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National Institute of Informatics News

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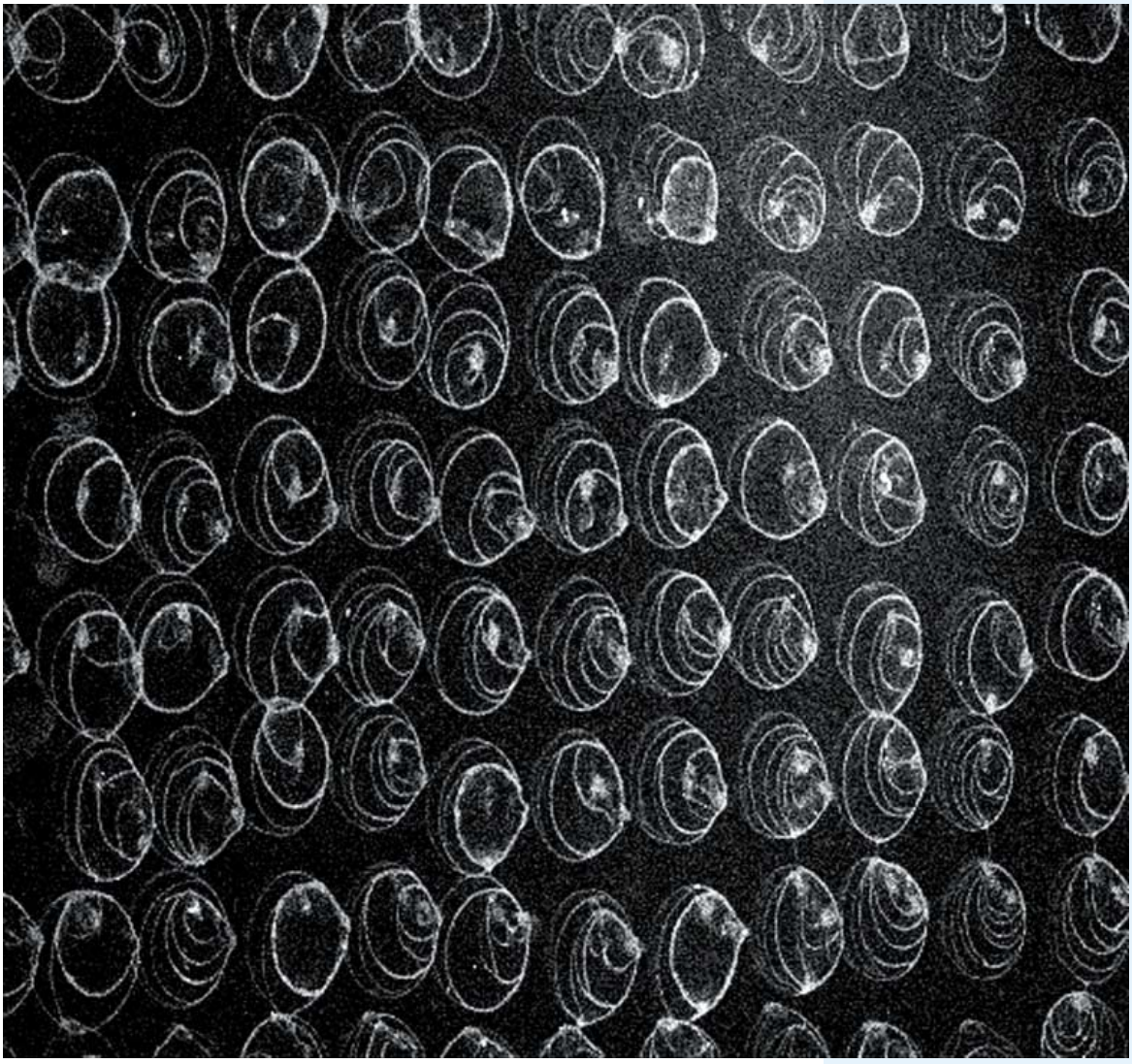


"microscopic view of the 1st-gteneration DNA chip" Photo : Prof. Asao Fujiyama (for details to p.5)

CONTENTS

Foreword

Opening a new chapter in its history, the National Institute of Informatics (NII) joined with other research institutes in April 2004 to establish the Inter-University Research Institute Corporation/ Research Organization of Information and Systems. The mission of the NII remains unchanged: to serve as Japan's principal research institute for scientific research on informatics.

Informatics provides numerous benefits to society, including the enrichment of intellectual and cultural pursuits, support for life activities, promotion of industrial and economic development, and strengthening of social infrastructures. The field encompasses a wide range of disciplines essential to the survival and sustainable development of humankind. Other important functions of scientific research in this field include the systematic consolidation of knowledge gained in emerging fields and contributions to the development of human capital through the effective transfer of this knowledge to subsequent generations. In keeping with the vision of Dr. Hiroshi Inose, its founding Director General, NII is positioned to develop this cutting-edge academic area and to build a sophisticated infrastructure for circulating scholarly information to build knowledge in this important field, with high-quality research and operations, like the two wheels of a cart.

The seeds of important scientific research that will transform future generations are sown and nurtured by the energetic, self-motivated efforts of individual researchers. It is researchers who are the source of new ideas shaped through spirited debate among research colleagues. Such debate functions as the testing grounds for creation of new scope. We encourage each researcher to make full use of this institute as a precious resource, to take every opportunity to engage in lively discussions, and to create and nurture new ideas. It is our hope that you will work closely with the three other institutes of the Research Organization of Information and Systems to advance research dedicated to the creation of new fields of intellectual interest.

Among its other activities, the NII is engaged in cooperation with the Graduate University for Advanced Studies to host graduate students seeking to pursue degrees in informatics. The NII has also accepted numerous students from other universities, including the University of Tokyo. However, due to the status as academic research institutes, NII is capable of fostering its own graduate students. Such activities are significant not only for maintaining and improving the vitality of research institutes, but for sending superior human resources out into the greater society.

I would like to close by reminding you of the vital role played by the NII in the work of the Inter-University Research Institute Corporation, and by stressing the need to raise the profile of its activities in the eyes of the tax-paying public. In our present capacity as a non-civil servant, we are working to improve our dialogue with outside individuals and organizations. We hope that all of you will redouble efforts to help us achieve even greater successes in the future than we have enjoyed in the past.

May 2004

Yasuharu Suematsu

Director General,
National Institute of Informatics
Inter-University Research Institute Corporation/
Research Organization of Information and Systems

Special Contribution

Including days of the National Center for Science Information Systems (NACSIS) and its predecessors, National Institute of Informatics (NII) has a long history well over a quarter of a century. Effective on April 1, 2004, it will make a new start as one of Inter-University Research Institute Corporation/Research Organization of Information and Systems. With this reorganization, the Board of Councilors fulfilled its role and disbanded after the final meeting was held on February 19, 2004.

In retrospect, establishment of NACSIS in 1986, the reorganization of NACSIS and assumption of its functions to NII, and the remarkable development during the period and thereafter owe much to struggles and efforts of Dr. Hiroshi Inose, ex-Director General, NII. With his evaluation as a researcher, he achieved the establishment, changes and operations of the organization with passion and heart-blood. This is still the stuff of legends. His successor, Dr. Yasuharu Suematsu controlled the overall organization so well and brought about prosperity of NII today. Needless to say, performance by all faculty and staff during the period was excellent together with supports from the government.

With this organizational change, there might be various changes in forms and mechanism of NII, however, I believe a basic philosophy, which is called as "the spirit on which a school was built" at universities, remains unchanged. What is said, " To conduct comprehensive research on informatics and develop an advanced infrastructure for disseminating scientific information." For that purpose, both research and operation (service) are deemed as wheels of a car. Such requests and expectations for NII will be increasingly mounting in the future through domestic and overseas. When I look at the current facilities and the personnel who work there, I feel the bright future. I sincerely wish you success.

As was referred to earlier, the Board of Councilors which was set up at our old building will put an end. I would like to express my sincere thanks to all the councilors, especially Mr. Hitoshi Osaki, Deputy Director General, who have always made sensible judgment and supported and helped me by expressing constructive opinions. At the same time, I would like to express my hearty thanks to successive Director General and all of faculty and staff, who expressed understanding in operation of the Board of Councilors painstakingly and to whom I owe everything

March, 2004

Wataru Mori
Director General,
the Board of Councilors, NII

Botanical Gardens, Graduate School of Science, the University of Tokyo, where NACSIS was tenanted. (In the Herbarium)

Aigamo (a cross between a wild and a domestic duck) on the pond

Southeast Asian Interactive Atlas 500-1500 C.E.

Joint research No. 2

"Digital Silk Roads Research aims to present the Southeast Asia Sea Route's span in time and space"

The present collaborative study aims develop a dynamic form of historical inquiry: visualizing cultural and ecological information across time and space on a digital map interface. Data on the natural, social and cultural history of Southeast Asia, linked to location, suggests relationships among cultures, societies, and the natural environment. This approach facilitates data sharing within and beyond the academic community. This study is a challenging application of advanced informatics technology to historical and cultural studies.

This study is a collaboration of the National Institute of Informatics, Kyoto University Center for Southeast Asian Studies, the University of California, Berkeley, and the University of Sydney Archaeological Computing Laboratory. The UC Berkeley GIS Center collects data from ECAI Southeast Asia team members in various countries and inputs data in TimeMap, a time-enabled Geographic Information System developed at the University of Sydney.

The project started in 2002 with members of ECAI Southeast Asia (an affiliate of ECAI, the Electronic Cultural Atlas Initiative), who sought to share their data with other scholars. Kyoto University Center for Southeast Asian Studies, in order to strengthen the joint information platform, has been digitizing its own holdings of maps, artifacts, photographs etc., and uploading maps and charts of Vietnam, Laos, and Cambodia. The Archaeological Computing Laboratory at the University of Sydney, which developed TimeMap, has constructed a database of the history of the ancient Khmer Empire that can generate an animation to spatially express the empire's expansion and decline. UC Berkeley has constructed a database on trade routes and commodities, travel accounts, shipwreck sites, inscriptions, and archaeological sites.

We are now in the last year of the project. Work is focusing on improving the platform software, gateway functions, and investigating metadata standardization in order to promote further integration of information and ideas. The project will be linked to work of the Digital Silk Roads, contributing to a larger understanding of the dynamics of trade and exchange not only in Southeast Asia, but throughout the Eurasian continent.

