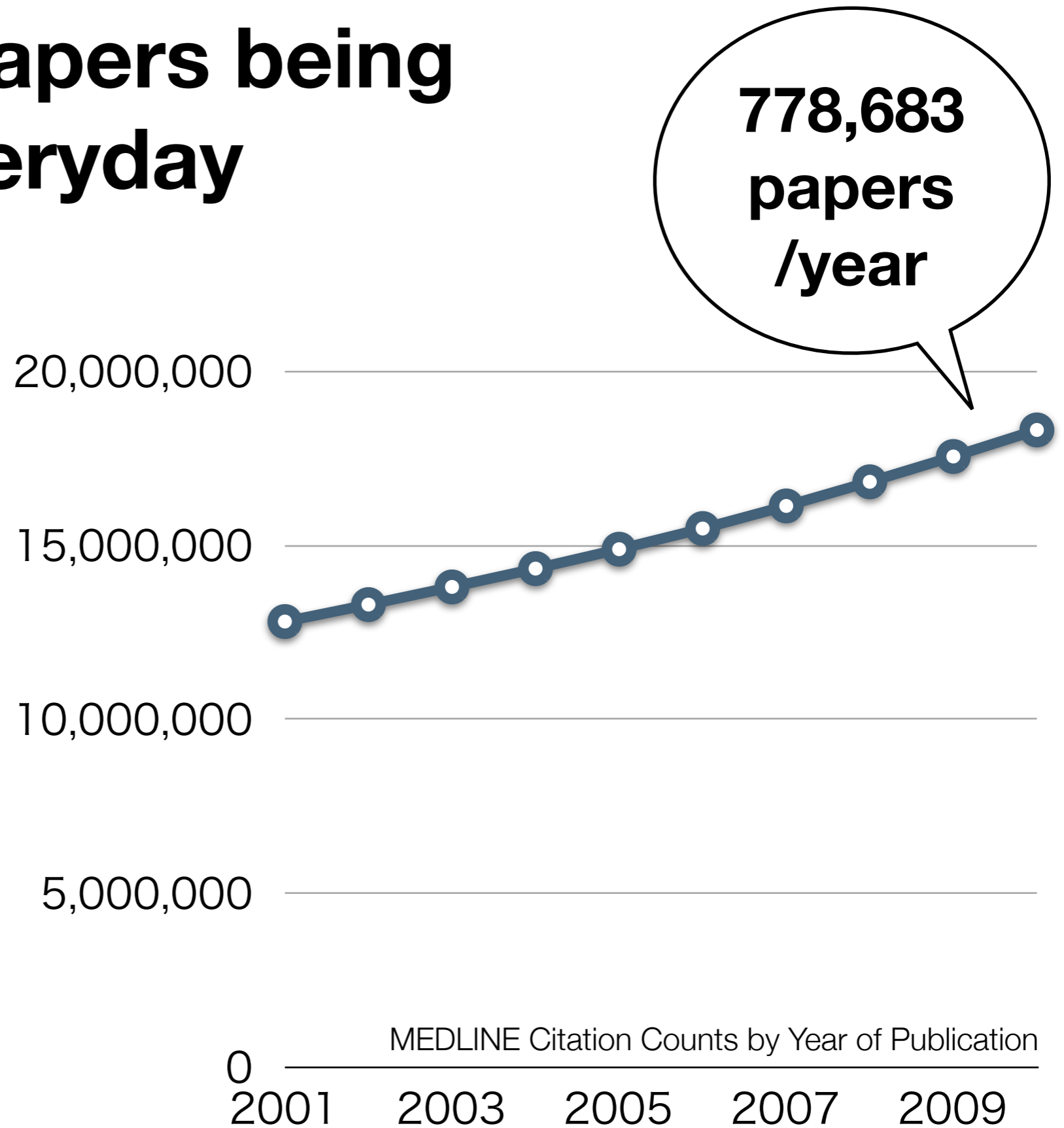


The screenshot displays the TogoDoc application window. At the top, the title bar reads "OREFiL: an online resource finder for life sciences. - TogoDocClient". Below the title bar is a "Keyword Search:" field. The main interface is divided into several panels:

- Article Explorer (Left Panel):** A tree view showing folders and articles. "Folder1" contains articles like "ALICE_ an algorithm to extract" and "Biomedical knowledge navigatio". "Folder2" contains articles like "Combinatorial patterns of histo" and "Integrating text mining into the".
- Main Content Area (Center):** Displays details for the selected article "OREFiL: an online resource finder for life sciences." by Yasunori Yamamoto and Toshihisa Takagi. It includes the journal name "BMC bioinformatics", volume "8", issue "287", year "2007", DOI "10.1186/1471-2105-8-287", and PubMed ID "17683589". There are links for "Full Text" and "Edit Bib Info". A checkbox labeled "Checked" is visible.
- Abstract (Below Main Content):** A text box containing the abstract: "We developed OREFiL, a search system for online life science resources, which is freely available. The system's distinctive features include the ability to return up-to-date query-relevant online resources introduced in peer-reviewed papers; the ability to search using free words, MeSH terms, or author names; easy verification of each hit following links to the corresponding PubMed entry or to papers citing the URL through the search systems of BioMed Central, Scirus, HighWire Press, or Google Scholar; and quick confirmation of the existence of an online resource web page."
- Tags (Below Abstract):** A section with tags like "TextMining", "biological-science-disciplines", "internet", and "online-systems".
- Note (Below Tags):** A section with the text "Users can add notes to papers." and a "Rating" section showing five stars (5).
- Search (Below Note):** A section with links for "Search Personal Library for Related Articles", "Search MedLine for Related Articles", and "Search TogoDoc for Related Articles".
- Tag Explorer (Bottom Left):** A panel showing tags like "TextMining (2)", "ToRead (1)", and "Evolution (2)".
- Recommended Articles (Bottom Center):** A table titled "TogoDoc Recommended Articles Search - Since 2010/08/01 : 38 / 100" with columns for article title, score, date, and author.

