

Teaching Statement

My interest in teaching comes from my own curiosity about the world around me. In my desire to understand the outside world better, I have always been eager to learn more. As a teacher, my role is to elicit a similar enthusiasm toward learning by helping my students foresee how knowledge can help them understand the world and provide them with powerful tools to solve complex problems.

Toward that end, my teaching philosophy is based on teaching a sound theoretical basis and supporting it with concrete examples. These examples should bring the theory to life by showing how it can be used to understand and analyze complex problems. Going beyond the classroom, I see the design tradition of “Learning by Doing” as a key part of a human computer interaction curriculum. This hands-on experience provides an illustration of how theoretical knowledge can be applied, and promotes a better understanding of its practical limitations. It also lets students acquire the basic skills to rapidly prototype, implement and evaluate their work.

Course development

By its very nature, the field of Human Computer Interaction covers a wide range of activities. These include capturing user requirements and establishing design goals, engineering the resulting design—in terms of software and, more and more in term of hardware—and finally conducting sound empirical evaluations of the design. Over the last five years, I have worked towards broadening the scope of the HCI curriculum in the CS department at UMD to help students become knowledgeable in each of these areas. In Fall 2002, I re-structured the higher level undergraduate “Introduction to HCI” course around the conceptualization of the design process used by IDEO, a leading industrial design firm. This provides a natural framework to introduce key elements of the HCI curriculum (e.g., the use of a persona to establish clear design objectives, the importance of rapid prototyping techniques, and the need for sound evaluation), while reinforcing the intrinsically iterative nature of the design process. Given the scope of the materials to be covered, I am currently in the process of transforming this part of the curriculum further by splitting this course between an entry level course focusing on the design process itself, and a upper-division course focusing on implementation techniques (to be taught by other faculty).

At the same time, in collaboration with the software engineering group, I developed a new graduate level introduction to empirical evaluation. This class covers all aspects of conducting a successful experiment, including the importance of sound measurement methods, experimental design, and a refresher of statistical methods commonly used to analyze empirical data. To complement the provision of theoretical knowledge, the curriculum relies heavily on “hands-on” experiences focusing on the replication of known experiments as well as the development of new experimental protocols in a semester-long project.

I have also introduced rapid prototyping techniques as part of the curriculum. With the rise of ubiquitous computing, the focus of HCI is moving from desktop applications to a wide variety of devices. As a result, the ability to build hardware prototypes has gained in importance. To this end, I have recently established a rapid prototyping lab (including a laser cutter, a 3D printer, and the tools and equipment to create printed circuit boards). This lab was successfully used to teach two seminars on rapid prototyping techniques and I am planning to teach this seminar on a regular basis.

Mentoring

Mentoring student is a key aspect of professorial life. At the graduate level, I was very fortunate to work with a number of excellent students who published in leading ACM conferences—some as early as during their second year. I believe that this early exposure to the highest standards is key to a successful career in academia. Based on this consideration, I have started semi-annual “paper clinics” to give students the opportunity to receive early feedback on papers that they are planning to submit to UIST or CHI, the main conferences in our field. These paper clinics offer students the opportunity to improve the presentation of their work and give them the opportunity to practice their skills as reviewers.

At the undergraduate level, I have supervised student research projects with great success. Kevin Conroy, was awarded the J.R. Dorfman Prize for Undergraduate Research in our College for his work on

paper augmented digital documents, and Morgan Dixon, a Junior who worked with me last summer as a NSF REU student, presented his work on ExperiScope at CHI'07.

In the future I intend to further the development of well rounded curriculum blending innovative design approaches, mastery of rapid prototyping techniques which are becoming more and more important as cost is falling quickly, and sound experimental practice so that students can evaluate their design with confidence. I would also like to develop multi-disciplinary course series. Taking digital game as an example, a typical series might start with a design class focusing on establishing the game concept, followed by a graphics class allowing them to implement the game, followed by an empirical studies class to establish how users respond to the games. By spanning over multiple courses, this approach lets students consider in depth more realistic problems and let them understand the intricacies of system development.