Joint research member

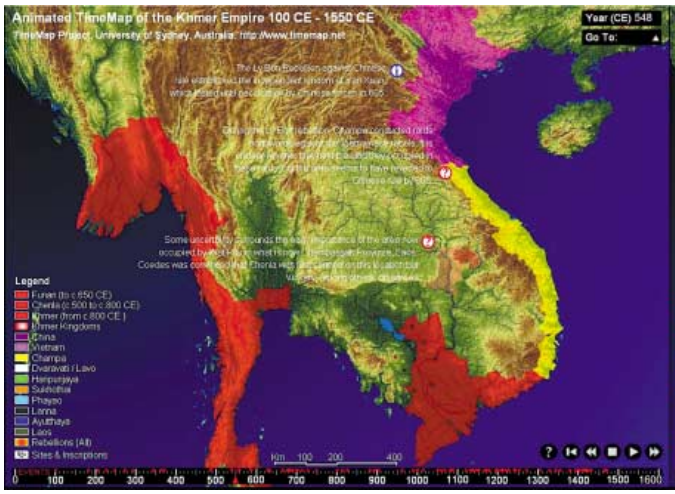
NII : Kinji Ono, Frederic Andres, Asanobu Kitanmoto, Eric Platon

CSEAS, Kyoto University : Yasuyuki Kono, Mamoru Shibayama, Koji Tanaka, Song Xianfeng

University of California Berkeley : Caverlee Cary

University of Sydney : Roland Fletcher

548 C.E.



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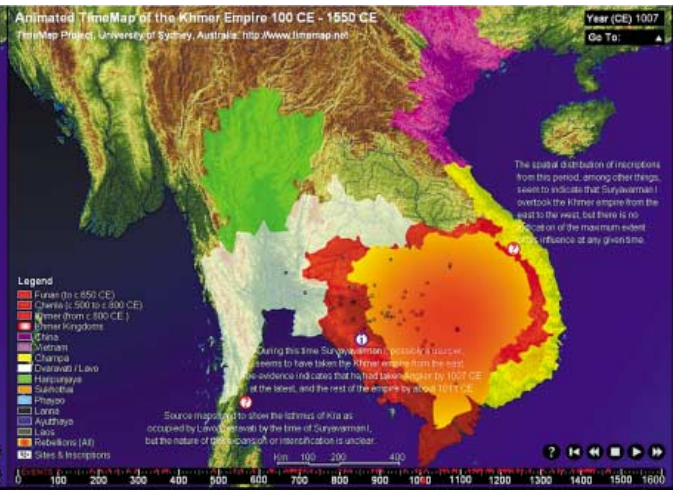


The animation visually expresses the expansion and decline of Ancient Khmer Empire.

*(**Yasuyuki Kono,** Associate Professor, CSEAS, Kyoto University / **Kinji Ono,** Professor, NII)*

NII Joint Research Program Report

Joint research No.3

National Institute of Informatics has become one of Inter-University Research Institute Corporations since April, 2004. The new NII is one of the four such National Institutes operated under the newly established Research Organization of Information and Systems. The mission, however, does not change. That is, promotion of an advanced research as well as joint research with other university scientists.

Several types can be considered as a joint research carried out as Inter-University Research Institute. The first type is that the investigator who belongs to NII accepts, and executes a joint research proposed from university scientists. The second type will be a joint research through sharing advanced equipments that the institute owns for such purposes. The third might be an offer of the place of scientific exchange. To the first type, Projects will be proposed from NII researchers to recruit outside co investigators, or from external scientists to carry out joint research with NII. It seems that the discussion and the arrangement of the joint research program in the future are necessary for the new corporation.

In this report, a joint research from F.Y.14-15th with the Morishita Laboratory, Tokyo University, is summarized. Major target of this project is to design set of the primer oligomers from human genome sequence to be used in DNA chip. In other words, it is a feasibility study to make the device to be used for the analysis of genomes of human and other organisms as well as quantitative and qualitative analysis of genes. (The photomicrograph of the DNA chip was shown for the reference. Molecules corresponding to 20 to 50 letters of genomic DNA are fixed on the surface of plane glass plate at the diameter of 100 micrometer level.)

It was a challenge to pick unique and unambiguous character sets from the human genome which consists of 3 billion letters because of the lots of repetitions involved in the actual human genome sequence. We succeeded in designing oligos for human Y-chromosome. Performance of the Y-chromosome chip is tested now.

Joint research member

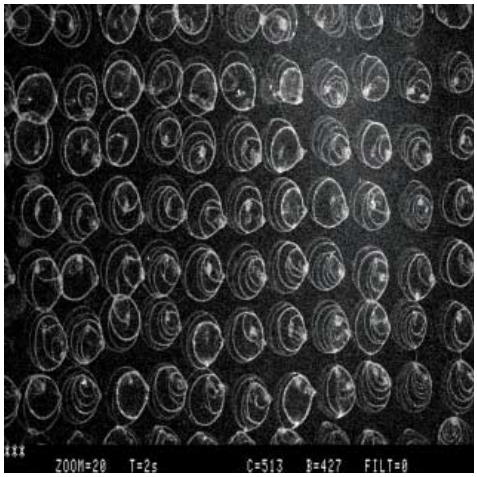
Prof. Shin-ichi Morishita, Graduate School of Frontier sciences, The University of Tokyo

Prof. Asao Fujiyama, National Institute of Informatics

Dr. Yoko Kuroki, RIKEN Genomic Sciences Center

Dr. Tomoyuki Yamada, Graduate School of Frontier sciences, The University of Tokyo

microscopic view of the 1st-gteneration DNA chip



*(**Asao Fujiyama,** Professor, Biosciences Information, Research Information Research)*

Research on Information Institution

Research introduction

"Research on information institution" is not a familiar word for us. However, this is the most important research field for the information society, and it will help us live conveniently, comfortably, and safely in the society.

We don't know what to do!

Recently, there are so many matters with which we cannot deal with. This means the current law system, which has been developed to handle "materials" as "properties," becomes obsolete and cannot manage such matters. While we can bring and maintain materials as properties easily, we need to deal with information as very important properties in the information society. Certainly, it seems possible to deal with information in a specific medium as materials. However, something in a floppy disk can move to a memory or a hard disk in a PC, and then even to the reverse-side of the earth, in a very short moment. In addition, we can copy digital information freely, and there are no distinctions between the original and copies. In other words, we live in the information society different from the traditional world, where a something very different from a traditional material becomes property and moves around the world instantly.

In this information society, there are so many matters which might be unexpected when the current law system was developed, and they result in so many crimes in the borderless information society. I would like to take an example of music files; anyone becomes capable of not only making an exact copy of a music file, but getting a desired file into his/her own PC and replay one directly via the Internet very easily. Of course, it causes hot discussions on copyright issues. This is only a tip of the iceberg. If the trend continues, it must widen the gap much more broadly between real issues developed by the current technology and the current law system.

What do we do now?

We should manage such unexpected matters if any. One practical solution for them is to interpret the law and apply it to a real issue. The current trial is based on such law interpretation and results in cases for the issue. However, the more unexpected the issue is, the more varied interpretations it may cause. Therefore, the issue may result in quite a lot of disputes because of the varied interpretations.

In addition, in order to compensate for a limit of the interpretation, we make discussions for new legislations in the field of "information network law." One example of such legislations is the Law Concerning Unauthorized Access to Computer Systems, known as the "Unauthorized Computer Access Law." This law was enacted in 1999 and came into effect in 2000, and is aimed at prohibiting unauthorized use of other people's passwords and homepage cracking.

What should we do in the future!

The purpose of research on information institution at the National Institute of Informatics (NII) is to lead the information society into its healthy maturity, by dealing with several current challenges, especially closing the gap between the technology and the law system in the information and communication technology field. Currently, the NII is promoting the research projects below:

1) Promoting arguments for current law interpretations. We will make sure to what extent interpretations of the current law can deal with the issues on which a clear interpretation of the law is not given, by providing opinions from various professionals.
2) Providing issues for new legislations. We will promote discussions and provide challenges for new legislations, so that handle issues where law interpretations are varied and application of the current law is difficult.
3) Developing information network law. We will make sure basic requirements and components of information network law, from viewpoints of law interpretations and legislations.

The NII tries to adopt interdisciplinary viewpoints from social and technological fields, as well as legal one, for promoting the above research projects. It will also promote the projects considering the direction and forecast of technology in the future, because the speed of technological progress is incomparably faster than before.

Examples of our research

Here, I would like to introduce a measure utilizing information and communication technologies to a maximum extent for research on law system in the information society. This is a "blog," an abbreviation of "Web log," which recently becomes popular in a few moments among Internet users. A blog is a Web site in which the user (blogger) describes his/her opinions for a specific topic like a diary, but it is different from a diary in that it allows a reader to describe his/her reply to the blogger's opinions. A blog may help people who are interested in the blog's topics and share values with the blogger, develop their community and exploit their social influence. Recently, a new tool for blog development, which is good at design for a Web site and at scalability for the size of the community, is available. We can expect that effective use of the new blog tool will expand its potential for opinion collection, discussion, consensus-building, and so forth, in accordance with the speed of technology and society change.

The NII is preparing for release of "Law Blog Japan," shown in Fig. 1, for the research project 1) and 2) discussed above.

The top page of "Law Blog Japan" under preparation for release.

*(**Yoh ichi Tohkura,** Professor, Information Institution, Human and Social Information Research)*

Lecture by Dr.Tomas Pajdla (Czech Technical University)

Dr.Tomas Pajdla from Czech Technical University had stayed at NII. from 30th November to 15th December 2003 as the Czech-Japan Bilateral corroboration in scientific researches. He is an assistant professor form Prof. Vaclav Hlavac's group, who also spend one week at NII on the beginning of November. Dr. Pajdla is one of world leading scientists in omni-directional vision. Recently, he proposed "non-centric camera model" which is a general mathematical framework on image formation by light ray in a space. He was the program chairman of ECCV (European Conference on Computer Vision) which was held at Prague on this May. During his two-week stay, he had visited Okayama University, Osaka University, and Toshiba Corporate Research and Development Center to give lectures on the state of arts in computer vision at Prague. In his lecture at NII on 10the December, Dr Pajdla talked on the mathematical framework on the non-centric camera and image retrieval system. His stay was supported from NII.

Lecture of Dr.Tomas Pajdla

*(**Atsushi Imiya,** professor, presently teaching at Chiba University)*

FY2003 Open Symposium on "Informatics Studies for the Foundation of IT Evolution"

On January, 26, 2004 (Monday), an open symposium was held at Hitotsumashi Memorial Hall, National Center of Sciences Building. The symposium was organized by the research project entitled "Informatics Studies for the Foundation of IT Evolution," supported by MEXT (Ministry of Education, Culture, Sports, Science and Technology) under Grants-in-Aid for Scientific Research on Priority Areas (Period: FY2001-FY2005),

At the beginning of the symposium, an overview of the past and current activities of the research project was introduced by the project leader, Prof. Yuichiro Anzai (President of Keio University), followed by the demonstrations and posters by the participant researchers, including Prof. Adachi (Director of Research Center for Information Resources, NII) and other NII research members. In the afternoon session, Dr. Kazuo Iwano (Director of Research and Emerging Business, IBM Japan) gave an invited lecture on the evolution of information technology and the expectation on the informatics researches. The subsequent panel discussion focused on the question of "what is the emergent need for Japanese informatics studies?" Being chaired by Prof. Akinori Yonizawa (Department of Information Science, the University of Tokyo), the panel was addressed by the following six presenters: Prof. Yuichiro Anzai (President of Keio University), Prof. Setsuo Arikawa (Vice President of Kyushu University), Prof. Makoto Nagao (the former President of Kyoto University), Dr. Mario Tokoro (Corporate Executive

Research demonstrations and posters.

