

HCI Design Graduate Program at the School of Informatics, Indiana University

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ABSTRACT

In this paper we describe the HCI Design Graduate Program at the Indiana University School of Informatics. We pose a series of questions that should be explored by all programs.

Author Keywords

Design and HCI, Human-centered Design, Interaction Design, Education, Curriculum, Science and Design, Case Studies, Studio-based Learning, Project-based Learning.

ACM Classification Keywords

HCI Education, Design.

INTRODUCTION

There's a famous parable that's told among researchers in the field of evaluation studies. A variation of this story follows: A man walking down the street discovers his friend on his hands and knees under a lamp post near his home. His friend asks him what he's doing. "I'm looking for my keys." After a few minutes with no results, the friend inquires, "Are you sure you lost your keys here?" "No," the man responded, "I dropped them by the door." "But why are we looking under the lamp post," the friend asked in dismay. "By the door it's too dark. Over here I can see!"

What does this story have to do with Human-Computer Interaction (HCI) graduate education at Indiana University's School of Informatics? We made a conscious decision three years ago when the program was formed to create a graduate program that focused on learning in new ways – by topic and by method. We chose to focus where the "CHI light" was not very bright, that is, in the area of human-centered design. While we do not believe that most HCI programs are looking in the wrong places, we do believe that there is value in searching those areas that are

not as well lit, and certainly human-centered design is one such place.

The remainder of this paper describes our program and responds to the questions asked by the workshop organizers.

PROGRAM PHILOSOPHY AND GOALS

New realities await Human-Computer Interaction Design (HCID) graduates in this new millennium. The *Dot Coms* have failed. The contexts of Human-Computer Interaction have shifted from the exclusive domain of the desktop to a wide variety of devices, sometimes large and sometimes small, sometimes public and sometimes private. Demonstrating the importance of experts in HCID in the marketplace is more difficult in the economies of a post 9/11, post Enron, color-coded threat advisory culture.



We propose a program of study that makes our students highly effective and sought after participants in this new world. We want to ensure that the program of study follows from strategic thinking about the role of HCID in organizations, corporate and public.

Back Stage. Opportunities follow from new realities. There is and will always be a clear value to understanding human needs and social contexts of computers and information. Nevertheless, you would be prudent to be a little bit worried about the field of HCI as it stands. This is a field that has re-invented and re-named itself several times, including such appellations as *Industrial Engineering*, *Ergonomics*, *Human Factors*, *Man-Machine Symbiosis*, *Human-Computer Interaction*, *Usability*, *Experience Design*, *Interaction Design*.

Goals and Vision. Given this state of affairs, the goal of our program from a pedagogical point of view has to be to foster individuals with diverse and substantive skills. Our graduates need the interpretive vision to apply their skills in tangible and effective ways regardless of fashion within the academic HCI community. They need to be able to demonstrate and effectively argue for the value of strategic, human-centered design to technology-centered and enterprise-centered colleagues in their post-graduate life. They need to be leaders with the power and influence to

ensure that human-centered thinking drives technology and enterprise. They need to be literate, capable, and engaging not only about design, but also about technology and business.

Some of the aspects of our vision are:

1. Computer Imagination
2. Design Synthesis
3. Transferable Prototyping
4. Scale is Part of Design
5. Viability is Part of Design
6. Possibility is Part of Design
7. Design is Leadership

HCID and Informatics. HCID is the branch of informatics that studies and supports the design, development, and implementation of humanly usable and socially acceptable information technologies. The goal of the field is to shape new media and tools that will support human use, augment human learning, enhance communication and lead to more acceptable technological developments at the individual and the social levels.

Research into HCID draws extensively on mainstream informatics concerns with cognition, communication, representation, and computation. HCID professionals seek to identify the nature and parameters of human information processing at the interface, to design forms of representation that support human interpretation and use of information, to reliably and validly test new technologies for usability and acceptability, and to determine how information technologies change working practices and social activities. At Indiana University, the HCID program draws faculty from across campus to provide the appropriate blend of multi-disciplinary expertise required to study this new discipline.

What's in a Name. Human-Centered Design and Human-Computer Interaction are names for complimentary but often-confused endeavors. The terms are often used as synonyms, but they are not the same. We have adopted HCID for Human-Computer Interaction Design in order to emphasize that the focus of our program is based in both traditional HCI and in Design.

