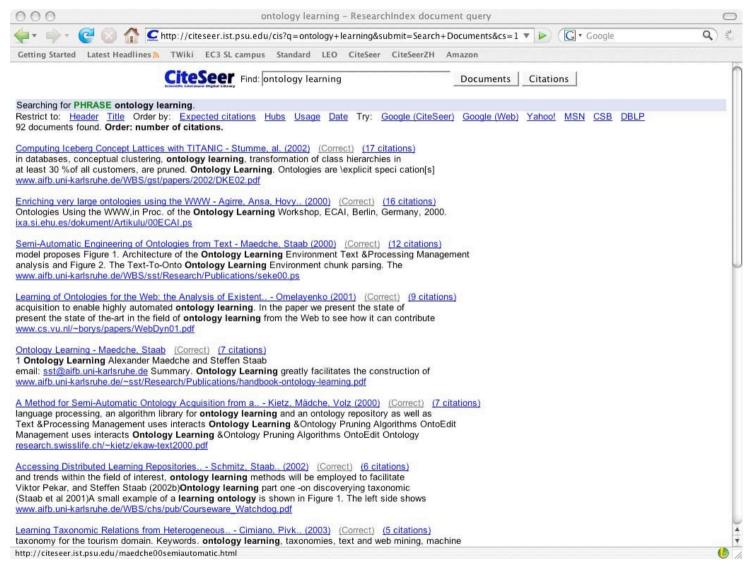
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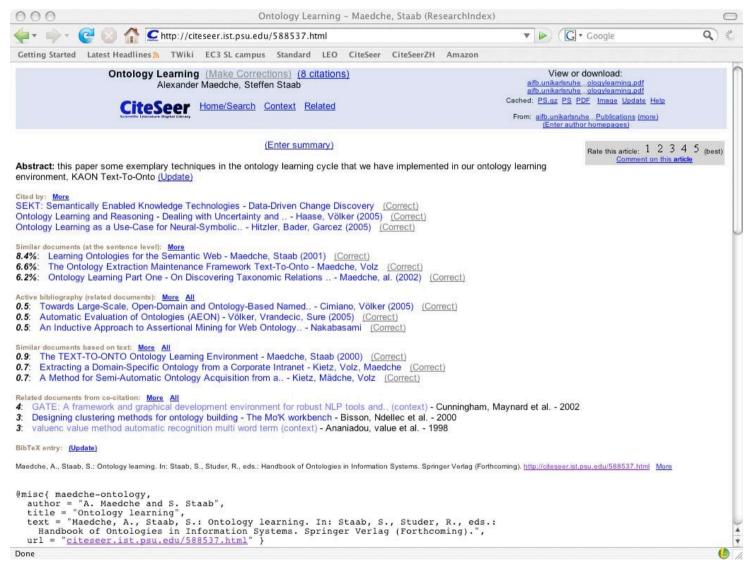
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futschek@ifs.tuwien.ac.at dieter.merkl@ec.tuwien.ac.at rauber@ifs.tuwien.ac.at