Invited lecture by Dr. Kazuo Iwano, IBM Japan

Vice President, Sony Corporation), Prof. Hideo Miyahara (President of Osaka University), and Prof. Taizo Yakushiji (a member of Council for Science and Technology, Cabinet Office and the former Professor of Keio University). There were also many questions and comments from the audience regarding the presence, social impact, and administrative issues of researches in the field. The symposium attracted about 500 participants and was closed quite successfully.

Before and after the symposium, an annual meeting of the project was also held on 25, 27-28, January, in which the outcomes and current status of the research, as well as the plans for the future advancement were actively reported and discussed.

Panel discussions.

URL : http://research.nii.ac.jp/kaken-johogaku/

*(**Akiko Aizawa,** Professor, Office for Research Coordination and Promotion, Research Center for Information Resources)*

Lecture by Professor Rump (Technical University Hamburg-Harburg)

Professor Siegfried M. Rump visited our institute on March 2nd and gave a lecture.

Professor Rump belongs to the Institute for Computer Science III, Technical University Hamburg-Harburg, Germany, and is well known for his work in self-validation methods in numerical analysis. He was visiting Waseda University for joint research with Professor Shin'ichi Oishi's group.

His two-hour lecture was entitled: INTLAB - A Matlab toolbox for self-validating methods.

In his talk he presented INTLAB, an interactive programming environment for self-validating methods based on Matlab, which he developed. He uses the Matlab operator concept to provide easy access to interval scalar, vector and matrix operations over real and complex numbers. The especially designed library is new and very fast. The toolbox also consists of real and complex standard functions with interval input and output. In this case, a true inclusion of the range is computed. Also, verified input/output, libraries for automatic differentiation, slopes, polynomials and a (slow) long arithmetic are available.

In the talk, the basic design concepts of INTLAB were presented, and an online demonstration of the solution of some selected problems was given.

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

Lecture by Dr. Dick (The University of New South Wales)

Dr. Josef Dick visited our institute on March 23rd and gave a lecture. Dr. Dick belongs to the School of Mathematics, The University of New South Wales, Sydney. He has just finished his Ph.D. under the guidance of Professor Ian Sloan. He was visiting Dr. Shu Tezuka of Japan IBM for joint research.

His two-hour lecture was entitled: Quasi-Monte Carlo Rules and Low Discrepancy Sequences.

In his talk, he gave an introduction to the Quasi-Monte Carlo (QMC) method as applied to numerical integration. When the integrand satisfies certain conditions, the QMC becomes superior to Monte Carlo (MC) methods, such as in finance applications.

Important parts of the theory behind QMC rules were explained, such as the formulation of the problem in terms of the worst-case error and how this, in some cases, can also be interpreted in a geometrical sense, yielding the notion of discrepancy. This is the framework in which point sets in the unit cube are assessed.

It has been observed that QMC rules and low discrepancy sequences work well for problems which have certain features. Recent developments in the theory of QMC rules aim at reflecting such features in the theory, leading to the notion of weighted function spaces and weighted discrepancy.

With the notion of worst-case error and discrepancy in

mind, it was shown how well distributed point sets in the unit cube can be obtained. There are two basic types of such point sets, namely lattice rules and (t,m,s)-nets or (t,s)-sequences. The concepts behind these point sets were explained. This also includes the component-by-component construction of lattice rules. The concept of (t,s)-sequences on the other hand yields low discrepancy sequences.

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

The 2004 NAREGI Symposium was held

The 2004 NAREGI Symposium took place at the Tokyo International Forum on February 25th. The first annual event drew 319 attendees from a number of different sectors including industry, academia, and government. The symposium was split into presentations and exhibitions. The Presentation session mainly covered Grid research and development activities at NAREGI. In the exhibition hall, several booths were set up so that attendees had a chance to talk to and question developers about the details of their activities.

The symposium started with an opening speech from Dr. Sakauchi, Deputy Director General of the National Institute of Informatics, followed by Mr. Hoshino, Director of Information Science and Technology Research at the Ministry of Education, Culture, Sports, Science and Technology.

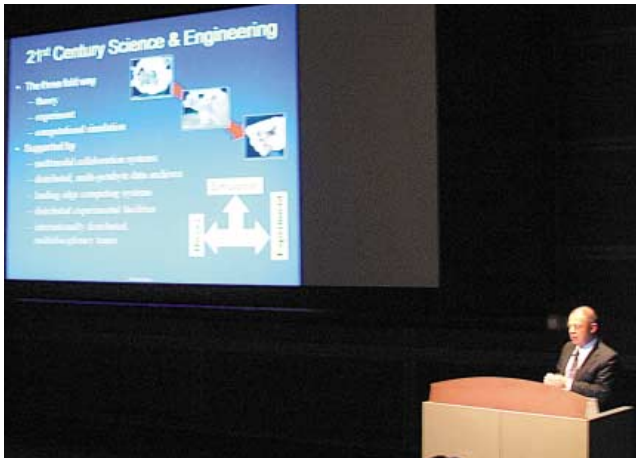
In the keynote address, Dr. Paul Messina from Argonne National Laboratory in the United States, a world-renowned researcher in Grid technology, gave a lecture about the future of grid computing, and introduced several ongoing Grid development and research projects throughout the world. He explicitly emphasized the importance of the role of software in Grid technology in his speech entitled "Software is Infrastructure."

Mr. Ikegami, Vice President of the Consortium for Promotion of Grid Applications in Industry, gave a lecture on the importance of integrating distributed computing resources in future industry. Next, key researchers at NAREGI gave presentations on NAREGI activities including Grid middleware, Grid programming, network, and nano-science applications.

NAREGI exhibitions were set up in the other hall, giving attendees the opportunity to experience NAREGI's activities hands-on. A number of attendees showed interest in NAREGI's projects, asking questions and offering useful advice.

Overall, this was a useful event for both those engaged in NAREGI projects and symposium attendees, giving NAREGI staff a chance to get a sense of how to arrange the different NAREGI activities and symposium attendees a chance to learn about NAREGI's projects.

(Center for Grid Research and Development)



Lecture of Dr. Paul Messina

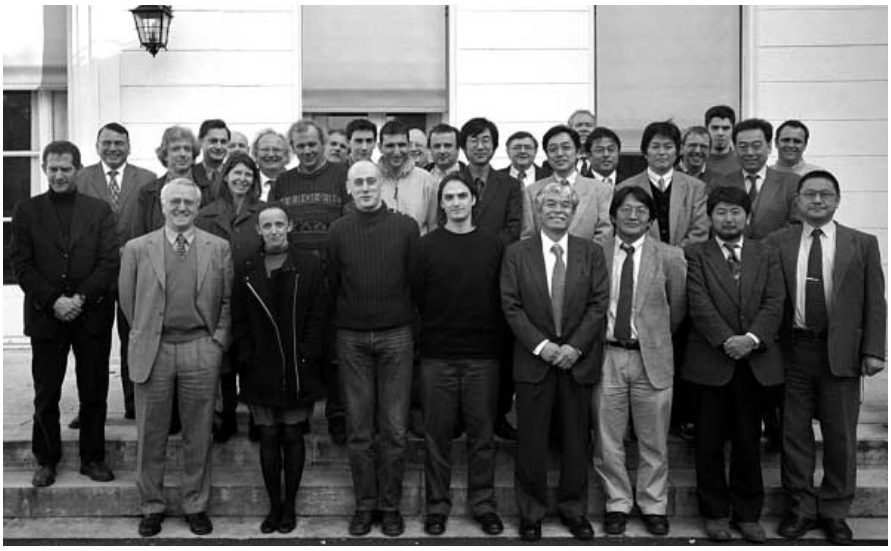
A demonstration and exhibition

Japan-France Grid Computing Workshop held in Paris

From Monday, March 8 to Tuesday, March 9, 2004, Japan-France Grid Computing Workshop was jointly held by National Institute of Informatics (NII) and Institut National de Recherche en Informatique et Automatique (INRIA) at the headquarters of Le Centre National de la Recherche Scientifique (CNRS) in Paris.

Recently, the French government has been very active in the area of grid computing centered around INRIA and

CNRS. This workshop originates from a proposal by INRIA when NII visited them last October. The purposes of this workshop are to introduce the ongoing grid-related projects in Japan and France to each other, and to discuss the possibilities of collaborative research and coalition. A total of 9 attended from Japan and about 15 from France.



From NII, Dr. Kenichi Miura, Professor (co-chair), Collaborative Center for Research Grid, and Dr. Henri Angelino, Visiting Professor, attended. On the first day, 8 projects including NAREGI, ITBL, National Institute of Advanced Industrial Science and Technology (AIST) Super Cluster, Biogrid, VizGrid, OmniRPC, Japanese Virtual Observatory (JVO) and Business Grid Project were introduced by Japanese speakers, and the projects including e-Toile, Grid5000, RMI GRID, GRAAL and CASPER were introduced by French speakers. At the discussion meeting on the second day, we identified our common important research themes and also discussed our future plans, including the possibility of the follow-on workshop to be held in Japan. It was a very productive workshop.

*(**Ken ichi Miura,** NAREGI Project Leader / Professor, High End Computing, Infrastructure Systems Research)*

LoRwi 2004 The third International Symposium on the Logic of Real World Interactions

The third International Symposium on the Logic of Real World Interactions (LoRwi 2004) was held on March 26 and 27, 2004 at National Center of Sciences.

Recent advances in empirical studies of human communication and cognition indicate that environments play much greater roles than previously thought. However, its semantic aspects--how information is generated, manipulated, expressed, and transferred--have been left untouched in empirical or pragmatic studies. These issues require proper treatments on modern mathematical logic.

The symposium was organized to give opportunity for free discussions to logicians, computer scientists, and cognitive scientists who share interests in these issues, but seldom get together. This year's meeting was the third installment of the symposium series sponsored by Japan Advanced Institute of Science and Technology, and co-sponsored by National Institute of Informatics and Cyber Assist Research Center of National Institute of Advanced Industrial Science and Technology.