TogoDoc:
Smart Recommendation and Efficient
Management of Life Science Literature
Wataru Iwasaki (Univ Tokyo)

1. So many papers being published everyday



**In the omics era,
interpretation of big data
requires more knowledge
concerning more topics, or journals.**

**2. So many PDF papers
in researchers' computers**

TogoDoc runs on **Windows and MacOSX**, and provided **for free**.

Literature Management and Recommendation Service for Life Scientists

Are there many "deeply buried" PDF papers in storage disks of your computers?
Do you have trouble checking "tsunami" of papers that are being published everyday?

TogoDoc Client is a solution for the above two problems for life scientists.
It runs on Windows and MacOSX, and provided for free.

TogoDocClient: on PCs
<http://tdc.cb.k.u-tokyo.ac.jp/>

Literature management by just downloading and saving PDF papers

- Automatic analysis
- Automatic renaming
- Tag suggestion

Recommendation of papers recently registered to PubMed
Based on the analysis

TogoDoc: via Web Browsers
<http://docman.dbcls.jp/>

Library accessible from everywhere
Synchronization of data including PDF files between PCs

Check recommendation from portable devices

Characteristics

Easy Management: Once you tell Client where you usually save PDF papers, it automatically analyzes and manages papers if you just download and save them.

PubMed Recommendation: Based on the analyses, Client recommends papers in which you would be interested from those recently registered to PubMed, by communicating with the **TogoDoc server**.

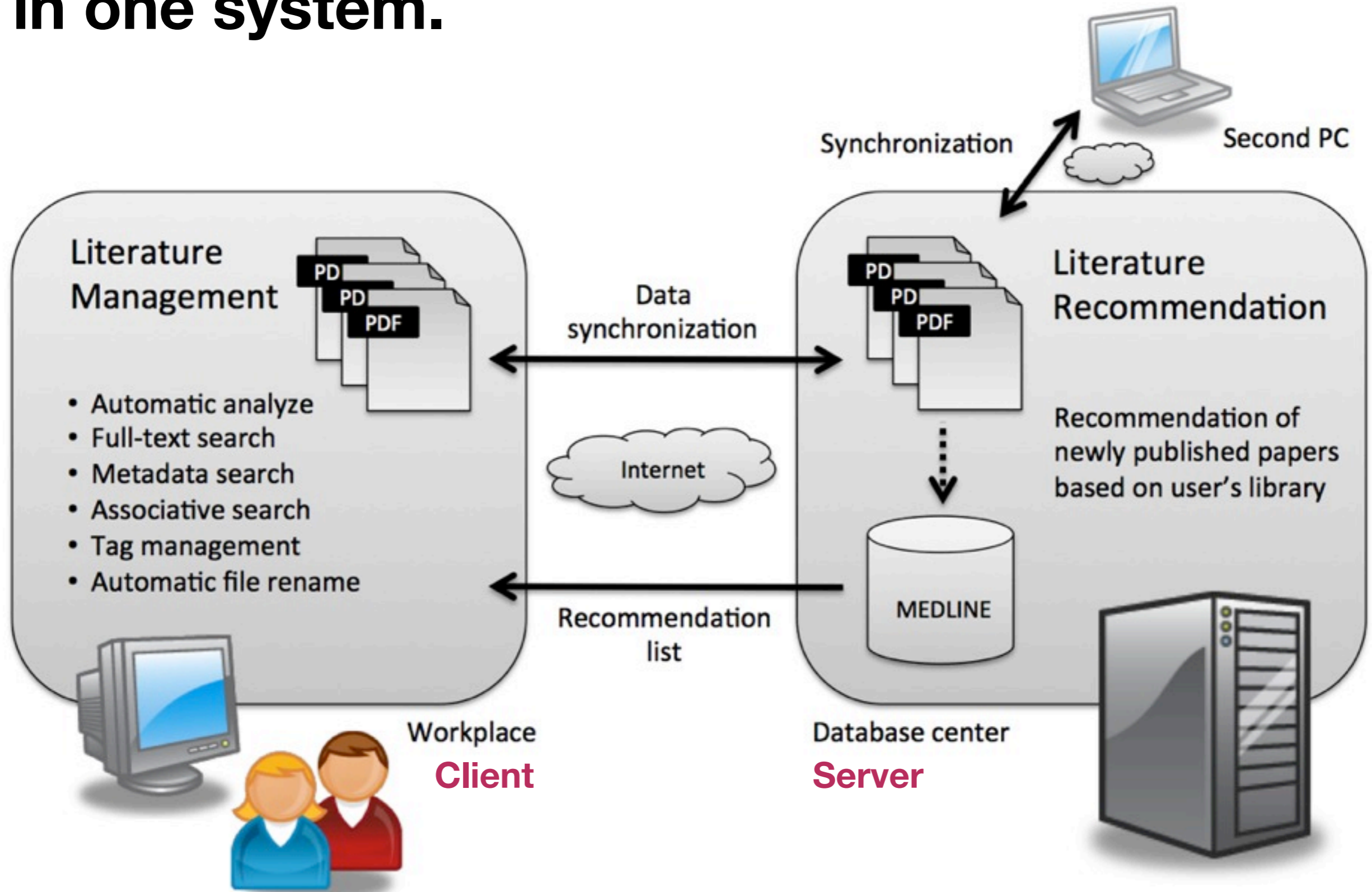
<http://tdc.cb.k.u-tokyo.ac.jp/>

History of TogoDoc

2007/08	Project Launched
2008/02	Alpha Version
2008/07	Beta Version
2009/12	Version 1.0.4
2011/02	Version 1.2.4

Developed at Univ Tokyo &
Database Center for Life Science

Literature management and recommendation, in one system.