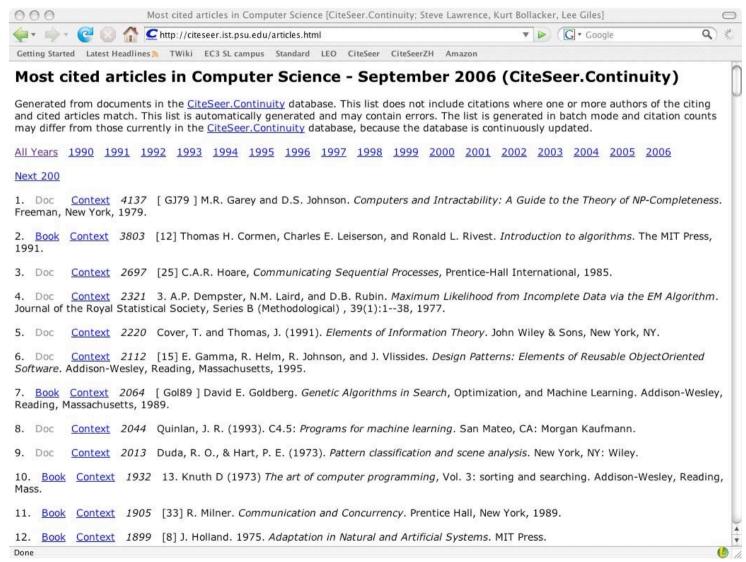




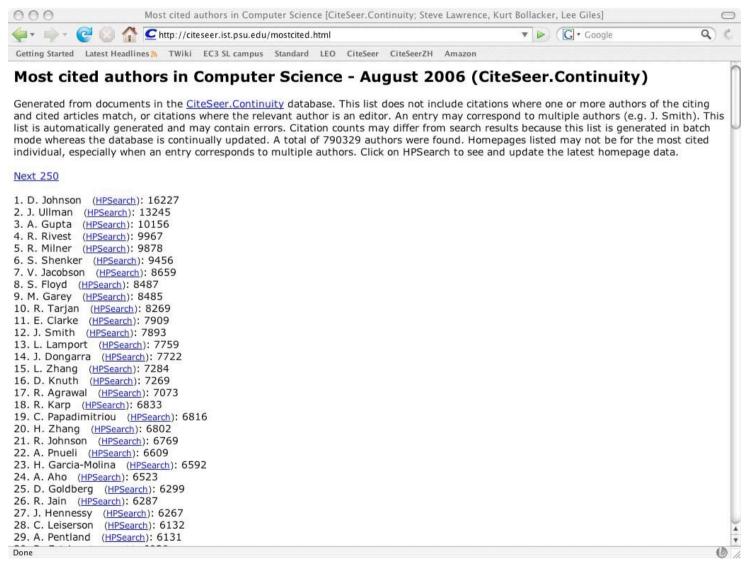




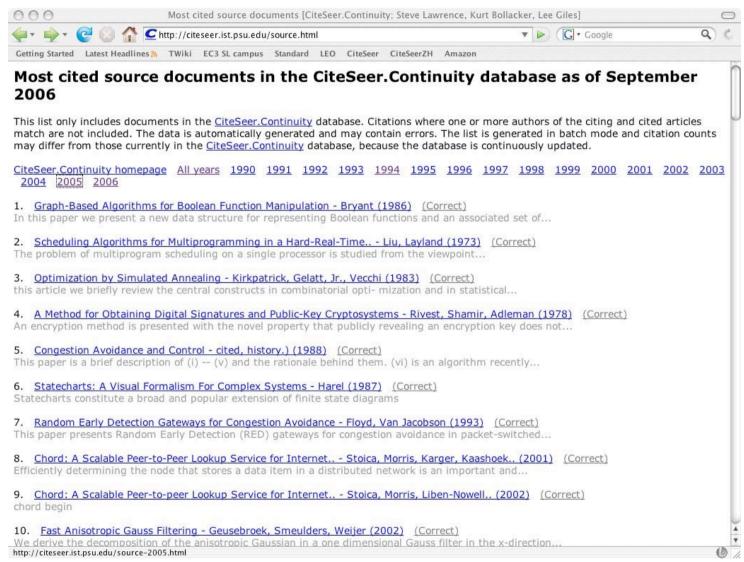




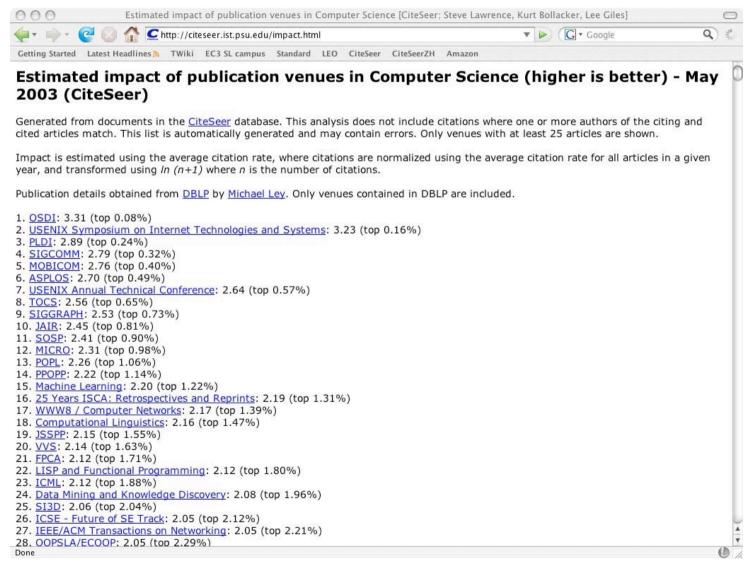




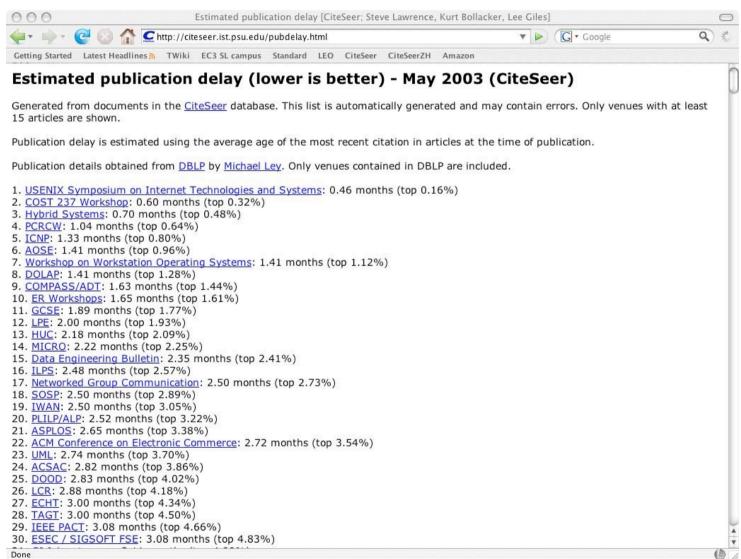




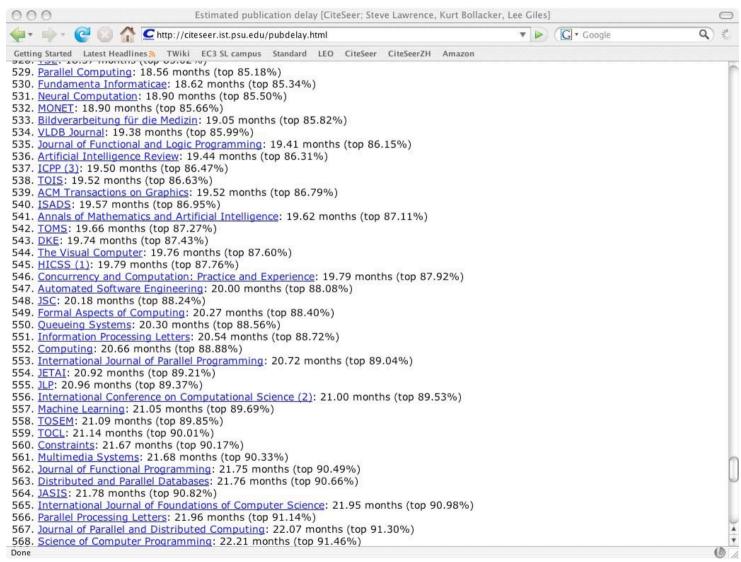














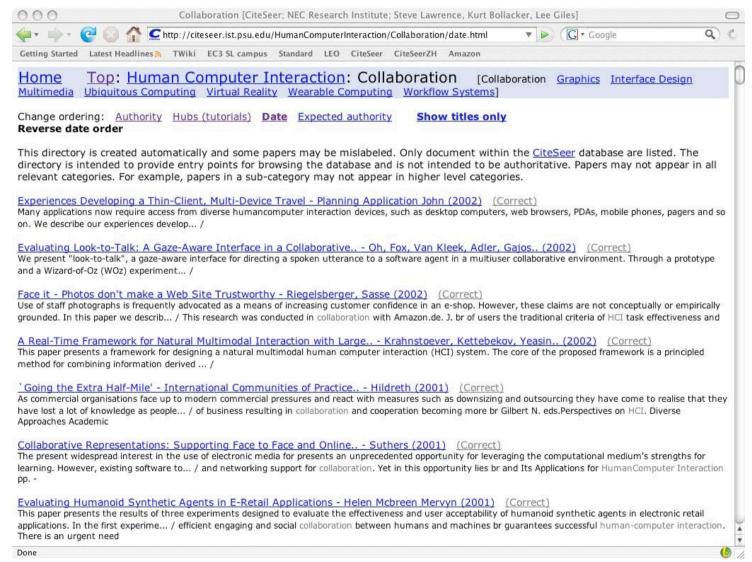




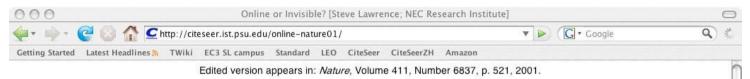
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Online or Invisible?

Steve Lawrence NEC Research Institute

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The volume of scientific literature typically far exceeds the ability of scientists to identify and utilize all relevant information in their research. Improvements to the accessibility of scientific literature, allowing scientists to locate more relevant research within a given time, have the potential to dramatically improve communication and progress in science. With the web, scientists now have very convenient access to an increasing amount of literature that previously required trips to the library, inter-library loan delays, or substantial effort in locating the source. Evidence shows that usage increases when access is more convenient [2], and maximizing the usage of the scientific record benefits all of society.

