I worked at Cavium Network’s design center in Marlborough, MA as part of the RTL design team, primarily focused on the Octeon II family of network/internet application processors. The RTL team is small enough that each person is responsible for a block or several blocks, and since I was there for only a couple of months, I worked on one of the smaller blocks (JTAG).

During my work term, I was given a variety of challenging tasks. I began by making modifications to existing RTL code, using formal verification to ensure the designs were functionally equivalent. I also did a lot of scripting work, writing and updating in-house tools and scripts. One of my larger scripting projects involved writing a script to update the entire chip’s codebase to pass module parameters by name rather than by order (a feature added in Verilog 2001), and implement a check to ensure the old style is no longer used. My last significant project involved writing a behavioral RTL model for the DDR interface to speed up simulation.

On my first day, I was given an orientation: shown around the site, introduced to coworkers, set up my computer environment, and given documentation about the company and the chip I would be working on. On the second day, I was put to work immediately and assigned my first significant project. I had a mentor that I could direct all my questions to, but everyone I worked with was more than willing to help.

All of the projects I worked on used concepts I had learned in ECE 230, ECE 314, ECE 210, and CS 311. It also would have been nice to have taken ECE 474 and ECE 475, but most of what I needed to know I learned on the job. I spent a lot of time writing/modifying RTL, so a strong familiarity with Verilog and the ability to debug using waveforms was a must. I also did a lot of scripting using Perl and Bash, both of which I learned on the job.

I took the advice of previous co-ops in the area and lived in one of Andrea Bibi’s (of BB Realty) apartments. The apartments are pretty nice and probably the cheapest in the area. The apartment building is on Main St. in Marlborough, so I had less than a 5 minute drive to work. I lived in a 3-bedroom apartment with two other interns, so there was always somebody to cook dinner or go see a movie with. Marlborough is by no standards a social hotspot, but there is plenty to do in the area. There are a couple of nice pubs and restaurants, movie theaters, and malls very close by. We frequently drove into Boston (40 minute drive) on the weekends, and even made a trip to Vermont.
I very much enjoyed my first work term at Cavium. The work was very interesting and is something I could definitely see myself doing after college. The pay was great, the hours were very flexible, and the work environment was very relaxed. Having worked on "real" projects, I feel I have gained a better understanding of some of my previous coursework and have a better idea of what courses to take in the future. Finally, having been away from campus for more than a semester, I will return with a recharged brain ready to soak up everything that’s left to learn.