Cecily Heiner’s Teaching Statement

I love to teach, I have extensive teaching experience, and I have won several awards for my teaching. As a Visiting Assistant Professor at Southern Utah University, I have taught the introductory computer science courses and an advanced course in computer architecture. As a graduate instructor at Neumont, I led a seminar and advised students working on Masters projects. As a graduate student at the University of Utah, I taught an introductory programming class. As an undergraduate and graduate TA, I have lead dozens of weekly labs, answered hundreds of questions during office hours, and graded thousands of introductory programming assignments. As a University TA, I helped design the curriculum for a new CS 0 course, a broad survey course that introduces the major ideas of computer science from a scientific perspective. In collaboration with my advisor (Joe Zachary), I created several applets and assignments for that course. These applets and assignments have been utilized repeatedly by several different instructors for that course as well as in one of my own courses. My work as a CS 1 TA resulted in winning the department’s “Distinguished Teaching Assistant” award for the “tender care and concern” I had shown for my students. My work as a CS 2 TA resulted in winning the college’s “Outstanding Teaching Assistant” award for being “a talented classroom teacher” and “devotion to students.” My work as a University TA was the result of a competitive grant application across the university to design a new course and curriculum. I have also been recognized as an Anita Borg scholar finalist for my volunteer outreach efforts.

Good classroom teaching requires a careful balance of explicit and implicit instruction. My explicit instructional strategies include juxtaposing vocabulary terms (e.g. unary and binary operators) with an example (such as 3+ - 4), simple object lessons that teach abstract concepts (e.g. linked lists and pointers are like snap beads or teaching combinatorics with a coin and a deck of cards), and explicitly explaining ethical ideas such as how to help each other without breaching the constraints of academic honesty and ethical behavior. One implicit teaching strategy is carefully choosing and balancing instructional materials and assignments to expose students to a variety of open research problems in several areas and introduce students to a diverse set of researchers. A complementary opportunity to exercise some creativity and work on a personal project can instill confidence and allow students to exercise their reading, writing, presenting and critical thinking skills. A frequent smile and an occasional fun anecdote or technical challenge from graduate school or an industrial interview experience can help inspire undergraduates to endure to the end.

In addition to formal classroom instruction, I enjoy opportunities to mentor individual students. I usually try to ask students about their educational goals and values and life plans when they come by to ask for help on an assignment. Sometimes knowing the students enables me to connect them with an applicable opportunity such as an internship, scholarship, or job. Several of the students in the classes where I was an instructor or TA have made an effort to express gratitude for my instruction (frequently in writing) and keep in touch long after the semester was over. Many of my students have had extended exposure to me as an instructor because I was their TA for more than one course. A couple of those students have collaborated with me on research, and one of those students and I wrote a successful (funded) proposal for a university funded student research project. I have also mentored several K12 students in science and computer
science, and several of them have advanced to regional and international competitions and won thousands of dollars in scholarships. As a professor, I hope to continue to work with students on an individual basis, and collaborate with a few undergraduates each year on research. If the students are interested, I would like to help them prepare to present their work at a national conference.

At the graduate level, I am actively involved in networking and enjoy participating in seminars and conferences related to my research. As a Masters student, I helped to organize an interdisciplinary lunch group for students from several departments with research interests in intelligent tutoring; this group was later formally funded and incorporated with the Pittsburgh Science of Learning Center. As a PhD student, I have been actively involved in various aspects of building the machine learning group including faculty recruiting, seminar attendance, and preparing presentations on papers written by other experts on machine learning. I have also had numerous opportunities to present various versions of my own research formally in conferences, seminars, and other meetings, and I have published several papers. Informally, I enjoy discussions with other researchers, and I intend to continue extensive outside reading. I hope to inspire my students to seek out the best papers and books in our field; maybe one day I will even be the author of one of those books!

Finally, I am committed to creating an environment that is conducive to academic integrity and diversity of all kinds. As a TA, I recommended that several students could benefit from corrective measures because they were cheating or collaborating too closely, and these recommendations were followed by the course instructor. As an instructor, I carefully design new quiz problems, and I carefully monitor the students as they worked on both quizzes and weekly assignments. To promote diversity, I have encouraged several students to join relevant e-mail lists, attend relevant conferences, and pursue scholarships targeted towards specific minority groups. As a result of those efforts, I was invited to be a panelist at a one day regional conference for women in computing, several of the graduate student women in my department attended that conference (even though it required some travel), and at least one student has won a prestigious scholarship. At the University of Utah, I taught a course in which exactly half of the students were female, half were male, and at least half of the students represented various racial minorities including several who were not native English speakers; all of the students did well in the class.

I would love to continue to teach introductory computer science courses, including a broad overview course, programming in Java, data structures, and web programming. At the upper division or graduate level, I would be interested in teaching human computer interaction, natural language processing, programming languages, or computer architecture, and possibly databases, artificial intelligence, data mining or machine learning. I would like to create a seminar or course on intelligent tutoring and educational data mining. I am also interested in creating new courses as the need and/or opportunity arises. I hope that as I teach, my students will grow to learn and love the principles of Computer Science.