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In this article we investigate the impact of free online availability by analyzing citation rates. We do not discuss methods of creating free online availability, such as time-delayed release or publication/membership/conference charges. Online availability of an article may not be expected to greatly improve access and impact by itself. For example, efficient means of locating articles via web search engines or specialized search services is required, and a substantial percentage of the literature needs to be indexed by these search services before it is worthwhile for many scientists to use them. Computer science is a forerunner in web availability -- a substantial percentage of the literature is online available through search engines such as Google (google.com), or specialized services such as ResearchIndex [1] (researchindex.org). Even so, the greatest impact of the online availability of computer science literature is likely yet to come, because comprehensive search services and more powerful search methods have only become available recently.

We analyzed 119,924 conference articles in computer science and related disciplines, obtained from DBLP (<u>dblp.uni-trier.de</u>). In computer science, conference articles are typically formal publications and are often more prestigious than journal articles, with acceptance rates at some conferences below 10%. Citation counts and online availability were estimated using ResearchIndex. The analysis excludes self-citations, where a citation is considered to be a self-citation if one or more of the citing and cited authors match.

Figure 1 shows the probability that an article is freely available online as a function of the number of citations to the article, and the year of publication of the article. The results are dramatic. There is a clear correlation between the number of times an article is cited, and the probability that the article is online. More highly cited articles, and more recent articles, are significantly more likely to be online.

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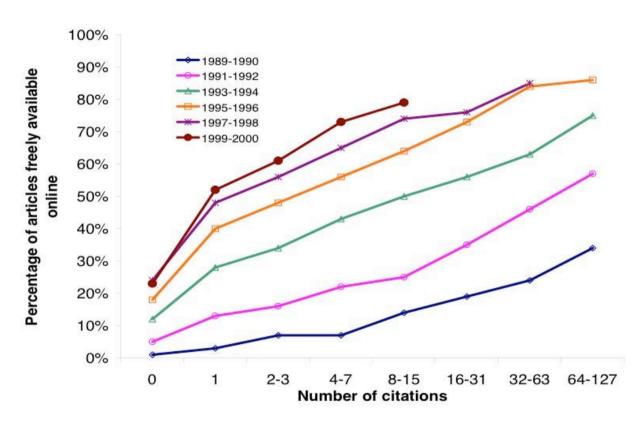
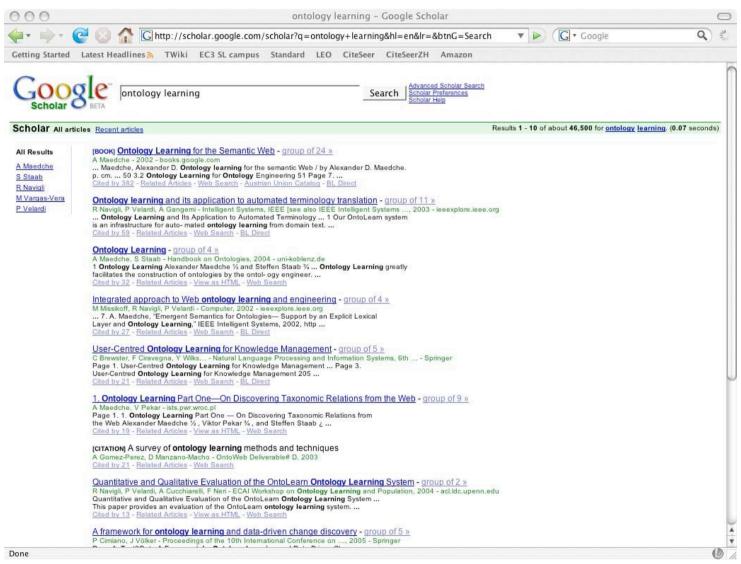


