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National Institute of Informatics

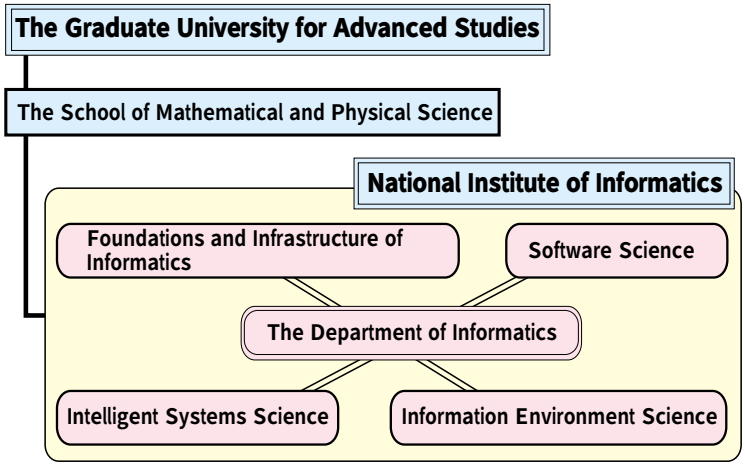
National Institute of Informatics News No.3

Implementation of doctoral course in Informatics -----Embarking on the journey to establish the Department of Informatics in the Graduate University for Advanced Studies (SOKENDAI)-----

Since the time it was known as the National Center for Science Information Systems (NACSIS), the National Institute of Informatics (NII) has been offering various academic support for graduate education in the University of Tokyo and the University of Library and Information Science, based on its achievement on developing databases for research activities and on the research in information infrastructure. Recently awareness of the importance of our contribution to the society by performing graduate education has increased. In addition the demand for highly skilled IT professionals has been growing. Thus in June 2000 we made a request to the Graduate University for Advanced Studies (SOKENDAI) for establishment of the new department, and launched to set up the Department of Informatics at the School of Mathematical and Physical Science in the University. Then *SOKENDAI* has submitted a formal proposal of budget request to the Ministry of Education, Culture, Sports, Science, and Technology (MEXT).

Supported by the fifteen Inter-University Research Institutes, *SOKENDAI* specializes in offering doctoral course in various fields. The consortium boasts a wide range of resources as state-of-the-art research facilities and information library, and it also offers a platform to delve into cutting-edge research. Through substantial use of the consortium resources, which is otherwise difficult for existing graduate school to provide, *SOKENDAI* aims to meet the social demand for highly qualified researchers and specialists

Informatics is a novel research area that deciphers information in its totality on a macro scale by resolving problems associated with information. Based upon the traditional Computer Science and Engineering, it also covers the domain of Human and Social Information Science. Because it is a study of the method to gather, manage, search, analyze, evaluate and utilize the information, as well as which of the information communications technology to perform this process, Informatics plays important role in that it forms the foundation of almost every academic domain, and that its adoption will create new research topics. In addition, Informatics has been making contributions to the progression of industries



and improvement in our lives through its application. Rapid advances and development of Internet and microelectronics will accelerate this process in Informatics.

Advancement in the field of IT today is regarded as national strategy and basis for international cooperation. What it means is that interdisciplinary research, rather than conventional way of study of scientific technology, is vital for the development in Information Technology. Researchers and specialists in Informatics and IT are increasingly required to be equipped with plenty of knowledge and comprehensive ability to solve problems to promote the integrated framework of information and scientific technology, as well as information and society.

Objective of the Department of Informatics is to develop professionals with proficient knowledge of cutting-edge technology, comprehensive perspective, flexibility, and highly specialized skill sets.

Those who meet one of the following qualifications may apply for the Department of Informatics.
Those who have/ are
1. Master's degree in Informatics or IT related discipline
2. Engaged in the information and communications industry or IT institutions as a researcher, and willing to get the academic degree in Informatics
3. University faculty members, and willing to get the academic degree in Informatics
4. Graduate students from abroad

They are expected to gain such career options as follows
1. IT researcher at national/ company institutes
2. Faculties at universities
3. IT venture entrepreneurs
4. IT professionals in the R&D division of the companies

(Research Cooperation Division)

Name of the inter-university research institute:
National Institute of Informatics

Major: Informatics (the doctoral course)

Program: Informatics

Fields areas: Foundations and Infrastructure Science, Software Science, Intelligent Systems Science, Information Environment Science

Degree Offered: Doctorate in Informatics

▶ See next page for detailed explanation of academic and research fields offered.

◆ Major

Informatics

Based upon the traditional Computer Science and Engineering, Informatics also covers the domain of Human and Social Information Science to be a new multi-disciplinary research area. In this program fundamental concept, theory, technologies in Informatics, including various issues on Information Systems Technology and Social Information Technology to realize advanced information infrastructure, software system, intelligent system, and to manage information content are studied comprehensively. This program aims to provide students with practical lessons to become professionals in Informatics and IT. For this purpose courses of every research field contain those with experiment and classes in rotation.

◆ Courses and Experience Offered

Foundations and Infrastructure of Informatics

Research on the theory and technical foundations of advanced information systems is done. Modern information systems are based on Information Mathematics and Information Communication Network Infrastructure. In this research area, both disciplines are treated comprehensively. In Information Mathematics, Mathematical Informatics is the key subject, and research is also done on Logic in Computer Science, Psycholinguistics, and Algorithms.
In Information Communication Network Infrastructure, the key Subjects are Communication Engineering, and Information and Communication Networks, and Multimedia Communications. Research on Communication Protocols, and functionally Advanced Networks are also focused. As a whole, the theoretical and experimental research on comprehensive information infrastructure is done.

Software Science

Software is the key technology of information systems. With the advance of ubiquitous information systems, software is requested to provide more and more sophisticated functions, and revolutionary methods are hoped to develop and maintain large and complex software systems with high quality and reliability. To satisfy these next generation system requirements, this are conduct researches from core/fundamental themes to application-oriented themes: programming languages, distributed software systems and networked multimedia information systems form a fundamental part. Data engineering, human-machine interface, computer graphics and multimedia information processing are application-oriented.

Intelligent Systems Science

In the highly information-oriented society of the 21st century we are required to have the ability to solve various problems by obtaining necessary information through advanced IT. To realize such a society intelligent information systems are indispensable and intelligent system technology would be the key domain. In this field of research we deal with essentially important topics and primary relevant academic areas in intelligent system technology. Providing intelligent systems, reasoning science and information logic as main courses, we promote extensive research on knowledge sharing system, soft computing, machine learning, image data processing, and natural language processing.

Information Environment Science

"Information environment" is a new concept which combines information with its technological infrastructure; its management, distribution and retrieval systems; people who relate with it; and its social infrastructure. Information environment science has come to be recognized as a field of science indispensable for realizing the information society. In this area, the basic course subjects are Digital Documents, Library Informatics and Academic Information Environment Environment. In addition to the above, Digital Publication, Informational Linguistics, Information Retrieval and Information Sociology will be taught systematically, from their basis to application.

The Graduate University for Advanced Studies (SOKENDAI) URL
▶ **http://www.soken.ac.jp/english%20pages/english-front.html**

PIA-Core: Learning to Semantically Annotate Texts from an Ontology and XML Instance Data

Associate Professor, Symbolic Reasoning Research, Foundations of Informatics Research Division

Nigel Henry Collier

Graduated from the Department of Computer Science, Leeds University (UK) in1992. Awarded a MSc. in Machine Translation in 1994 and a Ph.D. in 1996, both from the Department of Language Engineering, UMIST (University of Manchester Institute of Science and Technology).
Toshiba Fellow at Toshiba Central Research Laboratories (Japan) working on research related to knowledge acquisition for machine translation and cross-language information retrieval from 1996 to 1998. JSPS (Japan Society for the Promotion of Science) Fellow working on information extraction from molecular biology texts at the Department of Information Science, University of Tokyo from 1998 to 2000. Associate Professor at NII from 2000.
Research interests cover information extraction, natural language processing and machine learning.

PIA-Core (PIA: Portable Information Access system) aims to develop a domain adaptable information extraction (IE) system based on machine learning technology. In contrast to other Internet and Intranet-based technologies such as information retrieval (IR), used for searching the World Wide Web (Web), which are characterized by strong portability to any document collection, no such system as yet exists for IE, i.e. for extracting specific factual information from inside documents. Information extraction systems extract proto-typical facts from a large collection of texts such as the activation of proteins in cells in biology or the merging and acquisitions of companies in business news.

We consider that the main factors which have prevented IE from becoming a widely used technology are: (1) a reliance on the existence of knowledge sources such as term lists that may or may not exist, and (2) an emphasis on hand-built rules and patterns to customize the IE system to the new domain. The problem we see with this direction is that it promotes the development of rather inflexible IE systems that cannot easily be ported to new domains without substantial efforts to customize the system. Perhaps the greatest problem is that since there is no prior understanding between the IE system developer and the domain knowledge provider about the availability and encoding of the knowledge that will be used by the IE system, there is no guarantee that the type of knowledge that the system needs will be available in the new domain. We believe that the Semantic Web offers an opportunity to solve some of these problems.

PIA-Core: Machine Learning on the Semantic Web

The **Semantic Web** model, now being proposed by the W3C (W3C: World Wide Web Consortium) as the next generation Web, is shown in Figure 1 and raises many exciting possibilities. For example, that we can markup texts in XML (XML: Extensible Markup Language) according to an ontology written in RDF(S) (RDF(S): Resource Description Framework Schema) and then build software applications to reason with this knowledge using Artificial Intelligence-type inferencing engines built on logic. Intelligent applications such as being able to find the answer to a question in a document collection, electronic shopping, making appointments using agents, as well as 'smart' browsing of documents can then become a reality.

The majority of information on the Web, estimated at about 70%, is in the form of free-texts. However, due to the very high cost we cannot expect that instances of the concepts defined in the RDF(S) ontologies, such as technical terms, proper nouns, temporal and quantity expressions and their relations, will be marked up by experts in every text. This is one of the bottlenecks in the extension of Semantic Web applications to the majority of documents that can be viewed on the Web today. What is missing in the current focus on formalization is a consideration about how the actual instantiation of the concepts defined in the ontologies will take place.

Our expectation is that with the advent of standards for the annotation of semantic content on the Web such as XML for document structure, RDF for defining objects and their relations, and RDF(S) for defining basic ontological modeling primitives on top of RDF, that sources of domain knowledge will become widely available in electronic form and that these resources should be used for supervised training of a portable IE system which we call PIA-Core. Crucially these sources of knowledge will be

available in a predictable format allowing PIA-Core to be rapidly deployed in new domains. In this respect the requirement of IE for structured knowledge and of the Semantic Web for instantiation can be viewed as complementary.

The key goal of PIA-Core is to investigate machine learning as a way to reliably replicate the capabilities of experts. We are currently looking at the application of a number of models to this task such as SVMs (SVM: Support Vector Machine) and HMMs (HMM: Hidden Markov Model) that combine the knowledge available in the ontology with linguistically motivated features available from robust natural language processing tools such as morph-syntactic analyser. As shown in Figure 1, the scenario is that experts will develop a domain model (ontology) in RDF(S) and a relatively small set of example marked up texts using an ontology editor. From this knowledge PIA-Core will learn how to automatically annotate new texts in the same domain. By focusing on domain-based learning we hope to make use of the ontology as a valuable knowledge resource. Our current application domains are molecular biology and news; we aim to develop the system initially for both English and Japanese.

If we can achieve this then we hope that PIA-Core can provide a domain portable information extraction system that contributes to the increase of knowledge available to intelligent computer applications and users on the Semantic Web, making intelligent information access a reality for everybody.

PIA is a collaborative project between researchers at NII, Exeter University (UK), Osaka University, Ritsumeikan University and Kasetsart University (Thailand).

1) DARPA, *Proceedings of the Seventh Message Understanding Conference(MUC-7),* Fairfax, VA, USA, May, 1998. DARPA.
2) T. Bray, D. Hollander, and A. Layman (eds.), Namespaces in XML, World Wide Web Consortium Recommendation, **http://www.w3.org/xml/TR/REC-XML**, 14th January, 1998. World Wide Web Consortium.
3) A. Lassila and R. Swick (eds.), Resource Description Framework (RDF) Model and Syntax Specification, World Wide Web Consortium Recommendation, **http://www.w3.org/xml/TR/REC-rdf-syntax**, 22nd February, 1999. World Wide Web Consortium.
4) D. Brickley and R. V. Guha (eds.), Resource Description Framework (RDF) Schema Specification 1.0, W3C Candidate Recommendation, **http://www.w3.org/TR/2000/CR-rdf-schema-20000327**, 27th March, 2000. World Wide WebConsortium.
5) T. Berners-Lee, M. Fischetti and M. Dertouzos, Weaving the Web: The Original Design and Ultimate Destiny of the World Wide Web, Harper, San Francisco, September, 1999. ISBN: 0062515861.

