Teaching Statement

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My teaching goals are:

- Explain hard concepts using common sense and examples.
- Get new folks interested in joining my research field.
- Empathize.

The last goal means: the time for me to put together teaching materials is right after I've learned something difficult for myself. I find that waiting too long means I longer empathize enough with the first-time learner—so I try to seize those initial moments and write up teaching material.

Courses

For the last fifteen years, I have taught graduate courses in natural language processing at USC. This has kept me connected with CS and EE graduate students. My current course is organized around automata, probability, and linguistics. Here are my instructor ratings (1-5) from student evaluations for my most recent courses: 4.77, 4.82, 4.73, 4.57, 4.64, 4.90, 4.92.

I also taught at the Stanford linguistics summer school (2007), UCLA extension (1996), and Beijing Mining College (1981).

I co-wrote the textbook *Artificial Intelligence, Second Edition* (1991) with Elaine Rich. Because the field changed quite rapidly, we used very little material from the first edition. This textbook was adopted for undergraduate and graduate courses throughout the world.

Tutorials

I regularly give conference tutorials on language translation and decipherment. I have enjoyed doing tutorials by myself and jointly with colleagues Eduard Hovy, Philipp Koehn, David Chiang, and Richard Sproat. I am currently working on an unsupervised learning tutorial. (Unfortunately, ACL Executive Committee meetings are held during ACL tutorial days, so my options have been limited recently).

In addition to tutorials, I also value informative events such as the EM panel at the Empirical Methods in Natural Language Processing conference (2001), which I participated in jointly with Eugene Charniak, Stefan Riezler, and Ted Pedersen.

Workbooks

My most widely-read publications are not publications. They are:

- *Statistical Machine Translation Tutorial Workbook* (1999). I created this workbook after spending substantial time with a heavy seminal paper on statistical machine translation by Brown et al (1993). My goal was to present the material in a common-sense manner, with examples, and to communicate enthusiasm about a new scientific area. This workbook has been the entry point for most people currently involved in language translation research. I am very happy that my former PhD student Philipp Koehn has now published an entire textbook (2010) on the topic.

- *Bayesian Inference with Tears: A Tutorial Workbook for Natural Language Processing Researchers* (2009). When I realized I was not understanding many of the talks presented at our conferences, I started reading up on Bayesian inference in natural language, and I found nothing introductory. My goal for this workbook was to present the basics of Bayesian inference methods for structured-output problems like parsing and translation, using only eighth-grade math. I have received positive feedback about this workbook from many senior and junior researchers in the field.

Summer Internships

For the past decade, my colleagues and I have run a summer internship program in natural language processing at USC (nlg.isi.edu/get-involved/jobs.html). Each year, we receive 80-100 applications from students all over the world, and we select four. These students include both graduate students and undergraduates. Many key inventions and publications have come out of these summer projects, and many undergraduates have decided to join our research field because of their positive experiences.

The internship program has a heavy teaching component, as we give intensive introductory tutorials on topics like machine translation, unsupervised learning, finite-state toolkits, and cluster computing. Students return to their home institutions with a solid grasp of these topics, as well as research experience.