

Finding Related Research and Expertise Using IEEE Xplore

Thomas R. Muller, July 2003

Introduction

The IEEE Xplore website (<http://www.ieee.org/ieeexplore>) supports comprehensive searches of nearly 1 million documents published by the IEEE. Subscribers to this web site can locate and view abstracts and full text copies of each publication. This paper describes how to use IEEE Xplore to locate researchers in a particular field and to identify the most productive among them.

We begin with basic searches followed by methods for fine-tuning the search. Then we discuss how to search specific journals and to use advanced queries. We conclude with a summary that describes how to locate experts in a topic area using tools available with the Xplore database.

Conducting a Basic Search



Point your browser to the IEEE Xplore website and select “Basic Search” as shown at the left. If you have not yet logged in, you will be requested to do so at this time. Once logged in, the “Basic Search” screen will appear. Basic searches are conducted by combining up to three filters. These filters screen out unwanted documents by searching for words or phrases found in

publications themselves or information about each publication. A simple example helps to illustrate the basic search.

Example

To find all publications with the words “Wafer Technology” in the title:

- In the first text box, type **wafer technology** (see Figure 1)
- In the drop-down box, select **Title**
- Click on the **Search** button near the bottom of the page

1) Enter keywords in one or more text boxes.
2) Select the fields to search for each keyword.
3) Select search operators when using multiple keywords.
4) Limit the results by selecting Search Options.
5) Click Search. See [Search Examples](#)

wafer technology In: Title
And
In:
And
In: All Fields

Search Options:
Select publication types:
 IEEE Journals
 IEE Journals
 IEEE Conference proceedings
 IEE Conference proceedings
 IEEE Standards

Select years to search:
From year: All to Present

Organize search results by:
Sort by: Relevance
In: Descending order
List 15 Results per page

Search Clear

Figure 1 - Basic Search Example

This simple search matches 16 documents as of the time of this writing. The search results include (for each publication):

- Title of article
- List of Authors – all authors except those with Asian names are listed by last name with an optional first and optional middle initial. Authors with Asian names are listed without modification. (The same format is expected when searching for a specific author).
- Journal name, volume, and issue –or- conference title and date
- Page numbers
- Links to the Abstract and full-text of the article

Fine Tuning the Search

The “Search Options” settings allow selection of publication types. By default, all types are selected. However, it can be advantageous to limit the search to journals or conference proceedings only.

One can limit the years of publication by choosing a range with the two drop-down boxes.

Finally, the search results can be organized by year, title or relevance (the default). The search engine determines relevance as it finds matches with each of the search terms. A score from 0 to 1 (perfect match) is assigned for each article. The relevance rating tends to be more important when conducting advanced searches, described later.

Often, when searching for recent authors, it is useful to sort by “Year” in “Descending” order as shown at right.

The screenshot shows a form titled "Search Options:". It has three main sections: "Select publication types:" with checkboxes for IEEE Journals (checked), IEE Journals, IEEE Conference proceedings, IEE Conference proceedings, and IEEE Standards; "Select years to search:" with "From year:" set to "All" and "to" set to "Present"; and "Organize search results by:" with "Sort by:" set to "Year", "In:" set to "Descending" order, and "List" set to "15" Results per page.

Searching Abstracts Within a Specific Journal

To search in a specific journal for words in an abstract, one can use the Basic Search engine as follows:

Example:

- In the first text box, enter **Microelectromechanical Systems** and choose **Publication Name** in the drop-down box.
- In the second text box, enter “**lateral resonator**” and choose **Abstract** in the drop-down box.
- Leave the drop-down box between the two lines set to **And**.
- Click on the **Search** button near the bottom of the page

When the results of the search are shown, select the Abstract link for one of the titles to display its abstract and additional data.

The screenshot shows the Basic Search engine form with instructions: 1) Enter keywords in one or more text boxes. 2) Select the fields to search for each keyword. 3) Select search operators when using multiple keywords. 4) Limit the results by selecting Search Options. 5) Click Search. See Search Examples. The form contains three search lines: the first with "microelectromechanical" and "In: Publication Name", the second with "lateral resonator" and "In: Abstract", and the third with an empty text box and "In: All Fields". There are "And" dropdown menus between the lines and "Search" and "Clear" buttons at the bottom.

Additional Publication Data

The link to the abstract contains additional data that are useful when searching for productive researchers. Immediately below the abstract is a list of *Index Terms*. Each Index Term is a

hyperlink that generates a new search for other articles containing that Index Term. Hence it is possible to jump to other relevant articles from any publication abstract. Index terms can also be entered as parameters in a search. Simply enter an Index term in one of the text boxes and select "Index Terms" from the drop-down list.