Figure 1. Analysis of 119,924 conference articles in computer science and related disciplines. More highly cited articles, and more recent articles, are substantially more likely to be freely available on the web. The actual percentage of articles available online is greater due to limitations in the extraction of article information from online documents, and limitations in locating articles on the web. Only points with greater than 100 articles are computed.

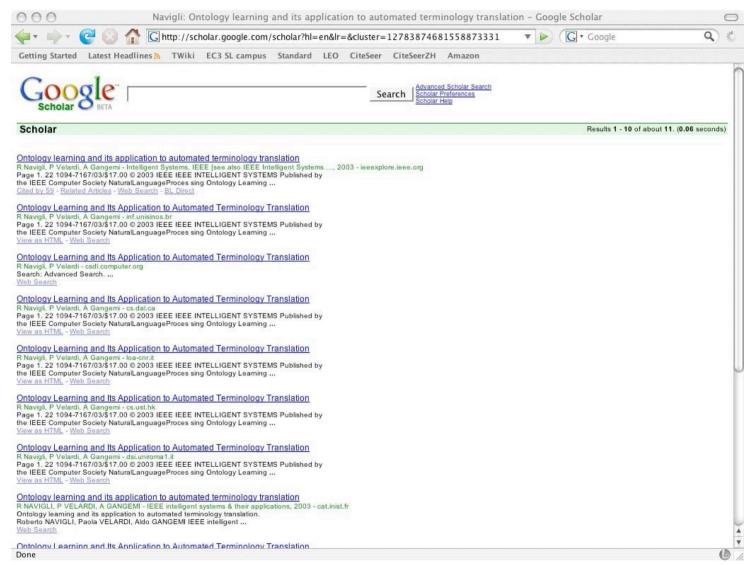


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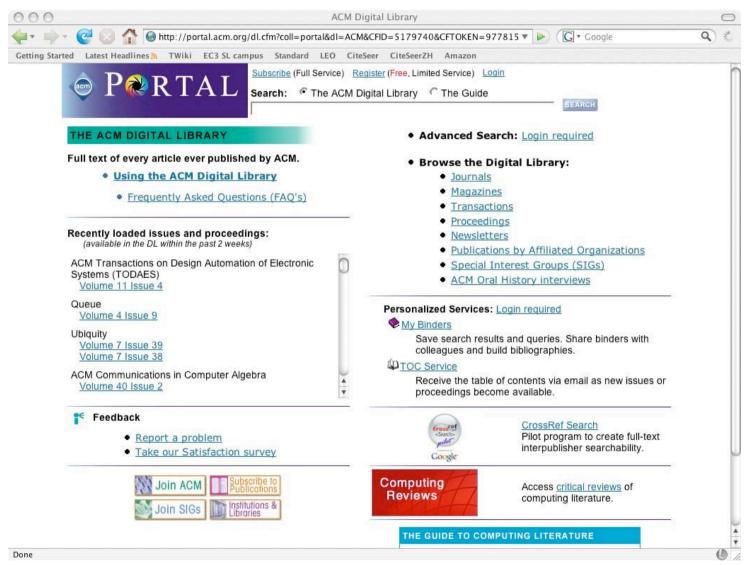
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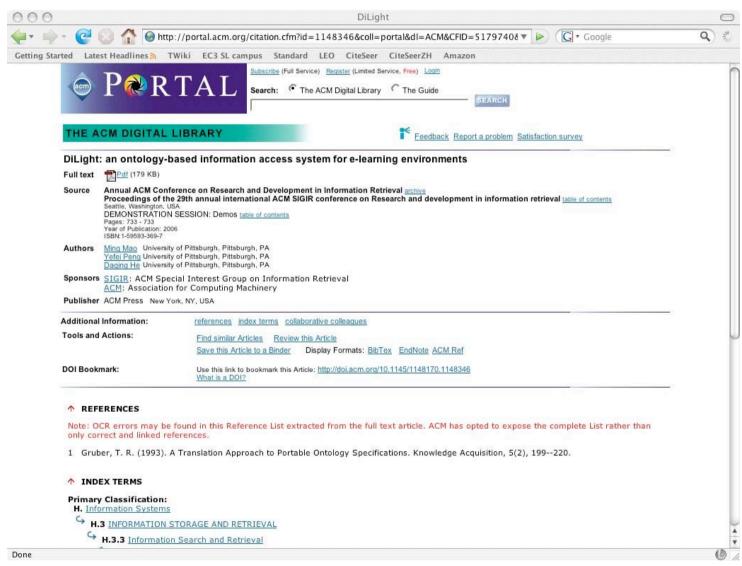