Notably for this year, we had, as our guest speaker, Professor Johan van Benthem (Amsterdam Univ. and Stanford Univ.), a well-known logician and the world leader of the logic-based approach to human cognition and communication. He gave very interesting lectures concerning the theory of information flow in the human communication, and the relationship between game theory and mathematical logic. Professor Nobuhiro Furuyama (NII) presented stimulating views about the relationship among bodies, languages, and environments as a clue to understand human communication. Professor Yukinori Takubo (Kyoto Univ.), Hans Rott (Regensburg Univ.), and Atsushi Shimojima (JAIST) also gave invited lectures. Finally, we had the panel discussion session hosted by Makoto Kanazawa (NII). (Participants total : 50, Netherlands:1, Germany :2)

We are planning the next symposium (LoRwi 2005). Although the past symposia all consisted on invited lectures, the next symposium will include contributed presentations of public call for papers. We hope it will be a forum in which junior researchers such as graduate students exchange ideas with world-renowned senior researchers invited for the symposium.

*(**Yasushi Hibino,** Professor, presently teaching at Japan Advanced Institute of Science and Technology)*

NII Informatics Open Forum
3rd <January 21, 2004>

Software Development utilizing Program Transformation

Software Research Division
Large-scale Software, Visiting Associate Professor

Department of Mathematical and Computing Sciences,
Tokyo Institute of Technology, Associate Professor

Shigeru Chiba

Completed his Master's Course, Department of Information Science, University of Tokyo in 1993. Doctor of Science. After experienced XEROX Palo Alto Research Center (PARC) of US, Research Associate at University of Tokyo, Assistant Professor at University of Tsukuba, he became Assistant Professor at Tokyo Institute of Technology in 2001. From 2003, he stays on his present post. His research fields include programming language and operating system.

Since the development of high-quality software in various respects is emphasized today, high knowledge in the fields of distributed processing, high-reliability and security is required to software developers even though it is a development of commonly-used application software. In the past, the functions, that were required such knowledge, were considered to offer by operating systems and middleware. However, at present, we have limitations in offering functions and there are quite a few functions required to implement one by one at the level of application software. This is a major factor of raising costs related to the software development.

In this presentation, I talked on the technology transforming application software programs and implanting functions automatically to programs. They include functions that operation systems can not provide. This technology can expect reduction of costs related to the high-quality software development. To be more precise, I explained on the background arts including reflection and aspect-oriented software development along with the explanation on program transformation I have developed. Moreover, since many of them are open to the public as open source software, I introduced some interesting stories to go with.

Constraint Programming Technique and Application to User Interfaces

Office for Cooperative Research Programs,
Research Center for Testbeds and Prototyping, Associate Professor

Hiroshi Hosobe

Completed his Doctoral Course and received Doctor of Science, Department of Information Science, University of Tokyo in 1998. His careers include Post-doctoral, Japan Society for the Promotion of Science (JSPS) Research Fellow, Research Associate, Research and Development Department, National Center for Science Information Systems, and Research Associate, Software Research Division, National Institute of Informatics. From January, 2004, he stays on his present post. His research fields include constraint programming, user interfaces, interactive graphics and information visualization.

A constraint programming is a programming technique that describes constraints declaratively. It is an effective tool to solve various issues, and is widely-used in the various fields including artificial intelligence, logic programming and user interfaces. In this presentation, he introduced mainly on his latest research achievements with regard to constraint solving method as basic technology for constraint programming and user-interface constructive method, application of the programming.

(Publicity and Dissemination Division)

Navigating Massive Data Sets via Local Clustering

Visiting Professor, Data Collection Laboratory,
Research Center for Information Resources

Michael E. Houle

Received a Ph.D. in Computer Science (computational geometry) from McGill University, Canada, in 1989. His previous posts include Research Associate at the Department of Communication Engineering, Kyushu University (1989-1990), Research Associate at the Department of Information Science, University of Tokyo (1990-1992), Lecturer at the Department of Computer Science & Software Engineering, University of New Castle, Australia (1992-1997) and Visiting Scientist at IBM Tokyo Research Laboratory (2001-2003). At present, he holds the position of Visiting Professor at the Research Center for Information Resources at the National Institute of Informatics.

The first half of this presentation introduces a scalable method for feature extraction and navigation of large data sets, for which no a priori knowledge of the distribution or other patterns within the sets may be available. Feature extraction is accomplished by means of local clustering, in which clusters are modeled as overlapping neighborhood sets. Under the model, intra-cluster association and external differentiation are both assessed in terms of a natural confidence measure similar to that used in association-rule mining. The local-clustering method is able to produce large numbers of meaningful clusters of very small size, even when the database is massive, and without the need for the user to specify the number of clusters. Minor clusters can be identified even when they appear at the intersection of two or more larger clusters. This method also produces a cluster-overlap graph structure that can be navigated and queried by users.

The heart of the local-clustering method, discussed in the second half of the presentation, is a practical, general-purpose metric index for approximate-similarity queries of large multi-dimensional data sets: the Spatial Approximation Sample Hierarchy (SASH). The SASH uses a similarity function satisfying the conditions of a distance metric, but otherwise makes no assumptions regarding the nature of the data. The data set is organized into a multi-level structure of random samples, in which objects at a given level are connected to several approximate nearest neighbors drawn from the level immediately above. In contrast with the partition-based methods proposed to date, most query result objects are reachable via multiple paths through a relatively compact portion of the structure. Experimental results are provided showing that for approximate k-nearest-neighbor (kNN) queries, this method consistently returns a high proportion of true k-nearest neighbors at speeds of almost two orders of magnitude faster than sequential searches. Importantly, this method also allows for significantly improved control over the time-accuracy trade-off than previous approximation methods.

Featuring Large Text Group of the Same Subjects

IRISA Universite de Rennes 1 (France)

Anne-Marie Morin

Her posts include Associate Professor at the Universite de Rennes 1, France (1973 to present). She completed her Master Course at Universite de Montreal, Canada in 1978. Received Ph.D. in 1981 and her Doctorat es sciences en mathematiques in 1989 from Universite de Rennes 1, France. Her research fields include statistics text analysis and classification as well as multimedia mining.

Text groups which focus on the same content, even if only partially, can be categorized as relating to the same subject. We are

interested in this type of indexing and analysis. Research related to similar keywords is not an easy task. This is because even in a text group related to a single subject, the terms used and the sub-fields related to it are extremely varied. Furthermore, apart from merely indexing, it is also important to detect the development of subjects in the corpus. Generally, text data is not structured. It needs to have at least a minimal structure, or to be handled as an analysis object, assuming that it deals with the topics common to the group. In this presentation, I will address this problem through factor-correspondence analysis and introduce research on the extraction of document clusters and their distinctive words.

(Publicity and Dissemination Division)

NII Informatics Open Forum
5th < February 27, 2004 >

'Universal' Induction Machine dPLRM for Probabilistic Multiclass Discrimination and its application to Speaker Identification Problems

Professor, The Institute of Statistical Mathematics

Kunio Tanabe

He graduated from the Dept. of Mathematics of the University of Tokyo in 1967, also earning a Doctorate of Science from the University of Tokyo in 1976. He has served as Researcher, Head Researcher, Director of the 3rd Division, and Director of the Dept. of Prediction and Control, and is currently Vice Director-General of The Institute of Statistical Mathematics. He has served as Dean of the School of Mathematical and Physical Sciences at the Graduate University for Advanced Studies. He has also been a Visiting Assistant Professor at the Dept. of Math at NC State University, a Visiting Scholar in the Computer Science Dept. of Stanford University, a Visiting Associate Mathematician at the Brookhaven National Lab., an Honorary Fellow at the Mathematics Research Center of the University of Wisconsin, and a Visiting Professor at the University of Basel. His areas of interest include Dual Differential Geometry, Optimization Algorithms, Numerical Linear Algebra, Newton's Methods, Inverse Problems, Bayesian Methods, Learning Machines, and Inductive Reasoning.

Support vector machines (SVM) have been recognized as powerful tools for deriving certain structures from data that allow for prediction. Their success is due to an intrinsic combination of quadratic programming models and a Kernel method. The machines, however, do not accommodate very well cases where the data-generating mechanism is largely stochastic in nature and the data is noisy. SVM were originally designed for dichotomous discrimination, and require certain ad hoc decision rules for multi-class discrimination. Besides, learning and prediction with SVM involves only a part (support vectors) of the training data set, which the speaker considers a great methodological defect of SVM. Because the information carried by the data is contained in the whole set of data as an ensemble, the mathematical structure of SVM does not reflect it. In order to avoid the above-mentioned problems with SVM, the present speaker introduced the penalized Logistic Regression Machine (PLRM) and its dual machine (dPLRM). (K.Tanabe, Penalized Logistic Regression machines: New methods for statistical prediction 1, ISM Cooperative Research Report 143, 163-194, 2001; K.Tanabe, Penalized Logistic Regression machines: New methods for statistical prediction 2, Proceedings of 2001 Workshop of Information-Based Induction Science (IBIS2001), 71-76)

Unlike other methods, which require human judgment in constructing parametric models, the 'Universal' induction machine, dPLRM, is a learning machine in which non-parametric models with huge sets of basis functions are implicitly defined and the best model for induction is automatically chosen based only on the training-data set. Also, it can give a probabilistic prediction for multi-class discrimination. The learning process of this machine is executed by solving a huge but relatively well-conditioned system of nonlinear matrix equations, which has an interesting mathematical structure from a computational

point of view. The present speaker cannot help speculating that a version of the dual machine dPLRM is a better approximation to the physiological reality of biological learning processes than existing ones such as neural networks.

dPLRM is based on a Bayes model which can coherently handle noisy data and uncertainty in the mechanism of data generation. The model enables us to eliminate human judgment in determining the values of crucial parameters for realizing an appropriate induction capacity. It also can handle, in a unified manner, numeric data combined with symbols, combined sound, picture, and text data, time-series data, sets of data with differing data lengths, and data sets with fuzzy labels. dPLRM can also be applied to the problem of 'Circumscription,' in which a marginal area of a given data set is to be determined. We also applied this machine successfully to a speaker identification problem in speech recognition software. (Matsui and Tanabe, 2003)

From human annotation to fully automatic machine annotation of named entities

Associate Professor, Symbolic Reasoning Group,
Foundations of Informatics Division

Nigel Collier

He is associate professor in the Information Foundation division at the National Institute for Informatics (NII) in Japan. Before coming to NII he received a B.Sc. in Computer Science from Leeds University (UK) in 1992, an M.Sc. in Machine Translation from UMIST (UK) in 1994 and a Ph.D. in Language Engineering from UMIST in 1996. From 1996 to 1998 he was a Toshiba Fellow working in Toshiba's human-interface laboratories on machine translation, and from 1998 to 2000 he worked on information extraction in the molecular-biology domain at the Tsujii laboratory of the University of Tokyo as a JSPS research associate. His research interests are in the areas of machine learning for natural language processing, text mining, and ontology engineering.

