Belinda Thom — Teaching Statement

I have always wanted to participate in teaching as well as research. The idea of being a professor excites me, and makes the academic track a perfect career choice. One of the pivotal moments in my own college career was due to my interaction with Physics Professor Ralph Grannan, who, by making technical learning so much fun, sparked my interest in pursuing engineering as an undergraduate. I mention this experience because it motivates me to teach—I want to instill a similar love of technical learning into the next generation of students—and it serves as the basis for my teaching philosophy.

In particular, I think students can be compelled to learn mathematical and computational methods *because* they allow them to better understand the world around them. For example, Professor Grannan's 11:00 am class often extended into a lunchtime brown bag discussion because we got so wrapped up in applying abstract dynamics to compelling real-life questions. "Who's hiking boot has the most friction?" tied into the day's lecture on force-diagrams, which inspired us to run some simple empirical experiments whose data was often analyzed on the computer. In motivating my own students, I will follow a similar example by: 1) encouraging critical thinking; 2) high-lighting the need to balance abstraction (which unifies transparently different solutions) and specialization (where, by building a real system, one gets their hands dirty); 3) providing easy access (an open-door policy); 4) integrating timely questions into programming assignments and homework exercises; 5) encouraging active participation in the classroom; and 6) presenting material in such a way that my own enthusiasm is infectious.

I have developed and presented many lectures in my area of expertise. At Carnegie Mellon University (CMU), I guest-lectured in two classes: Tom Mitchell's Machine Learning (ML) class and Manuela Veloso's Artificial Intelligence (AI) class. I have also lectured about my ML and Music research at internal seminars, and externally, at conferences and workshops. People often comment that my enthusiasm is contagious, and that my presentation style is, while rigorously founded, refreshingly accessible. I am also frequently told that I would make a good teacher because I am personable, sensitive to group dynamics, and care deeply about helping others and communicating effectively with them. In short, while I have yet to teach an entire class or develop its curriculum, I am confident that I will succeed in these endeavors. While I am most interested in teaching AI and ML-related subjects, and plan to develop an interdisciplinary AI course whose focus is interactive, art-based domains, I also value the teaching of fundamental computer skills (programming principles, algorithms, etc.).

In addition to guest lecturing, my role as a Teaching Assistant (TA) at CMU gave me invaluable experience creating, implementing, and grading programming assignments, homework exercises, and exams. I also held extensive weekly office hours, which, because of their informal recitation-style nature and their stimulating one-to-one contact, were my greatest pleasure as a TA. Office hours also challenged me to answer questions in creative new ways, for, while I wanted to help students understand the material, I did not want to do their thinking for them. I had a more extensive teaching experience as an undergraduate at UC Berkeley, where I worked in the Minority Engineering Science Program. Weekly, I ran tutorial math classes for minority high-school students. In developing the material for these classes, I worked in collaboration with the children's teachers, recapping and expounding upon the examples presented to them in class and interactively working through related examples. Initially, these classes had about four students, doubling in size as others heard about how much fun we were having.

Another aspect of teaching that I look forward to is advising students, both undergraduates and graduates. Informally, I have advised several undergraduates at CMU: as a mentor for women in Computer Science; as a reader of several undergraduate Computer Music and AI theses; and as the supervisor of a student that helped build an online musical database. As a research engineer at Lawrence Berkeley Labs, I also supervised a pre-college summer student; together we wrote software for the automated telescope I was building. Because I enjoy working and collaborating with others, these experiences have been most enjoyable. I am convinced that the best way to do high-quality research is to let your students become actively involved in it, infusing it with their own fresh thoughts, and making particular aspects of it their very own.