

## Teaching Statement

### Why I wanted to teach?

I have always thought that teaching was the most fulfilling aspect of an academic career. I was inspired to consider an academic career by two of my teachers. My first inspiration was my high school Math teacher who was so visual in his teaching that we hardly used the white board in a math class. My second inspiration was my Engineering Mechanics Professor in my freshman year at college. He taught the difficult concepts of Mechanics by using simple analogies. This made learning not only easy but also fun.

My first teaching opportunity was an Assembly Level course in my sophomore year where we used “System Software: An Introduction to Systems Programming”, by Leland L.Beck. The book was a fascinating read and I agreed to teach a five day crash course to a dozen other students in the class before the finals. It was a bittersweet moment when the results of the exam came out and I found that some of the students I taught got better grades than me. It was then I decided I wanted to become an educator, because I loved it and was good at it.

### What experience do I have in teaching?

*Teaching:* It was my passion for teaching that originally compelled me to pursue a PhD in the first place. In my first year of graduate school I was the Teaching Assistant (TA) for the undergraduate “*Software Engineering*” course at North Carolina State University, which involved a 2 hour lab session every week. The professor of this course had an outline for the lab, but it was up to the TA to teach it however they pleased.

I had students who had a fair amount of experience in the software industry taking the class. Over the course of the semester I learnt how to guide students to reach their objectives in class, as every student had different levels of experience in software development. I liked the course so much that I was the TA for two more semesters. I was also awarded the **Outstanding Teaching Assistant Award** for the year 2007 by the Computer Science Graduate Student Association at North Carolina State University. But more importantly, to this day I meet students who took that course and are now pursuing successful software careers, and it is rewarding to know that what I taught in class is now being put to use in their day-to-day professional activities.

More recently (Fall 2012), I was able to teach a graduate level seminar course for the Ultra-Large Scale Software Systems program at the School of Computing in Queen’s University on “*Empirical Software Engineering using Ultra Large Repositories*”. This course complemented the research I am currently pursuing. The syllabus included various state-of-the-art research studies in this area, and the students were each required to complete an eight week long project. Two of these projects have already been **accepted as research papers** at the 29th IEEE International Conference on Software Maintenance (ICSM 2013) and three others are under submission. It was a great learning experience in guiding the students on their projects and helping them turn it into publication quality papers.

*Advising:* As a Post Doc at the Software Analysis and Intelligence Lab in Queen’s University, I had the opportunity to **mentor and advice** a number of student on their thesis and dissertation work. **Three students have already defended their MSc thesis.** I have been able to successfully help them get their work published in top SE conferences and journals. This experience over the last two years has taught me the most ideal ways to bring out the best research capabilities among students. I have been able to mentor the students on not only identifying solutions, but more importantly, identifying problems that need to be solved.

### What I would like to teach?

1. I believe that a strong ‘*Software Engineering*’ course is invaluable for undergraduate students in Computer Science. Such a course will require a lot of practical hands on training. To that effect, I would have the students do a semester long practical project that will let them experience the real world requirements of software development, and use the tools that are commonly used in the industry to accomplish these tasks. The project would complement the theory taught in class.
2. I would like to teach a *seminar course on software engineering research for graduate students* where we would read and discuss seminal research papers in the area. This would give every software

engineering student the basics needed. Besides the basics it would also enable them to identify a well written and rigorously researched idea.

3. Finally, I would like to develop a new course for senior undergraduate and early graduate students on '*Data Engineering for Computer Scientists*'. Every company is regularly generating and recoding terabytes of data. There is dire need for computer science engineers who are capable of analyzing this large stream of data. I envision this course as an enabler for students to understand and learn the basics of data analysis. Ideally, I would invite my past collaborators, *Ahmed Hassan from Queen's University, Audris Mockus from Avaya Labs, and Tom Zimmermann from Microsoft Research*, who are experts in data analysis, to give guest lectures. Such a course would prepare the students for a whole new world of opportunities, beyond just software engineering companies.

Over the last decade I have had the good fortune of having a lot of excellent teachers, advisors, and collaborators. What I learned from them besides the subject material was invaluable. I learned that it is never too late to learn, particularly from students. These are some of the lessons that I would like to practice when I am teaching and can hopefully inspire many more to become teachers.