The Department of Social Informatics seeks to clarify the structures of our highly complicated information society to actually build information systems using its techniques in the areas of global computer networks and large-scale databases, taking also into consideration the fact that autonomous decentralized information networks are taking root in our daily activities. It also supports the activities of human society that has globalized in the areas of culture, economics, environment, disaster prevention and other fields.
**Education and Research on Contents and Information Access Environments as Social Information Platforms**

TANAKA Katsumi, Department of Social Informatics

Deciding how society should handle computerized information and knowledge and how to create information access environments for such information are key issues in building social information platforms for the Internet age. At the Department of Social Informatics, we have a Social Information Model Division pursuing education and research for this purpose. Our education and research focus on the technical problems related to the practical realization of social systems and their impact on society, which deal with the creation of e-governments and multimedia libraries, etc. founded on the modeling and database technologies for information and information systems scattered worldwide as well as theories of information organization and retrieval.

Society can be viewed as a distributed information system with information being generated, forwarded, accumulated and used in various locations. This information induces action and produces new information. The Distributed Information Systems Group implements education and research into systems for accumulating, managing and utilizing this distributed information. Furthermore, humankind has so far amassed vast volumes of information and knowledge in the form of libraries, magazines, and sounds as well as audio and visual recordings. The Digital Library Group has been introduced with the objective of conducting education and research to create new digital libraries by efficiently digitizing this information, organizing and structuring it into groups of knowledge, furnishing powerful search functions to cater to varying usage requirements and then supplying functions so that the information searched can be viewed and used with ease. Additionally, due to the rapid progress in information technology, greater importance has been placed on information technology to support the creation and distribution of software patents and copyrights, copyrights and design rights for multimedia information, and other intellectual properties as well as their social and legal systems. In view of this, the Information Society Group has been also set up to provide education and conduct research into the handling of intellectual property and associated information. In fiscal 2006, Keihanna Joint Graduate School was established in collaboration with Osaka University, Nara Institute of Science and Technology, National Institute of Information and Communications Technology (NICT), and NTT Communication Science Laboratories. The Knowledge Cluster Group was also set up within the department mainly to implement education and research relating to knowledge processing and information credibility.

**Go Out from the Laboratories and Explore the Field!**

ISHIDA Toru, Department of Social Informatics

Are you mistakenly under the impression that information science is confined to the laboratories? Social informatics looks at the state of information systems in our society and goes out and analyzes a system at its actual location of use so as to come up with new ideas. For example, the Department of Social Informatics is working with an elementary school in Kyoto to develop a nature observation system that uses mobile computing technologies. Overseas, we have a base in Thailand that participates in an international project to preserve the environment, shedding light on the ecology of rare animals such as sea turtles, Mekong catfish and dugongs using the latest bio-logging techniques. Moreover, we are developing a "language grid," which allows users to use a combination of translation software and dictionaries that are registered on the Internet in collaboration with research institutes, universities and corporations worldwide with a view to overcoming language barriers. International NPOs and NGOs have already started making use of this language grid. The system is also used to provide language support to non-Japanese patients at Kyoto City Hospital and Kyoto University Hospital. Furthermore, the Department of Medical Informatics of Kyoto University Hospital and the Disaster Prevention Research Institute also participate in the Department of Social Informatics. In this way, our department drives forward with research through interaction with society and international partnerships.
Harmonizing Society and Information Technology
### Divisions and Groups

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*TANAKA Katsumi, NISHIO Shojiro, ISOZAKI Hideki, and KIDAWARA Yutaka

### Graduate Curriculum

#### Courses for the Master's Program

- **Social Informatics**
  - Information System Design I
  - Information System Analysis
  - Seminar on Social Information Networks
  - Seminar on Disaster Prevention Informatics 1
  - Seminar on Disaster Prevention Informatics 3
  - Seminar on Information Education
  - Information Organization and Retrieval
  - Biosphere Informatics
  - Crisis Management
  - Business Information
  - Information Modelling
  - Advanced Study in Social Informatics 1
  - Field Informatics Seminar