In all domains, from news to science and engineering, we are experiencing the effects of information overload due to the rapid expansion and deepening of the Internet. In order to prepare for the next generation of intelligent content navigation and filtering tools it is necessary to empower computers with a basic understanding of the semantics of objects in texts and their relationships and properties. Within this context we have developed Open Ontology Forge* as a tool for engineering ontologies and annotating named entities inside texts (as well as their co-references) as instances of the ontology classes. From these human-annotated texts we explore the use of various machine learning techniques (support-vector machines, maximum entropy, decision trees) for the fully automatic annotation of named entities. We consider two very different domains (news and Molecular Biology) and look at the influence that various linguistically motivated features can have on generalization performance using human annotations as the gold-standard evaluation data.

Open Ontology Forge can be downloaded from:
http://research.nii.ac.jp/~collier

(Publicity and Dissemination Division)

NII Informatics Open Forum
6th < March 8, 2004 >

Multilingual Summarization and Translingual Transmedia Information Retrieval

Professor & Chairman, Department of Computer Science and Information Engineering, National Taiwan University, Taiwan ROC.

Hsin-Hsi Chen

Hsin-Hsi Chen received B.S. and M.S. degrees in computer science and information engineering in 1981 and 1983, respectively, and a Ph.D. in electrical engineering in 1988, all from National Taiwan University in Taipei, Taiwan. Since August 1995 he has been a Professor in the Department of Computer Science and Information Engineering at National Taiwan University. He is currently the chairman of that department. His research interests are in computational linguistics, Chinese language processing, information retrieval and extraction, and Internet and database design. He has published more than 140 papers in these research areas. He is a member of ACL (1986-) and ROCLING (1988-). He serves on the Board of Directors of ROCLING (1992-2005), and is Chair of the Academic Committee (1994-1995) in this society. He is also an Editorial Board member (2000-) for the International Journal of Computational Linguistics and Chinese Language Processing.

In this seminar talk, two challenging topics related to information access, summarization and information retrieval across heterogeneous information objects either in different languages or in different media, were presented by Professor Hsin-Hsi Chen. In the first topic, he first introduced the general architecture of a multi-document summarization system. Several important issues such as clustering algorithms, clustering units, features used in clustering, and event detection were discussed. He then showed how to extend the architecture to a multilingual, multi-document summarization system. Some additional issues like translation documents among different languages, idiosyncrasies among languages, and user preferences were also touched on.

In the second topic, he introduced this challenging research problem at the beginning. Following this, several approaches for unifying the languages and media of queries and documents were presented. The talk concluded with some preliminary results for cross-language image retrieval via spoken query.

Automatic query refinement for mono-and cross-lingual information retrieval

Associate Professor, Surugadai University,

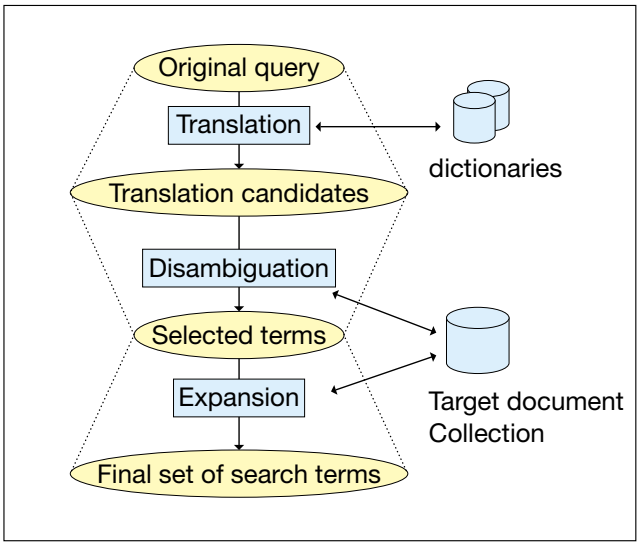
Kazuaki Kishida

1991 Research Associate at the University of Library and Information Science, 1994 Associate Professor on the Faculty of Cultural Information Resources, Surugadai University, 2002 Professor. From 2001, Visiting Associate Professor at NII.

In order to execute cross-language information retrieval (CLIR), in which document sets are searched for a query written in a language different from that used in the documents, we need language resources such as machine-translation systems or machine-readable bilingual dictionaries. However, such resources are not always available for all pairs of languages. One possible solution is the pivot-language approach, in which an international language, such as English, is used as an intermediary — i.e., the original terms are first translated into English

terms, and then the set of English terms is translated into target-language terms. Since the double translation through bilingual dictionaries used in this approach often produces a large number of erroneous terms in the final document set, it is important for this approach to automatically remove the problematic terms (i.e., translation disambiguation). The authors have proposed a method for refining translation candidates by repeating pseudo-relevance feedback twice, and confirmed experimentally that this method improves search performance. This method does not require resources other than the target document collection, and is easy to implement on computer systems. This method may also be applied to monolingual information retrieval.

(Publicity and Dissemination Division)



Visiting Chulalongkorn University and AIT

I was invited by Department of Mathematical Science of Chulalongkorn University and the Asian Institute of Technology, in Thailand from January 27 to 29, 2004, as a first official collaboration work under the MOU. Chulalongkorn University is the top University in Thailand. AIT is an international technology-oriented graduate university, which is sponsored by the Japanese government in part and has received high marks internationally. Currently, 1850 students from 49 countries are studying. NII made an exchange agreement, MOU, last year with these two Universities. The Department of Mathematical Science at Chulalongkorn University made a plan to have intensive lectures given by invited professors from NII. Since I am supervising a Chulalongkorn-graduated Ph.D. student in the Department of Informatics, I accepted their invitation. In two days, I lectured for 12 hours about the last 25 years of AI related research of myself. It was a precious experience; unlike any, I have had in Japan, lecturing to 21 Ph.D. students and 31 professors from 12 universities. On the third day I paid a courtesy visit to AIT, and exchanged opinions with the president, vice president and dean of engineering faculty for starting up the collaboration, and visited DEC (Distance Education Center) and the Robot project for project-based exchange. Exchange of Ph.D. students and joint research projects were expected from them and it will be my goal to make these come true. The accompanying pictures were taken during my lectures at Chulalongkorn.

*(**Haruki Ueno,** Intelligent Systems Research Division)*

An intensive lecture on AI by Prof. Ueno using Power Point

Audience of the lecture (faculties and Ph.D students)

NetCommons 100 Project (Second Term)

National Institute of Informatics (NII) is promoting "NetCommons 100 project," which provides help with installation to nonprofit groups that hope to use NetCommons. NetCommons, which was developed by Associate Professor Noriko Arai in collaboration with NTT Data Pocket Corporation, is an information-sharing support system for community activities. The aim of the project is to disseminate the results obtained by NetCommons throughout society and to further improve NetCommons.

In addition to 49 groups of the first term monitors who have already started the joint research since July, 2003, NII recruited the second term monitors. Many organizations applied to be the second term monitors of NetCommons including universities and research institutes that are considering introducing NetCommons as an infrastructure for remote teaching and information sharing, such as the Yomiuri Shimbun Tokyo Headquarters Editorial Bureau Newspaper in Education, the Research Station for Advanced e-Learning at the University of Electro-Communications, Toyama Prefectural University Department of Mechanical System Engineering Mechanical Energy Course Fluid Dynamics Laboratory, and AFS Japan

MESSAGE FROM FOREIGN RESEARCHER

Part-time Researcher, Human and Social Information Research Division

Mathieu Mangeot

June 1994 Grenoble 1 University (Department of Exact Sciences) Graduation
June 1995 Grenoble 1 University (Department of Informatics) Licence
June 1997 Grenoble 1 University (Department of Informatics) Master
September 2001 Grenoble 1 University (Department of Informatics) Doctorate
November 2001 to November 2003 JSPS postdoctorate fellow at NII
November 2003 to March 2004 COE postdoctorate fellow at NII

I come from France as a posdoc to work for the Papillon Project that aims to make a multi-language database such as English, French, Japanese, Lao, Malay, Chinese and Vietnamese. It is available as an open source for anyone without any commercial purpose. This project some computer linguists began aims to be useful and open to those who are interested in these languages.

My doctoral thesis is on environments for building and manipulating heterogeneous dictionaries. Thus, this project was a direct application of my Ph.D. during the first year. I implemented a generic platform based on the specifications from my Ph.D. thesis for manipulating and querying any kind of XML dictionary. During the second year, I worked in collaboration with David Thevenin (other JSPS posdoc at NII) on the implementation of a generic online editor for dictionary entries. The editor automatically generates the appropriate interface from the structure of the entry. Our work can be seen online at http://www.papillon-dictionary.org/.

During my stay at NII, I was technically responsible for the Papillon Project. Two workshops about Papillon were organized in Japan. The first in July,'02 at NII and the second in July, '03 at Hokkaido University, Sapporo.

Now, the main implementation of the platform is over. Thus I can focus on a more linguistically oriented problem that is the content of the dictionaries. Under the supervision of Dr. Kageura that I would like to thank here publicly for all his help, I began a linguistic study of two constructive phenomena between French and Japanese. The first is a comparison of the variations between named entities and the second is a study of the links between lexical functions and their values (from Meaning-Text Theory by I.Mel'uk and his colleagues) in the two languages. In the future, I wish to continue my collaboration with Dr. Kageura about the relations between lexicography and terminology, especially for the French-Japanese language pair.

Association, Inc. Many NPOs and academic societies also applied to be monitors. NII assembled a selection committee and, following a careful selection process, chose 16 groups (URL http://www.nii.ac.jp/hrd/HTML/NetCommons/NetCommons_monitor.html). We will distribute NetCommons to the second term monitors in February, 2004 and will start the joint research.

On December 1, 2003, "Briefing session on NetCommons introduction" was held at Hitotsubashi Memorial Hall (medium-sized conference room) at the National Center of Sciences for the groups that have already been selected as NetCommons monitors, as well as for groups that are intending to apply to the second monitors. In this session, 3 groups out of the first term monitors of NetCommons made reports on use of NetCommons. Each of them fully utilized the safe and high degree of usability information-sharing system flexibly and variedly. It seems that the possibilities of NetCommons got the point across to the participants in an understandable manner.

*(**Noriko Arai,** Associate Professor, Mathematical Informatics, Foundation of Informatics Research)*

The Ph.D. program in informatics of the Graduate University for Advanced Studies accepted 8 new students

The Department of Informatics of the Graduate University for Advanced Studies, in its third year, accepted 8 new students for the Ph.D. program in April 2004, providing them with course guidance at the National Institute of Informatics (NII) on Monday, April 19.

