Teaching Statement   Gururaj Saileshwar

Teaching is one of the joys of being in academia. A professor is uniquely positioned to not only pursue excellent research, but also teach and mentor students to become excellent researchers in their own stead. Teaching gives me joy, as seeing my students succeed gives me great personal happiness. This statement outlines my philosophy and vision towards being a good teacher and highlight my past teaching experiences.

Teaching Philosophy

My teaching philosophy has its origins in my first teaching experience more than a decade ago. In 2011, when I was an undergraduate teaching assistant for a freshmen computer programming course, I had students from highly diverse backgrounds. Some students grew up in rural areas who had never even owned a computer before, and others had been programming competitively since childhood. It was challenging to ensure everyone's learning outcomes were equally met. But I learned and applied numerous teaching strategies like pairing students of different skill levels for peer-learning and encouraging learning from online resources to promote a flipped-classroom approach. The "no student left behind" teaching philosophy I developed during that formative teaching experience continues to influence me regardless of what I teach.

Classroom Teaching Experience

I have been a teaching assistant for several courses: one graduate course at Georgia Tech in my Ph.D., and four courses at IIT-Bombay, India in my undergraduate, where I gained experience conducting recitations and grading assignments. I also delivered guest lectures on hardware security in two graduate courses in the School of ECE at Georgia Tech.

In Fall-2021, I am currently the co-instructor for a graduate course in the School of Computer Science at Georgia Tech, "Reliability and Security in Computer Architecture" (CS 7292), which I co-designed with Prof. Moinuddin Qureshi. My responsibilities spanned all aspects of teaching, like designing course curriculum, teaching over 30% of the lectures, designing exams and assignments, and overseeing students' course projects. The curriculum was designed to cover recent advances at the intersection of security, reliability, and computer-architecture. Overall, the course was well-received: in the mid-term course feedback collected anonymously, **students rated the course 4.5 (on a scale of 1 - very poor to 5 – very good)** averaged over metrics like course content, clarity of teaching and pace of the lectures. Overall, my teaching was also well-liked by the students. Some student testimonials are provided below:

> - *Gururaj's [lecture on] Transient Exec. Exploits was one of the clearest and most engaging lectures of the semester.*
> - *He has a very good ability to explain complex topics in a very easy to understand way.*
> - *He is very responsive and knowledgeable. He is approachable as well which I believe makes [him] a good teacher.*
> - *Gururaj is clear and very precise in his teaching. It is a fun experience taking this class.*

In the future, I am excited to create new courses building on my recent classroom experience. Given the increasing relevance of security and computer architecture, I will develop an advanced graduate course on "Advanced Topics in Secure Computer Architectures", including several security-related topics from my recently designed course and other emerging research in this area. Additionally, this course will have a new seminar component focusing on paper presentations and a research project, to encourage graduate students to explore new research at the intersection of security, computer-architecture, and systems.

Based on my research and teaching, I am also qualified to teach a range of undergraduate and graduate courses in computer architecture and security, and introductory courses broadly in computer systems and engineering.

Mentoring Experience

A good teacher also needs to be a good mentor outside the classroom: I am currently mentoring several junior students in their research across different research labs, universities, and countries.

In my research lab at Georgia Tech, I am mentoring two Ph.D. students who are working on securing DRAM against Rowhammer attacks: we are currently working on an ISCA'22 submission together. I am also mentoring several students as a part of independent research collaborations. First, I am mentoring a Ph.D. student in a different research lab at Georgia Tech, working on fuzzing: we recently published a CCS'21 paper together. Second, I am mentoring a Master's student from University of British Columbia, Canada working on DRAM integrity: we submitted two papers together, one each at ASPLOS'22 and HPCA'22. Third, I am also mentoring a junior Ph.D. student at TU Graz, Austria, on new micro-architectural side-channel attacks: we are working towards an S&P'22 submission together.

My learning across these mentoring experiences has been that different students have different mentoring needs. Accordingly, I have learned to customize my style of mentoring to each student to help them benefit the most. I look forward to continuing these mentoring relationships and seeing these students grow and succeed.