OReFiL: an online resource finder for life sciences. - TogoDocClient

ファイル(F) TogoDoc 検索(S) 統計情報(T) ウィンドウ(W) ヘルプ(H)

Keyword Search:

Article Explorer

- Folder1
 - *ALICE_ an algorithm to extr
 - Biomedical knowledge naviga
 - OReFiL_ an online resource fi
 - Rapid pathway evolution facil
 - Reconstruction of highly heter
 - Structural basis of the water-
- Folder2
 - *Issues in learning an ontolog
 - *Predicting gene function from
 - *ReagentsCatalog.pdf
 - Additional gene ontology stru
 - Associating genes with gene c
 - Automated discovery of struc
 - Burkholderia species are anci
 - Closing gaps in the human ge
 - Combinatorial patterns of hist
 - Evaluation of techniques for ir
 - Evolvability suppression to st
 - FUNYBASE_ a FUNgal phylog
 - Genome sequence of the beta

すべてのPDF: 37
解析済み: 36, 解析失敗: 1
未解析: 0

Tag Explorer

- TextMining (2)
- ToRead (1)
 - *Issues in learning an ontolog
 - *ALICE_ an algorithm to extract
 - OReFiL_ an online resource finde
- Evolution (2)
 - Rapid pathway evolution facilitat
 - Reconstruction of highly heterog

OReFiL: an o...

OReFiL: an online resource finder for life sciences.

[Yasunori Yamamoto, Toshihisa Takagi](#)

BMC bioinformatics **8** 287

2007

DOI: [10.1186/1471-2105-8-287](https://doi.org/10.1186/1471-2105-8-287) [doi](#)

PubMed ID: [17683589](#) [Full Text](#)

[Folder1/OReFiL_ an online resource finder for life sciences.pdf](#)

This file was added at 2010-09-01 21:12:22 .

チェック済

書誌情報の修正

▼ 概要

We developed OReFiL, a search system for online life science resources, which is freely available. The system's distinctive features include the ability to return up-to-date query-relevant online resources introduced in peer-reviewed papers; the ability to search using free words, MeSH terms, or author names; easy verification of each hit following links to the corresponding PubMed entry or to papers citing the URL through the search systems of BioMed Central, Scirus, HighWire Press, or Google Scholar; and quick confirmation of the existence of an online resource web page.

▼ タグ

[TextMining](#) [biological-science-disciplines](#) [internet](#) [online-systems](#)

▼ ノート

ここにメモを追加することができます。

▼ 評価

★★★★★ (5)

▼ 検索

- 関連文献の検索 (Client)
- 関連文献の検索 (MedLine)
- 関連文献の検索 (TogoDoc)

Article Search

TogoDoc 推薦文献検索 - 2010/08/01以降 : 11 / 100

タイトル	スコア	評価	日付	著者	ジャーナル	追加時刻
The DBCLS BioHackathon: sta...	-6.57539	1	2010-Au...	Toshiaki Kataya...	Journal of biomedical s...	-
Automated Assessment of Myo...	-6.58227	1	2010-Au...	Katsuomi Iwak...	Circulation journal : off...	-
Statistical identification of pred...	-6.5859	1	2010-Jul-31	Yuko Kanbayas...	Anti-cancer drugs	-
Androgens in human breast car...	-6.58594	1	2010-Jun	Takashi Suzuki, ...	Medical molecular mor...	-
Synthesis. structure determina...	-6.58741	1	2010-Se...	Masahito Yoshid...	Organic letters	-

2件の問題

TogoDocからのお知らせがあります

Searching: (22%)

Win, JP

Keyword Search:

Article Explorer

- Folder1
 - ALICE_ an algorithm to extract
 - Biomedical knowledge navigatio
 - OReFiL_ an online resource find**
 - Rapid pathway evolution facilita
 - Reconstruction of highly heteroc
 - Structural basis of the water-as
- Folder2
 - *Combinatorial patterns of histo
 - *Integrating text mining into the
 - *ReagentsCatalog.pdf
 - Additional gene ontology struct
 - Associating genes with gene on
 - Automated discovery of structu
 - Burkholderia species are ancier
 - Closing gaps in the human gen
 - Evaluation of techniques for in
 - Evolvability suppression to stab
 - FUNYBASE_ a FUNgal phyloge
 - Genome sequence of the beta-r
 - Insights into the history of the

All articles: 37
 Analyzed: 36, Failed: 1
 Unanalyzed: 0

Tag Explorer

- TextMining (2)
 - ToRead (1)
 - *Integrating text mining into
 - OReFiL_ an online resource find**
 - Predicting gene function from
- Evolution (2)
 - Rapid pathway evolution facilita

OReFiL: an o...



OReFiL: an online resource finder for life sciences.

[Yasunori Yamamoto](#), [Toshihisa Takagi](#)

BMC bioinformatics 8 287

2007

DOI: [10.1186/1471-2105-8-287](https://doi.org/10.1186/1471-2105-8-287) [doi](#)

PubMed ID: [17683589](#) [Full Text](#)

[Edit Bib Info](#)

[Folder1/OReFiL_ an online resource finder for life sciences.pdf](#)

This file was added at 2010-08-30 17:23:38 .

Checked

Abstract [edit](#)

We developed OReFiL, a search system for online life science resources, which is freely available. The system's distinctive features include the ability to return up-to-date query-relevant online resources introduced in peer-reviewed papers; the ability to search using free words, MeSH terms, or author names; easy verification of each hit following links to the corresponding PubMed entry or to papers citing the URL through the search systems of BioMed Central, Scirus, HighWire Press, or Google Scholar; and quick confirmation of the existence of an online resource web page.

