Microtasking as a way to accommodate Micro-attention

Shamsi T Iqbal
Microsoft Research
Redmond, WA, USA
shamsi@microsoft.com

Abstract
With a plethora of tasks that people have to attend to near simultaneously, and the widespread use of devices that allow tasks to be attended to anywhere, anyplace, it is not surprising that being able to attend to any one task for longer periods of time is becoming increasingly difficult. As a result, the traditional thinking behind managing attention in multitasking environments faces new challenges. I see Microtasking as an effective approach to help people accomplish their tasks leveraging the bursts of microattention moments that they have. Towards this goal, I am particularly interested in thinking about how we can convert larger tasks into smaller microtasks across a variety of domains where multitasking is common.

Author Keywords
Microtasking, attention management, interruption, microattention.

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

Introduction
As demands on people's attention continue to increase, being able to focus on a single task for a substantial time continues to be a challenge [2,5]. Tasks now not

only originate from background applications on desktop devices, but also accompany us through our mobile devices, encouraging engagement anytime, anywhere [4]. More often than not, we are constantly scheduling one task after the other, rapidly swapping context in and out as we move from one task to the next. While this practice of rapid task switching allows us to attend to as many tasks as need our attention as quickly as possible – there is also considerable effort spent in reinstating context for each task we switch to.

Part of the challenge is that many tasks may be more suited to be completed over a longer period of focused attention, but due to the fragmented nature of how we currently approach tasks, we seldom are able to plan for and set aside large chunks of time to do a single task only. Microtasking, where larger tasks are systematically decomposed into smaller subtasks, may be much better aligned with fragmented attention scenarios – allowing a person to focus on a small task and complete it – within a short period of time. Performing tasks in such a manner has been shown to result in higher quality work and are more resilient to interruptions [1].

Focus

I am interested in exploring how microtasking can help address the tradition attention management problem, where inopportune interruptions cause people to perform tasks worse and have negative impact on their affective state. I am primary interested in Microtasking and Microattention in the following three domains:

Writing

Writing is a way of representing one's thoughts, and strong, skilled writing requires multiple repeated steps of gathering content, organization, expanding into coherent text and editing. While typically one envisions that each of these steps requires focused attention for increasing periods, we are exploring how we can revolutionize the traditional writing process to be accomplish via microtasks. This allows us to not only perform subtasks ourselves in short bursts, but also allow us to integrate others to help complete some of the subtasks that do not require specific context.

Driving

While driving is a continuous attention safety critical task, it is also a learned behavior that potentially allows for opportunity for secondary tasks to be performed. However, there is a lack of proper understanding of which tasks are suitable to be conducted while driving, and little attention has been paid to leverage a driver's changing level of focus during driving, depending on the road conditions and driver state [3]. I am interested in better understanding how some of the in-vehicle tasks can be decomposed into smaller subtasks which can fit safely into the small available attentional chunks without jeopardizing driving safety.

Education

Often teaching certain concepts can be easier if broken into smaller modules. Can we think of breaking down larger education tasks into very small subtasks, that can teach a very small concept in a short amount of time, and can be used as a building block of the upcoming tasks? One can imagine tutorials to be decomposed in a such a way, where people can rapidly switch to the relevant part if certain concepts are already internalized.

Conclusions

Microtasking might as well be a way of tasks get accomplished in the future. I hope to engage the attendees of this workshop to start thinking about how they envision Microtasking to change how tasks are done in a wide variety of scenarios, which each in itself could pave the path for future research.

About

Shamsi Iqbal is a researcher in the neXus research group at Microsoft Research, Redmond. Her areas of expertise include Multitasking and Attention management in multitasking domains, focusing on the desktop and driving in particular. More recently, she has been heavily involved in the Microtasking project at MSR Redmond, focusing on revamping writing.

References

1. Justin Cheng, Jaime Teevan, Shamsi T. Iqbal, and Michael S. Bernstein. 2015. Break It Down: A Comparison of Macro- and Microtasks. CHI '15, 4061-4064.
2. Mary Czerwinski, Eric Horvitz, and Susan Wilhite. 2004. A diary study of task switching and interruptions. CHI '04, 175-182.
3. Shamsi T. Iqbal, Yun-Cheng Ju, and Eric Horvitz. 2010. Cars, calls, and cognition: investigating driving and divided attention. CHI '10.
4. Amy K. Karlson, Brian R. Meyers, Andy Jacobs, Paul Johns, and Shaun K. Kane. 2009. Working Overtime: Patterns of Smartphone and PC Usage in the Day of an Information Worker. Pervasive '09, 398-405.
5. Gloria Mark, Victor M. Gonzalez, and Justin Harris. 2005. No task left behind?: examining the nature of fragmented work. CHI '05, 321-330.