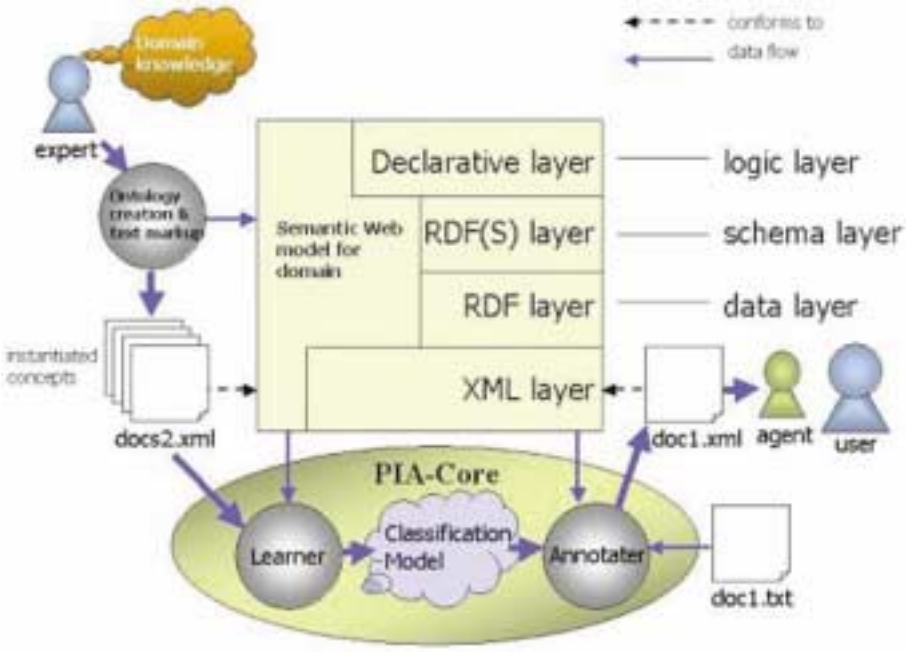


Figure 1. PIA-Core position in the Semantic Web model

9th NII Monthly Seminar ◆ June 20, 2001

Trial of the Paris-Contents Distribution Service (iFrench)

Visiting Professor, High Quality Networking Laboratory, Research Center for Testbeds and Prototyping, NII
Senior research engineer, supervisor in NTT Service Integration Laboratories

Masatoshi KAWARASAKI

He received his BE, ME and Ph.D. degrees of electrical engineering from Kyoto University in 1975, 1977 and 1991, respectively. Joining the Nippon Telegraph and Telephone Corporation (NTT) in 1977, he is currently in NTT Service Integration Laboratories. His study areas are architecture, design and control of telecommunication networks.

Broadband-compatible Web sites and contents are now appearing in medium-to-high-speed Internet access environment, such as ADSL or optical access. In September 2000, NTT Laboratories commenced a video delivery trial of the Paris-Contents Distribution Service (**iFrench**), which streams information about metropolitan Paris to Japan with the cooperation of NTT Europe. The trial, which combines video contents created at NTT's Paris base with a video delivery technologies/ copyright protection/ membership-based charging platform, aims to verify the marketability of video delivery service and the validity of the platform.

iFrench contents are developed by gathering on-site information about Paris in the video format with the cooperation of a French web development company. Composed of video (i-Video) and the latest information (i-News/i-Commerce/i-Web), iFrench is updated weekly and delivered to users in Japan.

Mass Delivery System (MDS) is used to deliver the video contents. This system optimizes the entire access environment by adopting mirroring that suits user access distribution through the use of distributed mirror servers set-up in advance. To protect copyright, a unique ID is allocated to video contents. This ID is embedded into the contents as a digital watermark. Although the embedding of digital watermarks has already been used in still images, this trial is the first time the concept has been extensively applied to video. iFrench is a membership-based service that allows users to be either monthly and zone members. At full-scale service implementation, contents charges will be added to the user's telephone bill using, for example, NTT Communication's "Calle" system. By conducting contents delivery separated and independent of authentication and accounting process, iFrench matches the invoice method with the contents being delivered via mirror servers to provide quick access to contents.

The number of registered members to the iFrench Internet site (**http://ifrench.ntt.fr**) reached 2,500 at the end of March 2001, thereby verifying the validity of the platform.

At the presentation of the NII study meeting, demonstrations of the iFrench video contents and the watermarking characteristics regarding quality and durability were performed.

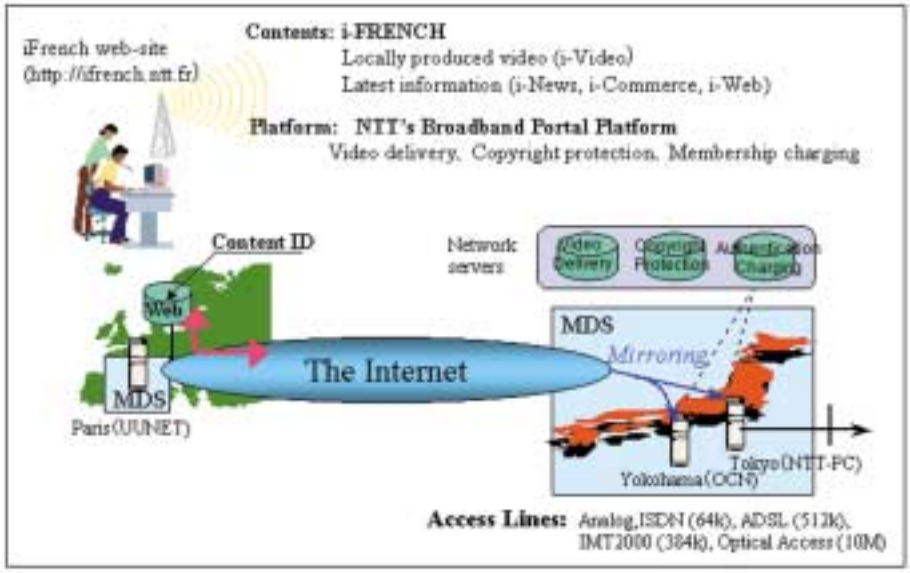


Figure Basic concept of iFrench trial

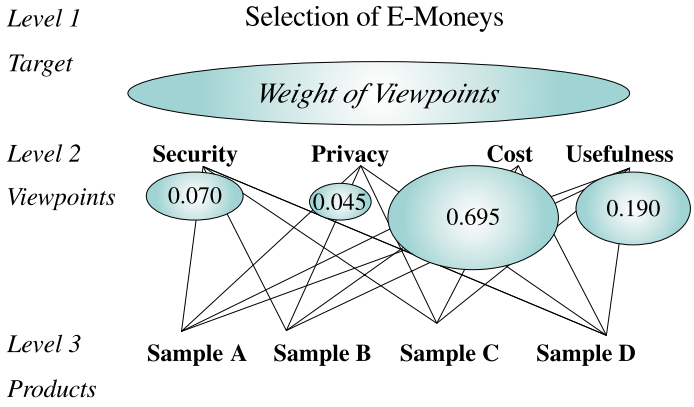
The institutional problem of electronic commerce

Associate Professor, Information Institution Research, Human and Social Information Research Division

Hitoshi Okada

Graduated in 1988 from Dep. of Law, University of Tokyo (Private Law Course), graduated in 1989 from Dep. of Law, University of Tokyo (Public Law Course), completed in 1998 the master course at Osaka School of International Public Policy (OSIPP), Osaka University; Ph.D. of International Public Policy; served as assistant research fellow at Private Finance Service Research Program at OSIPP, Osaka University, took the present office in November 2000; and, serves as secretary for the FACE forum of IEICE.

A next-generation portable telephone and the optical Internet enable the distribution of mass contents.
In order for a consumer to enjoy a movie and music, safe and easy cybermoney is required.
There are two kinds of cybermoney, one records customer information like a credit card, and another has anonymity like a cash currency.
Although customer information makes marketing more precise and prevents exploitation or double use, it also has the risk of privacy disturbance.
The safety intensity required for cybermoney differs according to the moneys scale dealt with, and the demand level to protection of personal information changes with utility functions of consumer each.
In this research, four elements of safety, anonymity, cost, and convenience were compared through the hearing to an expert of a distribution industry, and each significance was evaluated.
Moreover, numerical evaluation of the cybermoney of four types was carried out through the questionnaire to the specialists of finance.
By multiplying element significance and element characterlistics, it becames possible to choose cybermoney optimal type for every introductory scene.
By applying this research technique to development of the online purchase of scientific contents, I am planning to propose an academic online money in the near future.



Hierarchy of evaluating E-Moneys

10th NII Monthly Seminar ◆ July 18, 2001
Network related issues on Shared Virtual Environments with haptic media

Visiting Associate Professor, High Quality Networking Laboratory, Research Center for Testbeds and Prototyping, NII
Associate Professor, Center for Spatial Information Science at the University of Tokyo

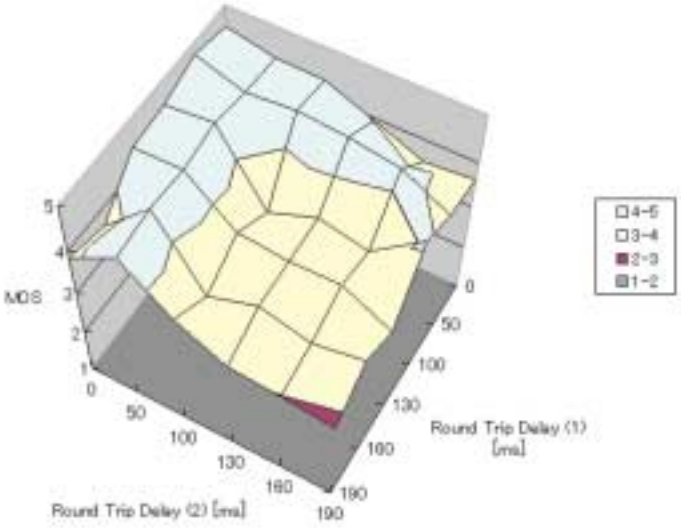
Kaoru Sezaki

He received his B.E., M.E. and Dr. E. Degrees in electrical engineering from the Univ. of Tokyo in 1984, 1986, and 1989, respectively. He joined the Institute of Industrial Science at the Univ. of Tokyo in 1989. Since 2001, he has been an Associate Professor of the Center for Spatial Information Science at the University of Tokyo. From 1994 to 2000, he was a guest associate professor at the National Center for Science Information Systems. His research interests include communication networks, location and context aware network services, haptic media, high-speed switching systems, and image processing.

Recently, haptic information and force feedback have been recognized as emerging and promising media as alternative to voice and image media as well as new type of human interface. Also, many experimental

level applications using haptics have been developed and some of them like surgery training are already commercially successful. However, almost all the existing applications have been developed by researchers of robotics whose interest are developing the hapitc devices themselves. Thus they ignore or almost unaware of the effect of the network impairment and assume ideal broadband minimum latency experimental network. In practical networks, however, there exist the severe bandwidth limitation, rather large latency and the packet loss and countermeasure against them is necessary to maintain the quality of applications.

From this point of view, in our laboratory we focus on such network oriented issues of haptic information and started the measurement of fundamental characteristics of transmission of haptic information over networks. We are developing the shared virtual environment (SVE) with haptic media. Currently, we focus on the issues as coding of haptic stream, media synchronization for the compensation of network latency and the countermeasure against packet loss for SVE type applications. Several interesting results are already found and introduced at the meeting. For example, the figure shows the characteristics of the subjective quality against the network latency in case of the collaborative task of carrying a virtual object using two haptic devices. Surprisingly, it is shown that strict media synchronization may sometimes cause the deterioration of the performance. Such counter-intuitive results can never be seen in case of conventional voice and image media They should be taken care of when construcing network protocols for haptic applications.



De-syntacticizing the theories of reference maintenance from the viewpoint of poetic function of language and gesture: A case of Japanese discourse.

Associate Professor, Cognitive Science Research, Foundations of Informatics Research Division

Nobuhiro Furuyama

Graduated in 1991 from School of Human Science, Waseda University; received his MA degree in human science in 1993 from Graduate School of Human Science, Waseda University and his Ph.D. degree in psychology in 2001 from Department of Psychology, The Division of Social Sciences, The University of Chicago; took the present office in April 2001; covers speciality in psycholinguistics and ecological psychology.

In the 10th NII Monthly Seminar, I presented a piece of work from my dissertation that argues for communicational unity of spoken language and gesture. In particular, I argued that textual structure, in addition to grammar, is the plane on which language and gesture, through the emerging indexical

relationships between and within the two different kinds of signs, together reveal communicational intent.

To demonstrate this argument, I picked up one of the classical problems in linguistics that referential ambiguity arises from the strong tendency to elide the subject/topic noun phrases. I pointed out that morpho-syntactic explanation is inadequate, if not entirely incorrect, to solve the problem. I then introduced a new approach to this issue that focuses on how the discursive textual structure is built up through various indexical relationships between and within the textual and gestural elements. Two analytically different arrangements of the linguistic and gestural signs were illustrated: One is indexical unity between speech and gesture realized by the performativity of speech as well as the tight synchronization tendency between the two signs, and the other is poetic structure realized by the iconic-indexical relationships within each type of the signs. It was emphasized that these two constitute, respectively, the vertical and horizontal threads that interweave one piece of fabric of discursive textual structure.

As an example of such a structure, an excerpt from a cartoon story narration by a Japanese speaker was examined. It was meant to demonstrate the significance of the analytic framework promoted in the present study. It particularly shows that gesturally achieved poetic structure is crucial in disambiguating the referent of the actor/subject noun phrase of a verb phrase '*soko made kuru* (come up to there),' which is ambiguous because of an apparent violation of the morpho-syntactic rule by continuing to elide the subject noun phrase when it is expected to be explicitly mentioned. Communicational intent, it was argued at last, emerges through the indexical relationships, at least in part, between and within the linguistic and gestural signs.