Tags

[TextMining](#) [biological-science-disciplines](#) [internet](#) [online-systems](#)

Note [edit](#)

Users can add notes to papers.

Rating

★★★★★ (5)

Search

- [Search Personal Library for Related Articles](#)
- [Search MedLine for Related Articles](#)
- [Search TogoDoc for Related Articles](#)

Article Search

TogoDoc Recommended Articles Search - Since 2010/08/01 : 38 / 100

Title	Score	Rating	Date	Authors	Journal	Added Date
The DBCLS BioHackathon: standard	-6.57539	1	2010-Aug-21	Toshiaki Katayama, K	Journal of biomedical semar	-
Automated Assessment of Myocard	-6.58227	1	2010-Aug-6	Katsuomi Iwakura, At	Circulation journal : official j	-
Statistical identification of predictor	-6.5859	1	2010-Jul-31	Yuko Kanbayashi, Toy	Anti-cancer drugs	-
Androgens in human breast carcinc	-6.58594	1	2010-Jun	Takashi Suzuki, Yasu	Medical molecular morpholo	-
Synthesis, structure determination,	-6.58741	1	2010-Sep-3	Masahito Yoshida, Hi	Organic letters	-

New Message from TogoDoc

Mac, EN

Article Explorer

- Folder1
 - ALICE_ an algorithm to extract
 - Biomedical knowledge navigatio
 - OReFiL_ an online resource find
 - Rapid pathway evolution facilita
 - Reconstruction of highly heteroc
 - Structural basis of the water-as
- Folder2
 - Integrating text mining into the
 - Reagent Catalog.pdf
 - Automated discovery of structu
 - Burkholderia species are ancier
 - Closing gaps in the human gen
 - Evaluation of techniques for in
 - Evolvability suppression to stat
 - FUNYBASE_ a FUNgal phyloge
 - Genome sequence of the beta-r
 - Insights into the history of the

All articles: 37
Analyzed: 36, Failed: 1
Unanalyzed: 0

Article Explorer

Keyword Search:

OReFiL: an o...

OReFiL: an online resource finder for life sciences.

[Yasunori Yamamoto](#), [Toshihisa Takagi](#)

BMC bioinformatics 8 287

2007

DOI: [10.1186/1471-2105-8-287](https://doi.org/10.1186/1471-2105-8-287) [doi](#)

PubMed ID: [17683589](#) [Full Text](#)

[Folder1/OReFiL_ an online resource finder for life sciences.pdf](#)

This file was added at 2010-08-01 17:23:38

Checked

Abstract

We developed OReFiL, a search system for online life science resources that is freely available. The system's distinctive features include the ability to return up-to-date query-relevant online resources introduced in peer-reviewed papers; the ability to search using free words, MeSH terms, or author names; easy verification of each hit following links to the corresponding PubMed entry or to papers citing the URL through the search systems of BioMed Central, Scirus, HighWire Press, or Google Scholar; and quick confirmation of the existence of an online resource web page.

Tags

[TextMining](#) [biological-science-disciplines](#) [internet](#) [online-systems](#)

Note

Users can add notes to papers.

Rating

★★★★★ (5)

Search

- [Search Personal Library for Related Articles](#)
- [Search MedLine for Related Articles](#)
- [Search TogoDoc for Related Articles](#)

Literature Tab

Tag Explorer

- TextMining (2)
 - ToRead (1)
 - OReFiL_ an online resource find

Tag Explorer

Article Search

TogoDoc Recommended Articles Search - Since 2010/08/01 : 38 / 100

Title	Score	Rating	Date	Authors	Journal	Added Date
The DBCLS BioHackathon: standard	-6.57539	1	2010-Aug-21	Toshiaki Katayama, K	Journal of biomedical semar	-
Automated Assessment of	-6.5859	1	2010-Jul-31	Yuko Kanbayashi, Toy	Anti-cancer drugs	-
Statistical identification of predictor	-6.58594	1	2010-	Takashi Suzuki, Yasu	Medical molecular morpholo	-
Androgens in human breast carcinc	-6.58741	1	2010-	Motoo Yoshida, Hi	Organic letters	-

Search/Recommendation Pane

OREFiL: an online resource finder for life sciences. - TogoDocClient

Keyword Search:

Article Explorer

- Folder1
 - ALICE_ an algorithm to extract
 - Biomedical knowledge navigatio
 - OREFiL_ an online resource find
 - Rapid pathway evolution facilita
 - Reconstruction of highly heteroc
 - Structural basis of the water-as
- Folder2
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 - *Integrating text mining into the
 - *ReagentsCatalog.pdf
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 - Automated discovery of structu
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 - Evaluation of techniques for in
 - Evolvability suppression to stab
 - FUNYBASE_ a FUNgal phyloge
 - Genome sequence of the beta-r
 - Insights into the history of the

All articles: 37
Analyzed: 36, Failed: 1
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 - Integrating text mining into
 - OREFiL_ an online resource find
- Evolution (2)
 - Rapid pathway evolution facilita
 - Reconstruction of highly heteroc

OREFiL: an o...

OREFiL: an online resource finder for life sciences.

[Yasunori Yamamoto](#), [Toshihisa Takagi](#)

BMC bioinformatics 8 287

2007

DOI: [10.1186/1471-2105-8-287](https://doi.org/10.1186/1471-2105-8-287) [doi](#)

PubMed ID: [17683589](https://pubmed.ncbi.nlm.nih.gov/17683589/) [Full Text](#)

[Edit Bib Info](#)

[Folder1/OREFiL_ an online resource finder for life sciences.pdf](#)

This file was added at 2010-08-30 17:23:38 .

