Ubiquitous Text Interaction

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Abstract

Computer-based interactions increasingly pervade our everyday environments. Be it on a mobile device, a wearable device, a wall-sized display, or an augmented reality device, interactive systems often rely on the consumption, composition, and manipulation of text. The focus of this workshop is on exploring the problems and opportunities of text interactions that are embedded in our environments, available all the time, and used by people who may be constrained by device, situation, or disability.

This workshop welcomes all researchers interested in interactive systems that rely on text input or output. Participants should submit a short position statement outlining their background, past work, future plans, and suggesting a use-case they would like to explore in-depth during the workshop. During the workshop, small teams will form around common or compelling use-cases. Teams will spend time brainstorming, creating low-fidelity prototypes, and discussing their use-case with the group.

Participants may optionally submit a technical paper for presentation as part of the workshop program. The workshop serves to sustain and build the community of text entry researchers who attend CHI. It provides an opportunity for new members to join this community, soliciting feedback from experts in a small and supportive environment.

Author Keywords
Text entry; text interaction; mobile interaction.

ACM Classification Keywords
H.5.2 [Information interfaces and presentation]: Input devices and strategies.

Background
The consumption and generation of text feature heavily in many of the computer interfaces we use everyday. Ten years ago, computing was primarily performed on desktop computers. Text was displayed on big two-dimensional monitors and user input was primarily via a keyboard and mouse. For most people, desktop computing only constituted a small portion of their day.

Today, mobile devices dominate and computing is as close as the phone in your pocket. Wearable devices such as smartwatches further lower the threshold for initiating computer interactions. Our mobile and wearable devices allow near instant communication with friends and family via text messaging. We can consult our devices for the latest news, to help navigate, or to seek information from the web. Text is still displayed on two-dimensional screens, though often quite small ones. Input is primarily via gestures or taps made on a touch-sensitive screen.

As devices that augment our senses with virtual content move from the research lab to product prototypes (e.g. Google Glass and Microsoft HoloLens), the threshold for interaction will become even lower. In a future where such devices are common, interaction becomes continuous and ever present. The focus of this workshop is on what such a future of always-on interaction embedded into our real-world means for text entry research. Further, we are interested in how to make such a future accessible to all people, regardless of limitations imposed by device, situation, or disability.

The term “text entry” is perhaps too narrow. While the fluid and efficient input of text is certainly a challenge, it is only one part of the problem. Interfaces also need to provide users with powerful, fluid, and task-appropriate *text interaction*. Prominent amongst these are supporting editing and correcting [1, 9, 25, 18], formatting of text [7], personalization [8], and context-awareness [10, 11].

The design of text interactions also requires special attention to the needs and capabilities of diverse types of users. For example children [21, 2], older adults [27, 12], users with motor disabilities [26], and users with visual impairments [3, 23, 17, 19, 22]. Further, interacting while in augmented or virtual reality poses many design challenges [4, 15, 16, 20].

This workshop has the following goals:

- Identify the research challenges associated with enabling rich text interaction embedded and intelligently integrated into the world around us.
- Identify the research challenges caused by input or output modalities being constrained by device, situation, or disability.
- Explore and discuss early work that addresses these challenges.
- Connect researchers with allied interests and complementary talents to facilitate progress in addressing these challenges.

Organizers
The organizers are all widely published experts on text entry. They have all published extensively in the HCI text entry

community and often collaborate with researchers from a variety of communities, such as Augmentative and Alternative Communication (AAC), Natural Language Processing (NLP), and speech recognition.

Keith Vertanen is an Assistant Professor at Michigan Technological University. He specializes in designing intelligent interactive systems that leverage uncertain input technologies. This includes input via speech, touchscreens, and eye-gaze. A particular focus of his research is on systems that enhance the capabilities of users with permanent or situationally-induced disabilities. Dr. Vertanen is the main contact person for this workshop.

Kyle Montague is a Research Associate at Open Lab, Newcastle University. His research focuses on digital technologies and accessibility; in particular solutions to support non-visual text-entry and interface adaptation.