Introduction to Joint Research Project

Information Access based on Association

1. Information Access based on Association

Virtually any documents including Encyclopedia, newspapers, and daily information within industries becomes available in digital form. The effective access to those information is crucial to our intelligent life. We need a swift and reliable method to collect relevant documents from millions of documents. But the currently available methods are mostly based on simple keyword search, which suffers low precision and low recall. To remedy this, several new methods are proposed. Among them, information access based on similarity between documents or words looks promising to offer an intuitive way to overview a large document sets. But the heavy computing cost for evaluating similarity prevents them from being practical for large corpora of million docs.

2. Generic Engine for Association: GETA

GETA (**G**eneric **E**ngine for **T**ransposable **A**ssociation) is the software that provides the efficient generic computation for association, and is expected to bring a breakthrough in information access of next generation. GETA enables the quantitative analysis of various proposed methods based on association, and provides the implementation basis for making them practical. The development of GETA is now in the final stage of a three years project. It is a joint research effort by the group of researchers from Hitachi Central Research Laboratory and NII. It is supported by the Advanced Software Technology project under the auspices of Information Promotion Agency (IPA), Japan. GETA is expected to release as open source software in spring 2002.

The basic features of GETA is as follows:

(i) Efficient and generic computation for association
(ii) It is portable to various UNIX's on PC servers.
(iii) Associative document search for over one million documents can be done within a few seconds.
(iv) The similarity measures among docs or words can be switched dynamically during computation.

3. Document analysis methods using GETA

Various methods for document analysis will be implemented using GETA. A couple of examples are:

(1) Tool for dynamic document clustering
The various methods for dynamic document clustering are implemented using GETA:

(i) It provides an efficient implementation of HBC (Hierarchical Bayesian Clustering) method. It takes 2 seconds for clustering 1000 documents on a PC.
(ii) Representative terms of each cluster are available.
(iii) For comparative studies among different methods, most major existing clustering methods (e.g. Ward method, single-link method) are also available.

(2) Tool for evaluating word representativeness
Representativeness is a new measure for evaluating the power of words to represent some topic. It provides the quantitative criterion for selecting effective words to summarize the content of a given set of documents. We propose a new measure for word representativeness together with an efficient implementation for evaluating them using GETA. It is also possible to apply it for automatic selection of important compound words.

4. Experimental Associative Search Interface

C/Perl interface of GETA is useful to implement experimental systems for comparing various statistical measures of similarities. For demonstrating this flexibility of GETA, we implement an associative search interface for document search (See below). It can be used for quantitative comparison among various measures.

5. Future Plan

We are planning to port GETA on PC clusters. This distributed version of GETA should be able to process tens of millions of documents with same efficiency. It is expected to make new information access based on association be applied to large corpora such as web documents.

(Akihiko Takano, Professor,
Programming Languages Research,
Software Research Division
<aki@nii.jp>)

Associative Search Interface using GETA

TOPICS

NII Technical Reports were launched

NII launched the following technical reports. (NII Technical Report, ISSN 1346-5597)
For details, please visit our web site. ▶ **http://research.nii.ac.jp/TechReports/**

Number	Author and Title	Date of Publication
NII-2001-001E	ICHISE Ryutaro, TAKEDA Hideaki and HON-IDEN Shin-ichi / An Alignment Algorithm between Concept Hierarchies	May 10, 2001
NII-2001-002E	HAYAMI Ken/ On the Behaviour of the Conjugate Residual Method for Singular Systems	July 4, 2001
NII-2001-003J	HAYAMI Ken/ On the Behavior of the Conjugate Residual Method for Singular Systems (in Japanese)	August 3, 2001

Electronic Library Service (NACSIS-ELS)

Since April 1997, NII has provided "NACSIS-ELS," an online information service that enables users to browse pages of Japanese academic journals. Documents are available to be retrieved by using searches by title, author, or keywords of journals from your computer.

Outline of NACSIS-ELS

NACSIS-ELS provides an electronic document delivery of Japanese academic journals to support academic researches: it enables users - wherever they are - to retrieve original texts from journals quickly and easily.

NACSIS-ELS includes data on academic journals provided by Japanese academic societies. Contents are bibliographic data (e.g. title, author, abstracts, and journals) as well as image data created by scanning texts.

Users of NACSIS-ELS can search articles by bibliographic information, also read and output image data for printing in the Internet.

NACSIS-ELS provides data on academic articles for researchers whenever and wherever they need. Researchers can retrieve necessary academic data without constraints of time and distance, staying where they are researching.

Included Data in NACSIS-ELS

Following is the breakdown of data at the end of January 2002.

Number of academic societies: 167
Number of academic journals: 449
Number of academic articles: 1,068,504
Number of pages in image data: 3,619,370

NOTE: Academic societies have a right to establish ① copyright fees, as well as ② the time the latest issue of journals is taken public.

System Requirements

You can use NACSIS-ELS on either your Workstation or personal computer connected to the Internet. Reading and printout of texts are available only with special software for NACSIS-ELS. The software is developed by NII to prevent publications from illegal online uses unauthorized by author: it helps to dissolve fears for piracy in information society including the Internet.

Workstation users can read and print out academic articles in NACSIS-ELS with the special browser: Windows and Mac users can use a WWW browser plug-in. The special browser and plug-in software for NACSIS-ELS are available to be downloaded from the site of NACSIS-ELS.

How to Use

NACSIS-ELS is available to use all day, all year round at **http://www.nii.ac.jp/els-e.html**. Users of NACSIS-ELS are free to search and display bibliographic data, and display table of contents. However, you need registration as follows if you want to read and/or print full-text data.

(1) How to Apply

You need to register to use NACSIS-ELS. Qualifiers are as follows: Researchers (including graduate students) and staff in universities/junior and technical college/inter-university research

institutions/institutions within jurisdiction to Ministry of Education, Culture, Sports, Science and Technology and Agency for Cultural Affairs, as well as full members of academic societies.

Simplification of registration process has been now under study.

(2) Charge

The use of NACSIS-ELS itself is free for the foreseeable future, though royalties are charged on some of data. Whether or not royalty is charged for data depends on the academic society concerned.

For further information on copyright charge, please refer to **http://www.nii.ac.jp/els/copy-e.html.**

NII is planning the automation of wider range of academic journals, to make NACSIS-ELS more capable archives. We will keep our efforts to enlist more academic societies. NII also plans to add new contents such as university bulletins in near future.

For inquiries:
Image Contents Section, Contents Division
Tel: 81-3-4212-2315
Email: els@nii.ac.jp

(Contents Division)

Support for the Computerization of the Library of the Beijing Center for Japanese Studies

With the collaboration of the Japan Foundation, NII has been assisting in the computerization of the catalog records of the Library of the Beijing Center for Japanese Studies since fiscal year 1998.
The original goals, the introduction of the library system's operation and the creation of a database for about 57,500 Japanese books, were achieved within three years since the start of the NII's support to that center in 1998.
Mr. Kitamura, Director of the Dissemination Activities Division of the International and Research Cooperation Department, Mr. Sakurai, Chief of the International Activities Section of the Publicity and Survey Division of the International and Research Cooperation Department, and Mr. Yonezawa, Chief of the Contents Management Section of the Contents Division of Development and Operations Department, visited the Beijing Center for Japanese Studies between June 17 and 29 of 2001. They provided advices and technical support to the staff of that center with regards to matters such as: (I) the entering of about 12,000 of Chinese books into a database; (II) the preparation of ILL within China; and (III) upgrading the operation of center's library functions. These measures were taken for the preparation of the opening a new library in the Beijing Center for Japanese Studies in 2003.
With the cooperation of the Beijing Center for Japanese Studies and of some libraries in China which hold Japanese materials, the above mentioned NII's staff, some professors and librarians from the Beijing Center for Japanese Studies visited Tianjin Foreign Studies University, Tianjin Library and Second Historical Archives of China to survey their practices related to the storing Japanese materials. The purpose of this visit was to support the creation of a union cataloging system for Japanese materials.
In addition to that, NII's staff also visited the libraries of Peking University and China Agricultural University in order to exchange opinions on creating a union cataloging system for Japanese materials in China and to survey the feasibility of cooperation with Chinese library network.

(Publicity and Survey Division)

Library of the Beijing Center for Japanese Studies

Providing advices and technical support to the Center

Document Delivery Service between U.S. and Japan

"Document Delivery Service" is a new term that means service of academic documents by libraries in response to researchers' requests. Interlibrary Loan (ILL) system, the online system which enables member libraries to request photocopy or loan of documents each other, supports this service.

There are many kinds of ILL systems in the world, such as NACSIS-ILL (NII) in Japan, OCLC (Online Computer Library Center) and RLG (Research Libraries Group) in the U.S., and KERIS (Korea Education & Research Information Service) in Korea. In the recent globalization of academic researches, however, there were trends toward international standardization of ILL system, aiming at conjunction with ILL systems and efficient international ILL service.

In "CULCON (U.S.-Japan Conference on Cultural and Educational Interchange)" and other meetings concerned, on the other hand, there were proposals for the improvement of document delivery service between the U.S. and Japan. ILL system providers, in both sides of the two countries, were requested to develop the system based on ISO ILL Protocol.

In response to those requests, NII implemented ISO ILL Protocol to NACSIS-ILL, and then will start an experimental interconnection with OCLC on November 2001. The ILL system linkage between NACSIS-ILL and OCLC will enable NACSIS-ILL member libraries to request photocopy to foreign libraries, as same as domestic ones. Z39.50 Protocol, a international standard for bibliographic and holding information retrieval, was also implemented on June 2001. So, bibliographic database of NII are now available using Z39.50 Protocol.

NII will keep efforts to infrastructure and improvement of NACSIS-ILL, to promote global document delivery service.

(Contents Division)

Super SINET Promotion Conference Meeting and Symposium Held

Mr. D. Yoshida, Chief of Information Section, MEXT

Prof. Y. Suematsu, Director General of NII

Mr. H. Murakami, President of Japan Telecom Co., Ltd.

NII plans to start the operation of Super SINET in January 2002. Super SINET based on 10Gbps optical communications technologies is the world fastest network to connect scientific research organizations, and the network will use optical crossconnects (OXCs) for the first time in the world, and will provide a critical infrastructure for the most advanced scientific research in the fields,

for example, of high energy and fusion science, genome informatics, space and astronomical sciences, super-computer interlocking (GRID) and nanotechnology development, all of which require capabilities for very large-volume data exchange.
In FY 2001, the following 11 universities and research organizations are planned to be connected by Super SINET: Tohoku University, the University of Tokyo, Nagoya University, Kyoto University, Osaka University, the Institute of Space and Astronautical Science (ISAS), National Institute of Genetics (NIG), National Astronomical Observatory, National Institute for Fusion Science, High Energy Accelerator Research Organization (KEK) and NII.
Prior to the commencement of the actual operation of Super SINET, the 1st meeting of the Super SINET Promotion Conference and its symposium on "Structure and Effective Application of Super SINET" were held on 31 August, 2001, at the National Center of Science under the sponsorship of NII.
In the meeting, the Super SINET Promotion Conference, wishing to contribute to the promotion of scientific research in which Super SINET would play a vital role, decided that its activities be pursued by establishing a study group on each frontier research subject.
The meeting was followed by the symposium, where the issues of the advanced research subjects and the structure of Super SINET were discussed. Mr. Yoshida, Chief, Information Section, Research Promotion Bureau, the Ministry of Education, Culture, Sports, Science and Technology (MEXT), Prof. Suematsu, Director General, NII, and Mr. Murakami, President, Japan Telecom Co., Ltd. a member of the joint research with NII, made addresses, and the program proceeded to the presentation on the concept of Super SINET and on, by directorate researchers from each research field, some actual applications of Super SINET, attracting enthusiastic interest of the participants.
Being the first occasion of this conference, the meeting together with the symposium was opened to the public, and attracted some 250 participants. In addition, the meeting and the symposium were carried live via Internet to the universities, etc.
e-Japan Priority Policy Program (March 2001 IT Strategy Headquarters' Decision) has stated that the general arrangements of Super SINET be promoted, and therefore the estimate budget for the costs for the new connection with Hokkaido University, Tsukuba University, Tokyo Institute of Technology, Kyushu University, Okazaki National Research Institutes, etc. has been demanded for 2002 fiscal year.

(For details, contact net6@sinet.ad.jp)

(Network Systems Division)

The Super-SINET Promotion Conference Launched

Prof. Shoichiro Asano
Director & Professor,
Infrastructure Systems Research Division:
Representative, Super-SINET Promotion Conference

The Super SINET Promotion Conference was started on August 31, 2001 at the National Center of Science.

As explained in NII News No.3. Super-SINET to connect certain research institutions with 10Gb/s or more bit rates is to be initially operated in January 2002, in order to facilitate their activities for advanced scientific research. Super SINET is

Prof. Mitsutoshi Hatori. Director, Development and Operations Department, is making an address at the Conference's meeting.

Prof. Hiroaki Terada, President, Information Communications Institute, Japan Telecom Co. Ltd., stated the critical values of the photonic network.

expected to significantly promote such activities in the fields of high-energy physics, space and astronomical sciences, genome information processing, nano-technology and computational GRID as well as to materialize photonic Internet for the first time in the world.

