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Discovery Service for Engineering and Technology Literature through Google Custom Search: A Case Study

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ABSTRACT

Discovery service in libraries has gained momentum in recent years owing to the influence of search giants like Google. Library users are expecting one search solution in similar lines with Google search engine to retrieve information from different sources, viz., library catalogue, bibliographic and full text databases, open access resources, etc. To meet this demand, new age discovery tools such as Summon and Knimbus have emerged and libraries are increasingly subscribing to such services to maximise use of electronic resources. There are also some open source tools, but their deployment is not widely seen in libraries. In this paper an attempt has been made to explain, how Google Custom Search Engine (GCSE) can be used as discovery service for subscribed, un-subscribed and open access resources.

Keywords: Search engine, custom search engine, discovery service, google custom search engine

1. INTRODUCTION

Today, the ubiquitous Internet has become a de-facto starting point for people in locating any kind of information. It holds huge quantity of information, the size of it goes beyond anyone's imagination. To facilitate searching of available information, search engines like Google, Bing, Yahoo,etc, have emerged, which has made access to information on the Internet a child's play. Apart from general search, using specific search features of these search engines one can easily obtain near accurate results on a particular topic. However, the number of hits still remains at higher side. This creates an information chaos, especially while looking for scholarly information. In order minimise the inconvenience, now scholarly search engines like Google Scholar, BASE (http://www.base-search.net) are helping researchers to locate scholarly literature published in academic and research journals and stored in digital repositories with limited access to full-text articles.

To enhance searchers experience, new age discovery tools such as Summon (http://www.proquest.com/products-services/discovery-services/The-Summon-Service.html), Knimbus (http://www.knimbus.com) have emerged as new age scholarly search tools, which restrict patron's access only to the resources, which are available within the library and subscribed by the library. However cost of such tools, is enormous for a small college library looking into the availability of budget and even if some tools are available in open source implementation of such tools is difficult owing to limited computer knowledge of library staff. Alternate to such discovery tools, is Google Custom Search Engine (CSE) which helps to create search engine or discovery tool which limits searches only to the resources subscribed by the library and selected sources available in public domain and thus saving patrons from information chaos. In this paper an attempt has been made to explain what is Google CSE. How it can be implemented in a college library discussing case study of Sardar Patel Institute of Technology and Sardar Patel College of Engineering, Mumbai, India.

2. LITERATURE REVIEW

There are good number of studies undertaken on the topic of search engines, federated search and their usefulness for libraries. However, there are very a few specific studies in respect to adoption of Google Custom Search Engine (GSE) in enhancing the library search experiences. Jain and Saraf[1] have analysed usefulness of Google search engine for libraries. Brophy and Bowden[2] in their paper 'Whether Google is enough' in finding out relevant information and its effectiveness with library systems have found that, given training, library systems fetch better

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results, but argue that use of both would provide better results owing to difference in their coverage. Kumar, Sanaman and Rai[3] have discussed about federated search engines and their usefulness for libraries in searching e-resources from one search box. Craven[4] dealt about implementation of federated search in Western health library and its usefulness in providing cross search to various databases. Enge and Biundo[5] have given overview of Google Custom Search engine. Usefulness of Google Co-Op for businesses and libraries in harnessing the power of web is quintessential. Bassett and Kumaran[6] have highlighted about how to implement this tool and usefulness of its features in libraries.

3. WHAT IS GOOGLE CSE?

Google Custom Search (formerly known as Google Co-op) is an online platform provided by Google that allows web developers to feature specialised information in web searches, refine and categorise queries and create customised search engines, based on Google web search. Google launched this service on May 10, 2006.[7]

Google Custom Search [GCSE] allows anyone to create their own search engine. In GCSE creators can specify list of websites to search, prioritise or restrict search results. This GCSE can be shared through link or also can be made part of website or blog using specific code generated by Google CSE. This is free and easy-to-use service, anyone with Google account (Gmail or other Google Services) can easily create and customise specific search engine for their organisation.

