Teaching Statement

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> Nothing substitutes a large apprenticeship, a heap of experiences which converts into the base of intuition. –Doug Scott, mountaineer

Mentoring students was a key component of my career as an industrial research scientist. I am excited to apply the lessons I learned to help students build their own "mountain of knowledge".

Not long after I started my career as a research scientist at FX Palo Alto Laboratory (FXPAL), I worked with an intern to design a mobile, location-based system. This was soon after the introduction of the iPhone, and mobile devices were changing rapidly. This expanding market was in one sense a blessing since it opened up our design space considerably wider than it had been just a few years, or even months, earlier, but choice can sometimes be overwhelming, and in this case the intern was having difficulty making the choices necessary to move forward in the project. Progress was slow. In one meeting, I could tell that the intern was particularly unnerved and I asked them what was on their mind, and they admitted that they thought a few other approaches looked interesting and worth trying, but that they did not want to interfere with my "vision" for the work.

I realized I had made a mistake that I would endeavor not to repeat with future interns. From my perspective, I was providing extra help for a young, timid researcher. But that was not it. I had failed to encourage them to think and act like a colleague who would be comfortable speaking their mind, bringing up challenges that might alter the course of a project, and most importantly, feel comfortable taking time to explore and investigate their interests.

After talking with the intern about this, we broadened their project from building a single app to also incorporate comparisons of methods. Keeping the project in scope for the limited schedule of the internship was a challenge, but it was mitigated by the extra effort the intern was now putting in.

This experience early in my career helped me prepare to work with other students. While their levels of experience differ, I found that there is almost always a moment that their interest sparks. The key is to keep a broad enough lens while developing a project until you collaboratively find it, then helping them focus their interests in a direction that pushes the field forward.

I enjoy this process in particular because of the interdisciplinary nature of human-centered computing--finding and following a student's interest is always an adventure worth taking. I have helped students design, build, and evaluate tools in domains related to my core expertise, from workplace whiteboard tools, mobile capture apps, meeting support systems, and tools for building and accessing tutorials. But I have also worked with interns on topics that stretched my knowledge, such as tools to summarize and navigate computational notebooks, methods and apps to help consumers find products in stores that better match their needs, and the design and construction of interactive headgear. Even though I had little prior experience with some of these areas, it was a joy to work with students to help them frame and carry out projects about which they were passionate.

Of course, it is practically impossible to give students in a class the kind of attention provided to interns. But I think the goal, to find a way to ignite intrinsic motivation, to help people acquire the knowledge, confidence, interest, and autonomy to explore a topic confidently, must be the same. Some of my best experiences as a teaching assistant were in sections where I could break students into project groups, allowing me to watch individuals grapple with ideas from the course. Almost always, somewhere along the way, you could see the spark of genuine interest and excitement at least once in each student; and once is all it takes.

Suggested courses

There are several courses I could teach in human-computer interaction and systems.

Needfinding and rapid ethnography

This course can focus on tools designers and developers need to understand the needs and values of their users. This could cover a wide range of topics, including field techniques experience sampling, diary studies, contextual inquiry, surveys, ethnographic methods, and probes to lab-based approaches, including interviews, focus groups, card sorting techniques, and co-creation workshops. The course would also include approaches to communicate findings, including written findings as well as journey maps, scenarios, and storyboards.

Building user-centric tools

This is a broad engineering course can help students understand how to use modern toolkits to build interactive systems. The course would include mobile platforms (iOS and Android) as well as web and desktop experiences. Students would learn how to use wireframing tools to design interfaces; modern layout systems; model-view-controller libraries; notification techniques; background tasks, scheduling, and threading for user-facing systems; and network interfaces. The course will also include methods for testing mobile and desktop interfaces in both field and laboratory settings.

Off-the-desktop, into the wild

This course focuses on designing and building applications that take advantage of IoT toolkits (e.g., Arduino or Raspberry Pi), wearable interfaces, as well as mobile devices to enrich off-the-desktop experiences. Students will learn the basics of hardware toolkits and how to configure and control them with external tools. The course will also include emerging methods for evaluating IoT systems in controlled and uncontrolled settings.

From theory to practice

This higher-level course investigates how to apply theoretical concepts to design strategies when building interactive systems. The course investigates several different theories of human behavior, including activity theory, distributed cognition, language-action theory, and how designers have brought them to bear on the development of new tools and applications. Students will apply theoretical concepts in critiques of their own creations.