The newly-formed Super-SINET Promotion Conference is responsible for the decision of objectives, the development of plans and the exchange of research results of the researches. For this purpose, it is planned that necessary study groups on research subjects are established. The meeting of the Conference was held and publicly broadcast via Internet, where the Charter of the Super-SINET Promotion Conference was adoptd and the Representative of the Conference and the Program Directors of study groups were elected. Further, because it has already been decided that the Super-SINET project and the ITBL project administrated by the Ministry of Education, Culture, Sports, Science and Technology(MEXT) be integrated for the network operation, representatives of the Institute of Physical and Chemical Research, Japan Atomic Energy Research Institute (JAERI) and other ITBL member organizations also attended the meeting. In the future, meetings of the members of the two projects will regularly be held. The meeting was followed by the Symposium on Super-SINET.
Subsequent to the opening address by Prof. Yasuharu Suematsu, Director General, NII, Mr. Haruo Murakami, President & Chief Executive Officer, Japan Telecom Co., Ltd. who is the representative of NII research partners for the Super-SINET project, gave an aspiring speech on the future of the company and then Mr. Daisuke Yoshida as honorable guest, Director, Information Section, Research Promotion Bureau, the Ministry of Education, Culture, Sports, Science and Technology, expressed congratulations and expectations for this project.

The author, Asano, outlined Super-SINET by using video demonstration, and then the program proceeded to the brief introduction of three research subjects. Prof. Yoshiyuki Watase, High Energy Accelerator Research Organization (KEK) referred to the relationship between emerging, challenging and internationally collaborative research topics and Super-SINET, and Prof. Yoshihiro Chikada, National Astronomical Observatory, to the possibility that super high-speed communications would contribute to dramatic progress of space and astronomical observation. Finally, Prof.Yoshiyuki Kawazoe, Metal Materials Research Institute, Tohoku University, introduced details of the forefront development efforts for new materials in an intelligible way, giving the audience a deep impression. In conclusion, Honorary Professor Hiroaki Terada, Osaka University, made a speech on the technological and business implications of photonic network. Honorary Professor Terada is the most prominent figure in the information communications field and, at present, in the position of President, Information Communications Institute, Japan Telecom Co., Ltd. This Symposium attracted some 250 participants from Japan and overseas countries, including those from US companies such as Lucent Technologies, Cisco Systems and Calient Networks. To achieve the smooth operation of Super-SINET and the successful development of its new functions, close cooperation with other research organizations and companies in Japan and overseas has to be strengthened, and it is expected to initiate some joint development projects with the participant entities in the present meeting and Symposium.

On the Behaviour of Iterative Methods for Singular Systems

Professor,
Mathematical Informatics Research,
Foundations of Informatics Research Division

Ken Hayami

1981: Master of Engineering, Graduate School of Engineering, The University of Tokyo. Ph.D., Dr. Eng. 1981: Research Laboratories, NEC Corporation.
1993: Associate Professor, Graduate School of Engineering, The University of Tokyo. From January, 2001: Professor, Mathematical Informatics Research, Foundations of Informatics Research Division, National Institute of Informatics.
Specializes in numerical analysis, especially numerical linear algebra, boundary element method and solution of inverse problems.

Problems in engineering and science often lead to large systems of linear equations. Iterative solvers are indispensable for the solution of such systems, and research have been done on various iterative solvers and their theory. However, the behaviour of iterative solvers on singular systems have not yet been sufficiently clarified.

Hence, we will consider the behaviour of iterative solvers for systems of linear equations whose coefficient matrices are not regular. Such systems arise, for instance, in finite difference approximations of partial differential equations describing the temperature distribution in a totally insulated room. They also arise in stochastic equations arising in the congestion analysis of computer networks.

Consider applying the Conjugate Residual (CR) method, which is a powerful method, to such singular systems. The method iteratively improves the approximate solution so that the residual (the difference between the right and left hand sides of the equation) is minimized. In the process, the method tries to improve the solution in the direction which is, in a sense, orthogonal (conjugate) to the previous direction.

It is clarifying to take a convenient basis when mathematically analyzing whether the CR method successfully gives the true solution. That is, when the range and kernel of the coefficient matrix are mutually orthogonal, the CR method can be decomposed in to the two components. Further, it can be shown that the necessary and sufficient condition for the CR method to successfully converge for arbitrary right-hand-side and initial approximate solution, is that the symmetric part of the coefficient matrix is semi-definite, and its rank is the same as the original matrix.

Further extending this idea, one can derive the necessary and sufficient condition for the CR method to converge when the direct sum of the range and kernel is the whole space, and the right-hand-side of the original equation belongs to the range space of the coefficient matrix, i.e. when the system is consistent.

As an example, for the singular system of linear equations arising in the finite difference approximation of the one-dimensional convection diffusion equation, the case of the periodic boundary condition corresponds to the former case, and the case of the Neumann (insulating) boundary condition corresponds to the latter.

For details, please refer to
NII Technical Reports (NII-2001-002E and 003J).

▶ URL http://research.nii.ac.jp/TechReports/index.html

Toward Knowledge Web Services

Visiting Associate Professor, Full-Text Contents Laboratory (visiting), Research Center for Testbeds and Prototyping, NII
Senior researcher, Tokyo Research Laboratory, IBM Research

Naohiko Uramoto

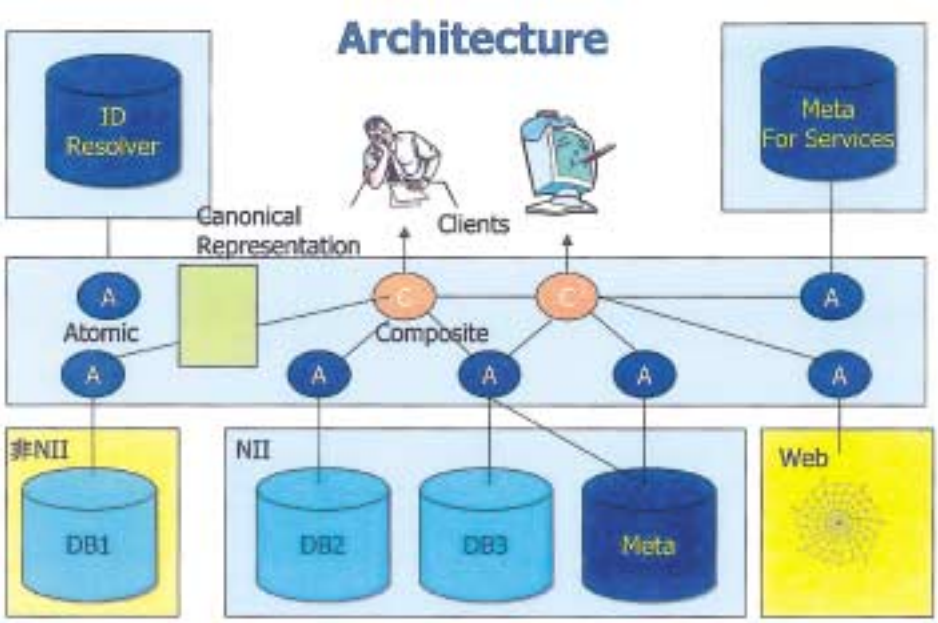
Naohiko Uramoto received the B.E. degree and M.S. degree from Kyushu University in 1988 and 1990, respectively. He joined IBM Research, Tokyo Research Laboratory in 1990, and he has engaged in research of natural language processing, information retrieval, and XML related technologies and their applications. He received Ph.D. from Kyusyu University in 2000, and joined NII in November 2000 as a visiting associate professor, Full-Text Contents Laboratory (visiting), Research Center for Testbeds and Prototyping.

The evolution of the Web does not stop year by year. In business area, XML has been playing a primary role on data representation. And now, the two new models the Web are coming: the Web Services and the Semantic Web. The aim of them is to make the web understandable for computers and accelerate the collaboration between humans and computers.

The Web is a huge knowledge system. There are huge amount of knowledge in the form of HTML files on the Web. XML makes it possible to deal Web resources as the structured data. To change the data to "operational knowledge", we must discuss on how to acquire, represent, and operate the data on the Web. Developing domain dictionaries and ontology are also important.

There have been many knowledge-system applications based on Artificial Intelligence (AI) and Natural Language Processing (NLP) technologies. Search engines and machine translation systems are good examples some of which had great successes, but most of them did not become big waves. One of the reason is the applications are complex and monolithic systems so that they are hard to maintain, enhance, and integrate them.

We are proposing the Knowledge Web Service which is a set of Web Services for existing and new AI/NLP applications. Each service has an XML-in/XML-out interface with a service description. It can be combined to construct larger services. The services can be operational from both human and computer, and it is easy to combine many tools and applications. Currently we are working on developing a set of Web services for existing tools developed at NII.



Introduction to Joint Researches Type Theory for Classical Logic

1. Type Theory

A type theory is a mathematical theory which analyses the notion of types, which are obtained by generalizing the notion of data types (for example, int in the programming language C) in programming languages. Type theories have been studied intensively for ten years. Type theories have not only theoretical deep significance, but also many contributions to design of programming languages. For example, the programming language ML is a practical programming language whose theoretical basis is a type theory. Recently the notion of types became indispensable for design of programming languages, since by using type information a compiler can optimize codes and automatically detect errors of programs written by human. On the other hand, various deep mathematical structures have been found in type theories. In particular, Curry-Howard isomorphism was found and it turned out that a logical system corresponds to a type theory by one-to-one correspondence.

2. Curry-Howard Isomorphism

Curry-Howard Isomorphism is one-to-one correspondence by which each type theory corresponds to a logical system of mathematical logic. A logical system is a theory which analyze inferences of mathematics by analyzing its syntax, while a type theory is a theory which analyze programs and types of data, and they seems very different. However, Curry-Howard isomorphism proved that they are essentially the same. This correspondence enabled knowledge for type theories in the computer science area and knowledge in the mathematical logic area to give new knowledge for each others, and make dramatic progress in both areas. For example, it is famous that a long-standing open problem in the mathematical logic area was solved by using the idea of a type theory. Moreover this correspondence gives us constructive programming, which is a way of programming and by which we can produce a program and its verification proof by writing a constructive proof of its specification formula, instead of writing a program directly and verifying it.

3. Type theories corresponding to classical logic

Curry-Howard isomorphism was known only for the relationship between constructive logics and type theories. Constructive logic is obtained from the usual logic used in mathematics, which is called classical logic, by erasing the law of excluded middle, which states that either "A" or "not A" holds. It is natural to think about extending Curry-Howard isomorphism to classical logic, since it is a common logic.

Our joint research is based on this idea, and we will study an extension of Curry-Howard isomorphism from constructive logic to classical logic. Recently this problem has been studied intensively and many good results have been obtained. However an appropriate answer to the question about what a type theory corresponding to classical logic is has not been found yet. It is conjectured that a type theory corresponding to classical logic is a type theory of continuation, exception handling and concurrent process calculus.

Curry-Howard Isomorphism

logical system	type theory
formula A	type A
and $A \& B$	cartesian product $A \times B$
or $A \vee B$	disjoint sum $A + B$
imply $A \supset B$	function space $A \to B$
for all $\forall x \in A.B$	dependent product $x : A.B$
proof P	program P
P is aproof of A	P is a type of A
proof normalization	program execution
classical logic	? type theory of exception handling, concurrency

Our research will construct a type theory of various features of programming languages which could not be covered by known type theories, such as continuation, exception handling, and concurrent process calculus. Then our research will enable us to use constructive programming to synthesis programs with these features. Moreover our research will contribute to mathematical logic by clarifying computational content of classical logic.

The members of our joint research of this year are Professor *Hirokawa* of *Kyushu* University, Professor *Kameyama* of *Tsukuba* University, Doctor *Nakano* of *Ryukoku* University, Professor *Fujita* of *Shimane* University, Professor *Hasegawa* of University of Tokyo, and I.

(Makoto Tatsuta, Professor,
Foundations of Algorithms Research,
Foundations of Informatics Research Division)

Introduction of NACSIS Projects

New service of image information through NACSIS-IR

The Information Retrieval Services of NII (NACSIS-IR) have accumulated scientific information in all fields of humanities, social sciences and natural sciences, to supply researchers with the necessary information online speedily and accurately.

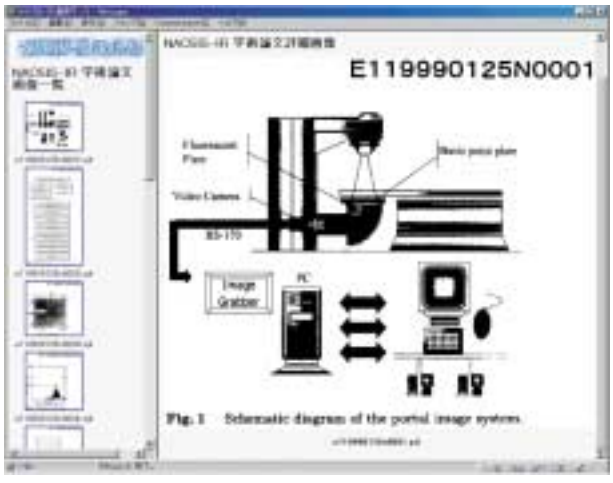
On the databases of 'Scientific Papers' and 'Clinical Case Reports,' NACSIS-IR has started the service of image information.

The databases have stored up literal information i.e. titles, names of author, extracts and texts of the papers carried in scientific periodicals: full text search and readout have been available. New service supplements with non-literal information such as diagrams, tables, pictures, and formulas through WWW browsers, by accumulating such information as images. This online provision works as an alternative to the former facsimile services of visual information.

