Project Year

2003

Project Team

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Project Title

Hopkins Paper Hopper

Audience

Students and instructors in computer science and other rapidly evolving fields

Pedagogical Issue

The rapidly changing computer science research landscape presents a unique challenge for instructors. Often, by the time a computer science textbook is published, much of the content has been superseded by new discoveries. This situation forces computer science professors to supplement or replace traditional textbooks with more current research papers. Such papers are readily available over the Internet. Unfortunately, the papers are neither centrally located, nor effectively organized, so each instructor is forced to manually locate relevant sets of papers for each topic. Furthermore, this approach does not allow students to see how a particular paper fits into the larger literature or to explore other papers on related topics.

Solution

This project team proposes to develop a semi-automated service that creates a semantically organized, centrally located, and easily searchable index of research papers. This is an evolutionary step forward from the Citeseer service (http://citeseerx.ist.psu.edu/), the current state-of-the-art application for this purpose. By using the proposed new application, the Hopkins Paper Hopper, a student interested in a topic – e.g., e-voting – will be able to easily view papers that propose new systems, papers that present vulnerabilities in each system, and those that propose methods for repairing such vulnerabilities. The service will display a chronological development of the literature on any particular topic, as well as a secondary set of connections between various papers, based on their bibliographies. A set of tools will automate many of the tasks involved in adding papers to the index. However, the semantic categorization step will remain human-directed. The challenge has been to develop a system that maximizes the utility of subject matter experts while minimizing their effort. In this project, the focus is on the fields of cryptography and computer security, but the tools that will be developed could be used for other rapidly changing subject areas, such as biology and medicine.

Technologies Used

Java