4. NEED OF CSE FOR LIBRARIES

Libraries apart from print sources subscribe to different online and offline databases in the subject areas of their organisations study, teaching and research. They may also be harnessing resources available in public domain, which are useful for their faculty, researchers and students. The library users, who are interested in searching information from these databases, have to either individually search each of these databases or use search engines to locate the information, which often cost on their time and creates information chaos. This often calls for the need to have a one search box to locate everything, especially for searching information from the online databases. Even though there are many commercial and open source applications software/platforms available to develop and offer federated or discovery services to users, but it may not be possible for all types of libraries to implement such tools owing to budget constraints and technical knowhow. In such cases free tools like Google CSE will be helpful in developing a discovery service/federated search engine, which will help in simultaneously searching information from online databases or sources. Thus the library users can save their valuable time in searching topic of interest.

4. HOW LIBRARIES CAN HARNESS CSE?

CSE, is a very easy and useful tool to work on. Libraries can easily harness CSE using its simple administration interface and customise its look and feel. In order undertake this work, libraries, first need to enlist different databases subscribed by them and find whether the contents of these databases has been indexed by Google, which is a prerequisite in setting up a discovery service using Google CSE. In addition to subscribed sources, libraries can also identify open access resources indexed by Google in the subject areas of interest to their clientele and add to the list of resources to be included for discovery services. In the second step, library staff needs to create a Google account, preferably in the name of library to add resources to CSE and customise it as per the needs of the library. Using its public URL or customised webpage library users would be able to find relevant resources from both subscribed and open access resources. Following are the steps followed by SPIT-SPCE library to develop its CSE 'Search Databases@SPIT-SPCE Library', which explains in detail the modalities involved in its development.[8]

4.1 Resource Identification in Engineering Technology

Engineering is the application of scientific and practical knowledge towards undertaking new inventions, designs and research and engineering technology is the practical application of science and engineering to a wide range of real world problems (Wayne, 2015).[9] The faculty and students undertaking study and teaching in engineering require resources, which help them in keeping updated with latest developments. Library being core center responsible for acquisition of resources in the form of books, journals and databases, plays an important role in furthering their teaching and research and acquisition of new knowledge. SPIT and SPCE library caters to around 2000 students and faculty across engineering branches such as Mechanical, Civil, Electrical, Computer Science, Electronics, Electronics and Telecommunication acquiring various resources both in print and electronic format to meet the information needs of its users. In addition, it is also striving hard to identify open access resources, which are useful for its clientele.

Library has provided links to both subscribed and open access electronic resources including library catalogue from its website for easy access. However, realising the limitations of such links

in providing search functionality, it embarked on developing a common search or discovery service for the following subscribed, unsubscribed and open access resources using Google CSE to enhance the users' experience.

ACM Digital Library

ASCE Library

Arxiv (E-Prints)

Directory of Open Access Journals (DOAJ)

IEEE

JSTOR (up to abstract level)

Nature (up to abstract/first page level)

Science Direct (up to abstract level)

Wiley Online Library (up to abstract level)

ASME Library

4.2 Developing Discovery Service@SPIT-SPCE Library using Google CSE

The library in order to develop a discovery service for the identified resources, created an account on Google. On signing into Google CSE account @ https://www.google.com/cse/, it provided with the following interface, which was used to develop a discovery service for SPIT-SPCE library (Figure 1).

Using the interface of CSE, a basic discovery service was created by adding one website address for search under 'Sites to Search' and name for the

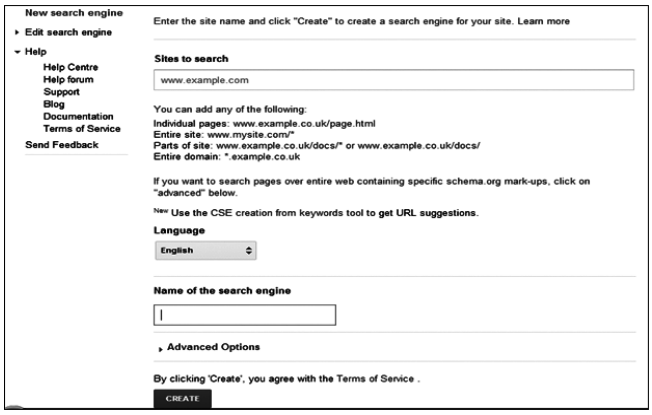

Figure 1. Google CSE interface.

search engine was assigned as 'Search Databases@ SPIT-SPCE Library' under 'Name of the search engine'. To mark the successful creation of CSE, site displayed a congratulatory message as depicted in Fig. 2, along with further options for adding search to site, view it on the web or undertake modifications.