For details on how to use the service, please visit the web site of NACSIS-IR.

▶ **URL http://www.nii.ac.jp/ir/ir-e.html**

(Application Division)



Transfer of Authority of NACSIS Career Information Service (NACSIS-CIS)

Since May 20, 1997, NII had exercised jurisdiction over 'NACSIS Career Information Service (NACSIS-CIS),' which encourages the circulation of faculty members, as well as the employment of talented researchers with various backgrounds and careers.

NACSIS-CIS had provided online career information for researchers, displaying the databases on position offers publicized by scientific institutions i.e. universities. Since the online service started,

approximately 15,000 job offers by 664 institutions had been displayed, while 1.25 million guests had accessed NACSIS-CIS. As related data, NACSIS-CIS also published the provisions that each institution regulates on the appointment term of faculty members.

The jurisdiction of NACSIS-CIS is now transferred to 'Japan Research Career Information Network (JRECIN)' operated by Japan Science and Technology Corporation (JST): JRECIN came into operation on October 1, 2001.

JRECIN is a consolidation of NACSIS-CIS and 'Directory Database of Research Career Information' which had been operated by JST. A wider range of data on job offers will be provided by JRECIN, and the information on applicant researchers will be also displayed.

We greatly thank to a large number of users of former NACSIS-CIS, and sincerely hope you will use JRECIN too.

(Application Division)

Japan Research Career Information Network (JRECIN)
▶ http://jrecin.jst.go.jp/
<For more information on JRECIN>
Japan Science and Technology Corporation, Department of Advanced Databases
Research Information Transfer Division
5-3 Yomban-cho, Chiyoda-ku, Tokyo 101-8666, Japan
TEL: 81-3-5214-8471 / FAX: 81-3-5214-8470
E-mail: jrecin@tokyo.jst.go.jp

'Information Processing Seminar in Karuizawa 2001' was held

Information Processing Seminar was held in International Seminar House for Advanced Studies (Kauizawa-machi, Nagano Prefecture) for five days from the 27th to 31st of August 2001, participated by 8 faculty members of universities.

The seminar is part of training of information literacy for faculties: the goal for participants is the acquisition of information processing skills using most advanced technologies. In this session lectures and training were given on the theme 'utilization of Linux.'

The following is some of comments on the seminar by participants: "my knowledge of Linux has deepened," "to practice PC assembly was a precious experience," and "it was valuable for me to exchange information with faculties from other universities."

(Dissemination Activities Division)

Tokyo Symposium of Digital Silk Roads

Dr. Abdul Waheed KHAN, Assistant Director General of UNESCO on Keynote address

General Session

Mr. Sergey Karpov, UNESCO-Almaty of Kazakhstan on Review address

Exhibition at the Entrance Hall of the National Center of Sciences

The Tokyo Symposium for Digital Silk Roads (DSR Tokyo) was held between December 11 and 13 at the National Center of Sciences under the joint auspices of NII, UNESCO, and the Japanese National Commission for UNESCO.

The symposium aimed to shed new insights on Silk Roads research by incorporating digital technologies into cultural studies. Our ultimate goals in this area are to contribute to the conservation efforts of theinvaluable, yet vulnerable, cultural heritage along the Silk Roads and tomake it accessible as a global information resource by creating its digital archives.

In the opening session of the first day, keynote addresses were delivered by Tokyo University's Emeritus Professor and recipient of 2001's Order of Culture, Prof. *Chie Nakane*, and the Assistant Director General for Communication and Information of UNESCO, Dr. *Abdul Waheed Khan.* Subsequent speakers included Kyoto University's Emeritus Professor *Takayasu Higuchi*, and the Director of the Research Center for Silk Roadlogy.

The second and third days were dedicated to expert sessions. In the session morning of December 12, the presentations focused on new approaches to Silk Roads studies, such as utilizing virtual reality and remote sensing technologies. A poster session took place that day's afternoon featuring as many as 22 poster exhibits. On the morning of December 13, the future strategies and the proposals were discussed in the morning session, and were later followed by two parallel panel sessions in the afternoon and by a discussion session, which concluded the symposium. At the entrance hall of the venue, and as sidelines to the expert sessions, an exhibition of state-of-art digital technologies related to the theme was held.

Prof. D. Vassiliev, Russian Academy of Sciences (center) & Mr. E. Bat-Bold, IISNC, Mongolia (right)

Some 330 people, including 30 participants from abroad, took part in the symposium, and actively engaged on an extensive and fruitful discussion on different ways and possibilities of using digital information technologies in protecting and promoting cultural heritage.

In overall, the symposium was very successful. As the majority of the Silk Roads heritage seems to be on the brink of collapse owing to social as well as natural factors. Its realization reflected UNESCO's strong commitment to carry out the efforts to conserve the Silk Roads heritage in digital images and make them available on computer networks to be shared by people around the world. UNESCO expects that the outcome of this symposium will help to the launch of some international collaborative projects that can contribute to this aim.

(Kinji Ono, Professor, Steering Committee Chair
of Tokyo Symposium for Digital Silk Roads
Executive Director of Research,
National Institute of Informatics)

Researchers from Iran, Kyrgyz-stan, Uzbekistan, Turkey, Sri-Lanka & the other countries participated in Poster Session.

Ms. Rosa Guerreiro, Div. of Intercultural Dialogue, Culture Sector of UNESCO HQs. as UNESCO Session chair

Special Session " New Aspects "

Panel Discussion " Personal Perspective:
Where we are and where we go "

Report on DC-2001 International Conference on Dublin Core and Metadata Applications

Speech by Dr. Stuart Weibel, Executive Director, DCMI

DC-2001, International Conference on Dublin Core and Metadata Applications, was held from the 22nd to 26th of October 2001 at Hitotsubashi Memorial Hall. 267 people from 27 countries participated in the event.

DC-2001 was co-sponsored by six organizations, i.e., National Diet Library (NDL), Japan Science and Technology Corporation (JST), Communications Research Laboratory (CRL), University of Library and Information Science (ULIS), Dublin Core Metadata Initiative (DCMI), and National Institute of Informatics (NII). The event was held with the financial assistance of JST, CRL, NII, and the Ministry of Education, Culture, Sports, Science and Technology. On behalf of DC-2001 organizing committee, I would like to greatly thank to all the parties that contributed to the success of DC-2001 as well as all the participants.

Metadata which is the theme of DC-2001 is defined as 'data of data' or 'information of information.' Recently metadata has been attracting more attention, as it is key to search information on the Web.

Dublin Core Metadata Initiative has provided annual workshops since 1995 to develop the standardization of metadata. When DC-2001 was planned, DCMI decided to expand the ninth session into an event of wider scope, including workshop, conference and tutorial. DC-2001 was the first conference where R&D on metadata and the result of its applications were presented, as well as the tutorial aiming for spread of metadata. It was also the first event hosted by DCMI in Asia.

On the first three days of DC-2001 (Oct. 22-24), the workshop was held as usual, picking up hot topics on the standardization of metadata. Themes in the workshop were architecture/registry, libraries, the government, education, citation, and agents. Sessions were held under each theme, and moderators of each session reported on the results at the plenary session. The summary of the workshop will be available through WWW soon.
http://www.dublincore.org/

Research presentation at the session

In the workshop, proposals were made for organizing a new group that deals with multilingualism, which would be a new issue for Dublin Core Metadata. Multilingualism will be an important matter in Japan as well.

The international conference was held from 24th to 26th of October. 35 of oral presentations and 11 posters were carefully selected for presentation among contributed papers from many countries.

As the keynotespeaker, Prof. *Makoto Nagao* (President of Kyoto University) gave a lecture for an hour under the theme 'Metadata for Multimedia Information'. He talked about the importance of metadata based on his studies on digital libraries.

In the conference, special sessions were held under five themes,: 'metadata in education,' 'government information,' 'open archives initiative,' 'next-generation internet,' and 'geographic information systems.' Speakers, most of who were guest participants, presented practices of metadata applications specifically related to the five themes.

Tutorials on Dublin Core were also held, participated by many Japanese librarians. We greatly appreciate

that the tutorials were well received by the audience.

The next session is planned in Italy in the autumn on 2002. The parties concerned in metadata applications will be greatly welcome to participate in the next conference.

Online proceeding of DC-2001 is available at
▶ **http://www.nii.ac.jp/dc2001/**

(Conference General Chair of DC-2001
Professor and Director, Research Center for
Information Resources, NII, Jun Adachi)

Discussing participants at the poster session

The 1st Mlabnet (Multimedia Laboratory over Internet) and the 8th WAINS (Workshop on Academic Information Networks and Systems) were held

In front of the Karuizawa Seminar House

Presentations at the workshop

The 1st Mlabnet (*Multimedia Laboratory over Internet*) and the 8th WAINS (*Workshop on Academic Information Networks and Systems*) were held at the *Karuizawa International Seminar House* between October 10 and October 13, 2001.

The number of registrations amounts to 35 in total, among which 10 from the United States, 7 from Thailand, 2 from France, 2 from Vietnam, 7 from National Institute of Informatics, 6 from Japanese universities and private companies, and 1 from French Embassy in Japan.
In the beginning of the workshop, Prof. *Kinji Ono*, the Executive Director of Research, delivered his welcome speech, in which he said special welcome to 10 delegates from the United States, and 2 delegates from Vietnam for their first participation in the workshops.
The number of keynote speeches was three: Prof. *Kinji Ono*, Executive Director of Research, on "Linking Culture and Digital Technology: A New Attempt of Informatics Research," and Prof. *Henri Angelino*, visiting professor of NII, on "Will Virtual University and Virtual Laboratory take over Reality in the Future," and Prof. *Nontawat Chancharoen*, *Kasetsart* University (Thailand), on "*Inter-Intra Campus through E-Learning*." Prof. *William Grosky*, University of Michigan, Dearborn (USA), also presented his talk on "From Context-Free to Context-Sensitive Content-Based Retrieval." The number of technical presentations was 16 in Mlabnet and 11 in WAINS, and one panel session was also programmed for each workshop.
Mlabnet (Principal Investigator: *Frédéric Andrès*) is a seminar "Japan-US cooperative science program" supported by both JSPS (Japan Society for the Promotion of Science) and NSF (National Science Foundation) (NSF), and this is the first workshop of the series. This international collaborative research group in the form of Multimedia Laboratory over Internet consists of researchers from Japan, the United States, France, and Thailand. In this workshop, the participants discussed research topics such as multimedia annotation and metadata.
WAINS (Grant-in-aid research by the Ministry of Education, Science, Culture and Sports / Principal Investigator: Kinji Ono) is an international collaborative research on academic information systems and networks, and since 1995, annual WAINS workshops have been held alternately in

Japan and in Thailand with the participation of Japanese and Thai researchers. In this workshop, the participants discussed the past and future of research collaboration between Japan and Thailand on various research fields such as near-realtime satellite data exchange, network collaboration, multimedia and hypermedia delivery system, multilingual information processing, distance learning, and bioinformatics.
Throughout the workshops, particpants enjoyed active discussion and serene relaxation in the middle of peaceful autumn atmosphere in Karuizawa.

(Frederic Andrès, Associate Professor, Distributed Processing Research, Software Research Division / Asanobu Kitamoto, Research Associate, Office for Promotion of Research Projects, Research Center for Testbeds and Prototyping)

Participants relaxing with a barbecue

12th NII Monthly Seminar ◆ October 19, 2001

Quantitative Analysis of Japanese Documents

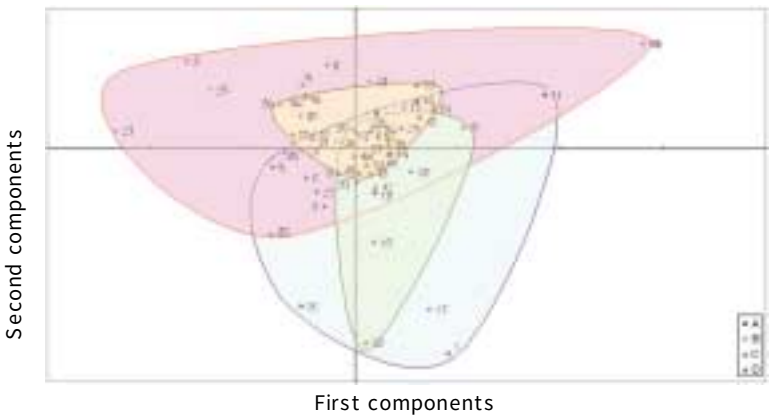
Visiting Professor, Data Collection Laboratory, Research Center for Information Resources, NII
Professor of the Institute of Statistical Mathematics

Masakatsu Murakami

He received a B.S. in Engineering in 1968 from Hokkaido Univ., an M.S. in Statistics in 1973 from Stanford Univ. and a Ph.D. in Engineering from Hokkaido Univ. in 1977. Since 1974, he has been studying statistical data analysis at the Institute of Statistical Mathematics.

A new research method for analyzing literary style has been applied successfully to foreign documents which have some questions about their authorship. This method pays attention to quantitative properties of documents such as word length, sentence length, frequency of words, frequency of parts of speech and so on.

