

Wordplay

University of Washington professor embarks on daunting language translation challenge

WHY Oren Etzioni is a professor at the University of Washington (UW) is not the biting question. Most universities would be proud to have him on their roster, seeing as he is continually pushing the boundaries of computer science.

The real question is, why is he not out becoming the next Bill Gates?

Even while remaining a college professor, he's amassed a pretty impressive entrepreneur's résumé. He is the founder of three companies he created while a professor at the UW's Department of Computer Science and Engineering, including Farecast Inc. — a company that utilizes data-mining techniques to predict prices in the travel industry. Etzioni is also a venture partner for the Madrona Venture Group. His other startups are Netbot Inc., which was acquired by Excite Inc. in 1997, and ClearForest Corp. At Netbot, Etzioni helped conceive and design the Internet's first major comparison-shopping agent. ClearForest is an international leader in text mining. Years ago, he left the university briefly to become the chief technology officer for Go2Net Inc.

Not bad for a guy who didn't touch his first computer, a Radio Shack TRS 80, until age 14 — and then only out of boredom. "I had just moved from Israel to New York with my dad. I was in culture shock. For a mathematically inclined nerd such as myself, it was the perfect diversion to play with the computer," he says.

The Paul G. Allen Center for Computer Science and Engineering holds the offices of professors like Oren Etzioni (inset), who want the world's people to communicate.



But he makes a point of making sure his duties with these startups only take a modicum of his time. For most of his workday, he's dutifully working to make the UW even more well known as an international leader in computer science.

"If my goal was to maximize compensation, I would definitely be in the private sector. But having spent a year as the CTO of a public company and having worked with startups, I know that, while it's exciting and dynamic, there's no substitute for me for the intellectual stimulation of research and teaching,"

he says.

His research is just part of the university's computer science and engineering department, an institution ranked among the top 10 in the country and on the cutting edge of many disciplines. There are those working on micro- and nano-scale electronic devices that will provide a variety of services to builders of the next generation of electronic devices. Others are designing computer chips based on light waves (photonics), rather than silicon and wires, that will greatly improve the speed of computing and communications devices.

ENTER THE TURING CENTER

Etzioni's current research project is under the auspices of the Turing Center, a multidisciplinary research facility at the



KATHY SAUBER



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SPECIAL REPORT

UW that investigates problems surrounding natural language processing, machine learning, Internet search and the “semantic web,” which scientists say is an effort to make the meaning of content on the Internet readable by computers.

The center was established in 2005 with a multimillion-dollar gift from Seattle entrepreneur Jonathan Pool.

Says Pool of the creation of the Turing Center, “Ever since the third grade I’ve been puzzled by the way people deal with the Tower-of-Babel problem: the fact that the world is awash in diverse languages, and yet it’s becoming a global community where most people want to communicate and collaborate. So, do we just choose a world language — an existing one or an invented one — and let the others die out? Try to make most people bilingual?”

To tackle this problem, Etzioni is

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— Oren Etzioni

working on software that will take any written electronic language and automatically translate it into any other language. He calls the project “panlingual translation,” the complexity of which is daunting. Linguists tell us there are 6,000 languages spoken around the

The University of Washington's Computer Science and Engineering Department is among the top in the country.

globe; that makes for 36 million separate language-translation pairs (e.g., English to Japanese, Russian to Mandarin Chinese, Swahili to Spanish, etc.). "We want to enable anyone in the world to electronically communicate with anyone else in the world," Etzioni says.

MACHINE READING

"There's a long history of 'automatic translation' or 'machine translation,' dating back to the Cold War effort in the '50s. There's the famous story of the government spending a lot of money for an effort to automatically translate English into Russian and back. They sent the message 'This spirit is willing but the flesh is weak.' It came back, 'The vodka's good but the meat's rotten,'" he says.

Etzioni explains that these days the U.S. government is concentrating on the one-dimensional task of Chinese and Arabic translations. For Etzioni, translating all languages means having to make the software easier to use. To facilitate that, he and his peers have come up with the concept of controlled languages. In this method, one inputs a set of assumptions about syntax and semantics into the software before the translation starts.

"There's a lot of ambiguity in language. We don't hear the ambiguity because our minds are so facile and [are] automatically interpreting what is said based on word choice, tone, context, nonverbals, our history with the speaker, etc. The classical example is 'Time flies like an arrow.' There are many, many interpretations a computer can find for that sentence. But if you can go in beforehand and tell the system, 'This word has this meaning,' then your translation problem becomes more manageable." This controlled language is what The Boeing Co. uses in its technical manuals, Etzioni says.

The project has just started. There's still much to do. But one doesn't need to be Etzioni to see the enormous business applications of panlingual translation. Commerce is about communication between seller and buyer, for instance. And commerce today is global.

Etzioni comments, "Let's put it this way

— we have the largest imaginable market for this technology: everybody in the world. If we can succeed in even a modest way, the potential for commercialization and value creation is enormous."

— John Draper



MARY LEVIN

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