

Kaushik Veeraraghavan

Teaching Statement

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I greatly enjoy the experience of interacting with students. I wish to pursue an academic career as it will provide me with the opportunity to mentor the next generation of computer scientists and actively work with them to tackle the thorniest problems in the field.

I believe that students learn best when lectures are complemented with projects that reinforce the theory while providing the opportunity to demonstrate creativity. Based on my experiences as a student, I also intend to incorporate the use of in-class problem handouts, which break the monotony of a lecture and provide a pause to absorb the material presented.

I have delivered guest lectures on deterministic replay and file systems to the graduate operating systems class at the University of Michigan in Winter 2011. Preparing these lectures was a learning experience for me, as I had to revisit my assumptions and construct arguments from the ground up in teaching a novice audience. I especially enjoyed the back-and-forth discussion of tradeoffs and alternate solutions that the students proposed as they understood the material.

Teaching interests

I am interested in teaching graduate and undergraduate courses in operating systems. I can also teach courses targeted at freshman/sophomore students such as introduction to programming and computer organization. In addition to existing classes, I am interested in developing new courses focused on concurrency targeted at both graduate and undergraduate students.

- Graduate course: Writing correct concurrent programs that run reliably on modern multicore and multiprocessor machines is a challenging endeavor. In this course, I will cover current research in Systems, Architecture and Programming Languages on new static/dynamic analysis techniques and runtime systems that aid in writing and debugging correct, scalable concurrent programs.
- Undergraduate course: I believe that teaching undergraduates the fundamentals of concurrent programming is critical to improving system reliability. This course will introduce students to current practices for structuring concurrent programs on shared-memory systems (e.g., producer-consumer, master-worker, etc.) and the challenges in ensuring correctness (e.g., consistency, data races). I also plan to introduce advanced material like different consistency models and current approaches to managing concurrency such as transactional memory.

My past research has spanned several areas including file systems and mobile computing, so I can also teach classes on these topics at the graduate and undergraduate levels.