Japanese documents present some difficulties in analysis since the sentence are not devised into words separated by spaces. For this reason, the research on Japanese documents is delayed compared with foreign documents.
Recently we started the quantitative analysis of *Genji Monogatari* (The Tale of *Genji*), which is rightly



Distribution of 54 volumes as a result of quantitative method III analyzing the frequency distribution of 21 auxiliary verbs(A: *Murasakinoue* story in the first part, B: *Tamakazura* story in the first part, C: The second part and "*Niounomiya Sanjo*" in the third part, D: *Uji Jujyo* in the third part).

considered the greatest accomplishment in Japanese classical literature. We present what has been derived from our study so far, mainly with respect to questions of authorship of the last ten volumes of the novel.

We also analyze the novels of *Yasunari Kawabata*, a winner of the Nobel Prize, and present the hypothesis that his literary style changed after the Second World War.

Innovation and Technology Transfer
The objective and the Ambitions of INRIA

Counsellor for Science and Technology, Embassy of France Tokyo, Japan

Michel Israël

Third cycle thesis in Computer Sciences on Multivalued Integrated Circuits, Univeristy Paris , 1987; Ph.D. in Computer Sciences on CAD tools for IC design, University Paris , 1987
Outstanding Professor, Dean of Faculty, Fundamentals and Applied Sciences, University of Evry, France (-September 2000); Member of National Council of University for Computer Science (1999- present); Research Area: Bio Informatics

One of the strong points of INRIA (*Institut National de Recherche en Informatique et en Automatique*) policy is to assure a highly fruitful exchange between scientific exploration and the social economic problems of the world. This exchange is essential to a society dominated by information, and it should guide any activity where the ICST has an impact. The path that leads to the heart of the world of information begins with bringing together scientific excellence and professionalism methods of the transfer of technology.

Information and Communication Sciences and Technologies (ICST) profoundly transform our society, creating also a formidable potential for growth and the creation of businesses and jobs. Apart from the scientific, technological, and economical stakes, that are already the object of fierce competition, they are the educative, cultural and social stakes as well. Their ramifications affect every country as well as the entire planet.

INRIA, a public research establishment, strives to be a major participant in the transformation of technology by subscribing its endeavors to the "Nobel Circle"-- a circle that plays a major role in the ICST fields, linking research to application.

Backed by its scientific excellence and the quality of the expertise that it has assembled, INRIA has an affirmed objective in the transfer of technology. Through the valorization of research results in industry, the development of businesses in technology, and the distribution of software, INRIA objective is to assure that the results of its research have a maximum impact upon the social-economic world. This goal, laid out in the Strategic Plan of the Institute has been confirmed by the Quadrennial Plan 2000-2003 signed by the Government. It states that INRIA has for objective to gain international success and notoriety in the transfer of technology. The principal fields of application are: Telecommunications and Multimedia, Health and Biology, Engineering, Transport, and Environment.

To define its politics, coordinate its action, and manage its transfer and valorisation, INRIA is backed by the following structures:

- The Vice-President for Technology Transfer, member of the General Direction of the Institute who define the major axis in transfer policies,
- The Department of Developpement and Industrial

Relations, DirDRI, that coordinates and manages transfers by making use of their local correspondents in the Research Units and those correspondents assigned by the Director of International Relation Department.

Start-up creation is a privileged way to rapidly transform research into innovation.

The technology companies stemming from INRIA are bringing products based on INRIA research prototypes to industrial standards or are spreading the Institute's know-how. Since the creation of Simulog in 1984, the first company to come out of INRIA, more than fifty other companies have followed its example. One of the most significant successes is that of ILOG, a world leader in software components that is listed on the Nasdaq and the New Market.

In 1999, 6 companies were started and the year 2000 witnessed the creation of eleven more, the latest being Xylème in September of 2000. As a whole, the corporate gains and inventory for these companies resulted in gross sales of over 800 MF, and count more than 1,400 employees.
The INRIA continues its effort in favor of start-up creation

References: **http://www.inria.fr**

13th NII Monthly Seminar ◆ November 21, 2001

Generic Approaches to Structure-Based Retrieval of Web Pages and Applications to Web Page Semantics

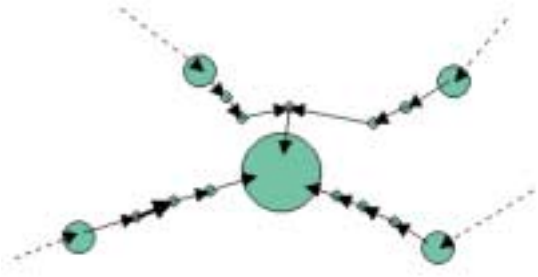
Professor and Chair, Computer and Information Science Department, University of Michigan, Dearborn, U.S.A.
Foreign Visiting Researcher, Distributed Processing Research, Software Research Division, NII

William Irvin Grosky

B.S. in Mathematics, M.I.T., 1965; M.S. in Applied Mathematics, Brown University, 1968; Ph.D. in Engineering and Applied Science, Yale University, 1971
Foreign Visiting Researcher, National Institute of Informatics (NII), Tokyo, Japan (October 2001- March 2002); Chair and Professor, Computer and Information Science Department, University of Michigan, Dearborn, Michigan (September 2001 - present); Interim Chair, Computer Science Department, Wayne State University (May 1995 - December 2000); Assistant Professor, Information and Computer Science Department, Georgia Institute of Technology (September 1971 - August 1976) Research Area: Multimedia Information Systems of Databases

We consider using the history of users' navigation paths through the web to provide both a more intelligent web browser and a more intelligent search engine, both of which can overcome ***the semantic gap*** , the mismatch between users' wants and the way automated search systems try to satisfy these wants. A user will be able to search for relevant web pages in the normal way, by providing various low-level syntactic features, albeit more general than standard keywords: we will also utilize both structural and multimedia cues in the form of structural keywords and visual keyword. Our browser will monitor a user's navigation history, and based on this history will automatically communicate with our search engine to suggest other relevant web sites for the user to consider.

In our approach, a web page does not have a fixed semantics, but multiple semantics that vary over time. Each element of a page's multiple semantics corresponds to a group of users who visit this page through similar browsing paths, and is defined in terms of the page's contents (both textual and image-based), the structure of the page (spatial distribution of rendered information from individual tags), and the amount of time spent browsing portions of the page. As different users visit a given web page, its semantics changes. Similarly, as a user browses the web, he incrementally builds up a semantic profile. Our browser, through the mediation of our search engine would compare a user's browsing semantics with the semantics of pages on the web.



Intelligent Information Media based on Videos
--- from intelligent video capturing to interactive presentation

Visiting Associate Professor, Computer Vision Research, Multimedia Information Research Division, NII
Associate Professor, Computer Vision and Image Media Lab., Institute of Engineering Mechanics and Systems, University of Tsukuba

Yuichi Nakamura

Graduated in 1990 from the Faculty of Engineering, Kyoto University, received in 1992 Dr. Eng. at Kyoto University, Research associate at Kyoto University 1990-1993, Assistant professor at University of Tsukuba 1993-1999, Associate professor at University of Tsukuba 1999-, also Visiting associate professor at NII 2000-. His research interests are in image understanding, video analysis, and multimedia systems.

An intelligent video production mechanism is essential for making video-based multimedia really tractable media for personal or small scale communications. Our approach for this purpose is to realize an automated system which has, (a) functions of virtual cameramen who shoot at human behaviors, (b) functions of a virtual director who plans and edit the videos, (c) functions of a virtual designer who arranges data in a comprehensible way.

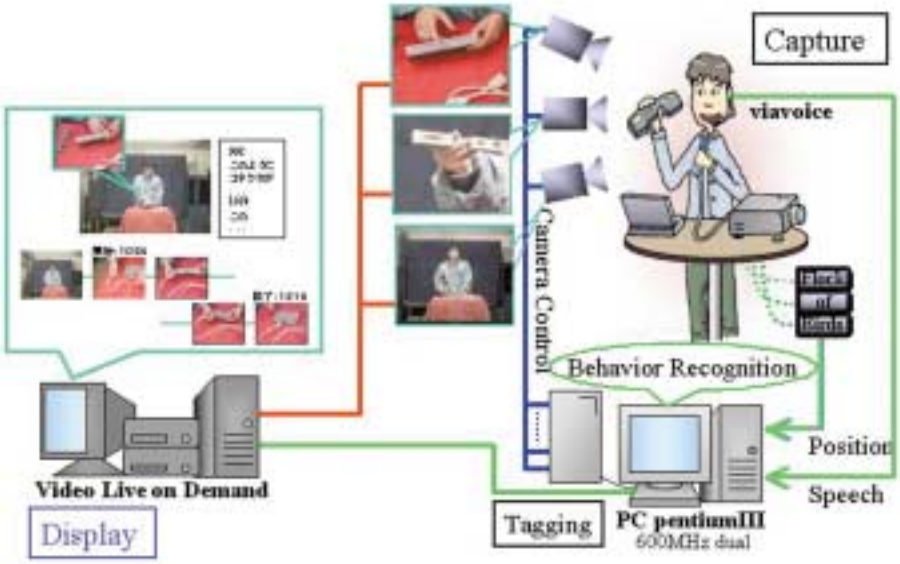
The following research results are presented at this lecture.

(a) An intelligent video capturing system whose cameras shoot at a face, hands, or other important portions are developed. Camerawork is adjusted based on the purpose: "what target to shoot" and "what aspect-of-target to shoot". This enables to take comprehensible videos without unpleasant views.

(b) A video selection mechanism which emphasizes the focus of attention is developed. Since the focus is frequently changing, we utilize human behavior recognition based on movements and speech analysis.

(c) Video Icon Diagram which arranges images taken from videos in a diagram format is proposed. Videos on explanation or presentation have typical semantic structures such as causality, order, and so on. By representing such structures in terms of a diagram, in which video icons are the elements arranged according to their relationships, we can obtain a comprehensible explanation of a video.

Intelligent Video Production system



Visiting Associate Professor, Data Collection Laboratory, Research Center for Information Resources, NII
Associate Professor, Faculty of Cultural Information Resources, Surugadai University

Kazuaki Kishida

Graduated in 1987 from School of Library and Information Science, Keio University; MA, Graduate School of Library and Information Science, Keio University in 1989; became a Research Associate, University of Library and Information Science in 1991; took the present office in 1994; became in Nov. 2000 Visiting Associate Professor, NII; covers specialty in information retrieval.

Average precision is often employed as a performance indicator for evaluating methods or systems in retrieval experiments. A test collection, a special data set for retrieval experiments, is needed in order to estimate average precision, but it is very difficult to develop a complete test collection. The incompleteness may cause a kind of non-sampling error, and a bias may be included into the evaluation results. Thus, we need to examine statistically robustness or stability of average precision against such errors.

Typical errors are caused in the process of developing test collection by (1) variation in determining correct or relevant documents to a sample query, and (2) failure to find some relevant documents in the test collection. As to (1), a computer simulation based on statistical measurement-error model enables us to assess the degree to which the error has an effect on a value of average precision. Similarly, we can also examine the degree of error (2) through a computer simulation. In fact, a result of the simulation using a part of **NTCIR-1** (NII/NACSIS Test Collection for Information Retrieval - 1) shows that these kinds of errors have almost no influence on a relative comparison of performance between a pair of retrieval methods. This finding can be interpreted to give evidence on stability of average precision in retrieval experiments.

A Portable Information Extraction System for the Semantic Web

Associate Professor, Symbolic Reasoning Research, Foundations of Informatics Research Division

Nigel Henry Collier

Graduated from the Department of Computer Science, Leeds University (UK) in1992. Awarded a MSc. in Machine Translation in 1994 and a Ph.D. in 1996, both from the Department of Language Engineering, UMIST (University of Manchester Institute of Science and Technology).
Toshiba Fellow at Toshiba Central Research Laboratories (Japan) working on research related to knowledge acquisition for machine translation and cross-language information retrieval from 1996 to 1998. JSPS (Japan Society for the Promotion of Science) Fellow working on information extraction from molecular biology texts at the Department of Information Science, University of Tokyo from 1998 to 2000. Associate Professor at NII from 2000.
Research interests cover information extraction, natural language processing and machine learning.

The Portable Information Access (PIA) project is an international collaborative research project based at NII. It aims to develop a domain adaptable system for automatically annotating semantic content in texts based on four key resources:

(1) PAT - an annotation tool that we are currently developing as a Java plug-in to the widely used ontology editor Protege-2000 from Stanford University. This will enable domain experts to create ontologies (knowledge structures that describe a domain's concepts and their relations)

and then annotate texts consistently with this ontology.

(2) Standards for annotation that are currently being discussed and developed by PIA in collaboration with other research groups in Japan and internationally. This should support consistent annotation of technical terms and coreferential expressions in English, Japanese, Thai and other languages.

(3) PAM - an annotation management system that will allow users to collaboratively develop and share ontologies, annotations and texts.

(4) PIA-Core (see Figure 1) - a system for learning how to annotate new documents based on examples from domain users.

We intend that the resulting system will enable machine understandable content to become widely available on the next generation Web, called the Semantic Web, enabling computers to help users to find and access information more effectively than today.

