

Harmonizing Society and Information Technology

Global networking is rapidly expanding via information technology. Based upon the trends of technologies that interact with our daily lives, the Department of Social Informatics seeks to clarify the structures of highly complex information societies and actually design information systems that are globally useful. Therefore, we endeavor to support globalized activities in the areas of culture, economics, ecology, disaster management, healthcare and education.



Information is Born in the Lives of People

Sources of social information do not exist on the Internet. These sources are usually found in people's daily lives. Social informatics includes processes from the acquisition of information from the sources, through constructing systems to utilize the information, to designing a better society using those information systems. For example, we collect ecological information relevant to fish by using bio-logging techniques for fishery resource conservation. We also glean biological information from forest ecosystems using various types of sensors to optimize the sustainable utilization of ecosystem services. Then, we study methods for database development to organize that information on natural resources and environments. Moreover, we study informatics applications in the fields of medical services and education, and also determine what types of information are needed for disaster prevention and harm minimization. We consider ways to utilize the data to design societies and social systems. We, the people in the Department of Social Informatics, work to acquire data directly related to our lives and societies, and to reformulate and store it in the most accessible and useful way to enable the development of our sustainable future.



Ohte Nobuhito

Department of Social Informatics

He is a Professor of the Biosphere Informatics Laboratory in the Department of Social Informatics at Kyoto University. His research themes are to understand mechanisms of hydrological controls of nutrient transformations and transportations in the forested catchment, and to elucidate the geographical variations of those ecosystem dynamics among various types of climatic and geological conditions. He holds a BA in forestry from Graduate School of Agriculture at Kyoto University in 1987, and a PhD also from Kyoto University in forest hydrology in 1992. He was awarded Biwako Prize for Ecology in 2013. He is currently an associate editor of Biogeosciences (European Geoscience Union).

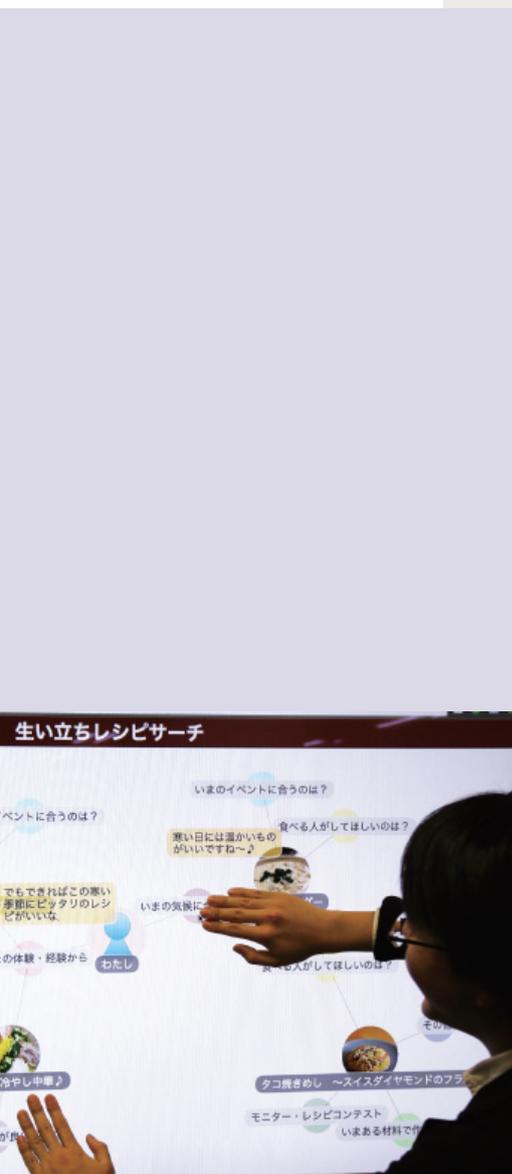
Fundamental Studies of Informatics and its Social Deployment

Information technologies are expected to become a driving force for dramatic change in many established social systems. Students in the Department of Social Informatics will understand both the possibilities and limitations of information technologies by mastering its basics. This understanding will also enable students to learn the social deployment of information technologies. Faculty members of the department include researchers in information technologies, and domain experts in biology, agriculture, medicine, disaster-prevention, and education. A variety of educational opportunities are provided to students, including the acclaimed advisor system. The educational goal of our department is to produce quality graduates who can resolve social problems or design new social systems by utilizing information technologies. In our department, many research topics are being studied even in laboratories oriented towards computer science. These include computer-supported clinical decision making, route recommendations for pedestrians that uses vital signs and confluent route search, estimation of the credibility of Web contents, and collective decision making. If you are interested in mastering information technologies and thereby creating a better society, you are strongly invited to join us.