Greetings from Dr. Suematsu, Director General of NII, and Dr. Ueno, head of the Ph.D. program, were followed by the self-introduction of students and faculty advisors and an explanation of the curriculum and the supervision system. The proceedings were conducted entirely in English, including speeches given by Japanese students for 4 international students of the 8 new students.

Following the guidance, NII hosted a reception for the new students. The entrance ceremony was held at the Graduate University for Advanced Studies in Hayama on Thursday, April 22.

Starting this academic year, the Department of Informatics became a part of the School of Multidisciplinary Sciences due to reorganization. 50 students, 21 of which are international students, are currently enrolled in this department, giving it the largest number of both total students and foreign students among the 22 departments in the Graduate University for Advanced Studies.

(Research Cooperation Division)

Guidance on the Ph.D. program in informatics at the National Institute of Informatics

Entrance ceremony of the Graduate University for Advanced Studies at the Graduate University for Advanced Studies

Message from Graduate Students

Ishii Masayuki

Department of Informatics
School of Multidisciplinary Sciences
Graduate University for Advanced Studies

When I was a master course student, I was doing research on mathematical models of chemical reactions under the supervision of Prof. Kazuo Kitahara of I.C.U. Then I found that to describe a natural phenomenon, numerical formulae are very persuasive and brief. I recognized it, and I felt I wanted to do research on natural phenomena which are described mathematically in the doctor course. Furthermore, I have been interested in the human mind since I was a high school student. I thought inverse problems are very convenient ways to analyze the mind mathematically. Hence, I entered The Graduate University for Advanced Studies under the guidance of Prof. Ken Hayami. At present, I am doing research on the numerical solution of simultaneous algebraic equations which occur in the inverse problem of the brain (M.E.G.) under the guidance of Dr. Takaaki Nara of N.I.I. (now at the University of Tokyo).

The Graduate University for Advanced Studies recommends students to actively interact with other researchers. I was impressed by Prof. Taketomo Mitsui of Nagoya University who encouraged me with sympathy in many cases. I learnt important things not only in research from him. So I feel very happy about being a student here.

Jumpot Phuritatkul

Department of Informatics
School of Multidisciplinary Sciences
Graduate University for Advanced Studies

I am very proud of being one of the students first enrolled in the international course in October 2002. It is very honorable for me to have this opportunity to conduct advanced research study in this well-known and world-class national institute with many rigorous researchers and excellent professors over the extremely high speed Internet backbone (SuperSINET) and advanced research facilities.

I was born in Loei, Thailand. I completed my Bachelor degree in Electrical Engineering from Khon Kaen University and obtained my Master degree in Telecommunication Engineering from Asian Institute of Technology, Thailand. I joined National Electronics and Computer Technology Center (NECTEC), a leading government-funded ICT research and development organization in Thailand for 5 years. During that time, I had been engaged in not only research assistant of the Network Technology Laboratory but also policy and technical development of the Government Information Technology Services. I was also appointed as country delegate in the international meeting for ICT research cooperation and development projects such as APEC-TEL, APT and e-ASEAN.

My current research area in NII is “Quality of Service Provisioning in WDM Optical Burst Switching Networks”. I am carrying out research in the area of WDM optical burst switching networks by investigating challenging issues such as quality of service, traffic engineering, contention resolution, and burst scheduling. My technical papers have been accepted for presentation at the international conferences. I am enhancing my research works and preparing to submit more technical papers to other international conferences and journals in the near future. I hope that during studying in NII, I can achieve my study goal and also learn interesting Japanese culture and language.

Especially, I would like to express my profound gratitude, most sincere appreciation and special thankfulness to my supervisor, Assoc. Prof. Yusheng Ji, for the invaluable advices, excellent suggestions, constant supports and fruitful discussions. Moreover, I am sincerely grateful to my senior supervisor; Prof. Kinji Ono and Prof. Shigeki Yamada, and my sub-advisor, Assoc. Prof. Jun Matsukata, for their guidance, valuable comments and supports. Finally, I wish to thank my scholarship donors, NII and KDDI for providing financial support. I am getting a great pleasure from my wonderful life in Japan, the leading, peaceful and interesting country.

Holding of "Information Security Lectures"

NII held "Information Security Lectures" at five venues across the country with the purpose of promotion of information security measures and further awareness-raising against formulation and operation of security at the academic institutions.

The lectures will be subsequently held from the previous year. This time, the lectures were planned with a central focus on information security at universities and legal topics and the latest anti-virus software, which have a significant number of requests from participants. In addition, at each venue, NII made an anecdotal report on information security measures at the organization in the district.

Some participants said that it was very helpful to know the measures to security. At the same time, others requested that they wanted to hear more detailed information or they wanted NII to introduce them some leading cases at other universities.

December 18, 2003 at Osaka University Icho Kaikan

Date, venue and participants of the lectures are listed in the following table.

District	Date and time	Venue	Co-hosting organization	Number of participants
Hokkaido	Tuesday, December 16, 2003 13:30-17:00	Hokkaido University Conference Hall	Hokkaido University Information Initiative Center	71
Tohoku, Kanto, Shin-etsu, Hokuriku	Tuesday, November 4, 2003 13:30-17:00	Hitotsubashi Memorial Hall	———	263
Chubu, Tokai	Tuesday, December 9, 2003 13:30-17:00	Nagoya University Symposion Hall	Information Technology Center, Nagoya University	163
Kinki, Chugoku, Shikoku	Thursday, December 18, 2003 13:30-17:00	Osaka University Icho Kaikan Hankyu Sanwa Hall	Cybermedia Center, Osaka University	202
Kyushu, Okinawa	Tuesday, November 18, 2003 13:30-17:00	Kyushu University Library Audiovisual Hall	Computing and Communication Center, Kyushu University	113

For further information including program, please see URL : http://www.nii.ac.jp/hrd/

(Planning and Coordination Division)

International Scholarly Communication Initiative invited Project Euclid

International Scholarly Communication Initiative invited Teresa Ehling, Director of Electronic Publishing, Cornell University and David Ruddy, Head of systems development and production, Cornell University who are responsible for electronic publishing from Project Euclid (Cornell University Library http://projecteuclid.org/), electronic journal platform in the field of mathematics and statistics supported by SPARC/US, from January 19 to January 30.

During the period, they exchanged views on provision of electronic journal contents with NII and had meetings with members of taskforce on Electronic Journals, Japan Association of National University Libraries and mathematics journals in Japan.


Mr. Ruddy (left) and Ms. Ehling (Center)

Especially, on January 23, with the collaboration of Mathematical Institute, Tohoku University and Tohoku University Library, they held "Workshop on Project Euclid" at the Aoba Memorial Hall and introduced Project Euclid. To this workshop, 37 attended including representatives from 20 mathematics journal in Japan. It was a good opportunity for mathematics journal officials to gather in one place and to discuss digitization of journals and business model establishment. They made considerable achievements in the meeting.

Contents and materials from this workshop are available at the International Scholarly Communication Initiative website http://www.nii.ac.jp/sparc/

(Contents Division)

Project Euclid Explanatory Meeting

Holding of "Education and Training Program for person in charge of Academic Portal 2003" and "Education and Training Program for person in charge of Academic Information Literacy 2003"

NII held the subject trainings for the first time. The outline of each training program is listed as below.

As this is the trial, we limited participants specifically to national universities.

Both training programs will be held routinely effective from 2004 based on the result of this time and we will review the contents, fix the number of holding of training and participants considering the requests for the training. The detail will be informed as soon as fixed either by "The Outline for Education and Training Program 2004" or at the website URL http://www.nii.ac.jp/hrd/

1. Education and Training Program for person in charge of Academic Portal

(1) Purpose: To acquire specialized knowledge and technology related to transmission of information, building of academic portal and management.

(2) Participants: Faculty members who are in charge of transmission of information, establishment of academic portal and management at universities

(3) Training period: From January 14, 2004 to January 16, 2004

(4) Venue: Conference Room on 12th Floor, National Institute of Informatics

(5) Capacity: 50 (number of participants completed the program: 50)

(6) Curriculum

Day	Hour	Contents
First day	9:00 - 17:20	Opening ceremony Compendium on portal　Metadata　Compendium on portal system
Second day	9:00 - 17:20	Web design　Legal problems of transmission of information Portal server management　Handling of copyrights
Third day	9:00 - 17:20	Building of portal Case study and discussions on research　Closing ceremony

2. Education and Training Program for person in charge of Academic Information Literacy

(1) Purpose: To train personnel who play core role in academic information literacy education

(2) Participants: Faculty members who are in charge of academic information literacy education at universities

(3) Training period: From January 19, 2004 to January 21, 2004

(4) Venue: Conference Room on 2ndth Floor, National Center of Sciences

(5) Capacity: 100 (number of participants completed the program: 93)

(6) Curriculum

Day	Hour	Contents
First day	9:00 - 17:20	Opening ceremony Compendium on academic information　Research methods on data　Presentations
Second day	9:00 - 17:20	Information search　NII contents utilization Rights handling　Electronic journal
Third day	9:00 - 17:30	Electronic journal (continued) Theory and practice (case study and joint discussions)　Closing ceremony

(Planning and Coordination Division)

Participating in the CEAL Annual Meeting

Three members of NII, Prof. Akira Miyazawa, Director of the Research Information Research Division, Prof. Yuan Sun, Associate Professor of the Research Information Research Division, and Ms. Sawako Kojin, Chief of Network Software Technology Section in the Application Division, participated in the CEAL (Council on East Asian Libraries) annual meeting held in San Diego, California, USA from March 2nd to March 6th.

CEAL is a council of librarians and researchers on East Asian studies in North America. Its objective is to serve as a faculty-librarians' forum for East Asian library issues, to formulate programs for their development, and to improve inter-library and international cooperation.

The annual meeting of CEAL is held in conjunction with that of AAS (Association for Asian Studies), for which most researchers on Asian studies in North America gather. In CEAL's annual meeting, the Committee on Japanese materials (CJM), the Committee on Library Technology (CLT), and other committees met, and active discussions were conducted on the activities and issues within each field.

This year, Ms. Kojin gave a presentation to the CJM entitled "GeNii : A New Service of NII." The audience expressed interest in the new service and its functions, and anticipation for the service's release was significant as it functions to greatly improve usability for overseas users. North America has the largest number of NII's information services users outside Japan. This occasion was a valuable opportunity to see their concerns and the high demand for the new information service. It will help future planning for international information services.

(Contents Division)

Topics

Visit by Dr. Francois Brown de Colstoun, Director for European and International Relations of INRIA (France)

On November 26, 2003, Dr. Francois Brown de Colstoun, Director for European and International Relations, Institut National de Recherche en Informatique et en Automatique (INRIA), France visited NII.

