Laboratory / Center profile

Human System Design Laboratory

http://lab.sdm.keio.ac.jp/maenolab/index.htm (in Japanese)

Representative: Professor Takashi Maeno

The Human System Design Laboratory ("Human Lab") refers to Maeno Laboratory in a narrow sense, while in a broader sense, it refers to a laboratory open to members inside and outside of Keio SDM. The activities of the laboratory are carried out openly by Maeno Laboratory, Shirasaka Laboratory, students from other laboratories, researchers and interested individuals from outside Keio SDM. In this newsletter, we will introduce the Human Lab in a narrow sense, as in Maeno Laboratory.

The Maeno Laboratory has approximately sixty members, including master's students, doctoral students and researchers. Members are involved in various fields, such as human cognitive psychology and system design, their motto being "research everything that relates to humans." A wide range of research topics are covered; currently, the following topics are under study: "Design of Social Systems Based on Happiness Study," "Designs of Local Revitalization Models," "Community Design," "Ranking Based on Personalization of Hotels and *Ryokan*" (Japanese-style hotels), "Design of Business-Academia Collaboration Workshop," "Innovative Workshop Design," "Simulation for the Integration of Bottom-Up and Top Down Approaches in an Organization," "Universal Design and Ethnography," "Throb Study," "Giftedness Study," "Human Growth Model Study," "Innovative Design Workshop for Business Management," "Relationship Between Sports and Adaptability to Diversity," "Optimization of Facial Massage," "Quantification of Senses of Touch," "Social Entrepreneurship," "English Education" and "Applications of Wants Chain Analysis." Although many of our topics in recent years have dealt with "collaborative creation", it is not limited to this theme. All of our researches aim to design technological, social and/or human systems with a view to contributing to peace and the happiness of humans.

You are most welcome to visit us, participate in and comment on our activities. Please feel free to contact us.

Visual Simulation Laboratory (VS-Lab)

http://lab.sdm.keio.ac.jp/ogi/lab.html (in Japanese)

Representative: Professor Tetsuro Ogi
Members: Assisting Professor Yoshisuke Tateyama and others

The Visual Simulation Laboratory deals with designs of next-generation information, communications and media systems based on technologies, such as visualization, virtual reality (VR)/augmented reality (AR) and tele-immersion. We carry out our research within a broad spectrum, from basic technologies such as immersive displays, tele-immersion and big data analysis, to applications such as utilizations of life log data, digital technologies for museums and local revitalization using contents. Examples of our research are:

Tele-Immersion

Tele-immersion is a technology that enables users at geographically distributed sites to communicate as if they were in the same physical room. We are developing communication using CAVE and tiled displays as well as video avatar technology, which integrates a persona to a virtual world. Recently, we conducted an experiment with 3D video communication by connecting with Astronaut Hoshide at the International Space Station, as well as with SHINKAI 6500, which was exploring the seafloor at a depth of 5,000 meters.

3D Video communication with Astronaut Hoshide.

Digital Museum

Digital museum uses digital technologies such as virtual reality (VR) and augmented reality (AR) to make displays attractive in museums. For example, with the application of spatial AR technology, items can be displayed with descriptions using CG video. Additionally, we create contents that allow visitors to interact with the art pieces, an example of this being digital 3D *Ukiyoe* (Japanese woodblock prints).

Immersive Driving Simulator

In collaboration with Nishimura Laboratory (Control Systems Design and Dynamics Laboratory), we are developing driving simulators for automobiles and motorbikes using the immersive CAVE display. This system constructs a simulator with a high degree of reality while measuring data on how drivers/motorists operate vehicles and pay attention to safety. We are applying this system to measuring the driving abilities of the elderly and to the development of a navigation system using HUD.

Immersive motorbike simulator.

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SDM System Design and Management