- **Information Systems**
  - Seminar on Social Information Models
  - Seminar on Biosphere Informatics
  - Seminar on Disaster Prevention Informatics 2
  - Medical Informatics Seminar
  - Dispersed Information Systems
  - Multi-Agent Systems
  - Disaster and Information
  - Medical Informatics
  - Information Education
  - Cryptography and Information Society
  - Advanced Study in Social Informatics 2
  - Strategic Communication Seminar

#### Courses for the Doctoral Program

- **Advanced Seminar on Social Information Models**
- **Advanced Seminar on Social Informatics Networks**
- **Advanced Seminar on Biosphere Informatics**
- **Advanced Seminar on Regional Disaster Prevention Information Systems**
- **Advanced Seminar on Medical Informatics**
- **Advanced Seminar on Information Education**
- **Advanced Seminar on Social Informatics**
Teaching Staff

Professors
YOSHIKAWA Masatoshi; TANAKA Katsumi; NISHIO Shojiro (Osaka University, Adjunct); ISOZAKI Hideki (NTT, Adjunct); KIDAWARA Yutaka (NICT, Adjunct); ISHIDA Toru; OKAMOTO Tatsuki (NTT, Adjunct); YOKOZAWA Makoto (Nomura Research Institute, Adjunct); MORIYA Kazuyuki; SAKAI Tetsuro; TATANO Hirokazu (D, Affiliated); YAMORI Katsuya (D, Affiliated); HAYASHI Haruo (D, Affiliated); YOSHIHARA Hiroyuki (H, Affiliated); KITA Hajime (M, Affiliated)

Associate Professors
ASANO Yasuhiro (Special Research and Education); TAJIMA Keishi; NAKAMURA Satoshi (Special Research and Education); JATOWT Adam (G30); HARA Takahiro (Osaka University, Adjunct); MIYAZAKI Jun (NAIST, Adjunct); ZETTSU Koji (NICT, Adjunct); YAMADA Atsushi (ASTEM, Adjunct); MATSUBARA Shigeo; KINNY David (G30); MANABE Yoshifumi (NTT, Adjunct); KINOSHITA Takashi (Nomura Research Institute, Adjunct); ARAI Nobuaki; Lina KOYAMA; MAKI Norio (D, Affiliated); HATAYAMA Michinori (D, Affiliated); KURODA Tomohiro (H, Affiliated); UEHARA Tetsutaro (M, Affiliated)

Senior Lecturers
TAKEMURA Tadamasa (H); INABA Rieko (Special Research and Education)

Assistant Professors
MA Qiang; SHIMIZU Toshiyuki (Industry-Government-Academia Collaboration); OGINO Hiroyuki; OHSHIMA Hiroaki (Industry-Government-Academia Collaboration); YAMAKAWA Yoshinori (GCOE); HATTORI Hiromitsu; MITAMURA Hiromichi; OKUYAMA Junichi (GCOE); SUZUKI Shingo (D, Affiliated); KUME Naoto (H, Affiliated); OKAMOTO Kazuya (Industry-Government-Academia Collaboration) (H, Affiliated); MORI Mikihiko (M, Affiliated); TSUJI Takaaki (GCOE) (M, Affiliated); OHIRA Kenji (GCOE) (M, Affiliated)

(D): Disaster Prevention Research Institute, Kyoto University
(H): Department of Medical Informatics, Kyoto University Hospital
(M): Academic Center for Computing and Media Studies, Kyoto University
(ATEM): Advanced Scientific Technology & Management Research Institute of Kyoto
**Social Information Model**

The development of information networks has enabled the widespread use of information bases distributed throughout the world. The Social Information Model Division’s Groups are based around a discussion of the formation of these distributed information bases. Through a study of the creation of working social information systems such as multimedia libraries, the Groups in this Division teach and study information models of today and their possible forms in the future, covering such topics as the problems that information systems cause and their impact on society.

