

Special Issue on Recent Advances in Audio and Image Based HCI on Mobile Devices

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Since coining the term human-computer interaction (HCI) in 1983, this field has been rapidly developing, opening, and broadening new application horizons, especially on mobile devices. Speech-enabled HCI interfaces on smartphones and other handheld devices free billions of hands everyday. However, there are still numerous factors introduced by user- and environment-based variabilities that affect performance of current HCI and limit its applicability in certain situations. In particular, nonstationary environmental noise, room reverberation, competing speakers, very short utterances, and language/dialect/accent variability impact state-of-the-art HCI and introduce new challenges in the research on speech based HCI.

At the same time, making a computer system see and comprehend this world better is an indispensable component of HCI. Together with speech based HCI, the high complexity of an image based HCI adds yet another challenge to the mobile device with limited computational and power resources. Efficient image processing and computer vision techniques are in high demand for the advanced HCI in biometric recognition, gaze tracking, and human activity analysis.

Combining speech and image processing can provide more effective interaction experience than when they are deployed individually. A synergy of the two HCI domains has a strong potential to better address the challenges facing mobile HCI. Since mobile devices are now widely used in human societies around the world, with more than two billions users spending more than two hours on their smartphones everyday, advancements in mobile HCI interfaces will impact and enhance the user experience in truly global terms.

The purpose of this special issue is to publish high-quality research papers and review articles addressing recent advances in audio, speech, and image based HCI on mobile devices. Original, unpublished contributions that are not currently under review by other journals or peer-reviewed conferences are sought.

Potential topics include but are not limited to the following:

- ▶ Mobile based human-computer interaction
- ▶ Security issues in human-computer interaction
- ▶ Speech, speaker, language, and emotion recognition for HCI on mobile devices
- ▶ Audio processing for auditory scene analysis
- ▶ Natural language processing for mobile HCI—information retrieval; question answering; and sentiment analysis
- ▶ Image processing for HCI on mobile devices
- ▶ Computer vision for HCI on mobile devices
- ▶ Affective computing for mobile HCI
- ▶ Human automation for mobile devices
- ▶ Applications of machine learning in HCI
- ▶ Mobile HCI for digital arts and experimental media
- ▶ Mobile HCI for healthcare and biomedical engineering

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