

## Human Computer Interaction Program Proposal

April 21, 2003

**1. Name of the proposed interdepartmental program.**

Human Computer Interaction (HCI)

**2. Name of the degree.**

Ph.D. in Human Computer Interaction

M.S. in Human Computer Interaction

**3. Name of the departments involved.**

Aerospace Engineering and Engineering Mechanics

Agricultural and Biosystems Engineering

Architecture

Art and Design

Botany

Civil and Construction Engineering

Computer Science

Curriculum and Instruction

Electrical and Computer Engineering

Geology and Atmospheric Sciences

Greenlee School of Journalism and Communication

Industrial Education and Technology

Industrial and Manufacturing Systems Engineering

Logistics, Operations, and Management Information Systems

Mathematics

Mechanical Engineering

Music

Philosophy and Religious Studies

Psychology

Statistics

**4. Need for the proposed program.**

This is a new intensely-multidisciplinary field, made possible by the unprecedented change in computer-related technology. This program will provide a conduit for students in all colleges to study in this area.

The computer keypunch, once a symbol of the Space Age, is now a museum piece. In ten years time, the mouse and keyboard we associate so closely with our own high technology will follow the keypunch into obsolescence. In their place will be innovative interfaces that streamline the interactions between people and the rapidly

increasing network of computers that work for them. These new interfaces will redefine the relationship between people and the net, blurring the boundaries between devices, blurring the boundary between the real and the digital. Bridging the gaps between today's technologies, next generation interfaces will combine ever-increasing computing power with the pervasiveness of the cell phone. Coming developments in Personal Digital Assistants (PDAs), wearable computers, and wireless networking will allow people to carry computer interfaces with them anytime, anywhere – dramatically expanding the computer's role in everyday life.

As the use of computers becomes increasingly central, the study of Human Computer Interaction will emerge as one of the most dynamic and important areas of research. Interdisciplinary in the extreme, this emerging field will have an impact on nearly every area of human endeavor. The proposal for a Human Computer interaction graduate major reflects a broad recognition both in academia and industry that the need exists to specifically train researchers in this burgeoning area, to meet the challenges faced by this rapidly evolving area of technological progress. The women and men who contribute to this new paradigm will be shaping the future.

**5. Objectives of the proposed program including the student learning outcomes.**

The objectives of the proposed major are:

- To provide broad and robust graduate student education in Human Computer Interaction.
- To enhance the national and international reputation of Iowa State University in the field of Human Computer Interaction.
- To foster further intellectual exchange and research collaborations among Iowa State faculty, students and staff involved in the study of Human Computer Interaction
- To provide a formal entity for seeking broad-based resources for the support of lecture series, retreats, graduate assistantships, postdoctoral fellowships and various graduate student prizes for excellence in Human Computer Interaction Research.

The student learning outcomes of the proposed major are:

- The HCI graduate program expects all students to demonstrate mastery of required coursework by maintaining a grade point average of 3.0 or better. All students will demonstrate the ability to work in teams, to design and publish a research project, to work in multiple disciplinary areas, and to orally present their work. In addition, all students are expected to be aware of societal and ethical issues that surround the discipline. ....UNDER REVISION...

**6. General description of the program.**

The study of the relationship between humans and increasingly powerful, portable, interconnected and ubiquitous computers is becoming one of the most dynamic and significant fields of technical investigation. The Interdepartmental Graduate Major in Human Computer Interaction is an interdisciplinary training program created to

provide advanced training and foster research excellence in Human Computer Interaction at Iowa State University.

Faculty from across the university who are involved in exploring the relationship between humans and computers will be members of the HCI faculty. These faculty span a broad range of disciplines from five colleges. Building on our particular strengths at ISU, the technical research component of the HCI initiative will focus on five areas:

- Information sensorization – human factors, cognitive models, virtual and augmented reality interfaces, haptics;
- Mobile/ubiquitous interfaces – wireless connectivity, integration of remote sensors and participants, group interfaces;
- Intelligent agents – network-based software services for individuals, groups and organizations;
- Accessibility for non-technical collaborators – technology to facilitate interdisciplinary collaboration;
- Enabling infrastructure – software and hardware to facilitate HCI research.

The program will welcome students from a diverse collection of technical and creative fields whose unifying characteristic is the desire to develop new ways to bridge the gap between human and machine. An M.S. degree and a Ph.D. degree will be offered. At the Masters level, admission requirements will include an undergraduate degree and demonstrable software skills. For the Ph.D. degree, admission requirements will include a master's degree and a portfolio demonstrating the potential for research at the boundaries of the human computer interface.

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Notes from the Faculty Senate Curriculum Committee (FSCC):

The full proposal can be found at the Virtual Reality Applications Center web page:

<http://www.vrac.iastate.edu/HCI/gradprog/>

Look for the Basic HCI Information and for the Regent's Questions.

The FSCC has asked that HCI proposal include a more complete statement of the student learning outcomes in Section 5 (above). That is being done with consultation with persons in the College of Education.