**Distributed Information Systems**

—Society is evolving thanks to new technology that allows us to manage and utilize distributed information—

Contemporary society relies heavily upon the massive amount of information that is found mostly on the Internet. Social progress will depend upon the establishment and continuous revision of both a) technology to enable the rapid and accurate transmission of data, and b) technology to allow rapid searches of vast volumes of data to retrieve required information in a timely manner. For this reason, we will conduct basic research on databases, information retrieval, XML, Web information systems, Web link analysis, and data security. We will also conduct applied research on development of information systems better adapted to our society. (Professor: YOSHIIKAWA Masatoshi, Associate Professor: ASANO Yasuhito, Assistant Professors: MA Qiang and SHIMIZU Toshiyuki)

**Digital Library**

—Aiming to create fundamental technologies for the organization, retrieval and distribution of information, and systems that will apply these technologies—

Humankind has accumulated an incredibly vast amount of information and knowledge in the form of books, magazines, voice and sound recordings, and still and moving images, to name a few. We will focus on basic research regarding the content that forms the basis of social information, and the environments in which this information is accessed. We will study ways to effectively digitize this content, organize and systematize it, and add powerful retrieval functions to meet the requirements of a wide range of applications. We will look at how to offer useful functions such as ones to recombine retrieved data into a form that makes it easier for users to read through and utilize. Our research and teaching topics cover a wide range of fields, and include databases, multimedia information systems, information retrieval, Web information systems, data mining and data visualization, content processing and digital archiving, and mobile information systems. (Professor: TANAKA Katsumi, Associate Professors: TAJIMA Keishi, NAKAMURA Satoshi, JATOWT Adam, Assistant Professor: OHISHIMA Hiroaki)

**Information Society Adjunct Unit**

—The application of IT to social systems—

[in collaboration with the Advanced Scientific Technology & Management Research Institute of Kyoto (ASTEM)]

With the rapid progress of information technology, there has been a corresponding rise in interest regarding the issue of intellectual property (information-based intellectual property) related to information technology, such as software patents and copyrights as well as copyrights and design rights stemming from multimedia creations. The issue of intellectual property needs to be considered from both technological and social perspectives and requires “IT-type” people who are familiar with the systems and processes of not one field but many. From this perspective, we will study the handling of both information-based intellectual property and information about intellectual property by making maximum use of the methodologies of informatics and sociology and applying them to the domain of information-based intellectual property. (Professor: TANAKA Katsumi, Associate Professor: YAMADA Atsushi)

**Knowledge Cluster Adjunct Unit**

—Extracting, organizing and retrieving knowledge, and the user interfaces involved in these processes—

[in collaboration with the Graduate School of Information Science and Technology, Osaka University; Graduate School of Information Science, Nara Institute of Science and Technology; NTT Communication Science Laboratories, NTT Corporation; National Institute of Information and Communications Technology]

In the coming knowledge society, the technology of extracting, organizing and searching for knowledge using the Internet and databases will only become more important. Our teaching and research topics will cover knowledge extraction, the organization of information and knowledge, searching for knowledge, the reliability and personalization of data, knowledge delivery platforms and user interfaces. (Professors: Katsumi TANAKA, Shojiro NISHIO, Hideki ISOZAKI, and Yutaka KIDAWARA, Associate Professors: HARA Takahiro, MIYAZAKI Jun, and ZETTSU Koji)
Social Information Network

Computer networks have enabled information resources unevenly spread around the world to be integrated and utilized. Today, computer networks covering the world enable us to communicate by various means, regardless of spatial or temporal constraints. And this new ability is starting to influence the structure of our society. The use of these kinds of information networks will create new social information systems and contribute to social change on a global scale.

Global Information Network
—Seeking global collaboration—

This Group aims to help Internet-based worldwide communication and collaborative activities. We will build a real social information system and conduct empirical research in the real world, then analyze the results and effects to get a better understanding of the relationship between IT and society and the best way to develop an information-networked society. Using artificial intelligence and human interface as foundations, the Group works closely with outside research organizations while undertaking participatory simulation, information economics, and cross-cultural collaboration projects.