YOSHIKAWA Masatoshi

Department of Social Informatics

Masatoshi Yoshikawa received B.E., M.E. and Ph.D. degrees from Department of Information Science, Kyoto University in 1980, 1982 and 1985, respectively. He was on the faculty of Kyoto Sangyo University, Nara Institute of Science and Technology (NAIST) and Nagoya University before he joined Department of Social Informatics, Kyoto University in 2006. His general research interests are in fundamental studies of data science and its social deployment. He is a past editor of The VLDB Journal and Information Systems.



Outline

Divisions and Groups

Division	Group	Research and Education Topics	Professor
Social Information Model	Distributed Information Systems	Technical Issues and Applications Used in the Formation of Distributed Information Systems	YOSHIKAWA Masatoshi
	Digital Library	Digital Contents and Information Access Architecture as Social Information Infrastructures	TANAKA Katsumi TAJIMA Keishi
	Information Society (Adjunct Unit)	Management of Intellectual Property and Associated Information	TANIGAWA Hidekazu MIYAWAKI Masaharu
Social Information Network	Global Information Network	The Formation of Social Systems Based on Information Networks	ISHIDA Toru
	Information Security (Adjunct Unit)	Encryption and Authentication System	OKAMOTO Tatsuaki
	Market and Organizational Information Systems (Adjunct Unit)	Information Society, Information Economy, Information Policies and Corporate Information Strategies	YOKOZAWA Makoto
Biosphere Informatics	Bioresource Informatics	The Processing and Analysis of Biosphere Resource Data	MORIYA Kazuyuki
	Environmental Informatics	Investigating Interactions between Human Society and the Biosphere Environment	OHTE Nobuhito
Regional and Disaster Management Information Systems (Affiliated)	Integrated Disaster Management Systems	Disaster Information Systems and Building Disaster Prevention Systems	TATANO Hirokazu
	Emergency Management for Disaster Reduction Systems	Social Scientific Research for Disaster Damage Reduction	YAMORI Katsuya
	Crisis Information Management System	Practical Disaster Management for Business Continuity	HATAYAMA Michinori
Medical Informatics (Affiliated)		Interaction between Information Systems and Medical and Social Organizations	KURODA Tomohiro
Information Fluency Education (Affiliated)		Training People to Use Information Technology in Various Areas	KITA Hajime

Graduate Curriculum

Courses for the Master's Program

Social Informatics	Multi-Agent Systems	Information Education
Information System Design	Biosphere Informatics	Cryptography and Information Society
Information System Analysis	Disaster and Information	Advanced Study in Social Informatics 1
Practice of Information Systems	Crisis Management	Advanced Study in Social Informatics 2
Dispersed Information Systems	Medical Informatics	Theories of Service Modeling
Information Organization and Retrieval	Business Information	

Courses for the Doctoral Program

Advanced Seminar on Social Information Models	Advanced Seminar on Medical Informatics
Advanced Seminar on Social Information Networks	Advanced Seminar on Information Education
Advanced Seminar on Biosphere Informatics	Advanced Seminar on Social Informatics
Advanced Seminar on Regional Disaster Prevention Information Systems	

((D) : Disaster Prevention Research Institute, Kyoto University
 (H) : Division of Medical Information Technology and Administration Planning, Kyoto University Hospital
 (M) : Academic Center for Computing and Media Studies, Kyoto University
 (ASTEM) : Advanced Scientific Technology & Management Research Institute of Kyoto