Mark Dunlop is a Senior Lecturer at the University of Strathclyde. He has been publishing in mobile text entry since 1999 and is currently running a research council project on text entry for older adults. His interests include both the underlying algorithms for smarter predictive text entry and novel solutions for user input on varying devices. As well as academic research, he has conducted usability studies on mobile text entry for commercial developers.

Xiaojun Bi is an Assistant Professor at Stony Brook University. Prior to joining Stony Brook, he was a Research Scientist at Google. Xiaojun Bi's research focuses on building interactive systems, designing interaction techniques, and studying fundamental issues of user interface design especially on mobile devices. He has pioneered a number of techniques for mobile text entry systems, pen and touch based interactive systems, and large display interaction. His innovations such as keyboard correction and completion algorithm, bimanual gesture typing, and personalizing language models for text entry have been integrated into the Android keyboard used by more than 100 million users.

Ahmed Sabbir Arif is a Postdoctoral Research Fellow at Ryerson University. As a researcher, his goal is to make computer technologies accessible to everyone by developing natural and intuitive input and interaction techniques. A major thread of his work focuses on smarter solutions for text entry, error correction, and editing on various devices. His other interests include text entry evaluations, and multimodal, predictive, and international text entry techniques.

Shiri Azenkot is an Assistant Professor at the Jacobs Technion-Cornell Institute at Cornell Tech, Cornell University. Her research interests are in accessibility, focusing on people with visual and reading disabilities, and interaction techniques on new platforms.

Website

Our workshop website is located at http://www.textentry.org/chi2017. The site includes the call for participation, a copy of this workshop proposal paper, and links to the organizers. Details of the one-day workshop program will be posted once details are finalized. The website also provides details about how to subscribe to the text entry research mailing list that was established as part of last year's workshop.

Pre-Workshop Plans

We have written a Call for Participation that we will send to a variety of mailing lists including: chi-Announcements, access-announcements, SIG-SLPAT (Speech and Language Processing for Assistive Technologies), and our text entry research mailing list. We will also contact authors of position papers from the text entry workshops that occurred at CHI'12 [14], CHI'13 [13], CHI'15 [5], and CHI'16 [24].

The organizers will reach out to personal contacts in an effort to solicit broad participation. We will identify researchers outside HCI who may be interested in participating and encourage them to submit a position statement. Based on feedback from last year's workshop, we plan to make explicit efforts this year to reach out to industrial researchers.

Our past workshop participants enjoyed the discussion and community aspects of the workshop the most. As such, we believe having a "lightweight" position statement as the requirement for attendance will improve our already healthy participant numbers. It will also allow us to make acceptance decisions in a timely manner. Thus this year we require participants submit just a short position statement outlining their background, past work, future plans, and suggesting a use-case they would like to explore in-depth during the workshop. Statements will be reviewed by the workshop organizers to ensure participants have a background or interest in the workshop's theme. We anticipate being able to invite most interested participants.

Some participants may additionally want to present a technical paper. Participants selected on the basis of their position statement may optionally submit a longer, more technical paper for possible inclusion in the workshop program. The deadline for this optional submission will be in late March, allowing authors more time to prepare their submission. Participants will receive at least two full reviews. Past participants, in particular early career researchers, have used the written reviews and feedback at the workshop to improve and extend their work for later successful publication at CHI and other venues.

Prior to the workshop, the organizers will create a list of the use-cases suggested by attendees, grouping them by similarity and popularity. This list will help organize small groups in the second portion of the workshop.

Workshop Structure

This is a full one-day workshop. We plan to have two morning paper sessions. Participants of accepted technical papers will give 10-minute talks followed by a 10-minute period for questions and discussion. After the paper sessions, participants will be invited to continue the discussion at a group lunch.

After lunch, we will have a one-hour Show-and-Tell session. This was a new and popular feature added to last year's workshop. This year, we will encourage all participants to demo systems regardless of whether it is related to a paper submission or not. As some participants may not have work of the nature or maturity to be demonstrated, the Show-and-Tell session will also have poster presentations.