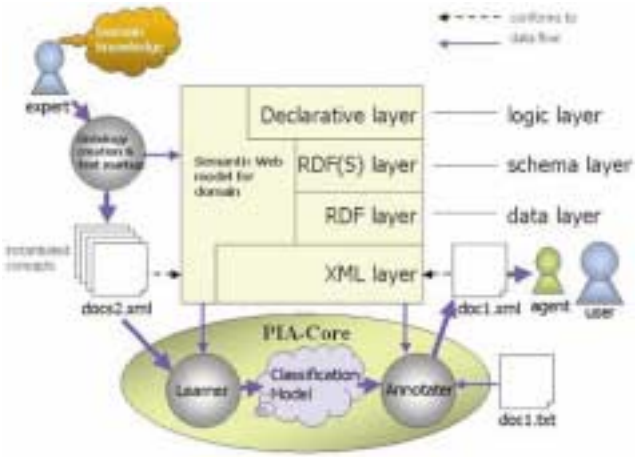


Figure 1. The position of PIA-Core on theSemantic Wed

Introduction to Joint Research Project

Papillon Project Multilingual Lexical Database over Internet

Issues and targets

The Initial motivation of the project is the lack of French<-> Japanese dictionaries of a suitable size for the common usage and usable by French-Speaking people non-specialists in Japanese. The available dictionaries are very expensive. They include only the Japanese information in Japanese writing without any phonetic transcription, and some major information are missing for foreigners. It is for example difficult to find in a same dictionary the kanji, the katakana words and the corresponding romanji.

The Papillon project started in January 2000 with the active support of the French Embassy in Japan, Tokyo, as cooperation (Memorandum of Understanding) between the GETA-CLIPS (Grenoble, France) and the Japanese National Institute of Informatics (NII). Since, Thai partners (Kasetsart University & NECTEC from Bangkok) joined the project.
The languages currently represented are the English, the French, the Japanese, the Lao, the Malayan, the Thai language, and the Vietnamese language.

The adopted method is to apply the paradigm of construction of LINUX to the multilingual lexical database based on "pivot" and to extract from bilingual dictionaries bilingual or multiple targets on the fly or off line, with or without filtering, and in varied formats, for human and machine usage. For each language, one builds a strictly monolingual dictionary with the DiCo format of Polguere and Mel' cuk. The essential unit is the "lexies" (direction of word), with a very rich and systematic description (lexico-semantic collocations, functions, examples…) allowing fine uses.

To ensure the portability towards other systems of representation, and of memorization of information that will have been useful to build the base, an axie is not only linked a list of lexies for each language. In addition, for each external system used (e.g. Worldnet, UNL, Ontos, LexiGuide, categories of ALT/JE…) there is a link of equivalent or close elements of this system (synsets, concepts, universal words, semantic… categories).

The macrostructure represented by an architecture with a dictionary pivot is based on work of Phd these

of Gilles Serasset. The microstructure of the monolingual dictionaries follows the work of Alain Polguere on the lexicographical format DiCo, which is a simplification of that of the Explanatory and Combinative Dictionary of Igor Mel' cuk. The environment of construction of dictionaries and navigation in a lexical base via Internet is based on work of Phd these of Mathieu Mangeot-Lerebours. The principal axis of research initially should be focus on the definition of the structures and methodology of construction of the dictionaries from existing resources.

Results

-> The first Papillon seminar (August 2000, Tokyo) enabled the essential conceptual decision-making based on the lexie notion of Mel'chuk-Polguere. The Papillon seminar 2001 took place in July 2001 at Grenoble. It made it possible to set up an organization of the type of W3C for the Papillon project.
-> A Web site **http://vulab.ias.unu.edu/papillon** and soon **http://research.nii.ac.jp/papillon**) as well as a list of discussion (very active) have been set up. They are used daily as support of the design process for the dictionary.
-> DTD XML of the Dico Dictionary and the pivot have been written (in a 1st version), and a certain number of articles in French, Japanese and Malayan have been put under these formats for validation.
-> A dynamic Web server of java objects is under development. It already makes it possible to consult the existing lexical items.

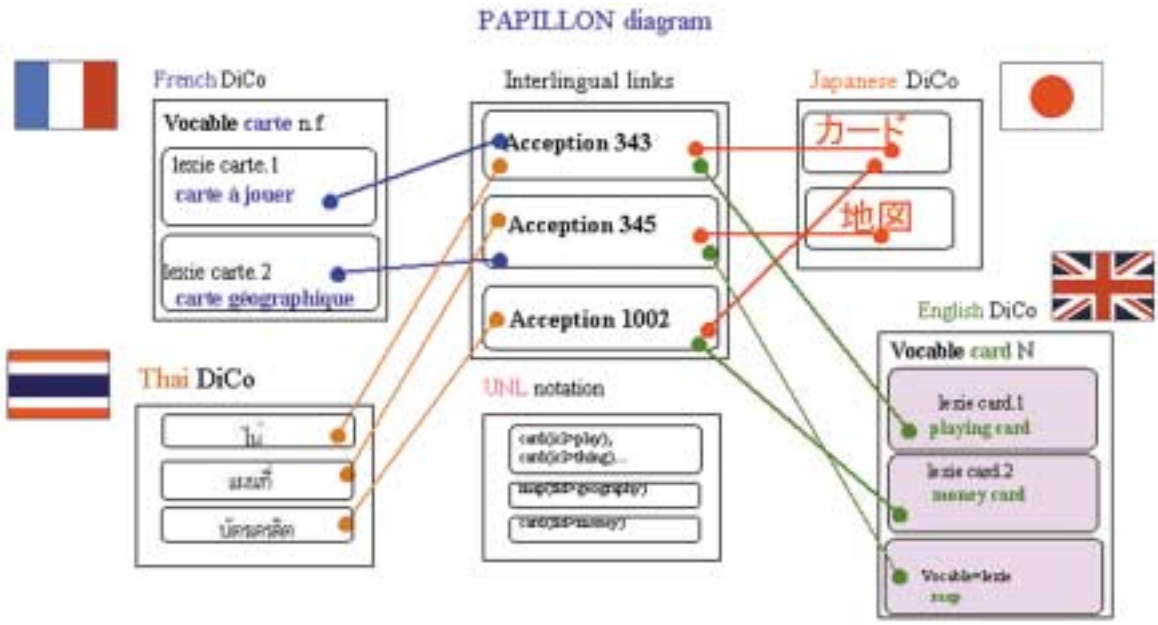
Method

To achieve these goals, the following approach as been followed:
-> Definition of the structures in cooperation with the partners of the list of discussion,
-> Recuperation of the existing data (FeM, JDict) and preparation of a skeleton of dictionary,
-> Correction of the existing data and addition of new data by contributors working in cooperation on the Web,
-> Validation and insertion in the lexical base of the data corrected by lexicologists,
-> Provide data to the public for navigation/ consultation of the database.

On-going works and Future

The Multi-lingual Lexical Database group has been joined by Dr. Mathieu Mangeot-Lerebours under the JSPS postdoc fellowship support (24 months from Nov. 2001), and by Dr. David Thevenin also under the JSPS postdoc fellowship support (24 months from April 2002).
Dr. Mathieu Mangeot is extending the Papillon Platform and Dr. David Thevenin will focus on the interactive user interfaces accessing the Papillon Platform.

(Frédéric Andrès, Associate Professor, Distributed Processing Research, Software Research Division)



Schema of the Internal Representation of the Multilingual Lexical Database

Visiting NII for 3 months

Visiting Associate Professor, Information Management Research, Human and Social Information Research Division, NII
Assistant Professor, the Computer Department of the University of Nantes (IRIN - Université de Nantes), France

Béatrice Daille

Diplomas: Ph.D. in Computer Sciences awarded Feb.1994 at the University of Paris
Positions: 1989-1992. Research Engineer at CNRS. /1993. Research Engineer at C2V (Small high-tech software company). / 1994-1995. Assistant Professor at the Linguistics department, University Paris . / 1995-2000. Assistant Professor at the Computer Science Department of the University of Nantes. / Head of the TALN (Natural Language Processing) research team, IRIN (Institute of Computer Science of Nantes) since Jun. 1999.
Research Areas: Terminology mining of Natural Language Processing.

I am Assistant Professor at the Computer Department of the University of Nantes. Since 1998, I lead the Natural Language Processing (NLP) team of the Computer Institute of *Nantes* (IRIN).
I am specialized in terminology processing, information retreival in textual data and machine translation. I participated to European research projects in machine translation (EUROTRA 1989-1992; ET 10/63 1992-1993; LS-GRAM 1994), in an international research project in information retrieval (STEKCHI France-Israël project 1996-1998) and in several French national projects in information technology through corpus handling.

In 1998, I met Dr. *Kyo Kageura* at *the COMPUTERM Workshop of the 36th Annual Meeting of the Association for Computational Linguistics and the 17th International Conference on Computational Linguistics (COLING-ACL'98).*
Involving in the Papillon project whose aim is to build a French-Japanese dictionary available in the Web, I participated in NII at the First Workshop of the *Papillon project* in August 2000 and met again Dr. Kageura. The discussion I had with him convinced me we could conduct very interesting research together and I invited him as an invited associate Professor at the University of Nantes in July 2001 in order to introduce him the work conducted in the Natural Language Processing team under my responsibility.

My visit for 3 months is to settle long-term research partnerships with NII and the NLP team of IRIN. Since my arrival, I have been introduced to the works of Dr. Kageura's students and Dr. Nigel and of course, I presented my work in terminology acquisition.
The topics of common interest are terminology mining and encoding and French-Japanese alignment. For the first topic, terminology mining, we are organizing a second version of the COMPUTERM workshop at *the 19th International Conference on Computational Linguistics* (COLING 2002) in Taiwan. For the second topic, French-Japanese alignment, we begin to work from a French-Japanese corpus, where Japanese texts are translation of the French texts, on the acquisition of French-Japanese word translations. This first experiment which applies on acquiring term and proper noun translations will be extended to other lexical units.

During my stay, I go to interact with researchers in Japan. I attended an research meeting in ATR research laboratory and participated to the NLPRS conference from 27th to 29th of November.
So, from the scientific point of view and the future partnership, I can say that this visit is a real success and I will enjoy the rest of my stay in NII and Japan.

TERMINOLOGY Vol. 6, No. 2, "Special Issue: Japanese Term Extraction"

Guest Editors: Kyo Kageura and Teruo Koyama (National Institute of Informatics)

Since the early 1990s we have been witnessing a growing interest in automatic term recognition (ATR) - the phenomenon having happened in parallel with the development of corpus-based natural language processing techniques in general, combined with the recognition of the importance of lexical acquisition. Though many interesting techniques have been proposed, there has been no consolidated platform for the discussion of the issue.

Against this background, from 1998 to 1999 we organised an automatic term recognition workshop (the NTCIR workshop TMREC task) as part of the research project "A Study on Ubiquitous Information Systems for Utilization of Highly Distributed Information Resources" funded by the Japan Society for the Promotion of Science, where researchers interested in ATR could discuss the matter over the shared data or common testbed.

This special issue of Terminology brings together the high-quality papers written by the workshop participants (seven different groups including three different countries) on the basis of their contributions to the workshop. The editors hope the collection of these papers will contribute to the further development of ATR and to computational terminology in general.

The contents are:

Recent advances in automatic term recognition: Experiences from the NTCIR workshop on information retrieval and term recognition
Kyo Kageura, Masaharu Yoshioka, Koichi Takeuchi, Teruo Koyama, Keita Tsuji and Fuyuki Yoshikane

An application and evaluation of the C/NC value approach for the automatic term recognition of multi-word units in Japanese
Hideki Mima and Sophia Ananiadou

Automatic term recognition based on statistics of compound nouns
Hiroshi Nakagawa

Extracting terms by a combination of term frequency and a measure of term representativeness
Toru Hisamitsu, Yoshiki Niwa, Shingo Nishioka, Hirofumi Sakurai, Osamu Imaichi, Makoto Iwayama and Akihiko Takano

Term recognition using corpora from different fields
Kiyotaka Uchimoto, Satoshi Sekine, Masaki Murata, Hiromi Ozaku and Hitoshi Isahara

Statistical and linguistic approaches to automatic term recognition:NTCIR experiments at Matsushita
Yoshio Fukushige and Naohiko Noguchi

Japanese term extraction using dictionary hierarchy and machine translation system
Jong-Hoon Oh, Juho Lee, Kyung-Soon Lee and Key-Sun Choi

Using author keywords for automatic term recognition
Masao Utiyama, Masaki Murata and Hitoshi Isahara

TOPICS

NII Open Lecture 2001 Was Held

Lecture in the East Meeting
(National Center of Sciences)

Lecture in the West Meeting (Campus Plaza Kyoto)

NII Open Lecture is an annual event where researchers (not limited to NII faculties) lecture on latest topics concerning NII research activities. The purpos of the event is the dissemination of fruits of R&D by NII: it mainly targets research assistants working at institutions companies, libraries, and information processing centers.

The main theme of NII Open Lecture 2001 was "Electronic Journal," which was discussed on at two meetings (East/West). The total participants of both meetings were over 580, mostly composed of researchers/librarians for university, and researchers and other stuff for companies/institutes.

After opening greeting by the chair, Professor *Syun Tutiya* (Director of Chiba University Library) gave a keynote lecture on the current situation and

problems of electronic journal in relation to university libraries. Consequently, Mr. *Mitsuaki Sakagami* (Administrative Director of *Hokkaido* University Library) and Professor *Akihiko Takano* (NII) gave a general lecture in the west meeting, Mr. *Yutaka Masuda*(General Manager of Marketing Center, USACO Corporation) and Professor Jun Adachi (NII) in the east meeting.

