CiNii: Bringing Linked Data to Japan's Largest Scholarly Search Engine

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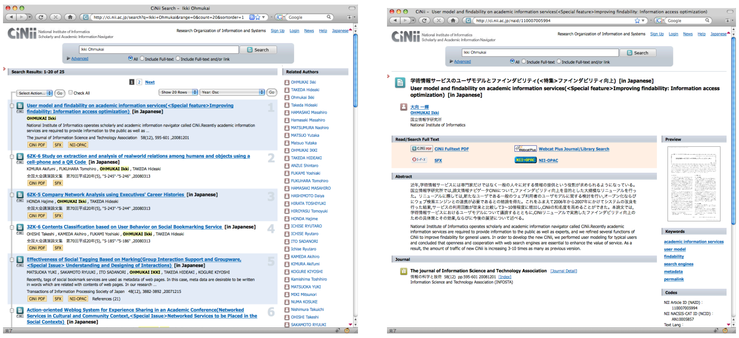
Keywords: metadata; linked data; academic information services; OpenSearch; RDF

1. Introduction

National Institute of Informatics operates "CiNii" (http://ci.nii.ac.jp/), the largest scholarly search engine in Japan. CiNii is a database of journals and proceedings. It stores full text and bibliography of over 3 million articles. In cooperation with National Diet Library, electronic journal publishers and institutional repositories, CiNii also collects bibliographic metadata of 20 million articles. The number of page views was over 10 million in December 2008 and still increasing. Fig.1 shows screenshots of CiNii.

CiNii provides search function of scholarly articles. Search result shows a list of articles corresponding to the query. CiNii also publishes "Bibliography Permalink", which is a web page describing bibliography of every article stored in the database. It shows not only title and authors, but also abstract and a list of reference and citation.

To become widely accepted by advanced users and developers, we are continuing to enhance CiNii, e.g., introducing permalinks and being target of major search engines. In April 2009, CiNii has redesigned and relaunched, and Linked Data (Berners-Lee, 2006) is offered for public use of scholarly information. In this paper we describe details of our Linked Data.



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□ Check All
Show 20 Rows
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Search Results: 1-20 of 25

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5 Effectiveness of Social Tagging Based on Marking(Group Interaction Support and Groupware, <Special Issue> Understanding and Designing of Interactions) [in Japanese]
MATSUOKA YUKI , SAKAMOTO RYUUKI , ITO SADANORI , OHMUKAI IKKI , TAKEDA HIDEAKI , KOGURE KIYOSHI
Recently, tags of social bookmark services are used as metadata of web pages. In this case, meta data are desirable to be written in words which are related with contents of web pages. In our research ...
Transactions of Information Processing Society of Japan 48(12), 3882-3892 ,20071215
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6 Action-oriented Weblog System for Experience Sharing in an Academic Conference(Networked Services in Cultural and Community Context,<Special Issue>Networked Services to be Placed in the Social Contexts) [in Japanese]

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TAKEDA Hideaki
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学術情報サービスのユーザモデルとファインダビリティ(<特集>ファインダビリティ向上) [in Japanese]
User model and findability on academic information services(<Special feature>Improving findability: Information access optimization) [in Japanese]

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Preview

Abstract

近年,学術情報サービスには専門家だけではなく一般の人々に対する情報の提供という役割が求められるようになっている。国立情報学研究所では,論文情報ナビゲータCiNiiについて,ファインダビリティ向上を目的とした大規模なリニューアルを行った。リニューアルに際しては,新たなユーザである一般のウェブ利用者のユーザモデルに関する検討を行い,オープン化ならびにウェブ検索エンジンとの連携が必要であるとの結論を得た。これをふまえて2006年から2007年にかけてシステムの改良を行った結果,サービスの利用回数が従来と比較して3～10倍程度に増加し,CiNiiの知名度を高めることができた。本論文では,学術情報サービスにおけるユーザモデルについて議論するとともに,CiNiiリニューアルで実施したファインダビリティ向上のための具体策とその効果,ならびに今後の展望について述べる。

National Institute of Informatics operates scholarly and academic information navigator called CiNii.Recently academic information services are required to provide information to the public as well as experts, and we refined several functions of CiNii to improve findability for general users. In order to develop the new CiNii, we performed user modeling for typical users and concluded that openness and cooperation with web search engines are essential to enhance the value of service. As a result, the amount of traffic of new CiNii is increasing 3-10 times as many as previous version.