(Professor: ISHIDA Toru, Associate Professors: MATSUBARA Shigeo and KINNY David Senior Lecture: INABA Rieko, Assistant Professor: HATORI Hiromitsu)

Information Security Adjunct Unit
—Creating a safe networked society through cryptographycollabo

In today’s world, where the Internet is used more and more to conduct electronic transactions such as electronic settlements and bidding in online auctions, or to carry out functions required by the government, such as the filing of tax returns, the maintenance of safe and secure network services is becoming increasingly important. Modern cryptography is a technology to achieve this safety and security, and goes far beyond concealment technology to prevent eavesdropping. It is a field of intense study that is developing rapidly. It involves technical and logical systems which include digital signatures that verify the identity of the party you are communicating with and guarantee the authenticity of the data (which means that the data have not been altered), as well as cryptographic protocols that enable advanced network services which guarantee privacy. In our laboratory, we will study various applied cryptographic technologies commonly used today in public key cryptosystems, electronic cash, electronic voting and other applications, and will logically investigate their safety, present new cryptographic protocols, consider how to use them in working systems, and study their effectiveness in our networked society.

(Professors: OKAMOTO Tatsuaki and ISHIDA Toru, Associate Professor: MANABE Yoshifumi)

Market and Organizational Information Systems Adjunct Unit

ICTs for the future economy and society
— (in collaboration with Nomura Research Institute)—

The Ubiquitous Network technology, the Internet of things, and cyber-physics, are changing our life. Mobile telephones, broadband Internet, near-field contact IC chips, and the software industry are all heading towards a major turning point. This unit pursues research themes regarding the reciprocal relationship between information and society, including modeling of new ICT business, cross-boarder collaboration in ICT industry, assessment of intellectual property, and social and technological innovation for sustainable industry. These studies are based on collaborative researches and experiments with a private think-tank, international organizations, industry associations, ICT companies, local communities, and virtual communities.

(Professors: YOKOZAWA Makoto and ISHIDA Toru, Associate Professor: KINOSHITA Takashi)
Biosphere Informatics

There is a great variety of bioresources in the biospheres of forests, farmlands and seas. These have complex interrelationships and influence our society in many ways. Our division considers the biosphere to be a complex, global system and attempts to gain an overall understanding of the way it functions by using the global network to gather biosphere data that includes information on individual animals, biosphere resources, and production. We discuss and study how human activities are affecting the global environment and society through the production and management of bioresources.

Bioresource Informatics

—Seeking to use information about bioresources—

This Group discusses and studies a wide range of themes that include the building of systems that enable the sustainable production of useful bioresources, the protection of endangered species, and the consideration of systems that seek the revitalization of local communities engaged in bioresource production. In order to gather and analyze the bioresource data that is needed in these themes, we use a number of systems, including GPS and biotelemetry. Some of our study themes include research into the development of new methods involving the use of technologies such as data loggers and image analysis.

(Professor: MORIYA Kazuyuki, Associate Professor: ARAI Nobuaki, Assistant Professors: MITAMURA Hiromichi and OKUYAMA Junichi)

Environmental Informatics

—Building information systems to promote coexistence between human society and the natural environment—

This Group is involved in discussion and study that focus on information about mutually related environments in biospheres that range from forests to oceans. The themes are varied and include the construction of databases of natural and social conditions using GIS (geographic information systems) data that transcend time and space; prediction of the distribution of resources and changes in the environment using various simulations on a range of scales; building of systems to support environmental education; and monetary assessment of ecosystems and environments. Students will use a wide range of methods in these research topics, including remote sensing to gather environmental data over a wide area and analyze the results, contingent valuation methods (CVM) and conjoint analysis, and will use portable information devices in their experiments.

(Professor: SAKAI Tetsuro, Associate Professor: KOYAMA Lina)
Regional and Disaster Management Information Systems (Affiliated)

Disasters are abrupt and large-scale environmental changes. The natural, artificial and social environments (especially the balance among them) that have been achieved and maintained by regional communities are forced to change. If the impact of a disaster is strong enough, local communities may be unable to recover the balance they had before the catastrophe, and may be forced to create a new balance. This was demonstrated in a dramatic fashion by the catastrophic damage inflicted by the Great Hanshin-Awaji (Kobe) Earthquake and the subsequent suffering in the stricken area.

The objective of disaster prevention is to minimize the effects of disasters. Unfortunately, it is beyond our power to eliminate natural threats, such as the disasters wrought by earthquakes and typhoons. Efforts at disaster prevention help to make society more resistant to disasters by: (1) raising our ability to foresee and predict the threat of natural disasters; (2) raising our ability to keep the damage in check; and (3) minimizing the effects of the damage.