Comments on NII Open Lecture 2001 were given by participants including " the lectures explained well not only electronic journal but also other matters concerning scholarly communication," and many say they look forward to the next open lecture.

The date, place, and program of NII Open Lecture 2001 were as follows:

1. Date and Place

West Meeting:
November 30, 2001 (Fri.) 13:30 - 17:00
Campus Plaza Kyoto

East Meeting:
December 18, 2001 (Tue.) 13:30 - 17:00
Hitotsubashi Memorial Hall

2. Theme

"Towards Electronic Journals: Challenges of Researchers, Librarians and Publishers"

3. Program

- Opening greeting by the chair
  Yasuharu Suematsu, Director of NII

- Electronic Journal and University Libraries
  [Lecturer] Syun Tutiya, Director of Chiba University Library

[Lectures (West Meeting)]

- Trends in Researches on Technology for Electronic Journal
  [Lecturer] Akihiko Takano, Professor, NII

- Problems for the Introducing an Electronic Journal
  [Lecturer] Mitsuaki Sakagami, Administrative Director, Hokkaido University Library

[Lectures (East Meeting)]

- Digitization of Scientific Journals: Various Approaches for its Realization"
  [Lecturer] Jun Adachi, Professor, NII

- Overseas Trends in Electronic Publishing
  [Lecturer] Yutaka Masuda, General Manager, Marketing Center, USACO Corporation

- Questions and Answers

- Chairs

[West Meeting]
Takashi Hamada, Director, International and Research Cooperation Department, NII

[East Meeting]
Hiromichi Hashizume, Professor, NII

(Dissemination Activities Division)

Lecturer responds to questions by participants

Workshop "Current Trends in Scholarly Communication" was held

NII held the workshop "Current Trends in Scholarly Communication" on November 7(Wed.) 2001. It is the workshop concerning trends in scholarly communication, which have been radically changing. The purpose of the workshop was to get a deeper understanding on the topic through reports and discussions by participants from both Japan and abroad.

Approximately 50 participants, including researchers and university librarians, actively exchanged their opinions on various matters concerning scholarly communication including electronic journal, research activities, journals of scientific societies, and scientific journals.

The following is the lectures and its lecturers at the workshop.

◆Current Trends in Scholarly Communication:

A Report on Japan's situations
Syun Tutiya, Director of *Chiba* University Library

◆Trends in Scholarly Communication from the Viewpoint of a Researcher
Ken-ichi Ueda, Director of Institute for Laser Science, University of Electro-Communications

◆Overseas Trends in Scholarly Communication
Martin Richardson, Publishing Director of Oxford University Press

(Dissemination Activities Division)

Mr. Richardson (Publishing Director of Oxford University Press) lectures (LEFT) in the workshop

Introductory Course to Numerical Simulation Held

On November 1st and 2nd, "the Tutorial 2001: Introductory Course to Numerical Simulations for Young Applied Mathematicians and Engineers" was held at the meeting room on the 12th floor of the National Center of Sciences Building. It was cosponsored by the National Institute of Informatics and supported by the Japan Society for Industrial and Applied Mathematics. Famous professors from abroad and home were invited as the lecturers. There were 84 attendees including graduate students studying numerical analysis and young researchers. Lively discussion followed each interesting lecture, resulting in a successful tutorial. The program was as below.

November 1st (Thursday)

(1) Hiroshi Fujita (Tokai University, Japan): Starting-points and an observatory for mathematical analysis of Navier-Stokes equations.
(2) Roland Glowinski (University of Houston, U.S.A.): An operator-splitting methodology for the numerical simulation of incompressible viscous flow: An Introduction.
(3) Masayasu Mimura (Hiroshima University, Japan): Singular perturbation and nonlinear phenomena.
(4) Hideo Kawarada (Chiba University, Japan): Distribution theoretic approach to multi-phase flows.

November 2nd (Wednesday)

(5) Olivier Pironneau (University of Paris VI, France): Computer solution of Maxwell's equations in homogeneous media.
(6) Masahisa Tabata (Kyushu University, Japan): Error estimates in the finite element methods.
(7) Jacques Periaux (Dassault Aviation, France): Hierarchical evolutionary algorithms and game theory: a road map to multi-objective design optimization in aeronautics.
(8) Zhong-Ci Shi (Chinese Academy of Sciences, China): Nonconforming finite element methods.
(9) Yuri A. Kuznetsov (University of Houston, U.S.A.): Basic preconditioned iterative methods.

(Ken Hayami, Professor,
Mathematical Informatics Research,
Foundations of Informatics Research Division)

Exhibition for DATABASE 2001 Tokyo

"DATABASE 2001 Tokyo," the biggest synthetic exhibition of database in Japan, was held at the Exhibition Hall of Tokyo International Forum through three days from October 30 (Tuesday) to November 1 (Thursday) 2001, under the sponsorship by Database Promotion Center Japan and Japan Database Industry Association.

NII has participated in DATABASE Tokyo as an exhibitor for two years running since 2000. At DATABASE 2001 Tokyo, NII demonstrated Electronic Library Service (NACSIS-ELS) as the main exhibition, also exhibiting Information Retrieval Services (NACSIS-IR) and Retrieval service for NACSIS-CAT Database on world wide web (Webcat).

NACSIS-ELS especially attracted a great deal of attention in the exhibition, because of its feasibility of full-text display/printout of papers as image information. Many visitors to NII booth told various questions and requests to the staff in charge.

According to the promoter, the total exhibitors for DATABASE 2001 Tokyo were 101, including corporations and organizations, while 33,696 guests had visited the exhibition in three days.

(Dissemination Activities Division)

Delegation to China as part of "Science Information Exchange Project with China"

As part of "Science Information Exchange Project with China," NII has supported for the automation of the Library of the Beijing Center for Japanese Studies, in cooperation with the Japan Foundation. In June 2001, as a part of the supporting activities, NII carried out an on-site survey on Japanese sources in libraries in China. The survey aimed at closer cooperation between NII, the Library of the Beijing Center for Japanese Studies, and libraries in China.

Based on the findings in the survey, NII dispatched two missions made of its faculties, in October and November 2001. Details on the missions are as follows.

(1) The first delegation, which consisted of Chief *Hosokawa* (Planning Section, Dissemination Activities Division, International and Research Cooperation Department) and Chief *Yonezawa* (Contents Management Section, Contents Division, Development and Operations Department), was dispatched to China on October 9-20,2001.

The delegation worked to maintain the support by NII for the automation of the Library of the Beijing Center for Japanese Studies. Additionally, Seminar of Cataloging System was held by the delegation at an office in the center during October 15-17: it was the first seminar on cataloging system in China. Four librarians of Tianjin Library participated in the seminar, which intended for making database. In the seminar, lectures and training were given by the delegation from NII, as well as staffs of the Beijing Center for Japanese Studies. As the fruit of the seminar, the automation has been now worked on approximately 60,000 of Japanese books and serials in the Tinanjin Library, to add the data into Union Catalog Databases of NII.

(2)The second delegation, which consisted of Director *Miyazawa* (Research Center for Testbeds

and Prototyping) and Director *Kyoto* (Contents Division, Development and Operations Department), was dispatched to China during November 4-11,2001, accompanied by Ms. *Rei Suzuki* from the Japan Foundation.

For the Beijing Center for Japanese Studies, the second delegation gave more concrete advice and instruction, aiming at solving the problems indicated by the first delegation, such as the automation of resources written in Chinese, and the reinforcement of the automation of Japanese resources in China.

Additionally, the second delegation visited libraries concerned to the automation of Japanese resources in China, accompanied by instructors and staffs of the Beijing Center. The following is the achievements made in their preliminary and exploratory visits.

(1)Follow-ups for the cataloging on which had started at Tianjin Library
(2)Detailed survey at Dairen Library on approximately 170,000 resources on Japan, which had been completed in the Manchurian period.
The precious resources need to be automatized.
(3)Advice on the automation of Japanese resources in the National Library of China

Furthermore, the second delegation visited Peking University Library, the core organization of library network in China, as well as China Agricultural University Library: the two libraries had been already visited by the first delegation on June. Active discussion was made on the policies for collaboration

Lecture by staff of Beijing Center for Japanese Studies

Training in the workshop

of the Beijing Center for Japanese Studies, the library network in China, and NII.

(Contents Division)

NACSIS-CAT Training Course was held in Germany

Catalog Information Service (NACSIS-CAT) by NII has been widely utilized by scientific research organizations not only in Japan but also abroad, e.g. European countries including U.K. as well as China.

Mr. *Masaru Sakata* (Director of Japanisches Kulturinstitut Köln) gives an opening speech

The workshop "Information about Japan in the 21st century" (cf, NII News No. 2) which NII had held last year, caused strong concerns about catalog information services for Japanese resources in Germany and neighbor countries. In response to rising requests for training course of catalog information service by related organizations, NII held NACSIS-CAT training course from October 10-12, 2001, under the co-sponsorship with *Japanisches Kulturinstitut Köln* (the Japan Foundation) and *Arbeiskreis Japan-Bibliotheken*. This workshop was also aided by *Regionales Reschenzentrum der Universität zu Köln* (Regional Computing Center of the University of Cologne).

This was the first overseas training course that provided a full course of NACSIS-CAT same as that

in Japan. All of the participants intently studied in the course, while 14 completed the course.

After the course, SPCAT, retrieval system for each library to provide the own OPAC using the data inputted into NACSIS-CAT, was introduced to participants. Participants had a chance to learn how to the data on resources of Duisburg University, Munich University and Zurich University.

(Dissemination Activities Division)

Training in the course

The outline of the Future Services of NII

The Adjustment and the Result of Cooperation between NII (National Institute of Informatics) and JST (Japan Science and Technology Corporation) on Information Services

1. Cooperation on Information Services

On December 2000, the Management and Coordination Agency issued the "Primary Recommendation based on the Administrative Inspection regarding Science and Technology", which recommended NII and the JST to keenly discuss and then to take the necessary steps for achieving a closer cooperation in the implementation of their information services. The MEXT (Ministry of Education, Culture, Sports, Science and Technology), NII and JST have been discussing ways to strengthen their cooperation on their information services since January 2001.
In August 2001, the conclusions derived from those discussions and the MEXT presented proposals for the future direction of adjustment and consolidation of the cooperation of the information services of NII and JST.

2. Future Services of NII

Current Services of NII		Future Plans
1. Information Retrieval Service (NACSIS-IR)	Academic Conference Papers	Final updating in March 2002. Service will end in March 2003. After that, it will be provided by **J-STAGE** (JST).
	SCIE (Science Citation Index Expanded)	Service continues.
	COMPENDEX PLUS	Service will end in March 2002. After that, **STN International** (JST) will provide this database.
	ISTP, ISTP&B	Service will end in March 2002.
	MathSci	
	Harvard Business Review	
	Scientific Papers	Final updating in March 2002. Service will end in March 2003 and move their contents to Electronic Library Service (NACSIS-ELS).
	Clinical Case Reports	
	Current Contents of Academic Serial in Japan	Service continues.
	Directory of Researchers	Service will end in March 2003 (Contents will be what is investigated in F.Y.2001). **ReaD** (JST) will provide the contents investigated from F.Y.2002.
	Databases other than the above	Service continues.

Current Services of NII		Future Plans
2. Directory	Directory of Research Activities and Resources (NACSIS-DiRR)	Service will end in March 2003 (Contents will be what is investigated in F.Y.2001). **ReaD** (JST) will provide the contents investigated from F.Y.2002.
3. Publication of Academic Societies Supporting Projects	Online Journal Editing & Publication System (NACSIS-OLJ)	Service will end in March 2002. After that, it will be provided by **J-STAGE** (JST).
	Electronic Library Service (NACSIS-ELS)	Service continues. The university bulletin will be included in F.Y.2002. The system to support the publication as online journals of university bulletin is due to be developed.
4. Network projects	SINET Super SINET	**IMnet** (JST) and **ITBL** (JST) will be gradually unified to SINET and Super SINET (NII) by March 2003.
5. Career Information Services (NACSIS-CIS)		Service was unified to **JRECIN** (JST) in October 2001.
6. Catalog Information Services (NACSIS-CAT / ILL, and Webcat)		Service continues.
7. Academic Society Home Village		Service continues.
8. Online Scientific Terms (NACSIS-Sciterm)		Service continues.

Notes) will shift to JST.

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Information

Seventh Pacific Rim International Conference on Artificial Intelligence (PRICAI-02)

Date: August 18 (Sunday) - 22 (Thursday), 2002
Place: Hitotsubashi Memorial Hall, National Center of Sciences (Hitotsubashi, Chiyoda-ku. Tokyo)
Promoter: Japanese Society for Artificial Intelligence
Sponsor: National Institute of Informatics
For further details, please refer to **http://pricai-02.nii.ac.jp/**

The Third NTCIR Workshop (2001/2002) Meeting
Evaluation of Information Retrieval, Q&A, and Summarization September 2001 - October 2002

Date: October 8(Tuesday) -10(Thursday), 2002
Place: National Center of Sciences (Hitotsubashi, Chiyoda-ku. Tokyo, Japan)
For further details, please refer to **http://research.nii.ac.jp/ntcir/index-en.html**
enquiries: ntcadm@nii.ac.jp

Detailed information on the research and projects of NII is available at our Website.

- **http://www.nii.ac.jp/index.html**
- **http://research.nii.ac.jp/index.html**
- **http://www.nii.ac.jp/nii-service-e.html**

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