Dr. Colstoun (left, innermost) and Dr. Gomez (second from left), making presentations to NII researchers

NII has promoted exchanges with INRIA and is now having discussions toward the conclusion of the International Exchange Agreement with them. Before this visit, Dr. Suematsu, Director General of NII visited INRIA in October and both agreed to pursue collaboration on some projects, especially the National Research Grid Initiative (NAREGI) Project conducted by the Center for Grid Research and Development.

On the day, after talks with Dr. Suematsu, an introduction of the outline and main research projects of INRIA were made. In the future, we will go forward the concrete selection of projects to be pursued under the International Exchange Agreement.

(International Affairs Division)

Visit by FENIX Programme Officials of Finland

On November 28, 2003, FENIX Interactive Computing Programme, a party consisting of 12 persons, visited NII.

This programme is a national programme for software technology research and development by collaboration of human beings and computers promoted by National Technology Agency of Finland (Tekes), and the leading research institutes and related companies in Finland join in it.

From NII, faculty and staff including Masao Sakauchi, Deputy Director General and Masamitsu Negishi, Professor, Director, International and Research Cooperation Department attended. Followed by brief explanation by Prof. Negishi, presentations by Prof. Haruki Ueno and Prof. Shin'ichi Satoh were made.

(International Affairs Division)

Officials receiving an explanation by Prof. Negishi, Director, International and Research Cooperation Department.

Visit by Director of the National Library of Bhutan

On December 2, 2003, Ven'ble Mynak Tulku, Director, the National Library of Bhutan visited NII.

His visit was made by Japan Foundation's "Invitations to Japan" activities. On the day, he received explanations on NII and its activities from Dr. Ono, Executive Director for Research. After the library tour, he talked with Dr. Suematsu, Director General.

In Bhutan, he is a high priest of Buddhism as well. At the meeting with Dr. Suematsu, they discussed not only research but also enjoyed topics on culture of each country.

(International Affairs Division)

At the Director General's Office
Ven'ble Mynak Tulku, Director (third from right)

Visit by Vice Director of MICA at Hanoi University of Technology (Vietnam)

On December 4 and 5, 2003, Dr. Eric Castelli, Vice Director, MICA (Multimedia Information, Communication and Application), an international research center which is built at the Hanoi University of Technology site, visited NII. Each of them introduced their research and held seminars over the two days.

MICA is a research center, which Hanoi University of Technology co-founded with Institut National Polytechnique de Grenoble (INPG) and Centre National de la Recherche Scientifique (CNRS) in 2001. Since they have common research fields, they agreed to promote research cooperation by participation of NII, research institutes in France and Vietnam.

Meanwhile, NII and MICA concluded the memorandum of understanding (MOU) with regard to research cooperation in December. With this MOU, we can expect further research cooperation between three countries in the future.

(International Affairs Division)

Visit by Deputy Director General, Institute of Scientific and Technical Information of China (ISTIC)

On January 16, 2004, four persons including Dr. ZHAO Xinli, Deputy Director General, Institute of Scientific and Technical Information of China (ISTIC) visited NII.

On the day, Dr. Ono, Executive Director for Research and Dr. Andres, Associate Professor attended. In connection with NII's conclusion of the memorandum of understanding with UNESCO, and its Digital Silk Roads Initiative, they agreed to review the research collaboration with regard to digital image processing technology.

(International Affairs Division)

Visit by Assistant Director, Directorate for Computer & Information Science & Engineering (CISE/OAD), National Science Foundation (NSF)

On February 9, 2004, Dr. Peter Freeman, Assistant Director, Directorate for Computer & Information Science & Engineering (CISE/OAD), National Science Foundation (NSF) visited NII to collect information on our research activities.

Dr. Freeman was especially interested in our grid research and eagerly attentive to explanation by Ken'ichi Miura, Professor. Aside from this, Akiko Aizawa, Professor and Frederic Andres, Associate Professor explained the outline of subjects of their research respectively.

At the meeting with Dr. Suematsu, Director General of NII, which was made prior to the above, Dr. Freeman explained about the way to select the NSF's support programs and its procedure. This is because NSF is one of the leading academic research aid arms in the US and he is responsible for the field of computer and information.

On the day, Dr. Chistopher Loretz, Director, US National Science Foundation, Tokyo Regional Office and Kazuko Shinohara, Program Assistant of the same also attended.

(International Affairs Division)

At the Director General's Office
Dr. Freeman (second from left) and Dr. Loretz (extreme left)

Visit by Former Chair and New Chair of NCC

On February 9, 2004, Sachie Noguchi of the University of Pittsburgh Library, former Chair of the NCC (North American Coordinating Council on Japanese Library Resources), and Toshie Marra of the UCLA Library, the new Chair of the NCC, visited NII. NCC, which has entered into a mutual-cooperation agreement with NII, is an organization of Japanese research libraries in North America that performs consulting and coordination functions. It is currently adjusting its collection of Japanese study materials and its training activities for Japanese research librarians. NCC is also a contact point for the North American side of the Japan-U.S. document delivery service which NII has been performing in cooperation with university libraries in Japan and the U.S. since 2002.

On that day, Ms. Noguchi and Ms. Marra paid a visit to Yasuharu Suematsu, the Director General, and exchanged opinions with persons concerned, including Akira Miyazawa, the Director of the Research Information Research Division.

(Contents Division)

Visit by National Director and Coordinator of the Iranian Cultural Heritage Organization

On Monday, February 23, three persons from the Iranian Cultural Heritage Organization including Mr. Abdolrasool Vatandoust Haghighi, National Director and Coordinator, visited NII.

Mr. Abdolrasool Vatandoust Haghighi (second from right)

The purpose of their visit was to request assistance for the preservation and restoration of Bam, a citadel city and proposed UNESCO World Heritage site, which was greatly damaged by a big earthquake in southeastern Iran on Friday, December 26, 2003. From NII, Prof. Kinji Ono, Executive Director for Research, and Frederic Andres, Associate Professor, responded to this request.

As an agreement concerning the Digital Silk Roads Initiative between NII and UNESCO has been concluded, we will conduct the necessary study to determine in which fields we can work together within the scope of this framework. Meanwhile, Ms. Junko Taniguchi of the UNESCO Tehran Office visited with them.

(International Affairs Division)

Visit by the Chairman of the School of Computer Science and Engineering of Seoul National University, South Korea

On Monday, March 8, Dr. Yanghee Choi, Chairman of the School of Computer Science and Engineering of Seoul National University in South Korea visited NII.

Dr. Choi has an association with Dr. Ono, Executive Director of Research, and has established close ties with NII by sending his students to the Department of Informatics at the Graduate University for Advanced Studies.

At the meeting with Dr. Ono, Prof. Negishi, Director of International and Research Cooperation Dept., Prof. Ueno, and Prof. Shigeki Yamada, it was agreed to collaborate in order to advance research in areas of common interest.

(International Affairs Division)

Dr. Yanghee Choi (second from right)

First Seminar on "Understanding Intellectual Property"

The preparatory task force, office of intellectual properties, Inter-University Research Institutes held the first intellectual property seminar "Understanding Intellectual Property" on the 12th floor of National Center of Sciences on December 17,2003.

In response to a trust of the Ministry of Education, Culture, Sports, Science and Technology, the seminar was held as a part of activities of "A development project by the office of intellectual properties for universities".

Followed by brief explanation toward the establishment of it by Kazuhiro Hiraide, Manager of the preparatory task force, office of intellectual properties, Inter-University

Keynote speech by CEO, Miyoshi International Patent Office

Research Institutes, general statements on intellectual properties by Hidekazu Miyoshi, CEO of Miyoshi International Patent Office and lecture on copyrights and software invention by Kei Konishi, patent attorney of the office were made. More than 30 persons, most of them were our faculty and staff, attended the seminar. After the lectures, lively questions and answers were made.

The preparatory task force, office of intellectual properties, Inter-University Research Institutes will continue to present information through these seminars in the future and promote enlightenment activities related to intellectual properties.

(Research Cooperation Division)

Inter-University Research Institute Corporation / Research Organization of Information and Systems started

On April 1, 2004, NII made a new start as one of the inter-university research institutes comprising Inter-University Research Institute Corporation/Research Organization of Information and Systems.

Research Organization of Information and Systems implemented interdisciplinary research on the collection of large quantity of data and establishment of the database through experiments, survey and monitoring, and extraction and the development of its utilization, regarding issues on life, the earth, environment and the society from the view points of information and systems. It set up four research institutes listed below, aiming at exploiting new research areas and develops new activities.

Inter-University Research Institute Corporation / Research Organization of Information and Systems

Shuwa Kamiyacho Building 4-3-13,
Toranomon, Minato-ku, Tokyo 105-0001

Locations and research areas of the four institutes which comprise Research Organization of Information and Systems

▲ National Institute of Polar Research
1-9-10 Kaga, Itabashi-ku, Tokyo
■ Polar Research

▲ The Institute of Statistical Mathematics
4-6-7 Minamiazabu Minato-ku, Tokyo
■ Statistical Mathematics

▶ National Institute of Genetics
Yata 1111, Mishima, Shizuoka
■ Genetics

◀ National Institute of Informatics
2-1-2 Hitotsubashi, Chiyoda-ku, Tokyo
■ Informatics

(Publicity and Dissemination Division)

Special Lectures on User-Oriented Annotation on Digital Silk Roads Supported by Nissan Science Foundation Award

November 2004. Nissan Science Foundation awarded in the field of science education a collaboration on User-oriented Annotation on Digital Silk Roads Contents between Professor Watanabe (the Secondary Education School attached to the Faculty of Education of Tokyo University) and Associated Professor Frederic Andres. (the National Institute of Informatics). A series of lectures (6 times two hours) in the field of new technology in

information systems based on the Digital Silk Roads research was given to sixth-year students (17-18 year olds). Moreover, Elham Andaroodi and Jerome Godard, (PhD students at NII) participated as lecturer. A total of 62 students participated in this program performed mainly in English. One purpose of this lecture series was an introduction to the case study of the Digital Silk Roads project. Students learned about multimedia information system, Database, XML, the way of creating an image database based on photos from caravanserais (Iran). Five students participated in a case study on annotation and metadata on Silk Roads images and presented a poster in English at the Nara symposium on Digital Silk Roads (December 2003). The aim of this case study was to investigate how students describe the content of Digital Silk Roads pictures, and give annotations to this data by using their own vocabulary.

Special Lecture at Secondary Education School attached to the Faculty of Education of Tokyo University

*(**Frederic Andres,** Associate Professor, Distributed Processing, Software Research)*

NII concluded a framework agreement on academic exchanges with Institut National de Recherche en Informatique et en Automatique (INRIA)

NII concluded a framework agreement on academic exchanges with Institut National de Recherche en Informatique et en Automatique (INRIA) on Monday, February 16.