Teaching Staff

Professors

YOSHIKAWA Masatoshi; TANAKA Katsumi; TAJIMA Keishi (Institute of Liberal Arts and Sciences, Secondary); TANIGAWA Hidekazu (Adjunct); MIYAWAKI Masaharu (Adjunct); ISHIDA Toru; OKAMOTO Tatsuaki (NTT, Adjunct); YOKOZAWA Makoto (Nomura Research Institute, Adjunct); MORIYA Kazuyuki; OHTE Nobuhito; TATANO Hirokazu (D, Affiliated); YAMORI Katsuya (D, Affiliated); HATAYAMA Michinori (D, Affiliated); KITA Hajime (Institute of Liberal Arts and Sciences; Secondary Appointment to Academic Center for Computing and Media Studies); KURODA Tomohiro (H, Affiliated)

Associate Professors

MA Qiang; ASANO Yasuhito; JATOWT Adam; OHSHIMA Hiroaki; YAMADA Atsushi (ASTEM, Adjunct); MATSUBARA Shigeo; ABE Masayuki (NTT, Adjunct); KINOSHITA Takashi (Nomura Research Institute, Adjunct); MITAMURA Hiromichi; KOYAMA Lina; SAMADDAR Subhajyoti (D, Affiliated); ONISHI Masamitsu (D, Affiliated); UEDA Hiroshi (M, Affiliated); TAMURA Hiroshi (H, Affiliated)

Senior Lecturers

OKAMOTO Kazuya (H, Affiliated)

Assistant Professors

SHIMIZU Toshiyuki; YAMAMOTO Takehiro; KATO Makoto; LIN Donghui; NISHIZAWA Hideaki; VINCENOT Christian; MORI Mikihiko (M, Affiliated); HIRAGI Shusuke (H, Affiliated)

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

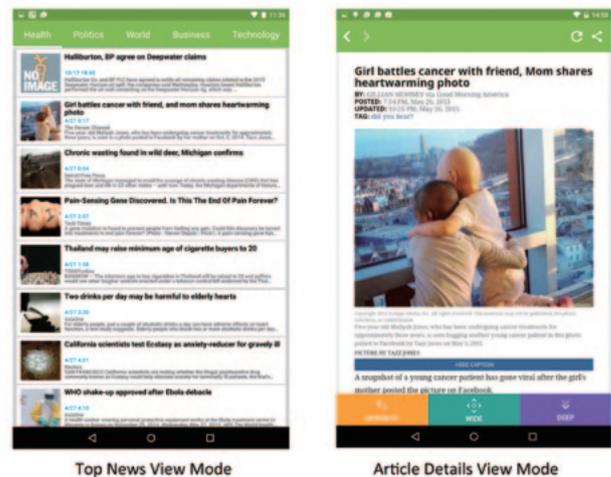
Society is evolving thanks to new technology that allows us to manage and utilize distributed information

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 evolution of a) technologies to enable the rapid and accurate transmission of data; and b) technologies to allow rapid searches of vast volumes of data to retrieve required information in a timely manner. For this reason, we will conduct fundamental research on data mining, geographic information systems, Web information systems, social network analysis, and privacy protection. We also conduct application-oriented research such as health/medical big data analysis, scientific data management, integrated utilization of knowledge bases and search engines, utilization of scholarly data, educational information systems, in cooperation with domain experts.

[Professor: YOSHIKAWA Masatoshi,

Associate Professors: MA Qiang and ASANO Yasuhito,

Assistant Professor: SHIMIZU Toshiyuki]



Diversity-oriented News App: News Salad

Digital Library

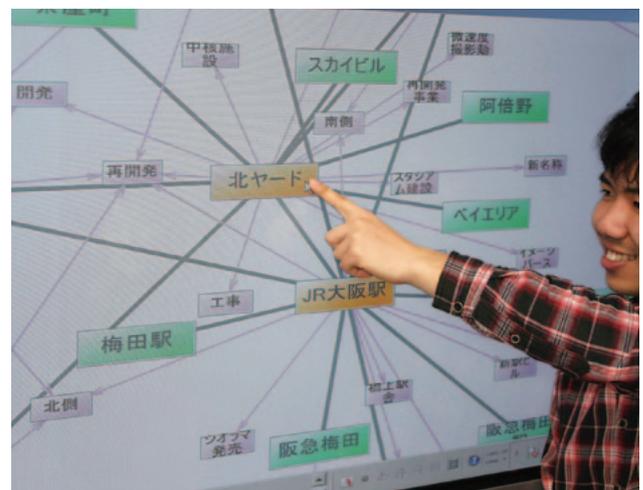
Aiming to create fundamental technologies for the organization, retrieval and distribution of information, and systems that will apply these technologies

