TEACHING STATEMENT

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I am interested in the area of Programming Languages and Compilers, with a focus on Program Analysis. For my doctoral dissertation, I have developed and applied static program analyses to make error handling in systems software more reliable. I have experience teaching introductory Computer Science courses as a graduate teaching assistant and lecturer. I also have experience teaching piano as an undergraduate teaching assistant.

Teaching Experience and Interests

My experience to date includes teaching introductory Computer Science (CS) courses to CS and non-CS majors at the University of Wisconsin–Milwaukee. I served as a graduate teaching assistant for introductory programming courses for four and a half years, and as a lecturer for one year. During this period of time, I had the opportunity to teach 429 students. I also served as an undergraduate teaching assistant in the School of Music at the Autonomous University of Coahuila in Mexico. The school offered non-credit music lessons to the community in general. I taught piano during seven semesters to an average of 10 students per semester.

I especially enjoyed teaching programming to freshman and sophomore students. Based on this experience, I believe I would also enjoy teaching other introductory CS courses as well. I am also qualified to teach more advanced courses. As a graduate student, I took several courses on data structures and algorithms, software engineering, software testing, programming languages, compiler construction, type systems, and advanced program analysis. I would be interested in teaching any of these subjects.

As a student, I have found that the learning process is more effective when one finds the value in the material, real-world application of concepts, etc. For my doctoral dissertation, I developed and applied static program analyses to find error-handling related bugs in large C programs. My analyses found hundreds of confirmed bugs in Linux file systems and drivers. Although my industry experience is limited, my experience applying static program analysis to large and widely-used software systems gives me useful insights to share in the classroom.

When teaching, I made students active participants, and helped them stay motivated. For example, I found that including extra-credit in programming assignments encouraged advanced students to stay motivated, and the rest to have an opportunity to go beyond the class material. I gave students feedback as soon as possible to prevent them from falling behind. I prepared study guides for exams, and students were particularly happy discussing and solving sample questions in the classroom. My students especially appreciated my availability inside and outside the classroom. I learned that having a friendly and enthusiastic attitude towards my students went a long way to make them interested and motivated in the subject.

Teaching is challenging. Students have different backgrounds and skills, and learn at different paces. I learned some of this when teaching non-CS majors how to program computers. Some students had taken computer programming courses in high school, but many others had not taken any computer classes. Learning the class material was particularly challenging for these students. I used to write additional examples to help them reinforce the concepts. As a piano instructor, I experienced another form of diversity: my students ranged from 5 to 70 years old. My approach to

teaching was different depending on their experience, skills, and educational background. Finally, there are students who have special needs. Once I taught programming to a student who was hearing impared. The student would bring an interpreter to class, and use an online service to call and ask questions. That experience in particular taught me a lot. I greatly admired the student's extra effort to learn and do well in class. In return, I put extra effort in communicating with the interpreter without CS background, writing additional notes whenever needed, etc. My limited teaching experience has showed me that teaching requires flexibility and creativity.

Beyond the Classroom

Professors play additional roles outside the classroom. Two of these roles are acting as mentors and role models. As a graduate student, I have mentored minority students. I served as virtual mentor to two middle school Latinas through the NSF-funded program *Girl Game Company*, aimed to increase middle school girls' interest in technology. I currently serve as mentor to three female CS undergraduate students at UW–Madison, as part of the *WACM* (UW–Madison ACM's committee on Women in Computing) *Mentoring Program*. As a minority student myself, I realize how important role models are and how their absence can stifle a young person's interest in the field; therefore I am committed to stepping up and becoming more active and visible so that other students can have models to look up to early in their education.

As a professor, I would like to make my small contribution to support women and other minorities to graduate from college and seek graduate studies in CS. I am already an active member of Latinas in Computing, a community created to promote the representation and success of Latinas in computing related fields. I also serve as a Latina in Computing Ambassador to the Anita Borg Institute of Women in Technology (ABI). ABI is dedicated to increasing the impact of women on all aspects of technology and organizes the Grace Hopper Conference (GHC).

GHC is the largest conference for women in computing. I have actively participated at this conference for the past three years, and also encouraged other women in my department to participate. I have organized and participated in panels that discussed issues that women in computing face, such as challenges of intercultural communication and effective networking. I also participated in a particularly interesting panel about giving back to developing countries. In this regard, my mid-term goal is to find ways to help CS students in Latin America to take advantage of opportunities abroad to continue their education and achieve their full potential. In the long-term, I hope to motivate technology companies to invest and bring research to developing countries in Latin America. This could have a great impact in many areas, education in particular.

In summary, I am looking for an opportunity to teach and conduct research in the area of Programming Languages, in particular Program Analysis. I would like to have the opportunity to interact with undergraduate and graduate students as a professor and advisor. I plan to continue my current research work on applying static program analyses to make systems software, and other large programs, more reliable. I would be eager to collaborate with faculty in other areas of Computer Science, e.g., Operating Systems and Databases and share these insights in the classroom. I also plan to continue my efforts to increase diversity.