Below the list of index terms is a link to other documents that cite the one being viewed. Selecting this link provides a simple way to find other authors interested in the same research area.

The authors of each publication are named as text in the results page. However, on the abstract page, each name is presented as a hyperlink. Selecting the author's hyperlink generates a list of all other IEEE documents written by that author. This can be more efficient than cutting and pasting names into the author-search box.

Advanced Searches



Most of the time, documents and their authors can be found quickly enough with basic searches. However, there may be times when it is necessary to use an advanced search. Typically, this occurs when more than three filters are needed, or when more complex searching logic is required.

To begin an advanced search, select the radio button shown at the left.

This will bring up a screen allowing a free-form query, which we introduce by example.

Example:

In the text box, type:

```
(microresonators <in> de)
```

```
<and> (1057-7157 <in> in)
```

as shown at the right.

This example illustrates the use of field codes and Boolean operators. The field codes limit the search for words or phrase just as the drop-down boxes do in the basic search.

Field codes are 2-letter codes unique to each field.

The first line of this example tells the search engine to look for the work "microresonators" in the list of index terms, which has a field code of **de**. The second line says to limit the search to the journal with ISSN 1057-7157, which is the unique number for *Journal of Microelectromechanical Systems*.

The Boolean operator **<and>** joins the two filters so that both must be true for an article to match. The usual three operators are supported (including **<or>** and **<not>**). If an operator is to be applied to more than two operands, it is placed in the front of a list. For example:

```
<and> (1057-7157 <in> in,ferrite <in> de,inductor <in> ti)
```

A list of operators is provided in Table 1 and a list of field codes is shown in Table 2. For a more complete discussion of how to use these operators and field codes, see the online help discussed later in this document.

It is helpful to realize that the basic search screen uses the text and drop-down boxes to generate a query, which is then submitted as an advanced search. The results page shows the generated query at the top, which can then be modified to adjust the search and to be submitted again.

1) Enter a single keyword, phrase, or Boolean expression. Example: acoustic imaging (means the phrase acoustic imaging plus any stem variations)
2) Limit your search by using search operators and field codes, if desired. Example: optical <and> (fiber <or> fibre) <in> ti
3) Limit the results by selecting Search Options.
4) Click Search. See [Search Examples](#)

```
(microresonators <in> de)  
<and> (1057-7157 <in> in)
```

Start Search Clear

Locating the Most Highly Productive Researchers

With the tools described in this document, it is a simple matter to identify those most productive in a particular area of research. For example, one may wish to start by searching for articles with specific index terms or keywords in the abstract. Using that list, one can select abstracts of

interest and click the hyperlinks of the authors to determine how many documents these authors have published. One can also locate other authors through the link on the abstracts page that shows articles citing the one selected. Upon generating a list of authors, the reader may wish to view their biographies. The author biographies are typically included at the end of each full-text document.

It is also possible to review the work of a specific author by using the “Author Search function.” When doing so, keep in mind that all non-Asian authors should be entered by last name without a comma followed by an optional first and middle initial (e.g. Doe J. J.). When entering an Asian name, just type it in the form that the author typically uses.

For Additional Information



Online help is available from the Xplore home page at the upper left corner. Select Help to open a small window with basic help information. At the top of this window is a button labeled “Contents”. Press the contents button and resize the screen to see the complete set of documentation for using Xplore.

Appendix

Table 1 Summary of Operators

x <and> y	Both expressions x and y must match.
x <or> y	Expression x or y or both must match.
<not> x	Expression x must <i>not</i> match.
x <not> y	Expression x must match, y must <i>not</i> .
x <in> y	Expression x must match in field y .
x <paragraph> y	x and y must be in same paragraph.
x <sentence> y	x and y must be in same sentence.
x <phrase> y	x and y must be in same phrase.
x <near/y> z	x must be within y words of z .
<many> x	Score results based on density of x .
<order> x	Terms in x must match in order.
<thesaurus> x	Find synonyms of x as well as x .
<wildcard> `x`	Search for variations or patterns. <code>[xy]</code> Match any letter x or y . <code>[^xy]</code> Match any letter <i>but</i> x or y . <code>{ab,xy}</code> Match string "ab" or "xy".
<stem> x	Find variations; don't score results.
<word> x	Search for an exact match.

Table 2 - Field Codes

Abstract	ab
Affiliation	cs
Article Title	ti
Author(s)	au
Catalog number	ca
CODEN	cn
Conference date	cy
Editor(s)	au
ISBN	in
ISSN	in
Issue number	is
Issue part number	pt
Meeting date	cy
Part number	pt
Publication name	jn
Index term	de
Title	ti
Volume	vo