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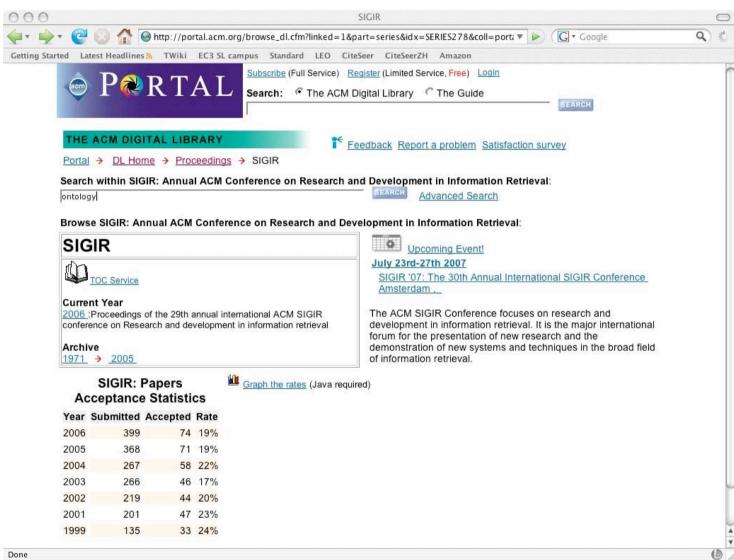


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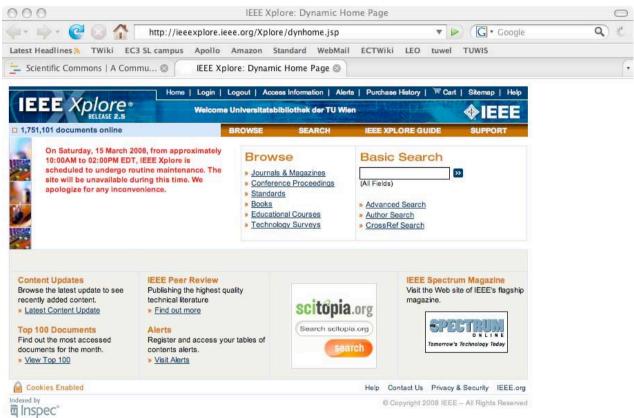