To undertake further modifications of 'Search Databases@SPIT-SPCE library' discovery service, 'Control Panel' of search engine was used to add

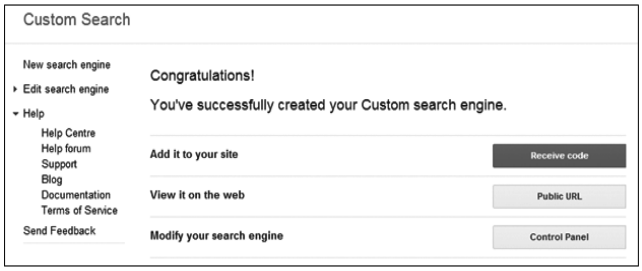

Figure 2. Successful creation of CSE.

sites, change its look and feel and search features. The basics options available under 'Setup' were used to provide description, keywords, enable image search, speech input, set language of the CSE and add sites for searching to enhance the users' search experience.

Using the 'Add' option under 'Sites to search', list of identified websites were added individually

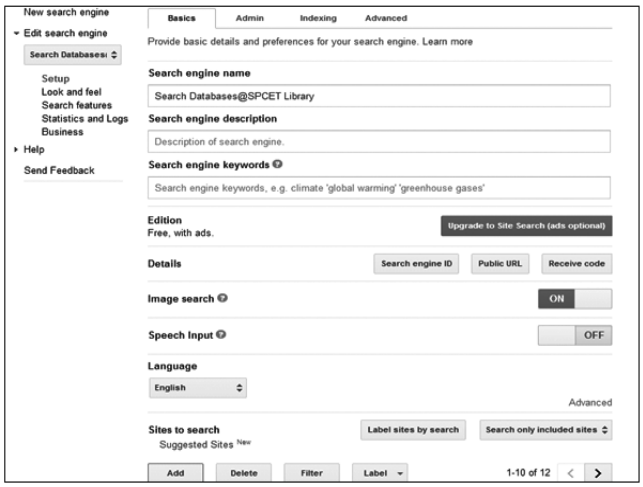

Figure 3. Control panel of search engine.

one by one and assigned labels for some of the sites in order to enable end users to find out search results emanating from specific resources. Certain sites were also selected from the list of 'Suggested Sites' provided by Google. Admin, indexing and advanced setup options were not used to incorporate any changes (Figure 3).

While adding site URL addresses, at the end

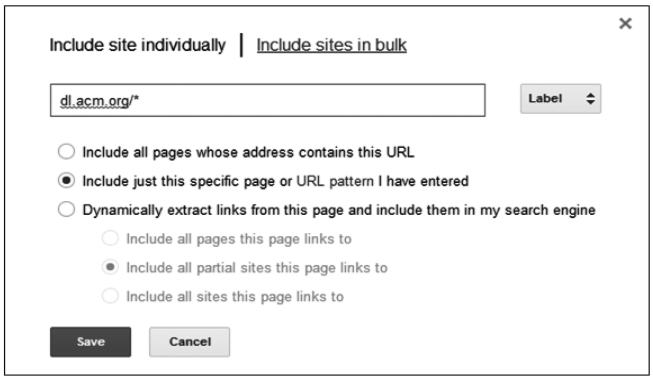

Figure 4. CSE add search site interface.

of each address '/*' is being used to enable CSE to include all the pages and sub-folders derived from the particular web address. For example, the site address dl.acm.org/* would include all contents emanating from this URL address. Also, while adding sites, 'Include just specific page or URL pattern I have entered' option was chosen to restrict searches only from the specific URL address instead of results appearing from other websites, which has linked some of its resources.

