Researchers of Information Sciences in Japan and their Research Fields
Masaki NISHIZAWA, Yuan SUN, Masaharu YAN0

The research fields of informatics or computer-related sciences are very wide. It is said that Japan is far behind the United States in these fields, but there are not many persuasive data for it. In this paper, we give some statistical comparisons between Japan and the United States about the number of researchers, the number of papers per fields, and so on. They are done using "Directory of Researchers" Database by National Institute of Informatics, and so on. Further, in order to investigate the content of information sciences and the validity of the classification of "Directory of Researchers" Database, we compare the declared research fields and the fields of their research themes with the classification by "Handbook for Information Processing" by Information Processing Society of Japan. Also, we analyzed the relation of three research fields declared by each researcher.

Some Trial for Making an Expanded Paradigm of Information and Knowledge Science
Shigezo Murakami

Abstract: We have new images of paradigm based on Japanese culture and Asia civilization. Upon these paradigm we are making the tentative specification of "Data Complex" which is an expanded concept for Data Base.

Tendency analysis of article citations in Japanese academic disciplines
Yasuhiro YAMASHITA, Masaki NISHIZAWA, Yuan SUN, Masamitsu NEGISHI

In recent years, research evaluation is becoming one of the major topics of governmental science policy. Along with this trend, citation analyses attract great attention as a tool for quantitative measure of quality of research output. We report some results of an analysis on the characteristics of citations in academic disciplines, based on the ISI citation statistic database: National Citation Report (NCR). This database contains bibliographies of articles written by authors affiliating to Japanese institutes from January 1981 to June 1997, with yearly citation counts. First, we analyze frequency distributions of citations by academic disciplines, and then investigate changes of citation counts per article through the years after the publication. Finally, we classify all disciplines into four types by the two indices: number of papers and cited times per article.

Extraction of Hierarchical and Associative Relationships among Terms in Consideration of Exceptions
Takayuki Morimoto, Yuzu Fujiwara

Information technologies are being developed at unprecedented speed due to high performance and inexpensive computers and Internet have been widely available. The transmission and utilization of information become more diversified and borderless very rapidly. However, users may not make good use of huge amount of information by using conventional computers whose major functions are numerical calculation, symbol matching in information retrieval and deduction. Therefore, advanced utilization of contents of information is required gradually.
Learning and thinking are worth a while targets to such requirement and have been widely studied without useful results thus far. In order to realize machine learning and thinking, it is necessary to know meanings and characteristics of terms and various relationships among them, because technical terms are the most convenient and powerful representation medium of abstract concepts. Therefore, the methods of constructing organized knowledge resources are based on extracting semantic relationships among terms. However, there are exceptional terms which may not be bypassed in natural languages. In this paper, we report the method of extracting hierarchical and associative relationships including such exceptions.

New approach to the Wuster's four field term model as a model of systematization and creation of knowledges
Yutaka Okaya

This paper tries to investigate the Wuster's four field term model from the viewpoint of systematization and creation of knowledges. 1. The four field term model is effective both in systematization of knowledge, for example,ont rolling of synonym and also in creation of knowledge, for example metaphor 2. The table of concepts is effective in explaining the network of concepts. 3. Some discussions about concept and further proposal, ie. constructing a creativity assisting system are presented.

An application of XML for the microbial biological information
Satoru MITAZAKI, Kohji TAKAHASHI, Hideaki SUGAWARA

Thanks to the genome projects and the research for the bio-diversity, we can find a great amount of biological information in Web servers. Thus it is very useful for us to set up a common mechanism to retrieve and exchange biological information worldwide. One of the most fundamental parts of the information sharing is to design the extensible format for the target data in diverse domains of biology. We propose a format by use of XML for the description of the microbial biological information such as bio-chemical characteristics, DNA sequences and their annotations.

A Fundamental Study on the Information Modelling of Multidisciplinary Objects
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Despite a rapid growth of the social interest in information and related technologies,
his or her wish. In this system, the user can register, modify and delete the image data together with attributes through a Web browser, since CGI programs which the Web server executes access the image database. An experimental result shows that this method reduced the registration time to about 1/7 against the traditional way of user's inputting SQL sentences. For image retrieval, we attempted to construct the category structure according to which the image data are classified. Furthermore we developed experimentally a retrieval system for images of tray (or "Don") and nests of boxes (or "Jubako"), and verified that the user can retrieve the expected images easily. We also use the function of similar image retrieval to detect the duplicate image registration, and to help the more detailed image retrieval.