Journal

The journal of Information Science and Technology Association [Journal Detail]
情報の科学と技術 58(12) pp.595-601 20081201 [Index]
Information Science and Technology Association (INFOSTA)

Keywords

academic information services
user model
findability
search engines
metadata
permalink

Codes

NII Article ID (NAID) : 110007005994
NII NACSIS-CAT ID (NCID) : AN10005857
Text Lang :

FIG. 1. Screenshots of CiNii.

2. Bringing Linked Data to CiNii

Summary of Linked Data in CiNii is shown in Fig.2.

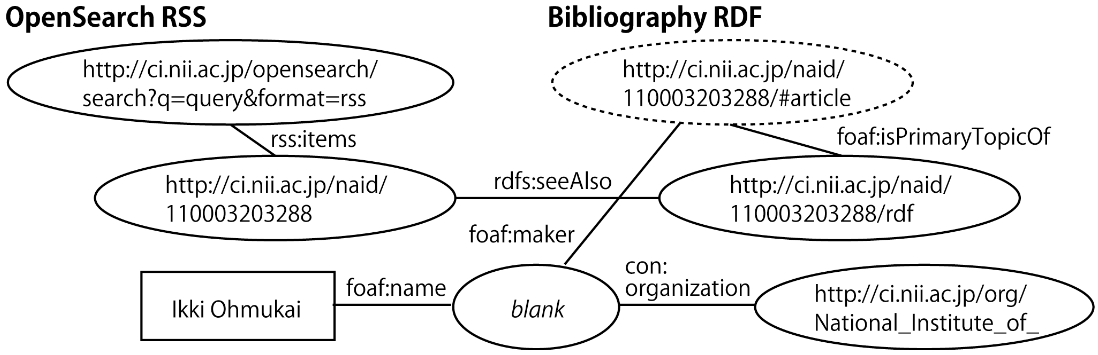
Search function in the new CiNii is compatible with OpenSearch specification. Response formats of OpenSearch consist of XHTML, RSS 1.0 and Atom 1.0. To improve interoperability with other Web services, CiNii does not use original modules, and only uses standard vocabularies such as Dublin Core and PRISM.

In OpenSearch RSS has a link to bibliography RDF by `rdfs:seeAlso` so that a software can obtain machine-readable bibliography without parsing XHTML. Bibliographic metadata is described with RDF. Like OpenSearch responses, Bibliography RDF does not contain original vocabulary.

There are several problems with representing bibliography by RDF. CiNii cannot know exact URI of full text PDF, which corresponds to subject of RDF triple, because download site might be different place among users. So we consider a virtual URI which is combination of bibliography permalink and `#article` fragment. There is also no reference to URI of RDF itself, but we resolve this problem by introducing `foaf:isPrimaryTopicOf` to indicate RDF URI.

Author information is expressed by not only `dc:creator` but also FOAF terms. In FOAF specification, it is impossible to describe that "Person A belongs Organization B". We use PIM vocabulary (W3C, 2006) to illustrate that statement. There are still some problems; for example, information of more than one person who have same name would be mixed because authors in CiNii do not have unique URI. In case of affiliation, we define organization name as a resource tentatively because it is not likely to exist multiple organization with same name.

We embedded several microformats in XHTML files for quick hacking. xFolk is used in search results, and hCard/hAtom are used in bibliography permalinks.


OpenSearch RSS
Bibliography RDF
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http://ci.nii.ac.jp/naid/ 110003203288
rdfs:seeAlso
http://ci.nii.ac.jp/naid/ 110003203288/rdf
foaf:maker
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foaf:name
blank
con: organization
http://ci.nii.ac.jp/org/ National_Institute_of_

FIG. 2. Model of Linked Data in CiNii.

3. Conclusion

In this paper we present our effort to create a large quantity of Linked Data from Japan's largest scholarly search engine. We are going to operate the new CiNii and obtain a feedback from the users and third-party developers. Trust of our data is still low because of a lack of unique URIs about author and organization. We will collaborate with information sources to resolve this problem.

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