Checked

Abstract

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Tags

[TextMining](#) [biological-science-disciplines](#) [internet](#) [online-systems](#)

Note

Users can add notes to papers.

Rating

★★★★★ (5)

Search

- [Search Personal Library for Related Articles](#)
- [Search MedLine for Related Articles](#)
- [Search TogoDoc for Related Articles](#)

Article Search

TogoDoc Recommended Articles Search - Since 2010/08/01 : 38 / 100

	Score	Rating	Date	Authors	Journal	Added Date
...	-6.57539	1	2010-Aug-21	Toshiaki Katayama, K.	Journal of biomedical semar	-
Automated Assessment of Myocard	-6.58227	1	2010-Aug-6	Katsuomi Iwakura, At	Circulation journal : official j	-
Androgens in human breast carcinc	-6.58594	1	2010-Jun	akashi Suzuki, Yasur	Medical molecular morpholo	-
...	-6.58741	1	2010-Sep-3	Masahito Yoshida, Hi	Organic letters	-

New Message from TogoDoc | Searching: (7496)

Easy Management:

Once you tell Client where you usually save PDF papers, it automatically analyzes and manages papers if you just download and save them.

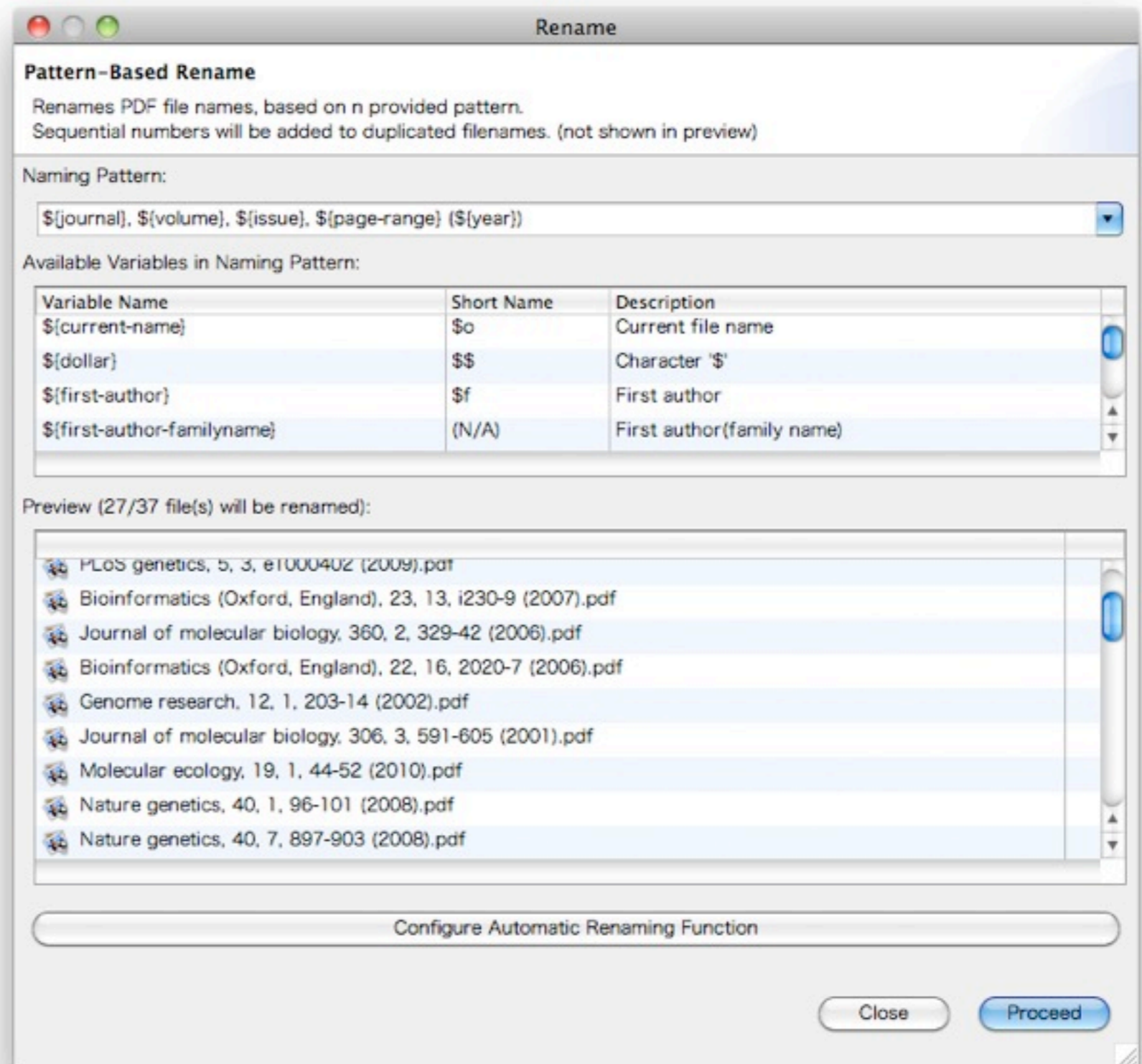
PubMed Recommendation:
 Based on the analyses, Client recommends papers in which you would be interested from those recently registered to PubMed, by communicating with the TogoDoc server, using words in the texts, MeSH terms, authors, and journal types, which reflect researchers' interest.

The screenshot shows the TogoDocClient interface with several panels:

- Article Explorer:** A sidebar on the left showing a folder structure with various articles like 'ALICE_ an algorithm to extract', 'Biomedical knowledge navigatio', and 'OREFiL_ an online resource find'.
- Article Search:** A window at the bottom displaying a table of recommended articles.
- Tag Explorer:** A sidebar at the bottom left showing tags like 'TextMining (2)', 'ToRead (1)', and 'Evolution (2)'.
- Main Window:** Displays a search result for 'OREFiL: an online resource finder for life sciences.' with details such as authors (Yasunori Yamamoto, Toshihisa Takagi), journal (BMC bioinformatics), and PubMed ID (17683589). It also includes a rating section with 5 stars and search options for related articles.

