

the area — become hip.

Does this mean that retrieval is a solved problem? Far from it. Despite their popularity and success, information retrieval systems leave ample room for improvement. In the School of Information, we are pursuing research to make retrieval work better. This is exciting work because it lies at the nexus of several disciplines. Improving information retrieval demands that we borrow from fields as diverse as information science, computer science, statistics, and linguistics. The hard thing about information retrieval is that computers are terribly literal, while humans have great intuitive flexibility when it comes to finding information. The challenge of improving retrieval involves modeling computationally the intuition that helps people separate information from noise.

Traditional information retrieval systems are based on the idea that the meaning of textual artifacts is closely related to the words they contain. This is a reasonable assumption, and it has brought retrieval research a long way. But it has limits. Searchers who request documents about cars are also likely to be interested in documents about *automobiles* or even *vehicles*. Likewise, the Bank of the West is quite different than the West Bank. Words provide good evidence for gauging the meaning of documents, but this evidence is far from perfect. Instead of words, most

searchers are interested in something less tangible — the concepts articulated by documents.

My research is concerned with computational methods for inferring conceptual “aboutness” from readily observable features of documents.

For instance, the media are fond of reporting on the increasing influence of online journalists who write political “Web logs” (known as blogs). These bloggers, as they are known, write prose that is timely, often well-informed, and highly opinionated. Opinion is not a feature of document aboutness that comes across well in traditional retrieval models. It is quite easy to use Google to find political blogs. But it is another matter altogether to find on Google political blogs that are, say, not written by cranks. In fall 2004, I presented a series of papers that outline a model for estimating the degree and type of bias expressed in online documents. The interesting result of this research was that using words to estimate the bias of a document works badly (left-wing and right-wing commentators use the same kinds of words, they just use them differently). But by taking a step back and looking at the network of Web links that connects political blogs, it becomes quite easy to guess which blogs evince high degrees of partisan bias.

This kind of computational analysis of style is an excit-



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ing direction in current research (the American Association of Artificial Intelligence hosted two symposia on the topic in 2004). But style is only one aspect of document meaning that readers care about. In more general theoretical work, I am conducting research into the problem of inferring relationships among words and documents statistically. Is it possible for a computer to learn the concepts that a document expresses based on the words that it contains? In a sign of the vitality of this research area, my investigations on this problem have brought me to collaborate with statisticians, computer scientists, and sociologists. In our work together, we have brought to bear models and methods from not only mathematics and statistics, but also psychology and the biological sciences.

Beyond making better search engines, my goal as a researcher is to understand which features of documents are the most informative. Answering that question demands a rigorous understanding of information. This is an old problem in

information science. But the current vogue that it enjoys makes this an especially exciting time to have joined the UT iSchool community.

EDUCATION

Shell Oil grant helps UT support math and science education

The Texas Regional Collaboratives for Excellence in Science Teaching (TRC) at the University has received a \$1 million grant from Shell Oil Company to improve the teaching and learning of math and science in grades k-12.

The four-year, statewide initiative will provide high-quality professional development opportunities for Texas science teachers, including teacher training, mentoring, and access to instructional materials.

With the goal of encouraging students to pursue advanced science courses leading to careers in engineering, geosciences, and environmental science, the

Shell-TRC Partnership will offer training opportunities to an average of 500 teachers each year. The partnership will serve 2,000 teachers and affect the learning of more than 166,000 students across Texas and other areas.

“Since the TRC was created, it has improved science instruction for around 10,000 teachers in more than 340 Texas school districts in 137 counties,” says Kamil Jbeily, founder and director of the TRC. “With this incredibly generous support from Shell, we will be able to expand our efforts and improve geosciences instruction for even more Texas children.”

Shell’s grant is the largest corporate gift the TRC has received in its 13 years of operation. It is also the company’s largest individual donation designated to k-12 science teachers and the improvement of geosciences and engineering instruction.

The TRC, headquartered at the Center for Science and Mathematics Education in the College of Education, is an award-winning statewide network of k-16 partnerships, which provides sustained and high-intensity professional development to k-12 science teachers across the state. More than 22 institutions of higher education collaborate with the Texas Education Agency, education service centers, school districts, and corporate and community partners to support continuous improvement in science and technology education.



The Texas Regional Collaboratives for Excellence in Science Teaching (TRC) got a boost from a \$1 million grant from Shell Oil Company to improve the teaching and learning of math and science in grades k-12. TRC founder and director Kamil Jbeily speaks at the press conference.

Fellowship inspires events and dialogue on social justice

Building on the success of a fellowship for student teachers, Mary Lee Webeck and colleagues from the colleges of education and liberal arts have joined forces

with Austin area arts, business, education, and civic leaders to create Light/The Holocaust & Humanity Project. The Warren Fellowship, which was created through the generosity of Holocaust survivor Naomi Warren, allows a select group of future teachers to go to Holocaust Museum Houston for a week each summer to learn Holocaust history and how to teach difficult topics like the



Mary Lee Webeck

Holocaust to children.

Inspired by the positive outcomes of the fellowship, Webeck, an assistant professor in the Department of Curriculum and Instruction, and graduate student Brent Hasty have worked with the Austin community to expand the educational scope of the fellowship and bring its messages

of tolerance and coexistence to the general public.

Project-related events this spring included a world-premier production by Ballet Austin, in-service training for teachers of middle and high school students, a lecture series featuring Nobel prizewinner Elie Wiesel, an outdoor art installation from the Museum on the Seam in Jerusalem, and a televised town hall meeting hosted by Linda Ellerbee.

With the goal of fostering community-wide dialogue and using multiple media and venues to study the ethical and historical issues of the Holocaust, organizers hope that the project can serve as a model for other cities.

For a list of events, visit www.balletaustin.org/light/. For more information about Light/The Holocaust & Humanity Project, contact Webeck, webeckm@mail.utexas.edu, or Brent Hasty, brenthasty@aol.com.