it. This argument resonates with the comments from [Mader et al.](#), who plea for a tinkering approach to design in this space, along with early stakeholder involvement to increase acceptance. Tinkering involves playful and creative exploration, and their paper offers a detailed description of this approach including a comprehensive list of materials in their tool kit. They report that tinkering can result in a broad diversity of developed concepts, indicative for a successful design process.

An important question raised by several authors in this Research Topic concerns the extent to which a digital social touch should (or could) mimic a human touch. To answer this question, we need better instruments to measure and quantify human touches. This challenge is picked up by [Xu et al.](#) who describe a 3D visual tracking system and advanced mesh and surface modeling to derive contact area, indentation depth, three orthogonal velocity components, and contact duration of skin-to-skin interactions. To study the emotional components of social touches such as poking, patting, massaging, squeezing, and stroking, [Zhu et al.](#) used a closed-loop system consisting of an array of force sensors, algorithms to generate control signals, and an array of voice coil actuators to generate a social touch. One of their findings is that the speed of the touch has a great influence on perceived valence, arousal, realism, and comfort. These results shed light on the design space of mediated social touch, a topic further explored by [Rognon et al.](#) and [Ipakchian Askari, Haans et al.](#) [Rognon et al.](#) empirically examined the interaction between four social touches

(high five, handshake, caress, asking for attention), two or three actuation parameters (different for each social touch including e.g., duration and strength), and two social contexts (specifically tuned to each social touch) on perceived emotional content using the circumplex model of affect. Although all social touches were recognizable above chance, the paper suggests that some may have more universal or intuitive meanings. [Ipakchian Askari, Haans et al.](#) took a comprehensive approach to study the design space by reviewing 89 prototype affective haptic devices described since 2019. They identified 17 dimensions in the design space including for instance synchronicity and actuation type.

The papers in this Research Topic illustrate concerns as well as optimism. Social touch is of critical importance for human wellbeing and because of that, it is also vulnerable to misuse or abuse. Digital social touch may bring the importance of inter-human touch interaction back in times of social distancing, geographically separated families, and long-distance relations. This promise inherently raises important ethical and societal questions on, for instance, agency, consent, and acceptance. Collectively these papers make a strong case for the need and benefits of addressing these questions by bringing social touch technical developments and social research on their take up and use, to go hand-in-hand.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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