In 'Look and feel' settings, it was decided to keep the default options of CSE and no changes were incorporated. In case of 'Search features', refinements were added in the form of 'labels' such as ACM DL, ASCE, JSTOR, etc., for specific sites to enable clientele to find out search results on a specific topic from a respective resources. However, other options such as promotions, auto-complete, synonyms and advanced were not used and it was left to their default settings.

It is possible to check the usage of discovery

Figure 5. Search features-refinement.

service through its 'Stats and logs' option to judge its usefulness. However, this option was left untouched to default settings and 'Business' option was not used as CSE being a free edition, as per Google's policy, by default ads gets displayed on the search results page.

A public URL of CSE (https://www.google.co.in/cse/publicurl?cx=010120612263752258457:ppg3ypztsjy) was used to beta test the working of discovery service and seek feedback from some of the library users. On successful beta testing of CSE, it was added to library website for use of library users. Using 'Add this to your site' option the code of CSE was copied from control panel and included it in one of the library webpage's to make it available from library website to enable users to search for the contents from the selected databases and websites.

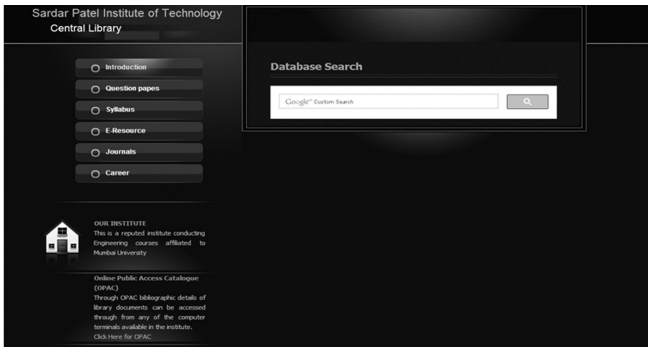

Figure 6. Search databases@SPIT-SPCE library discovery service interface.

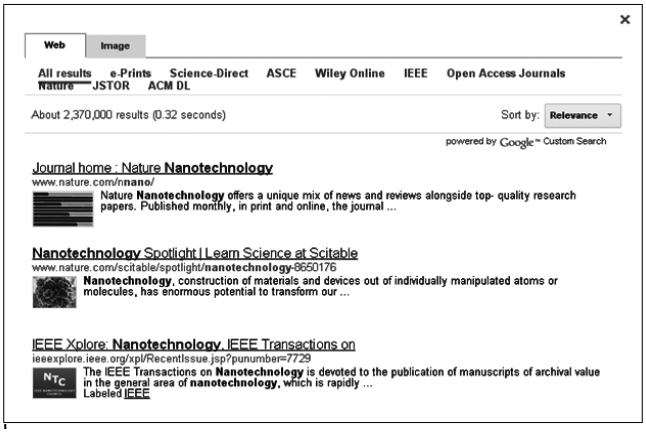

Figure 7. Search results from 'search databases@SPCET library' discovery service.

5. LIMITATIONS

Google CSE even though is an excellent free service to develop a discovery service is not free from limitations. Some of the limitations include

1. It may not be able to search some sites, if webmasters do not allow to index sites by Google;
2. Free edition is offered as per Google's terms and conditions, which include advertisements; and
3. In case of subscribed databases, search for whole site is specified.

6. CONCLUSIONS

Enhanced search to domain specific resources has become a need of the hour owing to ever increasing quantum of information. To fulfill this objective libraries are increasingly striving hard to increase users experience by subscribing to services such as Knimbus. However, many small libraries find it difficult to subscribe for such services for non availability of funds and not having many subscribed resources. Here, GCSE well fits in, as it is a zero cost solution, fast, very easy to use and efficient, which can be effectively used to build a discovery service. This is economical, time-saving

application powered by Google which is very useful for librarians who have to deal with overwhelming information. Library professionals need to put in efforts in using such new age tools to enhance the users' experience.

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