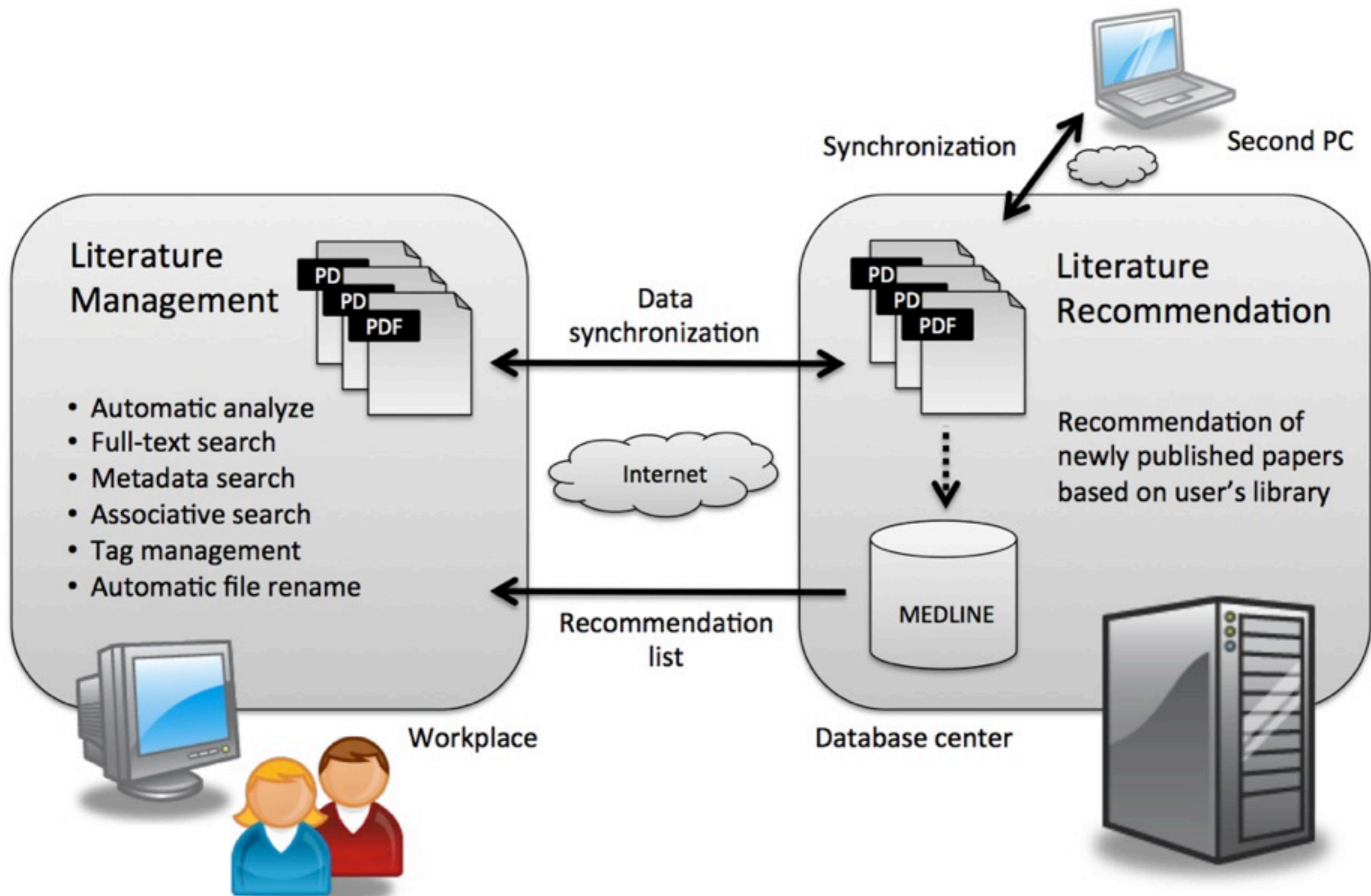
Title	Score	Rating	Date	Authors	Journal	Added Date
The DBCLS BioHackathon: standard	-6.57539	1	2010-Aug-21	Toshiaki Katayama, K	Journal of biomedical semar	-
Automated Assessment of Myocard	-6.58227	1	2010-Aug-6	Katsuomi Iwakura, At	Circulation journal : official j	-
Statistical identification of predictor	-6.5859	1	2010-Jul-31	Yuko Kanbayashi, Toy	Anti-cancer drugs	-
Androgens in human breast carcino	-6.58594	1	2010-Jun	Takashi Suzuki, Yasu	Medical molecular morpholo	-
Synthesis, structure determination,	-6.58741	1	2010-Sep-3	Masahito Yoshida, Hi	Organic letters	-

New Message from TogoDoc | Searching: (74%)



Useful Functions:

Client offers useful functions of automatic renaming of PDF filenames, associative search of past-read papers, etc.



Synchronization:

Literature libraries are synchronizable b/w server and multiple computers.

TogoDoc server:

Library is also accessible via **web browsers**

The screenshot shows the TogoDoc by DBCLS web interface. The browser address bar displays `https://docman.dbcls.jp/pubmed_recom`. The page title is "TogoDoc by DBCLS". Below the title, the user's ID is shown as `http://openid.dbcls.jp/user/togodoc`. There are links for "ヘルプ" (Help) and "ログアウト" (Logout). A message indicates that the total size of saved PDF files is 13.42 MB, with a maximum of 7 GBytes allowed. A navigation bar contains tabs for "文書の登録" (Document Registration), "登録文書の操作" (Document Management), and "お薦めタグの取得" (Recommended Tag Acquisition).

