Teaching Statement
Adrian Caulfield

Throughout graduate school at the University of California, San Diego I have TA’d undergraduate computer architecture and mentored other graduate students during the design and implementation of a large and complex systems project. These experiences have led me to believe that project based classes with students with in small groups are one of the best teaching tools, and that larger group projects are an excellent way of leading graduate students through their time in school.

As a teaching assistant for an undergraduate computer architecture course, I designed and lead the lab sessions. In the course, students collaborated to implement and simulate a 5-stage pipelined MIPS processor in Verilog. Working in groups allowed the students to tackle much larger problems than they would otherwise have been able to in the same time, giving them more exposure to advanced topics while providing support to each other. For example, group members can divide up the required work and implement simple pieces individually, while collaborating more closely for the larger, more complex tasks.

As the lead graduate student on a large hardware and systems design project like Moneta, my thesis work, I mentored several graduate and undergraduate students throughout my graduate studies. During this time I helped guide students in breaking down complicated designs and turning them into manageable pieces. I also provided non-technical guidance to these student to help them work their way through the graduate program successfully. Working with students of varying levels of expertise and prior experience required me to explain concepts and designs in multiple ways, while matching assignments to the skill level of the students involved. These interactions have given me the opportunity to learn how to manage graduate student projects and provide the support students need to make progress and explore ideas while helping them to learn new skills and concepts. Throughout my graduate career I have been a resource for the other members of my lab to bounce ideas off of and in helping solve design problems as they arose. Working on a variety of closely related projects at the same time allows me to see where ideas from one project might generalize and apply more broadly to influence and guide other projects, making them all stronger in the process. I believe my experience mentoring students at UCSD will help me to more easily guide my future graduate students to become excellent researchers.

At both the undergraduate and graduate levels, as both a student and TA, I have used and maintained online tools for collaboration and interaction with classmates and instructors, and found them very useful for managing communication with large groups of students and for collaborating on research projects. Throughout the many courses I’ve taken and as a TA I found that there are many students who are unwilling or unable to attend office hours or seek extra in-person time to clarify their understanding and having online tools available for students to discuss problems and interact with each other and the instructors has been a tremendous resource. As a graduate student and mentor, online discussion lists, document sharing sites, and wiki-based collaboration tools have proven invaluable for maintaining a productive and communicative research group, and I would provide similar tools for my own students.

I look forward to the teaching opportunities I will have as a professor and feel comfortable teaching a wide variety of undergraduate computer science courses ranging from computer architecture to operating systems and embedded systems. At the graduate level I am most familiar with computer architecture, storage technologies and architectures, and lower-level systems courses, and would enjoy teaching more focused seminars and courses on specific topics or in a team-teaching multi-disciplinary approach. For example, a course on how architecture and operating systems work together, and how these disciplines can interact to make tasks easier on either side of the hardware/software boundary. I also look forward to the satisfaction of mentoring students as the progress through earning their own degrees and become productive members of our community.