

## **Teaching Statement**

### **Patanjali SLPSK**

#### **Overview:**

There is a certain joy in teaching that cannot be described in words. The moment you see a student understand a concept or when their doubts are cleared, and their eyes widen with the newfound clarity is magical and makes the hard work and effort worthwhile.

As far as I can remember, I have always wanted to teach. Maybe it was because I come from a family of teachers, or maybe it was because I was fortunate enough to be taught by some of the best teachers at every level of my education. I have applied the philosophies I learned from observing my teachers, mentors, and advisors during my teaching career. I believe that a classroom is where I, as an instructor, interact with some of our generation's best and brightest minds. Thus, it should be a place where the students should feel empowered to think, reason, question, and, more importantly, innovate. I feel that students should be given a platform where they don't just learn the subject but figure out how to take their learning forward and push the boundaries further.

#### **Teaching Philosophy:**

As an instructor, my primary role is to help shape the students. I believe in fostering an environment where the students can learn, question, and understand the subject without fear. My courses would include a healthy mix of theoretical and practical modules to help the students understand the subject. I would also use my teaching platform to help empower students with similar teaching philosophies.

#### **Teaching Experiences:**

I have served as a Teaching Assistant at my alma mater IIT Madras in India, since when I was a Masters student. I have helped professors set up courses across various subjects in Computer Science for both Undergraduate and Graduate disciplines. As a Graduate Teaching Assistant, I have co-taught graduate courses such as Digital Systems Testing and Testable Design, CAD for VLSI, Digital Design Verification, Secure Systems Engineering, and GPU Programming. Some of the undergraduate courses I have co-taught include Computer Organization, Operating Systems, Data Structures, and Algorithms.

I have experience teaching courses that focus on core Computer Science concepts and courses that focus on system design. As a Teaching Assistant, I helped set up a Computer Architecture Lab in conjunction with Intel. In this lab, the students used Galileo and Atom boards provided by Intel to understand core architectural and Operating Systems concepts. I also helped set up a CTF (Capture the Flag) for the Secure Systems Engineering course, where the students could explore various concepts related to cybersecurity. The initial version of the CTF platform hosted 30 teams, and today, the platform has scaled up to host around 550 teams across the nation in its current edition.

Apart from this, I have also been a Teaching Assistant for NPTEL courses on Operating Systems, Information Security-III, and Information Security-IV courses. NPTEL is IIT Madras' online teaching platform and caters to thousands of students from different regions in India. As a Teaching Assistant, I always ensured that all the students could understand the course modules, and interact with students who had different learning skills, spoke different languages, and had different learning environments. This part of my teaching career helped shape a lot of my insights into teaching. Traditional classroom teaching gives the instructor a lot of scope to efficiently interact and understand the students' mindsets, whereas online teaching platforms do not. Thus, the effort required to ensure the success of online teaching is significantly higher. For example, since the students were learning remotely, the lab modules were challenging as we had to provide students with access to the servers and the tools, unlike the traditional course where the students would show up to the lab.

As a postdoc at the University of Florida, I was a co-instructor for the Advanced VLSI Design (EEE 6323) course in the Spring of 2022. I helped devise the curriculum and taught 8 of the 13-course modules. Since the course was offered during the pandemic, I ensured that the lectures and the lab modules were easier to follow for students attending the classes remotely. The remote teaching experience was a real eye-opener since I gained a lot of insight into the effort and undertaking required to offer a course at an international level.

In addition to the traditional textbook knowledge, I can combine several interesting labs that can benefit students. I can also teach the application of several technologies as complete courses in the field of Internet of Things, Hardware security, and Machine Learning. I have the experience of creating and conducting online classes for lecture and lab-based courses. In addition, I am an expert in several programming languages like C/C++, Python, Matlab, Verilog, System Verilog, and Tcl with experience in developing industry-standard tools. Also, my knowledge of using several ML packages available in python for various applications is helpful in research and creating a new curriculum. I can also help undergraduate and graduate students in their projects in the areas mentioned above.

### **Mentorship Experience:**

I have been fortunate enough to mentor several domestic and international students from both graduate and undergraduate levels during my Ph.D. and Postdoctoral Fellowship. During the Summer Undergraduate Research at Florida (SURF) program in 2019, I got the opportunity to mentor two undergraduate students from two different universities. I trained them in various concepts related to hardware security and tool development using C++ and Python. Several of my mentees have been accepted to prestigious Ph.D. programs at different universities such as Stanford, CMU, UF etc. I have also mentored Ph.D. with whom I was able to go great depths of research and publish several papers. These mentoring opportunities gave me the experience to work with excellent students, train and inspire them to pursue the challenging life of research. This has been a significant experience that would help me in my future endeavors as a good advisor.

In brief, I will be delighted to teach both graduate and undergraduate courses in a wide range of topics in Electrical and Computer Engineering. Besides, I consider mentoring, graduate and undergraduate students to become independent researchers and industry professionals, an honor and privilege. As a professor, I will engage myself in various academic services within and outside the department as required. I eagerly look forward to starting my career as a full-time faculty member and make significant contributions to the department and the university through teaching, research, mentoring, and various academic services.