The main content area is titled "チェックした項目に対する操作:" (Operations for checked items) and shows "全 11 件 (1 - 11)" (Total 11 items, 1 - 11). It includes buttons for "削除" (Delete), "タグ付け" (Tagging), "タグ解除" (Tag Removal), and "書誌情報取得" (Bibliography Information Acquisition). Below this, there is a table of documents with columns for "Check", "Rating", "TITLE (Click ● to read a full-text)", "DATE", "UPDATED", and "PDF".

Check	Rating	TITLE (Click ● to read a full-text)	DATE	UPDATED	PDF
<input type="checkbox"/>	1	(●) Structural basis of the water-assisted asparagine recognition by asparaginyI-tRNA synthetase.	2006 Jul 07	2010.10.07	ファイルを選択 ファイルが未選択です
<input type="checkbox"/>	1	(●) Reconstruction of highly heterogeneous gene-content evolution across the three domains of life.	2007 Jul 01	2010.08.30	OPEN DEL
<input type="checkbox"/>	1	(●) Using indirect protein interactions for the prediction of Gene Ontology functions.	2007	2010.08.30	OPEN DEL
<input type="checkbox"/>	1	(●) ALICE: an algorithm to extract abbreviations from MEDLINE.	2005 Sep	2010.08.30	OPEN DEL
<input type="checkbox"/>	1	(●) Biomedical knowledge navigation by literature clustering.	2007 Apr	2010.08.30	OPEN DEL
<input type="checkbox"/>	1	(●) Rapid pathway evolution facilitated by horizontal gene transfers across prokaryotic lineages.	2009 Mar	2010.08.30	OPEN DEL
<input type="checkbox"/>	1	(●) Unsupervised method for automatic construction of a disease dictionary from a large free text collection.	2008	2010.08.30	OPEN DEL
<input type="checkbox"/>	1	(●) Combinatorial patterns of histone acetylations and methylations in the human genome.	2008 Jul	2010.08.30	OPEN DEL
<input type="checkbox"/>	1	(●) Transcription factors bind thousands of active and inactive regions in the Drosophila blastoderm.	2008 Feb	2010.08.30	OPEN DEL
<input type="checkbox"/>	1	(●) Closing gaps in the human genome with fosmid resources	2008 Jan	2010.08.30	OPEN DEL

On the left side, there is a "Menu" section with a "タグ" (Tag) list including "evolution", "human-genome", "mimosa", "proteins", "TextMining", and "TextMining/ToRead". Below the list are buttons for "絞り" (Filter), "解除" (Release), and "タグ削除" (Tag Deletion). At the bottom, there is a "新規タグ作成" (New Tag Creation) section with instructions: "Alpha-numeric, dash(-), underscore(_), or comma" and a "作成" (Create) button.

Special features available on TogoDoc server



TogoDoc by DBCLS

あなたのID: <http://openid.dbcls.jp/user/togodoc>

[ヘルプ](#) | [ログアウト](#)

保存されているPDFファイルの総容量: 13.42 MB (Max: 7 GBytes)

[文書の登録](#) | [登録文書の操作](#) | [お薦めタグの取得](#)

MeSHタームによる対象文献群に対するキーワードリストです。タグを付ける際の参考にご利用下さい。

Docs列には該当するMeSHタームに関連する文献数が表示されており、一つはそのタームが付られている文献数、もう一方は更にそのタームの下位概念のタームが付られている文献も含めた数です。

この下に表もしくは「Loading...」が表示されていない場合はリロードして下さい。

キーワードの取得対象文書の内容が多岐に渡っている場合は何も得られないことがあります。

Check	Keyword	MeSH Term	Docs
<input type="checkbox"/>	information-storage-and-retrieval	Information Storage and Retrieval	03 04
<input type="checkbox"/>	natural-language-processing	Natural Language Processing	02 02
<input checked="" type="checkbox"/>	human-genome	Genome, Human	02 02
<input type="checkbox"/>	artificial-intelligence	Artificial Intelligence	02 02
<input type="checkbox"/>	gene-components	Gene Components	01 01
<input type="checkbox"/>	chromosome-mapping	Chromosome Mapping	02 02
<input type="checkbox"/>	molecular-evolution	Evolution, Molecular	02 02
<input type="checkbox"/>	medical-dictionaries	Dictionaries, Medical	01 01
<input type="checkbox"/>	aspartate-tma-ligase	Aspartate-tRNA Ligase	01 01
<input type="checkbox"/>	pyrococcus-horikoshii	Pyrococcus horikoshii	01 01
<input type="checkbox"/>	pubmed	PubMed	01 02
<input type="checkbox"/>	blastoderm	Blastoderm	01 01
<input type="checkbox"/>	abbreviations-as-topic	Abbreviations as Topic	01 01

Refinement of recommendations by focusing on particular keywords

Permalinks make recommendations available via smartphones etc.



Permalinkの取得

下記URLを保存することにより、ログインせずに常に最新の推薦結果を取得できます。PubMed Related Articlesを利用する場合は、先方の仕様によりスコアは全てゼロになります。6ヶ月以上アクセスの無い場合はURLが無効になることがあります。

[Permalink \(HTML\)](#)

[Permalink \(ATOM\)](#)

[Permalink \(RSS\)](#)

[Permalink \(JSON\)](#)

Technology Keywords

Java: TogoDoc software is implemented in Java.

Eclipse Rich Client Platform: TogoDoc software platform.

JPedal: Java library for analyzing PDF.

LAMP: Server is deployed using Linux, Apache, MySQL, Perl.