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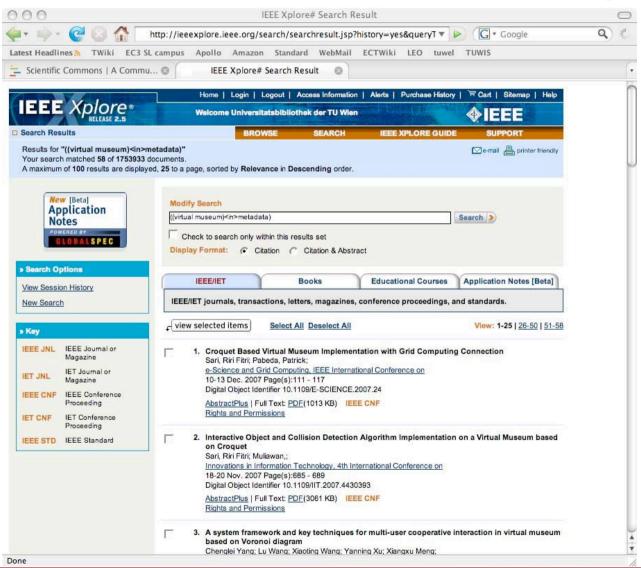


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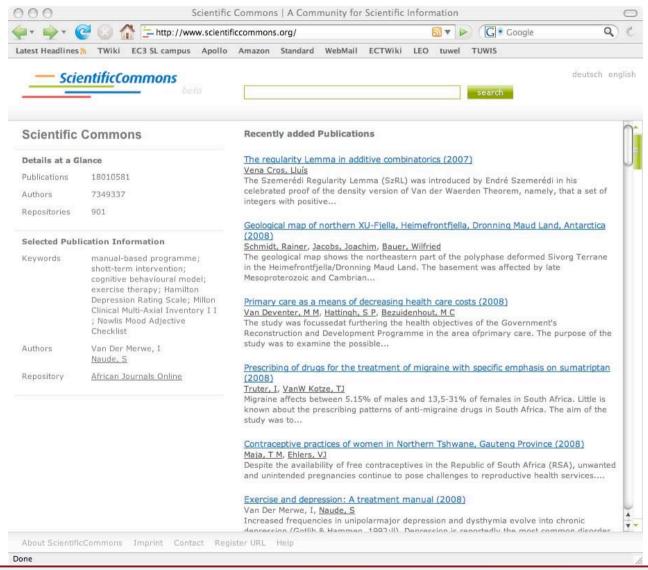


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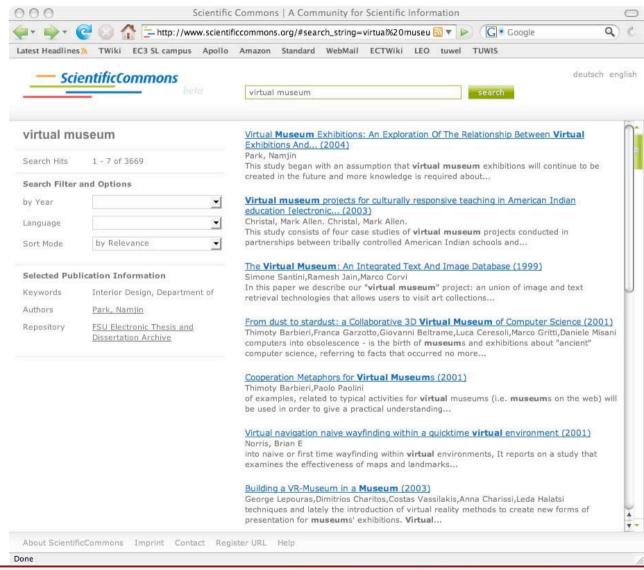


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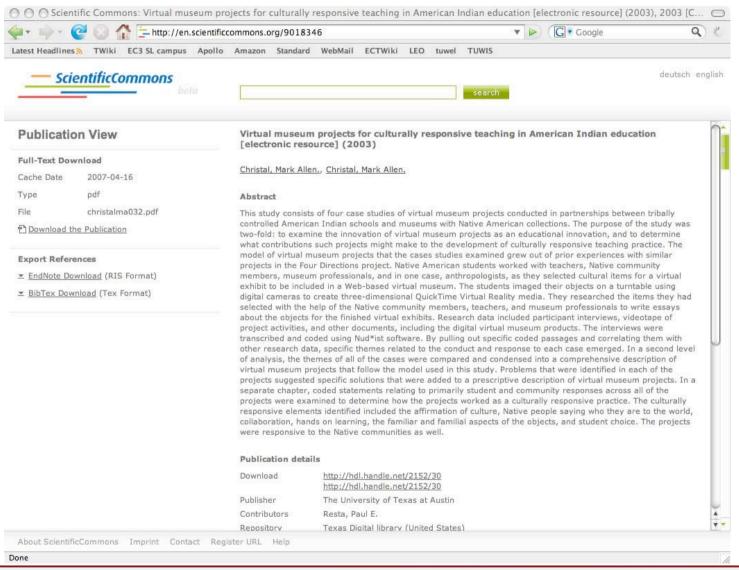




