Intimate Mobiles: Near-Body Telepresence through Tightness, Wetness and Airflow in Mobile Phones
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ABSTRACT
In this paper, we propose three principles for near-body telepresence in mobile phones: Tightness, Wetness and Airflow. We present three prototypes that allow for hands-on experience of the proposed means of telecommunicated near-being.

An overview over the relevant literature in intimate telepresence is given, with regard to the proposed styles of interaction. The proposed prototypes are described in their conceptual groundwork, and in their current implementation.

We conclude by projecting the findings in our designs onto future work in this field.

Author Keywords
Tightness, airflow, airstream fluids, body fluids, wetness, grasp, haptics, mobile phone, erotic, sex, telepresence.

ACM Classification Keywords
H5.m. Information interfaces and presentation: Miscellaneous.

INTRODUCTION
Mobile phones are increasingly present in our everyday communication habits, and thereby also becoming a valuable means of erotic telecommunication. However, the current style of interacting with a mobile phone, through touch screens, audio transmission and simple vibration, does not live up to the full experience one could imagine or wish for.

BACKGROUND
Recently, Paulos et al. have published work on personal tele-embodiment [14], which can, alongside and Tollmar and Persson’s analysis of remote presence [16] and Vetere et al.’s proposals of mediated intimacy [17] serve as the theoretical foundation for explorations in the field of near-body telepresence. With regards to the relationship between the users, Hassenzahl et al.’s work on technology for people in love [8] should be considered as well. Dourish’s notion of Embodied Interaction [4], combining the social and the physical, could be considered as a potential overarching theoretical framework for the recent developments in the way we interact with computers.

As for practice, numerous projects are concerned with means of mediated near-being in telecommunication. An overview over the relevant literature will be given in the following.

Earlier explorations of this field have included mostly vibration-based interaction, such as the ComTouch [1] and the ComSlipper [2]. Later, visual approaches, as in the Lover’s Cups [3], have been proposed, but simulated human nearness through cutaneous actuation has proven to be increasingly popular. An interesting approach to simulate human touch has been presented in Li et al.’s Tapping and Rubbing project [11], emphasizing the potential of subtlety in touch. Differently from that, Wang
et al.’s work Touch & Talk, based on shape-memory alloys [18], proposes a contracting element worn around the arm. Werner’s United-Pulse ring [19] and Eichhorn’s stroking device [5] also show the spectrum of nearness in telecommunication communication, often with romantic elements, like shared moments, or taking care of each other. Breathing, in particular, has been utilized as a status display [9], in architecture [20], and as a shared experience means [15]. Ultimately, holding hands [6, 13] and hugging, e.g. in the ‘Hug’ [7], ‘Hug over a distance’ [12] and the ‘Huggy Pajama’ [10] projects, have been largely investigated by the research community.

It has become obvious that physical nearness in telepresence is an active research field that is still to be explored in depth. Given their strong integration into our everyday lives, the integration of intimacy-enabling technology into mobile phones is of particular interest.

**PROTOTYPES**

We propose three means of intimacy communication in mobile phones – tightness, wetness and airflow. We have developed mobile phone-shaped boxes that make it possible for users to play and experiment with the new styles of actuation.

**Tightness**

Firstly, we propose tightness actuation as a means of telecommunicated nearness. Our prototype is equipped with a motor on its inside that allows for a widening loop to be extended and contracted on the mobile phone’s outside (Fig. 1). This loop can, for instance, be placed around the user’s hand to make it possible, through a force sensor on the caller’s phone, to telecommunicate through hand grasp while talking.

**Wetness**

Secondly, we propose wetness as a means of intimate telepresence. Through a moisture sensor on the caller’s phone, the level of sweatiness of their hands could be transmitted to the prototype, which features a moisturizable membrane. A sponge is affixed to a tube on the phone’s inside, which is connected to a nearby water pump. Once the sponge is moisturized by the pump, it is pushed against the phone’s casing (which consists of a semi-permeable membrane). This makes the casing wet on the backside. Furthermore, the prototype features two outlets for liquids on its front side.

**Airflow**

The third principle we propose is airflow. We present a mobile-phone shaped prototype that is equipped with three airjets, each allowing for a different type of airstream output. The three jets could allow for the reproduction of the caller’s nostril airstreams, for the air involved in speech (including guttural and plosive sounds), and for the transmission of atmospheric winds.

**CONCLUSION**

Innovation in machine-mediated human communication is a tough challenge, as it often leads to awkwardness and uncanny feelings for users. The presented prototypes allow for experimenting with future visions of such novel types of communication hands-on. We believe it is a beneficial undertaking to make such visions a tangible experience, as to provide a basis for discussion, whether or not such communication is desirable. Especially in times of omnipresent connectedness, it is a fruitful field of research to investigate how the basic human need for nearness can be fulfilled. We encourage activities that make interacting with computers – and through them, with each other – richer and more enjoyable.

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