First Term Co-op Job Summary

During my first work term with Intel I was in the Implementation group for a future generation Itanium processor in Hudson Massachusetts. The site I was in is called MMDC (Massachusetts Microprocessor Design Center) and works closely with a site in Fort Collins. I worked on a section of the chip that was responsible for interface to off-chip memory, other processors, and IO hub communication. I was responsible for synthesizing 3 digital blocks of this section – creating layout from the verilog code. This involved using many VLSI tools – some Intel developed, some from outside vendors. I was assigned a mentor on my first day of work, who taught me to how to use all the tools and provided me with numerous VLSI books for me to ramp up. I was responsible for creating logic, routing, running extraction tools, and running timing analysis on all the blocks. I had received informal training on all these tasks; most from my mentor and some from other people on the project. Most Intel employees are always happy to devote some of their time to teach co-ops and train future engineers.

MMDC requires all co-ops to come up with a training plan at the beginning of the co-op term and attend about one training session per two week basis. This training is secondary to the training received from your mentor and is meant to inform you of all the
different work that is done at Intel. I had various trainings on architecture, dynamic logic, semiconductor packages, and test methodology. These trainings provided me with a broader knowledge of topics outside of implementation, and helped to make me a well-rounded engineer.

All the work that I did closely matched my career interests and previous courses taken. I directly applied the knowledge gained from ECE 230 and ECE 315 in my daily tasks. Even though I hadn’t taken ECE 474 I was quickly able to learn what VLSI concepts were needed for my tasks.

One of the best things about Intel is the incredibly relaxed work atmosphere. Everyone, including the high level managers, sit in cubes making approachability very easily. I felt like I could go and talk to anyone and I didn’t feel overwhelmed to walk into the office of my manager or a highly ranked engineer to ask a question. Through this relaxed atmosphere I was able to meet many of the engineers and develop my networking skills and professional contacts.

As far as housing goes I can suggest nothing better than living in Andrea’s place in Marlborough. (andrea@bbraltycopr.com). She provides furnished short term housing for a very reasonable price. ($550/month w/ all utilities). I suggest getting in touch with her early as her place might fill up fast. I lived in the intern building with about 10 other co-ops. This made my co-op experience all the more enjoyable as we all hung out on weekends and after work.

As far as things to do after work I never had trouble keeping myself occupied. Since a lot of us lived in the same building we all hung out together and had parties. We had a weekly poker night and I even organized an indoor soccer team in a nearby league.
It was a 7v7 league and everyone enjoyed playing. I also played for a couple of other soccer teams in the area.

In conclusion this co-op term was excellent. I enjoyed the work I did, the people I met, and all the fun experiences I had. I was very happy to meet many engineers at Intel and find out exactly how things work in the industry. I was treated more as a newly hired engineer as opposed to an intern, and was given similar responsibilities as other full-time engineers.
Co-op Job Summary

As this was my first co-op term, I was not sure what to expect. I worked in the Validation group, writing test cases and debugging flows on an upcoming Intel microprocessor. My group worked on debugging global flows, so I had to communicate with members from the not only our Hudson site but also the design center at Fort Collins. Some of the topics I worked on included local and global cache coherency and the memory ordering model. I created test cases mostly using Itanium assembly and Perl, which I had learned from scratch at Intel, and developed a stronger understanding of the architecture of the system. In general, I enjoyed the work I was doing and I learned a lot. As a result of my first co-op term, I've decided that pursuing graduate school is probably going to be a good idea. I saw how little we learn as Cornell undergraduates and how much more education I would need in order to be doing what I want to do.

The co-ops at Intel had a tight bond, so we were able to do many activities together. During lunch, we had fierce team doubles competitions in ping-pong (White vs. Wong). We formed an indoor soccer team, went snowboarding together, played poker, and ate out every Friday for lunch. During our co-op outing, we played paintball and got to shoot the people we didn’t like.

One of the cheap and affordable housing plans is with Andrea Bibi under BB Realty. The building housed several Intel co-ops, with everything included (utilities, kitchen ware, internet). For the price, the rooms were definitely good enough for us lowly interns (and only 3 miles away from the Intel site).

Unless you wish to suffer by being carpooled around, you better bring a car along with you. Marlborough, the city next to the Intel site is quiet with not many things to do. Fortunately, there's Boston and Worcester not too far away (you can take commuter rail up there at the Southborough Station). There's also Solomon Pond Mall which is a decent mall. During the weekends, some of the over-21 co-ops got together at Boston to hit the clubs/bars and casinos. Most of the time during the week, you're going to be tired anyways so the place is alright.

The best thing at Intel would probably be the relaxed atmosphere. Intel has some quirky people as well as many normal people also, but most everyone is friendly and you can have a good time if you want to. Every Fridays at 3:00, we have cookie time where we sit around and play cards.

The worst thing at Intel might be ramping up in the beginning of your first term. In my case, I was lucky to have a very good mentor who would answer every dumb
question I asked. There are many acronyms and words that you’ll have to learn, and you will feel very lost in the beginning. Ask questions to your mentor and to other coops as much as you can. After a few weeks, everything will make sense.

