Teaching Statement

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In my childhood, I was deeply intrigued by Greek Mythology – the story of Prometheus who stole the magic of fire for all mankind; and the story of Pandora's Box, which contained the evil that afflicts the world, and the eternal hope that makes us human. As I was starting my exploration of the world of computers, I realized that we can symbolize the power of computing through these two metaphors. Like Prometheus, computing gave us the power to unlock the secrets of the world and augment our lives through effective use of information. But, at the same time, it has opened up new threats and challenges. And, at the end of the day, computing has given us the audacity to hope – hope that the world will change for the better through our efforts. In my career in the field of computer science, I am motivated by the latter, that we can change the world, overcoming all evil through the effective use of technology. And we can only do that by spreading the light of knowledge. Therefore, I want to devote my career to teaching and research, to explore the state-of-the-art technology in computer security, and at the same time, to motivate, guide, and encourage a new generation of learners.

1 Teaching Philosophy and Experience

In today's world, our lives have become increasingly dependent on the use of digital data. When data becomes mobile and can pass through untrusted environments, securing it against outsider and insider attacks becomes very important. My research focuses on this important problem of computer security – how can we ensure the trustworthiness of information in this increasingly untrustworthy world. As part of my dissertation, I have developed techniques for providing security for data in the face of attacks by powerful adversaries. But I have also taken the time to teach these methods, through lectures and seminar talks given to mixed audiences. Eventually, I want to pursue a career in academia and research. I will continue research in information security, and explore state-of-the art technology that will make this world a safer place for the children of tomorrow. Along with that, I want to develop better ways of teaching information security through theoretical discussions and enjoyable practical demonstrations.

My teaching philosophy combines several different themes. I subscribe to the philosophy of *Active Learning*. I believe that a good teacher needs to treat students not as disciples, but as friends. Effective interaction is the key to successful teaching. A good teacher also needs to encourage students to think, rather than to memorize only. A good teacher should also be able to communicate technical ideas easily, through interactive examples, audio-visual aids, and new technology. In my future career in teaching, I want to combine these themes in order to be a mentor, friend, and guide to my students.

I enjoy teaching. Before joining UIUC to pursue my PhD, I spent a semester teaching 60 undergraduate students at the top engineering university in Bangladesh. During my undergrad years, I had also tutored more than 120 freshman students, whom I taught how to program in C, C++, and Java. Many of these students had their first lesson in programming from me. I found that the experience not only benefited the students, but also enhanced my own understanding of the subject. And it gives me immense joy today to see those students shine in their career as programmers in top technology companies such as Microsoft and Google.

However, the graduate studies at UIUC have changed the way I look at teaching. While I certainly have broadened my learning through the world-class courses here, I have also learned that teaching is not merely imparting knowledge, but it also means the interaction of minds, and the generation of new ideas. Teaching is not a one-way street. A teacher is not merely the distributor of knowledge – a great teacher is a friend, guide, and mentor. My interactions with my advisor and the other faculty members of Illinois taught me to view teaching as fun, as a channel through which the great minds of the yesteryears pass on their learning to the children of tomorrow, and at the same time, get benefitted by the fresh perspectives of the young and the curious.

In recent years, I gave several guest lectures at the advanced data security and advanced security courses at UIUC. These lectures were directly related to my dissertation research, and the interaction with students enabled me to communicate my ideas effectively in subsequent talks. I have also given presentations in many conferences and invited talks at UIUC and Purdue. This experience sharpened my presentation skills and I learned how to present a deeply technical idea to a diverse audience. I believe that the lessons I learned through all of these experiences will allow me to teach and communicate effectively to my students in future.

Finally, I had the opportunity to solely design a new course on *Security and Privacy in Cloud Computing* at the Johns Hopkins University. I taught the graduate level course in Spring 2010 and will again teach it in Spring 2011. Designing one of the first courses on cloud computing security gave me a unique perspective on the topic and revitalized my interest in teaching. I effectively used lectures based on active learning methods. From the experience I gained from teaching this course, I am confident that I am capable of effectively interacting with students and encouraging them in thinking independently. This will certainly benefit me greatly in my future teaching career.

2 Teaching Interests

I am prepared to teach both graduate and undergraduate courses. My past experience in getting undergrads started with programming has made me confident that I will be able to tackle advanced undergraduate courses on databases, systems, and security. I am also interested in teaching graduate level courses on database and storage systems security. In particular, I am prepared to offer course related to my research topic – focusing on trustworthiness of data in diverse systems such as databases, files, and cloud computing.

For advanced graduate level courses, I want to emphasize on interactive classes, reading papers from top research conferences, and cutting-edge class projects. At the same time, I want to develop teaching materials and courses focusing on computer security in general, and secure operating systems and storage systems in particular. I plan to develop lectures and teaching material that will allow learners to know more about my research, as well as the state-of-the-art in data security. I will disseminate this information on data security and provenance via regular courses as well as online compilations. The ultimate goal of my teaching activities will be to motivate and guide a new generation of researchers to cutting-edge research in data security.

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Knowledge empowers people. Developing exciting new technology is not enough – it is also important to create engineering curriculum to spread the knowledge, and to explore technologies that facilitate the dissemination of knowledge to a larger audience of learners. In my future career in academia, I want to have a profound impact on engineering education, by combining the exploration of the state-of-the art with my role as a friendly mentor, advisor, and guide for my students. Just as Greek historian Plutarch said, *"The mind is not a vessel to be filled, but a fire to be kindled"*, – I want to enlighten my students, to open their minds to the endless, wonderful knowledge of the universe. I strongly believe that my past experience, exposure to cutting-edge research, and my passion have made me well prepared to pursue a career in teaching.