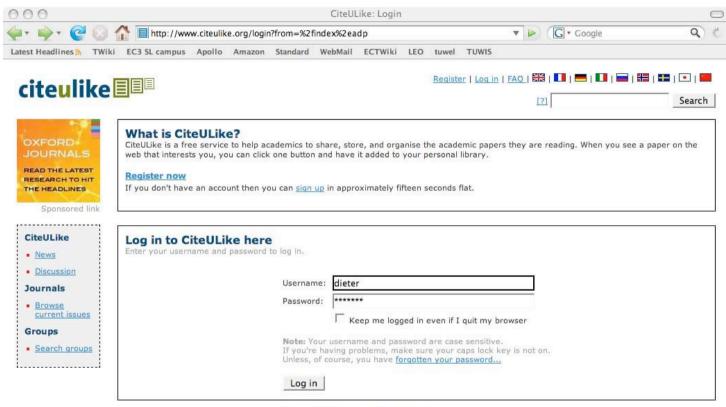
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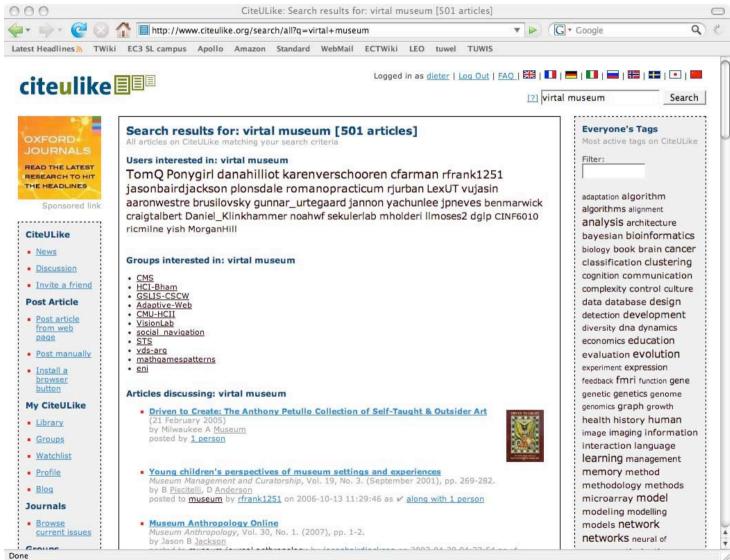


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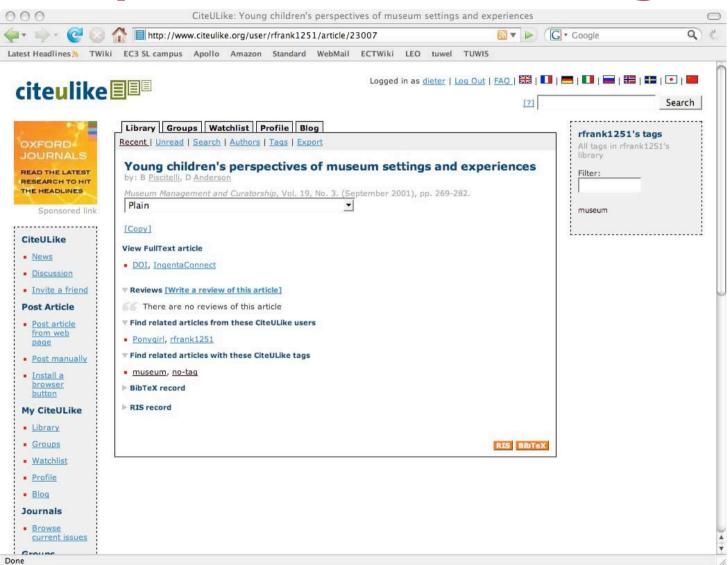


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