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 and TAJIMA Keishi,

Associate Professors: JATOWT Adam and OHSHIMA Hiroaki,

Assistant Professors: YAMAMOTO Takahiro and KATO Makoto]



Outline

Social Information Network

Information networks enable us to communicate by various means, regardless of spatial or temporal constraints, and influence the structure of our society. The use of these information networks will create new social information systems and contribute to social change on a global scale. The Social Information Network Division consists of the Global Information Network Group, the Information Security Adjunct Unit, and the Market and Organizational Information Systems Adjunct Unit.

Global Information Network

Seeking global collaboration

This Group aims to generate advanced technologies for Internet-based worldwide collaboration. Based on artificial intelligence and a human interface, we conduct global research activities with researchers in the US, Europe and Asia to build real-world systems while addressing the latest technological issues including services computing, Internet of Things (IoT), crowdsourcing, incentive design, and auctions. We also work closely with the Kyoto University Design School to promote practical education such as shaping and solving problems in the real world.

[Professor: ISHIDA Toru,
Associate Professor: MATSUBARA Shigeo,
Assistant Professor: LIN Donghui]



Multilingual Communication Support for Youths using the Language Grid

Column

From the World to Japan, from Japan to the World

Over 40 foreign students are enrolled in the Department of Social Informatics, representing more than 15 countries. You may obtain a sense of global community by studying in such a diverse environment. Many students from the Department of Social Informatics make presentations, discuss research, and join internship programs abroad.

A welcome party is held in October to welcome newcomers from foreign countries, and various kinds of international exchanges happen on a daily basis.



Research presentation at an international conference (Canada)



An international event

Biosphere Informatics

There is a great variety of organisms in the biosphere, for example in environments such as forests, farmlands or seas. These organisms have complex interrelationships, and influence our society in various ways. Our division attempts to comprehensively understand the information about individual animals as well as bioresources and production by using various methods and techniques to gather data about the biosphere. We also study the influence of human activities on the global environment and human society itself through the production and management of bioresources and ecosystems.

Bioresource Informatics

Seeking utilization and conservation of bioresources

This group discusses and studies a wide range of themes including system evaluation for the sustainable production of bioresources, the conservation of endangered species, and the revitalization of local communities engaged in bioresource production. In order to gather and analyze bioresource data, this group works in the development

and application of new research methods involving the use of GPS, biotelemetry, biologging and image analysis.

[Professor: MORIYA Kazuyuki,
Associate Professor: MITAMURA Hiromichi,
Assistant Professor: NISHIZAWA Hideaki]



Various methods and techniques are applied



Environmental Informatics

Seeking conservation and utilization of ecosystems

Recently, society has been interested in environmental changes at various spatial/temporal scales. This group works on topics such as understanding/monitoring environmental information or the role of various organisms in ecosystems. Our research interests cover various fields related to terrestrial ecosystems, ranging from their diverse inhabitants such as plants, animals and microbes to their complete physical environment. We study how these relate to other organisms or environments in the ecosystems, or how human

society influences them with respect to their sustainability in a changing environment. Various methods/approaches such as field investigation, questionnaires, remote-sensing or chemical/isotopic analyses are applied to collect and analyze key information about these ecosystems and organisms.

[Professor: OHTE Nobuhito,
Associate Professor: KOYAMA Lina,
Assistant Professor: VINCENOT Christian]



Fieldwork is conducted in various types of sites



Regional and Disaster Management Information Systems (Affiliated)

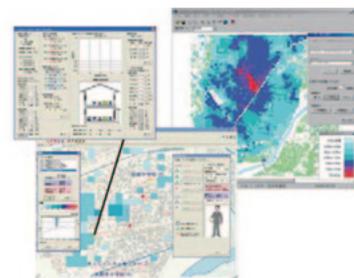
Disasters are abrupt and large-scale environmental changes. The natural, artificial and social environments (especially the balance among them) that have been achieved and maintained by regional communities are forced to change. If the impact of a disaster is strong enough, local communities may be unable 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: Subhajyoti SAMADDAR]



Flood Risk Communication Support System

Emergency Management for Disaster Reduction Systems

Social scientific research for disaster damage reduction

Society is required to prepare and take actions to reduce the potential damage of disasters by sharing information and knowledge concerning potential disaster risks through communication among the members of society. This laboratory aims at developing disaster risk reduction systems through practical studies from the perspective of social psychology and systems analysis. The research interests include disaster psychology, disaster risk information and communication, disaster education, regional crisis management and decision making support, financing for disaster recovery.

