

After working on tabletop computing for my Master's thesis, my intention was to continue on with the Hispace table project in Human Interface Technology Lab (HITLab) under the Industrial Engineering program. However, due to my current shift in research focus and the organizational changes in the lab, I feel that my current research is much more aligned with Computer Science than Industrial Engineering.

My current research focus is on understanding the design challenges of developing social software and to develop a theoretical basis for how to establish design guidelines for social software. Social software is different from single user software because when we use it, we care about how our actions affect others' perception of us and how to interpret the meaning of other people's actions.

When we use software, we develop "mental models" that guide our expectations for how the software should react. Good usability is achieved when these mental models match the behavior of the software. Like the conventional "mental models" we use to represent the behavior machines, we also construct "social mental models" to determine our behaviors in social interactions. The concept of "social mental models" is analogous to what is called "theory of mind" in Psychology.

However, theories of mind are more complex because the people we are modeling are also capable of constructing mental models. This means such theories can be multilayered and recursive like "John thinks I think he's shy" or "Lisa thinks that John doesn't know that I'm aware that Lisa likes John".

When we interact via social software, the software modulates the range of interactions that are possible and the design of the software affects what theories of mind are constructed and, as a result, what users will choose to do. Thus, it becomes possible to use these theories of mind to construct a model of user behavior and how it will emerge through social software design as well as how to influence and encourage certain group behaviors through this design.

This theory of mind process of social software changes the nature of the design task. Often, what is proscribed as best practices in conventional usability will end up leading to poor social behaviors. Despite 3 decades of design, Clay Shirky notes that:

"descriptions of flaming [are] often treated by designers as a mere side-effect [of mailing list software], as if each eruption of a caps-lock-on argument was surprising or inexplicable.

Flame wars are not surprising; they are one of the most reliable features of mailing list practice. If you assume a piece of software is for what it does, rather than what its designer's stated goals were, then mailing list software is, among other things, a tool for creating and sustaining heated argument. " **

Other times, social software faces design challenges which have no parallel in single user software. In my recent paper, *"Intentional Unusability: Supporting deniability through unorthodox design"**, I detail how using the theory of mind could lead to certain unorthodox design decisions which deliberately degrade usability in order to support plausible deniability.

These phenomena indicate that we need to rethink the HCI design process for social software and to develop an understanding of how and why social software is unique and how to design for those particular challenges.

Investigating social software is tough, both from a theoretical and methodological point of view. Such research spans fields far outside of conventional Computer Science ranging from psychology and anthropology to economics and game theory. Being able to integrate and synthesize such diverse fields requires someone with a natural curiosity and solid grounding in many academic traditions. During the last 6 months, I have been working hard on absorbing seminal works from a diverse range of fields in so that I may gain a grounding in different theoretical approaches and be able to apply those perspectives to my research.

From a methodological perspective, it is not immediately clear what are the best approaches towards studying the design problem. Information on existing social software systems is often proprietary and confidential and building your own social software is unlikely to succeed without user adoption. Building successful social software requires an entrepreneurial spirit as well as skills like how to promote your software and understand your market. Over the past year, I have worked hard to understand and forge relationships with the entrepreneurial software community, including a 3 month job at a mobile social software startup in Sydney. I feel that these lessons have greatly enriched my understanding of the field and taught me lessons which are not typically taught within a standard CS curriculum.

I feel that, although high risk, the best approach towards studying social software is to build something yourself and get real people using it in a natural manner. To that end, my plan for the next year or so is to attempt to get at least one social software project off the ground and in widespread use. One project currently in progress is a project with CS graduate student Michael Toomim called PhotoGuardian. PhotoGuardian is a novel method for online photo sharing access control which relies on the ability to answer shared knowledge questions like “what is the name of my dog” for authentication. More details on PhotoGuardian is available in our CHI Paper***. Details of other project ideas is available online at <http://students.washington.edu/xianhang/ideas.txt>.

I feel that social software design is a relevant, important and fruitful area of research and one that I am becoming increasingly passionate about. Although the challenges involved are significant, I feel that my experience and dedication are more than enough to meet them and that the CS program at the University of Washington is the right place for me to pursue these challenges.

*CHI2008 Workshop, To appear. Accessible at http://students.washington.edu/xianhang/chi_workshop1.pdf

** Group as User: Flaming and the Design of Social Software, http://www.shirky.com/writings/group_user.html

***CHI2008 Note, To appear. Accessible at http://students.washington.edu/xianhang/chi_note.pdf