The next hour session will consist of exploring and discussing future-looking use-cases as suggested by participants in their position statements. Small groups will form around a particular use scenario. Each group will have an hour to discuss the scenario, proposing possible interactive systems, perhaps developing low-fidelity prototypes of their ideas. Groups will identify the research challenges and open questions germane to their scenario.

In the final hour session, each team will present a summary of what they discussed including a walk through of their proposed best idea for an interactive system addressing the scenario. This will be followed by a group discussion about the scenario and the proposed system.

At the end of the last session, we will have an open discussion about what participants thought about the workshop and its format. We will also solicit ideas for themes for future workshops and other community events. Towards our community-building goal, workshop participants will be encouraged to join the text entry research mailing list that was

established as part of last year's workshop.

Post-Workshop Plans

We expect a number of important outcomes from this workshop. First, this workshop continues our effort to build and sustain a community of text entry researchers at CHI. Our workshop builds upon the enthusiasm and feedback received from past participants at the successful text entry workshops held at CHI'12 [14], CHI'13 [13], CHI'15 [5], CHI'16 [24], and the CHI'14 text entry SIG [6]. To help participants get to know each other before the workshop, and to connect with each other afterward, we will share a folder with participants' position statements with all attendees.

Second, we hope the workshop, and in particular the group use-case exploration portion, will yield a variety of future-looking visions of text interaction in a post-desktop and post-mobile world. Participants who share an interest in a particular use-case explored at the workshop will be encouraged to pursue further collaborative work after the workshop. Such collaborations have the potential to bring together researchers with complementary expertise to create and evaluate new interactive techniques that would be difficult for any one person to pursue on their own.

Third, authors of accepted workshop papers will be encouraged to place their papers on the workshop's website. Additionally, we will encourage participants with demos to submit short videos for inclusion on the website.

Call for Participation

We invite position statements for the CHI 2017Workshop on Ubiquitous Text Interaction. This one-day workshop offers an interdisciplinary forum for both practitioners and academics interested in interactive systems that rely on text input or output. A particular focus this year is on exploring the problems and opportunities of text interactions that are embedded in our environments, available at all times, and used by people who may be constrained by device, situation, or disability. For example, text interfaces using wearable devices, head-mounted displays, or interaction when visual feedback is limited or non-existent.

Early submission deadline: **December 20, 2016**
Normal submission deadline: **February 21, 2017**

Interested participants should submit a short position statement outlining their background, past work, future plans, and suggesting a use-case they would like to explore during the workshop. During the workshop, small teams will form around compelling use-cases. Teams will spend time brainstorming, creating low-fidelity prototypes, and then presenting and discussing their use-case with the group.

Participants will be selected on the basis of the quality of their position statement. All workshop participants must register for both the workshop and for at least one day of the CHI 2017conference.

In addition to a position statement, participants are encouraged to submit an *optional* technical paper for possible inclusion in the workshop program. The separate deadline for paper submission is April 7, 2017. Papers should be in CHI Extended Abstracts Format (maximum eight pages excluding references). Papers will be peer-reviewed with accepted papers being presented as part of the workshop program as a talk, poster, or demo. At least one author must register and attend the workshop.

For further information, see our workshop website at http://www.textentry.org/chi2017.

How to submit:

- Write a position statement in the CHI Extended Abstracts Format (maximum four pages excluding references).
- Each statement should include a biography, and a summary of any past work relevant to the workshop theme.
- Your statement should identify a future-looking text interaction use-case you would like to explore in-depth during the workshop.
- Email your position statement in PDF format to textinteraction@gmail.com

Important dates:

- Early submission deadline: December 20, 2016.
- Early acceptance notification: December 23, 2016.
- Normal submission deadline: February 21, 2017.
- Normal acceptance notification: February 24, 2017.
- Workshop: Saturday May 6, 2017, Denver, Colorado.

Organizers:

- Keith Vertanen, Michigan Technological University, USA.
- Kyle Montague, Newcastle University, UK.
- Mark Dunlop, University of Strathclyde, UK.
- Xiaojun Bi, Stony Brook University, USA.
- Ahmed Sabbir Arif, Ryerson University, Canada.
- Shiri Azenkot, Cornell Tech, USA.

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