Department of Industrial Design

1. Introduction

As a specialized field focusing primarily on the aesthetic form of products produced in large quantities, the discipline of industrial design has been growing into an area that includes exploration of the essential desires and values of humankind as well as suggesting and materializing creative concepts for new products and services to satisfy those desires and values. Instead of staying within the boundary of traditional design education concentrating on aesthetic form, KAIST Department of Industrial Design became the first industrial design department in Korea to introduce design education in convergence of science and technology. In the face of an era of the Fourth Industrial Revolution, the Department is currently providing education and research opportunities to produce practical designers, convergent design professionals, and design researchers who will lead creative innovation.

Design education at KAIST aims for a balanced development of three different qualities: the ability to analyze design issues from a human-centered perspective and present adequate solutions (human-centered design); the ability to learn and use new technologies as a means to solve design issues and materialize ideas (convergence of new technologies); and the ability to practically commercialize design outcomes in innovative business.

2. Education and Research Activities
Research groups of the department of industrial design are as follows.

❐ **Human-Centered Interaction Design Laboratory**
HCIDL (Human-Centered Interaction Design Lab) focuses on planning and developing human-centered interaction through in-depth research for physical, cognitive, emotional, and socio-cultural aspects of human beings. Research interests include 'Design Planning' for developing innovative design strategy and concept through user-centered design, contextual inquiry, and future research; 'User-Interface Design' which focuses on developing and evaluating user-interface design by understanding a user's cognitive information process: 'Emotional Design' for a user's emotional satisfaction; 'Cultural Design' for reflecting a user's socio-cultural characteristics on design. In order for systematic application of research interests, HCIDL develops diverse design tools and software such as video-annotating program for user-observation, remote usability testing program, mouse tracking software, wearable camera for understanding mobile-user's behavior. HCIDL is harnessed with state of art facilities including usability testing room with full equipment of video recording and observation tools, gaze analyzer, and portable ethnographic tool kit for user-observation.

❐ **Collaboration and Interaction Design Research Laboratory**
This laboratory investigates research issues of collaboration and interaction from the design perspective. Collaborative designs are concerned with the tools, methods and environments to achieve better design quality by working together with other designers, other professionals and end users. Interaction design is in the upper level

of collaborative design. Interaction is understood as a cyclic process in which two actors alternatively listen, think, and speak. In this respect, the research laboratory focuses on new tools and techniques to facilitate seamless and efficient human-human and human-product / system interactions. With the design methods investigated, the research also addresses real product and interaction design problems. Representative research and consultancy projects include 'the development of prototyping tools for designers', 'case studies of remote participatory design workshops', 'augmented reality-based collaborative 3-D CAD system and intuitive modeling interface,' 'new concepts of home appliances,' and 'information architecture generation tool for consistent software interface identity.'

❒ **Design Media Laboratory**
The advent of new media has exchanged human lifestyle, thinking style, and the style of form. Design media is the hardware and software employed in developing design ideas. Technological innovation in design media facilitates new ways of designing. The Design Media Laboratory investigates the useful applications of emerging technologies which can augment designer's creativity and enrich human life. Currently, our research activities are focused on hyper design media and tangible communication media. Hyper design media combines both the versatility of digital tools and the tangibility of traditional design material using augmented reality and physical computing technology. We think of products as tangible communication media and investigate the way that enriches human-to-human and human-to-artifact interactions in ubiquitous computing environment using tangible communication media.

❒ **ID+IM Design Laboratory**
"ID+IM" is multi-disciplinary product design laboratory based in Korea, founded by Prof. Sangmin Bae in 2005. "ID+IM" is an abbreviation for 'I design, therefore I am' which is from Rene Descartes' famous quote 'I think, therefore I am' and means our design directions of Innovative Design, Intuitive Design and Interactive Design as well. ID+IM Lab is only for designers who deeply understand the importance of design as well as social role of designers based on the belief of 'I design, therefore I am.' Breaking from the research-based study, we are pursuing an innovative, intuitive and practical design for the real world. Intuitive product design, Bio-design (studying organic system and basic form of nature), Green design (considering sustainability and environmental-friendly) and interactive design using physical computing are our design interests. Especially we design products which can be shared by society and give benefits back to society to achieve the concept of "Design is sharing" in design ethics. For designing real-world products, we have been participating international competitions and as the result of our efforts, we won Best of the Best awards and Best for 2007 Reddot Design award and awarded two Silver award prizes for 2008 IDEA Competition. We are developing new innovative and experimental product designs for a daily life and participating various international design shows and competitions to promote and release them into a real market.

❒ **Design IS Laboratory**
Design IS (Integration and Strategy) lab seeks ways to integrate multi-disciplinary elementswithin design process strategically. Design IS lab seeks ways to achieve design innovation through integration between strategic left brain and emotional right

brain. By doing so, Design IS continues to explore what 'desingn is'.

❐ Creative Interaction Design Laboratory (CIxD Lab)
We are exploring various design approaches and possibilities in the advent of new digital and computational technologies. In particular, we are currently focusing on the following topics. 1) Redefining UX (User Experience) design concept and theory as we face with the 4th Industrial Revolution era, 2) developing human-centered research methods and tools for creative interaction design, and 3) developing new concepts of interaction design approaches and theories under the new technology development. In our research activities overall, we particularly emphasize how design can promote quality of human life, experience, values, and enhancement of human potential.

❐ Color and Emotion for Design Laboratory
We empirically explore the affective experiences of humans with a particular focus on affective judgment related to color. Currently, in 2009, we are fostering multidisciplinary research in various topics such as color psychology and emotional design. Ultimately, we aim to provide scientific evidence for design research and creativity development using designerly research methodologies.

❐ Design Technology Laboratory
Design Technology Lab. (DTL) is the intersection spot of traditional design practices and digital technologies. Its research focuses on 1) understanding/analyzing the current design workflow and ideation/presentation/communication skills, 2) designing/implementing/evaluating novel interaction techniques/systems for design activities, and 3) suggesting new paradigms for both the real design process and design education.

❐ My Design Laboratory
My Design Laboratory performs design research into non-professional design activities: we study users as the designers and makers of their own life. Our goal is to develop the next generation tools to support users in their design and fabrication needs.
Our current interest spans three topics: 1) We are interested in online design platforms for personalizing products and study how to guide users through an enjoyable and effective design process. 2) We are interested in augmented reality as a means of designing in context, how to design in the living room, in the garden and in the car. 3) We are interested in decentralized and personal manufacturing using 3D printers and robots.

❐ MAKinteract Laboratory
The MAKinteract Lab in the department of Industrial Design at KAIST. is a research group composed of inventors, designers and makers working in the field of Human-Computer Interaction (HCI).
Through user-centered design, fabrication, iterative prototyping and users studies we make new tangible and wearable systems to understand human behavior and imagine yet unseen interactions.