Teaching Statement

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In my opinion, teaching others is among the most fulfilling occupations one can aspire to. Helping students to understand new concepts and ideas, along with discovering ways them to overcome the difficulties of growing intellectually is very satisfying. In addition, I find that as I teach others, I increase my own knowledge as well. As a full-time instructor in a combined undergraduate and graduate level course made up of 70+ students each semester, I had the opportunity to interact with a large and diverse group. I believe students can learn almost anything if they are provided with an inspiring and collaborative setting with an approachable and motivated instructor. I encourage students to explore their own ideas and work together to create an environment of creativity and critical thinking.

Previous Experience I began teaching *Computer and Informatics* in India at the Institute of Engineers. When I came to the City College of New York, I started teaching *Introduction to Computing* and *Operating System laboratory*. I had to adapt my teaching style to the educational standards in the USA. I learned that instead of simply lecturing in the class, I should focus on allowing students to study on their own while I acted as a facilitator, guiding them in overcoming any difficulties. My approach was to give an introduction to the topic and then allow them the opportunity to solve the programming assignments for the class. When students asked for help, instead of giving the solution, I would give hints on where they went wrong or on what the next step should be. At the end of class, I would give the final solution. After moving to the University of Nevada, Reno, I applied the same approach while teaching *Digital Design* laboratory. I used to provide hints about the solutions in a periodic manner and give the students opportunity to do their own critical thinking.

Moving forward as a full-time instructor, I took on the responsibility of teaching *Principles of Operating Systems* to a class consisting of both undergraduate and graduate students. My philosophy has been to encourage critical thinking and an outside-the-box approach. Sometimes in class, I introduced a problem and asked the students to apply their rational thinking to develop a solution. Students would come up with different ideas, views, and notions as they approached the problem. After gathering a few ideas, I began teaching the topic. At every step, I explained the notions proposed by the students and how they could be modified to arrive at the correct answer.

Interactive communication is another vital point while lecturing in class to maintain the students' attention. I avoid talking for more than 10-12 minutes at a time. After every interval, I try to give some example problem and allow students time to collaborate with a group of three to four, which enhances their social skills by interacting with a team. Most of the in-class activities can be completed during the lecture. Instead of evaluating their performance on how close they are to the correct answers, they are judged on how innovative they are in approaching the problems. Feedback from students was extremely positive regarding these in class activities; they actually learned the practical way of solving problems. They communicated that had I given the solution to the problems, they would have learned less, but the group discussion allowed them think in an unbiased way, and different people attack the problem from different perspectives. As a result, after completing the course, students were able to analyze problems critically.

In the summer of 2016, I was one of the instructors for NSF-funded *Cyber Security Initiative for Nevada Teachers*. In this project, school teachers from several high schools in Nevada came together for a hands-on training on Cybersecurity. We let the teachers explore the security and vulnerability in an isolated sandbox. I lectured a few classes as well as laboratory sessions for a group. They became very motivated after experiencing the hands-on training on the cyber-physical system. Having said this, I believe that there should be a balance between how much theory I teach in the class and how much time I let the students explore freely. Also, I noticed that periodic evaluation of their progress through taking weekly quizzes can be very helpful. Through a balance of these four, a good classroom environment can be maintained.

Future Plan With the interdisciplinary background of Electronics and then Computer Science, I am interested in teaching undergraduate courses from core areas such as programming languages, data structure, design and analysis of algorithms, operating systems, computer networks, up to advanced undergraduate courses such as wireless and mobile communication, cyber security, mobile security, system prototyping, etc. For the graduate level, I would be interested in teaching wireless networking, network security, forensic management of digital evidence, probability and stochastic processes, etc.

I believe, demonstration is the most efficient way to teach engineering subjects. I am actively involved in designing laboratory study materials while teaching topics such as programming languages, digital design, operating systems, wireless and communications, and cybersecurity testbeds. By leveraging my current experience at the Computer Networking Laboratory of the University of Nevada, Reno, I plan to develop a state-of-the-art comprehensive sandbox testbed to explore vulnerabilities in both wireless and wired network protocols. The wired testbed will be equipped with physical host machines as well as virtual machines. The wireless testbed will be equipped with frequency agile software defined radios.