Wearable Computers Are Coming, Whether You Like It Or Not.

Polly Huang
Computer Engineering and Networks Laboratory
Swiss Federal Institute of Technology
huang@tik.ee.ethz.ch

Abstract

For a while, I thought clock towers were simply pretty landmarks and pondered, "why clocks, if they only needed to be pretty?" Then I found out that the weird-looking piece of furniture (a bench I suppose) by the entrance of ETHZ's Computer Science Department was really a retired Cray. Suddenly, the existence of clock towers makes sense. They don't mean to become landmarks or furnitures at the first place. They all once played a very important role as the most prominent computers in their time (to assess time or data). It is difficult for me to realize because more easily accessible wrist watches and PCs have taken over that role. Conversely, people living in the time of clock towers and Crays probably had wondered if there would be need for much smaller computing devices like wrist watches and PCs. "Who would need a wrist watch? I can just walk out my house and read the time from the clock tower." That never seems to stop technology from advancing and the human society continues to be adpative, so adaptive that we sometimes scare the hell out of ourselves. So, if we follow the trend of *increasing accessibility*, it is not difficult to imagine the next generation data computers being more accessible than today's PCs or laptops – something that we can wear with us all the time, just like the wrist watches. They are often referred to as *wearable computers*. If we think today that watches are indispensable, maybe one day we will think the same for wearable computers. Or many have already thought so if cellular phones qualify as wearable computers.

Wearable computing is an active area undergoing research. This presentation is intended to provide an overview and to highlight some of the debates on whether we need wearable computers and whether there exists a killer application. Based on this position paper [1] and an earlier version of the presentation [2], we will begin with a brief walk-through of the terminology and examples. Then, we will take a closer look at existing technologies and research prototypes in four major area: I/O interface, searching and indexing, communication, and power. In addition to showing wearable computing applications in slides, we plan to demonstrate the *augmented memory agent* software released by the MIT Media lab. Finally, we would like to present our plan on pursuing problems in the communication aspect and infrastructure anticipated to make our experiments an actuality.

References

[1] P. Huang. Promoting wearable computing: A survey and future agenda. In *Proceedings of the International Conference on Information Society in The 21st Century: Emerging Technologies and New Challenges (IS2000)*, November 2000.

[2] P. Huang. Wearable computers. Ubiquitous Computing Seminar, Summer Semester 2000, Department of Computer Science, Swiss Federal Institute of Technology, Zurich, April 2000.