Disasters are the greatest obstacle to the sustainable development of humankind. According to figures from the International Red Cross, disasters annually take the lives of 130,000 people and cause $US440 billion in damage. Population growth is driving urbanization. Societies are becoming more complex and diverse. At the same time, disasters are growing in scale and frequency. One could say that society’s ability to withstand disasters is rapidly diminishing.

Information processing lies at the heart of disaster prevention. This Division will focus primarily on disaster prevention in urban areas and will teach students about the establishment of information systems designed to achieve “urban disaster reduction” that both minimizes the immediate effects of disasters and prevents their aftermath from lingering for too long a time.

Integrated Disaster Management Systems
—Aiming to build disaster prevention systems to ensure a safe and secure society—

To build a safe and secure society, we need to put in place disaster prevention systems that will enable the planning and implementation of disaster risk control, financing, and other integrated policies in a rational manner. We will take an informational, organizational and economic approach to find out what kind of disaster prevention system will result in cities with greater resistance to natural disasters.

(Professor: TATANO Hirokazu, Associate Professor: HATAYAMA Michinori)

Emergency Management for Disaster Reduction Systems
—Social science research concerning the creation of integrated disaster reduction systems and applied disaster prevention science—

The research that our Group carries out to reduce the destruction caused by major disasters is a fusion of natural science and social science. In particular, we investigate the issue of what constitutes practical disaster prevention science, and propose approaches to disaster information, disaster-prevention education and disaster culture from the perspective of social psychology.

(Professor: YAMORI Katsuya, Assistant Professor: SUZUKI Shingo)

Crisis Information Management System
—Clarifying how disaster responses work in terms of the information processing process—

In the wake of a disaster, people learn new behaviors in response to the new reality and need a process through which their positions can be accepted in society. Responding to a disaster is an information processing process in which individuals and society have to decide how to comprehend and respond to the reality of what has happened. Our research seeks to gain a better understanding of the information processing process through which people respond to disasters, based on the Business Continuity Management framework of 1) risk assessment, 2) strategic planning, 3) standardized risk management systems, and 4) training that seeks to reduce peoples’ suffering caused by disasters.

(Professor: HAYASHI Haruo, Associate Professor: MAKI Norio)
**Medical Informatics (Affiliated)**

—Medical informatics supporting clinical and hospital management—

In the 2000s we are faced with the issue of how the hospital information systems that were virtually completed in the 1990s can be used to supply data in a form that can be useful in medical treatment. The Medical Informatics Division carries out research from the perspective of effectively utilizing the data held in a hospital’s information system. Our topics include: using natural language processing to assist clinical research, utilizing artificial intelligence to analyze data, hospital management analysis, the building of hospital management simulation models and their use in hospital administration, regional medical collaborative networks supported by electronic medical records, patient services and ward information support through wearable ubiquitous computing, and applications of VR technology in medicine.

(Professor: YOSHIHARA Hiroyuki, Associate Professor: KURODA Tomohiro, Senior Lecturer: TAKEMURA Tadamasa, Assistant Professors: KUME Naoto, OKAMOTO Kazuya)

**Information Fluency Education (Affiliated)**

—Striving for new forms of information education—

Information education provides an important nexus between information and society. In the past it was known as “information literacy” and focused mainly on developing students’ skills in applying information technology. There is an increasing need for the application of IT to many academic fields and social issues, and it is very important to educate people about the basic concepts of information usage and to foster their intelligent information-use skills so that they can apply information technology. This is what we call “information fluency education.” In the Information Fluency Education Division, we use the educational computer systems of the Kyoto University Institute for Information Management and Communication to teach and research in the fields of information education (to train people to use IT in a range of areas), artificial intelligence to support education and learning, the application of information security technology, the systematization of education content, and education methods and assessment techniques.

(Professor: KITA Hajime, Associate Professor: UEHARA Tetsutaro, Assistant Professors: MORI Mikihiko, TSUJI Takaaki, and OHIRA Kenji)