Tokyo Cabinet: Server-side database manager.

OpenID: Authentication protocol for sharing a single account.

JSON: Data transfer format b/w server and client.

RSS/ATOM: Data transfer format for RSS readers.

PubMed/MEDLINE: Literature databases at NCBI.

NCBI E-Utilities: API to access PubMed.

Lemur/Indri: Information retrieval toolkit.

MeSH: Subject headings in MEDLINE.

BibGlimpse: Bibliographic analyzer.

Want to try TogoDoc?
Search “TogoDoc”!

Interested in Technology?
Read our paper!

Literature Management and Recommendation Service for Life Scientists

Are there many "deeply buried" PDF papers in storage disks of your computers?
Do you have trouble checking "tsunami" of papers that are being published everyday?

TogoDoc Client is a solution for the above two problems for life scientists.
It runs on Windows and MacOSX, and provided for free.

TogoDocClient : on PCs
<http://tdc.cb.k.u-tokyo.ac.jp/>

Literature management by just downloading and saving PDF papers

- Automatic analysis
- Automatic renaming
- Tag suggestion

Recommendation of papers recently registered to PubMed
Based on the analysis

Cooperate

TogoDoc : via Web Browsers
<http://docman.dbcls.jp/>

Library accessible from everywhere
Synchronization of data including PDF files between PCs

Check recommendation from portable devices

Characteristics

Easy Management: Once you tell Client where you usually save PDF papers, it automatically analyzes and manages papers if you just download and save them.

PubMed Recommendation: Based on the analyses, Client recommends papers in which you would be interested from those recently registered to PubMed, by communicating with the TogoDoc server.

<http://tdc.cb.k.u-tokyo.ac.jp/>

TogoDoc Server/Client System: Smart Recommendation and Efficient Management of Life Science Literature

Wataru Iwasaki^{1,2*}, Yasunori Yamamoto^{1,2*}, Yoshihisa Takagi^{1,2,3}

Abstract

In this paper, we describe a server/client literature management system specialized for the life science domain, the TogoDoc system (Togo, pronounced Tō-Gō, is a romanization of a Japanese word for integration). The server and the client program cooperate closely over the Internet to provide life scientists with an effective literature recommendation service and efficient literature management. The content-based and personalized literature recommendation helps researchers to locate interesting papers from the "tsunami" of literature, in which, on average, more than one biomedical paper is added to MEDLINE every minute. Because researchers these days need to cover updates of much wider topics to generate hypotheses using massive datasets obtained from public databases or omics experiments, the importance of having an effective literature recommendation service is rising. The automatic recommendation is based on the contents of personal literature libraries of electronic PDF papers. The client program automatically analyzes these files, which are sometimes deeply buried in storage disks of researchers' personal computers. Just saving PDF papers to the designated folders makes the client program automatically analyze and rename metadata, rename file names, synchronize the data to the server, and receive the recommendation lists of newly published papers, thus accumulating efficient literature management. In addition, the tag suggestion and associative search functions are provided for easy classification of and access to past papers. Researchers who read many papers sometimes only vaguely remember or completely forget what they read in the past. The TogoDoc system is available for both Windows and Mac OS X and is free. The TogoDoc Client software is available at <http://tdc.cb.k.u-tokyo.ac.jp/>, and the TogoDoc server is available at https://docman.dbcls.jp/docman_recomm.

Introduction

Recent technological advances have enabled life scientists to conduct routinely parallel experiments and access an abundance of data sets publicly available on the Internet [1]. Consequently, biologists today are engaged in more research tasks than ever. To generate hypotheses and interpret experimental results within this context, researchers need to [1] keep up with advancements in many fields and [2] organize and codify knowledge in domain fields. Despite recent efforts devoted to knowledge engineering software, such as the Semantic Web and ontologies [2], the most popular medium of such knowledge is still literature written in several languages, much of which is available electronically today [3]. Therefore, it has become increasingly important, particularly in the life science domain, to retrieve useful knowledge from public literature databases and manage personal electronic literature libraries effectively [4].

MEDLINE, the most representative literature database in biology and medicine, continues to grow at an extremely fast pace. Over the past few years, MEDLINE's entries have increased by about 400,000 per year on average [5]; it may be worth recalling that one year only contains about 120,000 minutes.

Modern researchers engaged in numerous fields must check not only their accustomed journals but also this entire "tsunami" of literature. In addition, to accomplish the goal of interdisciplinary research, it is necessary to effectively connect the knowledge retrieved from diverse literature. Papers already read should be easily accessible, even without clear intention. Researchers reading numerous papers sometimes only vaguely remember or completely forget what they read in the past. As a result, it is common that huge amounts of valuable literature are buried in personal libraries, typically as electronic PDFs on storage disks. Today's researchers are becoming increasingly busy [6], and highly efficient and streamlining literature management is in great demand. For example, one of the most cumbersome tasks in literature management is classification. Although it is common to classify papers by placing them in separate folders or by giving them "tags", it is often difficult to create and manage good classification schemes, especially if the number of managed papers increases.

Several tools have been developed for the dual objectives of finding literature on topics of researchers' interest and managing personal libraries. For the former, a classic and still popular solution is to use the PubMed search system periodically to check

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To promote research in "information flood"

- ✓ It is necessary to supplement our information processing ability.
- ✓ Usually, computers are not good at making such subjective judgements; though,
- ✓ fortunately, the literature sets can easily quantify researchers' interest in a very compact and machine friendly manner, and may have high potential.

Lessons from TogoDoc Development

- ✓ Literature is the key in promoting research activities
- ✓ In addition to (or, together with) solving the legal, economical, and social issues,
- ✓ Research and development on literature may promote research as a whole.
- ✓ **Who does it?**