INRIA is a national research institute established under the double supervision of the Research Ministry and the Ministry of Economy, Finance, and Industry, and is a hub for information research in France. It is very significant for us to have a framework to promote academic exchanges with such a research institute. By this point we have already started substantial exchanges, including a joint Japan-France workshop on grid research held in Paris last March. We plan to actively pursue more such exchanges in the future.

On this day, six persons, including Dr. Laurent Kott, Vice-President for Technology Transfer of INRIA, and French embassy staff visited NII and witnessed the signature of Prof. Suematsu, Director General of NII.

Dr. Laurent Kott (left)

Additionally, on this visit, Dr. Kott and Dr. Gerard Giraudon, Director for Development and Industrial Relations INRIA's technology transfer and its at an intellectual seminar called "Make Use of Intellectual Properties" hosted by the Office for Establishing the Intellectual Property Center of the Inter-University National Institute on Wednesday, February 18.

(International Affairs Division)

Lecture by Dr. Kott

Lecture by Dr. Giraudon

Second Intellectual Property Seminar "Taking Advantage of Intellectual Properties"

The Preparatory Task force, Office of Intellectual Properties, Inter-University Research Institutes has been engaged in the building up of a system for implementing the creation, acquisition, and utilization of intellectual properties of Inter-University Research Institutes in a strategic way.

As part of its activities, on the occasion of visiting Japan by Vice President for Technology Transfer of "Institut Nationale de Recherche un Informatique et en Automatique" (INRIA), an intellectual property seminar entitled "Taking advantage of Intellectual Properties" was held at Josui Kaikan on Wednesday, February 18.

Using the term "Technology Transfer" as the keyword of this seminar, Professor Hidetoshi Yokoi of Institute of Industrial Science (IIS), The University of Tokyo talked on the promotion of cutting-edge technology transfer at IIS.

From the French side, Dr. Kott, Vice-President of Technology Transfer of INRIA and the other members

introduced their technology transfer activities.

Forty faculty members of intellectual-properties-related at universities, research institutes and private companies around the nation participated in this seminar, and active questions and answers were exchanged.

(Research Cooperation Division)

Prof. Kinji Ono and Prof. Mitsutoshi Hatori gave farewell lectures to mark their retirement from NII.

The farewell lectures by Prof. Kinji Ono (Executive Director for Research/Professor of Information Networking Research) and Prof. Mitsutoshi Hatori (Director of Development and Operations Dept./Professor of Multimedia Information Research Division) were held at the National Institute for Informatics on Monday, March 15, 2004.

On that day, both men gave lectures related to continuing research in their respective research areas; Prof. Hatori's topic was "The Beauty of Communications and Broadcasting," while Prof. Ono's speech was entitled "Informatics and Digital Silk Roads." Drawing from their considerable experience, Prof. Hatori gave an introduction to enjoyable and beautiful research, development, and decision-making, and Prof. Ono introduced his vision for advancing global collaborative research in a way that would benefit both the sciences and humanities. The audience was eager and attentive.

The fellowship banquet which followed the lectures was a great success, with over 100 well-wishers in attendance to see the professors off on the road to retirement.

We wish them continuing challenges and successes in the future.

(All members of organizers of farewell lectures by Prof. Kinji Ono and Prof. Mitsutoshi Hatori)

farewell lecture by Prof. Ono

farewell lecture by Prof. Hatori

Japan-US Supercomputer Forum held at NII

On Tuesday, March 23, Japan-US Supercomputer Forum was jointly held by National Academies of the United States and The Engineering Academy of Japan (EAJ) at National Institute of Informatics (The head of Executive Committee on Japan side was Dr. Tsuneo Nakahara, Vice President of EAJ). National Academies are generating a report called "Future of Supercomputing" at the request of the U.S. federal government. The purpose of this report is to make recommendations to the government from the academic viewpoint with regard to future directions in supercomputer systems and high-end computing technology (system software and applications). While the main focus of this study is on the U.S. technology, EAJ received a request from the National academies to exchange views with Japanese experts in this field in the government, universities, laboratories and industries. Seven in the U.S. delegation and 24 leading Japanese researchers in this field attended the One Day Forum. From NII, Dr. Masao Sakauchi, Deputy Director General and Dr. Kenichi Miura, Professor (co-chair), Collaborative Center for Research Grid, participated. After one speaker from U.S. and Japan gave overview and presented the current issues on each topics such as the general trends, applications, hardware, software and policies, we had discussions (overview on policies was only given by U.S.), and in conclusion, we had a comprehensive discussion. It was a very fruitful meeting for us to be able to have a very rich interactive dialogue on the current status and future directions of supercomputing. From Wednesday, March 24, throughout the week the delegation visited the typical supercomputer centers in Tokyo area.

Meanwhile, the final report will be completed by December.

*(**Ken ichi Miura,** Professor, High End Computing,Infrastructure Systems Research)*

Cooperative Program for the Exchange of Experience, Expertise, and Information on Science and Technology in Southeast Asian Countries (CO-EXIST-SEA)

CO-EXIST-SEA is a global cooperation program related to the science and technology information business with participants from Japan and five countries in Southeast Asia including Indonesia, Malaysia, the Philippines, Thailand, and Vietnam begun in 1999. From Japan, representatives from both the National Institute of Informatics (NII) and the Japan Science and Technology Agency (JST) attended. This program hosts an annual workshop for the sharing of information and opinions concerning global cooperation and provides a training course with the aim of improving the skills and knowledge of the personnel in charge of the information business.

From October 16, 2003 to October 17, 2003, the 5th CO-EXIST-SEA Workshop was held in Manila, Philippines. Miyuki Kuranishi, Director of the Publicity and Survey Division of the International and Research Cooperation Department at the time, attended as NII's representative. At the workshop, a report on the 4th CO-EXIST-SEA Workshop's training course, reports from each member country, and special lectures were given, followed by animated discussions on a number of future issues and requests to be dealt with by CO-EXIST-SEA (solutions to copyright issues, a survey on e-learning and the creation and implementation of guidelines for it, the creation of an e-Book, and assisting in the creation of a full-text online database as well as a training course for librarians).

Meanwhile, from February 23, 2004 to February 27, 2004, the 5th CO-EXIST-SEA training course was held at JST Tokyo Headquarters (Science Plaza) with 10 participants from 5 Southeast Asian countries. From the second through the fourth day, lectures and workshops on XML were given; the lecturer was Dr. Hosobe, an Associate Professor at NII. From 16:30 to 17:30 on the fourth day, NII gave an overview of its organization and introduced its activities at the NII site.

The CO-EXIST-SEA program is a valuable framework for science and technology information business cooperation between Japan and Southeast Asia as well as international exchanges of management personnel, and its further development is expected.

(International Affairs Division)

NII Public Lectures 2003 "Eight Words to catch the Informatics"

Sixth Lecture: December 18, 2003
"How do you link protocol computer with another?"

Professor, Information Medium Department

Hiromichi Hashizume

Completed his Doctoral Course and received Doctor of Engineering, Electric Engineering, University of Tokyo in 1984. His careers include Research Associate, Bibliographic Information Center, University of Tokyo, Associate Professor, National Center for Science Information Systems, Visiting Professor, Computer Information Systems, University of Pennsylvania, and Academic Advisor for Ministry of Education. From 2000, he stays on his present post. His research fields include human interface.

First, I begin a story about Kira Kozunosuke because he is the most famous authority on protocol in Japan's history. When you look up the word "protocol" in the dictionary, you will find "diplomatic courtesy" as primary meaning of the word. In the computer terminology, it is translated as "communication rule", which means the rule you should comply with when communication by computer is made. However, similar to diplomatic negotiation, computers can get things going by the same structures and procedures. Here I will give an explanation on behind-the-scenes work (TCP/IP) which makes Internet as it is. I will also introduce the topics on politics over protocol and peer-to-peer (P2P) communications of the recent focus of public.

Seventh Lecture: January 15, 2004
"How do you link interface computer with human beings?"

Director and Professor, Multimedia Research Division

Takeo Yamamoto

Completed his Doctoral Course, Graduate School in Chemistry, University of Tokyo in 1967. Received Ph. D. in Chemistry. His careers include Assistant, Department of Chemistry, University of Tokyo, Postdoctoral Fellow, Department of Chemistry, University of North Carolina at Chapel Hill (U.S.A), Associate Professor, Computer Center, University of Tokyo, Professor, Department of Library and Information Science, University of Library and Information Science and Vice President of the same. From 2001, he stays on his present post. His research fields include informatics (Human Interface of Information Systems, Digital Library).

"Interface" is a phase boundary; especially it is often used as a boundary between human beings and computers. Today, looking back over the history of the way of thinking of interface, I will focus my talk on introduction of the people who made a great evolution on interface and their achievements. Those people include Vannevar Bush, J.C.R. Licklider, Ted Nelson, Douglas Engelbart, John Kemeny, and Alan Kay. Lastly, I will introduce Japan's proud interface.

Eighth Lecture: February 26, 2004

"Database — How do we best provide data to computers? — "

Professor, Science and Engineering Information Research, Research Information Research Division

Director of International and Research Cooperation Department

Masamitsu Negishi

In 1976, he completed a Ph.D. in Economics at the University of Tokyo. After working as a Research Associate and Associate Professor at the Research Center for Library and Information Science, University of Tokyo and an Associate Professor at the Center for Bibliographic Information, University of Tokyo, he was appointed as a Professor of Database Research at the National Center for Science Information Systems (NACSIS) in 1986. In 2000, he was appointed as a Professor and the Director of the Research Information Research Division at the National Institute of Informatics. He has been at his present post since 2002. His area of research includes informatics and bibliometrics.

The official definition of a database is contained in both JIS Standards and Copyright Law. The indication of the importance of databases is found in the "Weinberg Report of 1963" issued by the U.S. Presidential Science Advisory Board. This time, for this lecture, I could promptly take out the actual Weinberg Report, which exist only a few in Japan from libraries of other universities by using an NII database called "Webcat". Probably, this shows a part of the availability of databases.

We call it simply a "database," but this term actually refers to three systems including databases as containers, contents, and services. I will explain these to you by referring to the "White Paper on Databases," which covers databases in an overall fashion, including technologies, markets, systems, and policies.

First of all, regarding database-container software, there are a number of types, including card type, relational type, retrieval type, and XML type. With regard to databases as contents, they can be classified in several types, including reference type and fact type. Database services can be sorted into types such as on-line/off-line, personal, in-house, and commercial. The type of usage is changing along with the level and type of Internet penetration, moving from search to surf, then returning to search and navigation functions.

Finally, I conclude the lecture by introducing bibliometrics, a research method that utilizes databases, along with a discussion of the current state of NII databases.

(Publicity and Dissemination Division)

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

▶ http://www.nii.ac.jp/index.html

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National Institute of Informatics

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