Methods for Japanese text retrieval by using large test collection
Kazuaki KISHIDA

The paper reports some findings from an empirical study on comparison of retrieval performance between some statistical methods: vector space and probabilistic models. A large Japanese text test collection provided by the NACSIS was used, which consists of about 330,000 records of scientific proceedings. Each statistical method was testified using three kinds of indexing techniques for Japanese text: (1) longest matching against entries in a dictionary, (2) tokenizing by change of kind of characters, (3) a simple bi-gram method. Almost no statistically significant difference among the methods was observed, but it seems that probabilistic method based on logistic regression model indicates relatively better performance than other methods.

Building a Browsing System of Metadata
Tetsuo Sakaguchi, Kyoko Shimada, Kana Numajiri, Koichi Tabata

The Library of the University of Library and Information Science launched its digital library service (ULIS-DL) in February 1999. The major functions of ULIS-DL are to build and provide a collection of metadata of network resources for libraries and library and information science. This paper describes building a browsing system of metadata. The system provides a list of words included in the metadata. Users choose one or two words from the list and get a subset of the metadata which include the words. It also provides a list of the creator element of the metadata and a list of Japanese noun phrase which includes chosen word. Users easily get metadata for accessing network resources with this system. The system is available on the Internet.
J-STAGE: Electronic Journal
Publication/Dissemination Center:
Total system for electronic journal
publication and distribution via the
Internet
Yukitaka Matsubara

J-STAGE (Japanese Science Technology
Information Aggregator, Electronic) is an inte-
grated system which aim to support submis-
sion of manuscripts, peer-reviewing, compo-
sition and dissemination of electronic jour-
nals. J-STAGE is so designed that is freely
accessible by participating academic societies
or printers via the Internet, and is available
24 hours/365 days. Electric data is cap-
tured in SGML format. J-STAGE provides
definition and converter. All transactions in-
cluding submitting manuscripts, downloading,
them for review, inputting review result, and
checking review status are done via the web
interface. Citations are linked to external
databases and/or electronic journals. Elec-
tronic journal data thus created are brows-
able and searchable via the Internet. J-STAGE
also supports production of abstracts for meet-
ing.

XML-based Electronic Publishing of
Chemical Article's Multilingual
Full-text Database
Ying li, Hidehiro Ishizuka

In an electronic publishing field, attention
is being focused on XML. We constructed
chemical article's multilingual (Japanese, Chi-
enese and English) full-text database based
on XML, and distributed it in the Web. The
On-line Journal XML-DTD of NII (National
Institute of Information) is adopted as the
DTD of the database. Unicode is used as an
encoding character code to represent those
languages. To display the database in Mi-
crosoft Internet Explorer (IE) 5.0, the data
of the standard style sheets for XML (i.e.
CSS and XSL) are added to the XML docu-
ment. Applying VB Script and DOM, the
elements selected by a user, such as title,
author, abstract, bibliography, are extracted
from the full-text database, and displayed in
IE 5.0. Finally, we discussed the problems
related with Unicode, expression of chemical
formula, as well as schema.

The Influence on the Commercial
Publishing Business By the Internet
Takushi Fukami (Toppan Printing Co.,
Ltd.)

In this paper I described The Influence on
the Commercial Publishing Business by In-
ternet Technology in Japan. Specifically the
business structure, the process of the pub-
lishing and the distribution channels in an
ever-changing environment. The revolution
of business process reengineering has occurred
and is developing at a very high speed in
most business fields. Then I described the
problems of the distribution of digital con-
tents such as the publishing contents via the
internet.
There are two main problems with the dis-
tribution of digital contents via the internet.
One is the display of the information. The
other is the payment of fees. As of now we
can't get the information from the display
unit such as we can from paper. Also the
publisher can't receive the fee from the con-
sumer who can get the information from the
internet, due to a lack of safety mechanisms.
There is now no system to ensure the safety
of the payment, nor is it user-friendly.

The Impact of Commercialization on
Scholarly Communication
Kotaro Nawa

Understanding for 'authorship' in scholarly
communication is inconsistent with that for
'authors' right' in copyright law. The incon-
sistency has become actual under the com-
mercialization of scholarly publishing.