[Professor: YAMORI Katsuya,
Associate Professor: ONISHI Masamitsu]



Disaster education materials developed in our lab

Adjunct Units

Information Society Adjunct Unit

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

The application of IT to social systems

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 “Π-type” people who are familiar with the systems and

processes of not just 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.

[Professors: TANAKA Katsumi, TANIGAWA Hidekazu and MIYAWAKI Masaharu,
Associate Professor: YAMADA Atsushi]

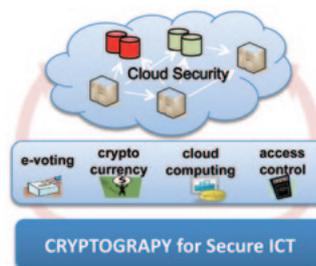
Information Security Adjunct Unit

Creating a safe networked society through cryptography (in collaboration with NTT Corporation)

In today's world, where the Internet is increasingly used 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 and develop various applied cryptographic technologies commonly used today

such as public key cryptosystems, crypto currency, electronic voting, and other applications suitable for cloud computing with rigorous security analysis based on a firm theoretical foundation.

[Professors: OKAMOTO Tatsuaki and ISHIDA Toru,
Associate Professor: ABE Masayuki]



Information Security Adjunct Unit
—Creating a safe networked society through cryptography—
(in collaboration with NTT Corporation)

Market and Organizational Information Systems Adjunct Unit

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

Informatics is changing our society. Everything in our life and business is based on data and networking, and global flows of products are rapidly being replaced by flows of data and services. In this unit, we focus our research on these areas: 1. Analysis of socioeconomic mechanisms in the digital economy and society, 2. Scientific design of new businesses, 3. Study of public policies regarding dependable management and operation of the Internet, and 4. Research on personal data protection for secure and reliable digital business. These studies are based on collaborative research and experiments with a private think-tank, governments, international organiza-

tions, industry associations, ICT companies, local communities, and virtual communities.

[Professors: YOKOZAWA Makoto and ISHIDA Toru,
Associate Professor: KINOSHITA Takashi]



Special Education Program of the Department of Social Informatics

1. Specialized Subjects and Special Lecture



Special lecture

In the first year of the Master's program, students are introduced to specialized subjects including the design and analysis of information systems, and the relationship between information and society. They can acquire the fundamentals of informatics from the ground up through these subjects, and even students with less specific experience in informatics can benefit by combining their informatics and other expertise. In addition, we have more than 50 special lectures a year in our department, for which we invite lecturers from various universities, research institutes and government offices.

2. Education for innovation



FBL (Field based Learning)/ PBL (Problem based Learning)

The Department of Social Informatics joins Kyoto University Design School, in which students take a course titled "FBL (Field based Learning)/ PBL (Problem-based Learning)" that helps them acquire the skills needed to find and solve real-world problems. In this course, students select one of a variety of themes, and form small groups to tackle specific problems. The themes include "Designing a new environment for education: creating a place that fosters creativity", "Design of places for conversation over books and tea", and "Organization design in crowd-sourcing". Kyoto University Summer Design School arose from activities mainly led by the Department of Social Informatics, and has become a seasonal tradition in summer, attracting more than 250 participants to share the same innovative space. Over 20 different kinds of themes were proposed by companies and universities, and were tackled by many students eager to solve real-world problems: they went into the field, and used trial-and-error methods by actually creating prototypes. The Department of Social Informatics proposed themes such as "Predicting Kyoto in 2050 by simulation" and "Designing safety into apartment buildings: first priority, disaster prevention".

3. Education for globalization



Strategic communication seminar

The Department of Social Informatics and Berlitz worked together to develop teaching materials that have been used in a "strategic communication seminar" provided by the Kyoto University Design School. Students in the Department of Social Informatics can benefit from the focused English lecture presented by lecturers from Berlitz.