STRUCTURE OF THE PROGRAM

The Masters of Science Degree in Informatics with a concentration in HCID is structured as a 36 credit hour program of study. 18 credit hours are core to HCID, required of all students. 18 credit hours need to be carefully chosen to create an area of specialization.

Courses:

First semester.

I501: Introduction to Informatics

INFO I590: HCI Design I

Elective

Second semester.

INFO I502: Prototyping Methods and Strategies

INFO I590: HCI Design II

Elective

Third semester.

INFO I694: Capstone/Thesis

Elective

Elective

Fourth semester.

INFO I694: Capstone/Thesis

Elective

Elective

Total: 36 credit hours

COURSE DESCRIPTIONS

Introduction to Informatics. Emphasis on topics in human-computer interaction and human factors, collaborative technologies and group problem solving, ethics, privacy, and ownership of information and information sources, information representation and the information life cycle, the transformation of data to information, futuristic thinking.

Prototyping Methods and Strategies. Students will learn and begin authoring in Macromedia Flash, a multimedia authoring application and hot new medium in its own right. Topics will include learning the Flash authoring paradigm, the creation of animations and interactivity, Flash application architecture, and basic programming in its native ActionScript. In a final project, students will fuse Flash development and HCI methods to envision an innovative user experience and prototype it in Flash.

HCI Design I. This course is organized around a collection of readings and three design projects concerned with applying human-computer interaction principles to the design, selection, and evaluation of interactive systems such as web-based sites and tools, personal digital assistants, web learning, information portals, security systems, productivity and knowledge management systems, and information appliances. In simplest terms, this course attempts to be as specific as possible about the major concepts of interaction design, pointing out generalizations across different applications whenever possible. Concepts from other design fields, for example, architecture, instruction, music composition, and dance, are used to gain insight about HCID strategies. A secondary emphasis will be on protocols for team decision making and work flow.

HCI Design II. This course is targeted at preparing you to succeed in the capstone project course. Its mission is to relate the theory and design exercises of HCI Design I to developing the skill set to allow you to deeply apply a

human-centered design process in the real world. Topics covered include: Design methods; Observation techniques; Insight development; Concept creation; Conceptual, Behavioral, Appearance, and Actual Prototyping; Business and Development Strategy; Constructing Design Arguments/Explanations and Presentations.

Capstone (distributed over two semesters). The goals for the capstone project will vary with what the student expects to do when he or she graduates. For all participants, we expect that this project should serve as the key element of a portfolio that showcases your talents. All capstone projects must demonstrate:

- Skilled observation work
- Competent background research
- Deep insights
- Divergent concept generation
- Convergent prototyping
- Computer imagination
- Compelling presentation
- Excellent production values
- Timely execution

Depending on the student's area of specialization, the capstone project will emphasize at least one of the following:

- Strategic design planning
- Testable software prototyping
- Software implementation planning, including convincing discussion of scale
- Detailed usability analysis
- Hardware prototyping
- Appearance prototyping
- Entrepreneurial planning

STUDENT DATA

Over the past three years we have admitted approximately 60 students, about 20 students each year. In 2004-2005, there are 22 students in the Masters HCID program.

WHAT WORKS AND WHAT NEEDS TO CHANGE

There are interesting challenges and opportunities that result from incorporating design and HCI in the same curriculum, given that we accept students with backgrounds either in design as it owes to traditions of product design, communications design, art, and architecture or HCI as it owes to traditions of cognitive psychology and computer sciences. There are numerous, important differences in

cultural contexts of learning and research between these source disciplines and these differences have implications for our style of pedagogy and research. Many of our primary challenges and insights concern the creation of an infrastructure and culture to scaffold learning in HCI and design. We articulated this in [1].

COMMITMENT TO CONTRIBUTE

We pledge our commitment to contribute material to the HCC Education Digital Library.

FIVE QUESTIONS FOR DISCUSSION

1. What specific skills should every graduate student have on entry and graduation from these studies?
2. If this varies from school to school, program to program, how can potential employers understand what they are getting - what skills are warranted by which programs?
3. Is the design emphasis universal to all programs? Does anyone still emphasize only usability? How varied is the notion of design? How do we defend the design emphasis internally if we are correct in our thinking that design emphasis is generally accepted externally?
4. What would it take for one of our Masters students in HCID to get into the PhD program at Stanford, or a research unit at Microsoft? Programming? Usability? Visual literacy?
5. How do we sell a viable concept of facilities that can support collaborative design work as well as usability internally to an informatics oriented school? What kinds of facilities do other programs provide? Is this an issue at other schools?

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