Approaching Engagement towards Human-Engaged Computing

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Abstract

Debates regarding the nature and role of HCI research and practice have intensified in recent years, given the ever increasingly intertwined relations between humans and technologies. The framework of Human-Engaged Computing (HEC) was proposed and developed over a series of scholarly workshops to complement mainstream HCI models by leveraging synergy between humans and computers with its key notion of "engagement". Previous workshop meetings found "engagement" to be a constructive and extendable notion through which to investigate synergized human-computer relationships, but many aspects concerning the core concept remain underexplored. This SIG aims to tackle the notion of engagement considered through discussions of four thematic threads. It will bring together HCI practitioners and researchers from different disciplines including Humanities, Design, Positive Psychology, Communication and Media Studies, Neuroscience, Philosophy and Eastern Studies, to share and discuss relevant knowledge and insights and identify new research opportunities and future directions.

Author Keywords

Engagement; Human augmentation; symbiosis; antibiosis; creativity; direct manipulation; intelligent agents.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Pioneers like Douglas Engelbart [1] and J.C.R. Licklider [2], criticized the prevailing human-technology paradigm for focusing on making technological progress rather than on realizing human potential through technological progress. Touchscreen innovator Bill Buxton wrote that computers should enable people to realize their full potential [3]. Terry Winograd and Gary Bradski [4] expressed the limitations of AI in natural language processing and computer vision respectively and shifted their focus to enhancing human capacities. Despite these concerns, researchers still have not adequately explored the use of information technology to fully develop the user's human capabilities and human capacities in general.

To address the above concerns, one of the proposers of this SIG and his colleagues developed the Human-Engaged Computing (HEC) framework [5] in 2016 aiming to leverage synergy between humans and computers, through examining and evaluating the notion of "Engagement". The framework also aims to exploit various eastern and western notions of "Engagement" so as to integrate both holistic and analytical approaches into wider interaction design potentials. Side by side consideration of other eastern and western philosophical insights and findings may help us realize new factors leading to seamless synergism within a far wider bandwidth of human-computer interaction that honors untapped human potential [6] and leads to greater human fulfillment. Thus, HEC may be described as the promotion of a greater emphasis in HCI on engagement that includes the specific and explicit development of human capacities and potentials and their conscious application in HCI design and interaction.

This vision was presented in a CHI 2017 panel discussion [7] when distinguished HCI community members exchanged various views on the future relationship between humans and computers and expressed their concerns about a perceived fast approaching disruptive singularity in AI. More importantly, participants in the discussion envisioned that HCI designs would pay more attention to the users' "softer" skills such as mindfulness, self-control, self-motivation, empathy, and trust, while at the same time adjusting and improving non-human, machine-like aspects of interface design such that the synergism achieved will reflect mutual enhancement and exploitation of 'affordances' between humans and devices i.e., 'symbiotic mutualism'.

To further the discussion, an international workshop on HEC [8] was held in November 2017 in which HCI researchers from different disciplines had a productive exchange, examining and evaluating the notion of engagement. Workshop participants see "engagement" as a valuable concept through which to explore and extend synergized relationships between humans and computing technology, to delineate a far wider variety of assemblages or associations amongst humans and non-human agents.

Engagement offers the following potentials to re-imagine more productive relationships between humans and computers both theoretically and practically: Engagement is "a state of consciousness in which one is fully immersed in and aligned with the activity at hand" [5], similar to mindfulness meditation or to "achieving flow" which is a "holistic sensory experience". In the age of ubiquitous computing, efficiency via the integration of fully developed and developing human capacities and device affordances is not only required, it is progressively achievable. Meanwhile, an interpretive approach advocates "meaningful engagement" through which computing technology not only "transforms people and systems" but also elevates "prosaic experience" into "aesthetic experience" [9] and thus into human fulfillment beyond mere utility.

In this 80-minute SIG session, we aim to unpack the critical notion of "Engagement" and explore its implications and thus to engage a broader audience of the CHI community in important discussion regarding the relationships between humans and computers, as we are passionate about designing engaging technologies for engaged humans, following the CHI2018 theme.

The session would search for answers for the following questions:

1. How can existing engagement theories (e.g., Flow [10], as described in psychology studies etc.) be articulated toward facilitating synergized interaction between humans and computers?

2. How can a heightened emphasis on understanding and practicing human engagement support future HCI research?

3. How do individual differences (personality, gender, culture) influence human engagement, and what can researchers learn from such differences?

SIG Goals
This SIG anticipates two outcomes from the discussion:

1. Facilitating multidisciplinary and interdisciplinary discussion on the concept of engagement within the HCI community from the four threads: theoretical, practical, reflective, and programmatic (see next section).

2. Establishment of a path ahead, i.e., a set of initial considerations regarding a structured approach that will be truly productive of better design, fuller engagement (synergism) between humans and computers with both elements receiving full consideration and appropriate integration into interfaces of the future.

The SIG will invite broader participation from the CHI community and it will gather valuable feedback for further development of the HEC framework, building on HEC international workshops of the past [8] and the future.

Suggested Topics
The SIG will be structured as a panel discussion centering on the areas of interest important to the HCI community. The panel will be moderated, and in addition a question moderator will continually filter and present written questions from the audience to a large screen and to the panel moderator. We believe the following four threads will facilitate for our community discussions:

Theoretical - What existing theories, frameworks, principles are particularly promising for enabling a deeper understanding of engagement and providing guidance for user interface design? What can we learn, retain and adjust, from existing engagement theories (e.g., Flow [10]) in order to develop a novel framework that will truly enhance engagement between humans and computers? In what ways do we need to redress the implied neglect of human capacities and human outcomes in past HCI practice? This theoretical thread can advance our understanding by providing new "ways of thinking" regarding human engagement.

Practical - What existing studies could contribute to the theme of this SIG? What techniques/methodologies have been employed in their work and to what effect? Do existing methodologies suffice? This practical thread can provide evidence as well as inspiration for some novel methods.

Reflective - The notion of engagement should be critically reviewed by reflecting on some basic assumptions. For instance, what is at stake when engagement is framed as a cognitive and physiological phenomenon that can best be studied by cognitive neuroscience [11] of the individuals as opposed to a

social and cultural matter to be better approached through hermeneutic studies?

Programmatic - How should HEC and engagement research proceed? Which challenges and questions should be prioritized in the research agenda? What should be the expected outcome in the next five or ten years? This programmatic thread focuses on driving the proposed theme forward through well-defined research questions.

Conclusion

A holistic consideration of our human capacities and technological hindrances to those capacities is essential to achieving greater synergy between humans and computers and more edifying outcomes for human experience beyond interactions with devices. By drawing on the unique perspectives of multiple disciplines including the social sciences and humanities as well as different fields within the HCI community, we can design systems that will enable us to realize our full potential and create a better world. Insights to be gained from this SIG can contribute to the development of an integrated framework based upon two progressively developing entities - Engaged Humans and Engaging Technologies - as we strive integrate truly engaging technologies with increasingly enhanced human beings towards enhanced human existence in general.

Acknowledgement

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