Statement of Teaching

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Teaching Philosophy. Computer Science (CS) is all about challenges. In practice, cyber-infrastructure projects always involve interesting challenges such as integrating legacy and new technologies, developing innovative and efficient solutions, learning emerging technologies, enforcing functional and Cybersecurity properties, among many others. In such a context, students need to be taught not only the fundamental CS principles, but also need to learn how to embrace, and eventually overcome, non-trivial challenges as the ones just mentioned. With that in mind, I strive for students not only to effectively learn the topics devised for each class I teach, but also to acquire the skills that would allow for them to analyze, dissect, investigate, tackle, and eventually overcome difficult challenges, as that will be a major everyday task in practice once they enter the workforce. Conversely, Cybersecurity is rapidly becoming an essential task for deploying reliable, effective, and efficient cyber-infrastructures. Along with constrained budgets, fixed time frames, technical qualifications, and customer requirements, Cybersecurity is now a big concern in industry. As an example, even a simple mobile phone app can become famous having tons of downloads overnight, and can become the target of serious cyber-attacks the next morning. With that in mind, students need to learn, digest, and practice Cybersecurity topics, so they can later become the first line of defense against cyber-attacks by correctly implementing protection and countermeasure techniques right into their code. That includes students being aware about *what* class topics they are learning, *why* they are learning them (justification), and then how will they use such a knowledge in practice (*for what*, utilization).

Teaching Experience and Style. I have had the opportunity to teach at the undergraduate level since 2013. As a result, I have accumulated valuable experience and have been able to overcome several challenges along the way, which have greatly influenced my teaching style over the years. I usually start my lectures with a brief discussion on recent events in mainstream media that feature Cybersecurity incidents. Not surprisingly, several times news describing cyber-attacks along with their main causes have matched topics that have just been, or will be, discussed in recent or forthcoming class sessions. Based on such events, and also inspired by my own research interests, I regularly modify the topics I include for discussion in class, highlighting their importance for addressing emerging trends in the field and solving *real-life* problems. In addition, I favor in-class exercises, and I encourage students to take notes as much as possible, pausing my lectures for a few minutes so they can write down important information. In my experience, asking students to take notes in class, and performing in-class exercises, has a positive impact on making sure they properly digest key concepts that will be helpful in the future. When it comes to class assignments, I usually craft them to be challenging (but commensurate enough), following the teaching philosophy described before. For such a purpose, I strive to incorporate manageable, small-scale versions of *real-life* systems and cyber-infrastructures, as well as recent prototypes that were developed as a part of my own research projects. This allows for students to practice the topics discussed in class at the same time they are encouraged to solve technical challenges on their own, thus learning additional valuable skills for the workforce along the way. Finally, I try to make myself available for students as much as I can, so they can approach me for questions, clarifications, concerns, etc. That includes the time defined for office hours as well as pre-arranged, one-to-one meetings. In such regard, I maintain constant communication with students via class announcements, which are distributed to students via the online class management frameworks and/or via email, and I try my best to reply to all student emails in a prompt and practical manner.

Mentoring. I consider mentoring as the bridge between teaching and research duties at the university level, which serves as a convenient initial training for future graduate scholars and researchers. In such regard, I usually recruit highly-motivated students from the classes I teach that show an interest in cybersecurity, and are willing to learn more about it by engaging into a research project. My mentoring style is based on small-scale, personalized teaching, which lets students explore topics themselves, providing guidance and advice when needed, allowing for them to leverage the experience at the same time I make sure projects stay within scope. In addition, I strive to achieve a *full-stack* mentoring style by making sure they are properly assisted on getting effective and complete background, developing projects and prototypes, setting up and performing experiments, gathering and processing data, and finally writing and publishing

results. Such a method has resulted in students learning the basics of academic research up to the point they are able to conduct small-scale projects themselves, from the inception of promising ideas and approaches, all the way to paper writing, publication, and its presentation at major conferences in the field. Recent successful mentoring experiences include an undergraduate student who was accepted by a highly competitive PhD program offered by the University of Virginia, and was awarded the prestigious Jefferson Graduate Fellowship, which is given to student candidates who demonstrate outstanding achievement and the highest promise as future scholars. As of today, as the leader of the Cybersecurity Research and Innovation Laboratory (CSRIL) at Texas A&M University - Corpus Christi (TAMU-CC), I am mentoring three PhD students as well as two MS students.

Diversity and Inclusion. I definitively agree that major work is needed to favor the acceptance, inclusion, and success of underrepresented groups in Cybersecurity, in CS, and in academia in general. In my academic career, I consider myself the product of successful programs tailored for underrepresented groups: I attended the University of Texas at El Paso (UTEP) from 2006 and 2008, a Hispanic-serving institution. At UTEP, I was mentored to overcome challenges such as academic deficiencies, lack of motivation, unrealistic assumptions and/or expectations, among others. For such a purpose, I took advantage of the student-success-centered culture of the university, the mentoring of outstanding faculty, and well-designed institutional programs, which eventually led me to obtain my MS degree and receive an Outstanding Masters Thesis Award as a result. Inspired by these experiences, I am fully committed to work as a faculty member to provide underrepresented groups with opportunities for inclusion, development, and success. As an example, in my previous position at Arizona State University (ASU), as well as at my current position at TAMU-CC, I have been able to work closely with students from underrepresented groups: I have successfully mentored one outstanding female researcher, and I am currently working with other two, one of them from a minority group as well. In addition, I am currently mentoring two male students from Hispanic backgrounds. Future activities in this regard may include serving as an academic advisor and/or research mentor for students in such groups, helping them join, participate, and succeed as a member of my future research unit, connecting them with potential employers in industry with whom I happen to have research collaborations, and helping them leverage institutional as well as state-and-nation-wide programs. In addition, I am willing to actively participate in initiatives tailored for inclusion and diversity at the institutional level, besides the expected service commitments for a faculty position.

Future Classes. Due to my teaching and research experience, I feel confident teaching general introductory CS and Cybersecurity courses at the undergraduate level. That includes introduction to programming courses, as well as data structures and algorithms. In the future, I plan to offer graduate courses featuring advanced Cybersecurity courses based on my research experience and interests. As an example, I have devised a course for analyzing and designing approaches for enforcing Cybersecurity principles, e.g., authorization, in emerging technologies such as Mobile Augmented Reality (MAR) and the Internet of Things (IoT). Moreover, I also plan to offer a course featuring software validation and verification techniques, such that Cybersecurity properties can be properly assessed at the source code level. This would allow for students to better understand the importance of such techniques for locating, assessing, and removing potential vulnerabilities in software products before they can be leveraged by attackers.