Overall, I had a great experience and can’t wait to come back next summer.

Other Info:
Andrea Bibi’s phone number is 508 485 7546. (She’s the landlord of BB Realty)
My group is responsible for designing the next generation Itanium server microprocessor. The major project I worked on this term was to develop a debugging tool. I also developed a focus test. Like last term, I had a mentor who answered my questions or directed me to someone who could.

My work is directly related to my major as an ECE student with an interest in computer engineering. As such, I tried to take advantage of all the resources I had at Intel. There are many things going on in the design center, and as the corporate culture is very open, people are willing to help you learn if you just ask. If I were to go through another coop, I would try to be more aggressive in asking questions, since most people like answering questions anyways.

Contact Andrea Bibi (BB Realty) for the cheapest housing in the area. The place isn’t too nice but definitely the best value out there and good enough for a lowly intern like myself. A car is definitely necessary. While it is possible to carpool (I did my last term), people will think you are annoying and not like you. There were plenty of other coops and many fun things to do. We had a soccer league for Intel employees, Poker Wednesdays, Thirsty Thursdays, and a city called Boston about 40 min. away. There’s also two casinos that are an hour and 15 minutes away, but I’d recommend staying away if you have a gambling problem. The site also has a gym where you can get bronchick like my friend Boris. When he started lifting weights at Intel, he got big.

Intel is a great place to work if you’re interested in microprocessor development. People here are friendly, it’s a nice environment, and there are plenty of things to do in the area if you’re not feeling lazy.
Job Summary

I worked with Intel’s Test Technology team. My team uses faults models to describe possible defects on the chip after manufacturing. The more faults we detect the higher the fault coverage, therefore we have a better understanding of the quality of a chip. Test Technology is important to Intel because it’s expensive to fix defective units that have been sent out to customers; therefore the team saves Intel money and improves customer satisfaction. One of my most important tasks was to keep track of the team’s fault coverage weekly progress. Since we have certain coverage goals to reach, we need to know where we stand compared to our goal. I used stuck-at and at-speed fault coverage data for each unit on the chip to calculate the overall coverage. Then I took all the information I had and created an html file and a graph, so my team could know and see how much the coverage had changed from the previous week. Another task was fault exclusion, which improves fault coverage; therefore it’s an important part of my team. My mentor was very helpful to me, he taught me the concepts of my team and he clearly explained each task that I had to do. He was also very willing to help when I was confused about something. The best part about working here was learning more about the different aspects of electrical engineering and feeling like I contributed to Intel.

I believe that my computer programming skills have improved greatly since I joined Intel. I’ve also learned how complicated Intel processors are compared to the MIPS pipelined-processor I worked on in ECE 314 and it’s interesting to learn the different functions of the units in the chip. I was also intrigued by multi-core processors, although I had heard about them before I came to Intel, I didn’t understand how they
worked or how they could communicate to each other. Intel also gave me the opportunity to learn outside of my team; therefore I learned about noise, beta-ratios, clock timing, and other components of Intel.

Outside of Intel there were other activities to do such as ice skating, bowling, seeing movies and going to Boston. These activities made life outside of work very enjoyable and entertaining. Intel also provided fun activities like community service, soccer, table tennis, a Wii-tournament, cookie time, paintball, and coffeehouses.

Marlboro is a good place to live, and I highly recommend Stone Gate Apartments. They’re apartments are very nice and there is a basketball court, fitness center, swimming pool, a playground and grill (if you decide to live here tell them that Carla Quiller referred you!)
Job Summary

During my second Co-op term, I was part of the MMDC Test Technology FG group. I realized that my technical responsibilities increased. I was assigned the task of running simulations, generating models, debugging, and script writing. I applied knowledge learned at Cornell to my work, but I also learned many new things from my mentor and co-workers such as debugging, Linux skills, and software usage.

In terms of training, some of it was administered on-line while some took place in a classroom setting. Scripting techniques and tool information was generally found on-line. I also participated in training sessions which were helpful in teaching me about other teams at Intel. For instance, there was a session based on power, testing strategies and technologies, and hardware description language.

I was assigned a new mentor this term. She was very helpful to me, and was always willing to come to my desk and help me with issues I encountered. This was her first time mentoring and she did an amazing job. She explained material on a level that I could understand, and she also gave me a fair level of responsibility.

The work environment at Intel is very friendly and open. My co-workers, supervisor, and fellow co-ops were helpful and kind to me. I was given the chance to participate in 2 volunteer activities with Intel Involved. The first activity included planting tomato plants at a charity farm, and the second activity was Family Day. I was also able to other musicians to play jazz with in the Intel coffeehouses. There were also fun social outings such as Beach Day and paintball. There are also soccer teams, ultimate frisbee and volleyball games.
I worked on the full chip noise team doing various tasks. Originally, I was supposed to be doing noise analysis, but soon switched over to working with design for manufacturability (DFM). I ran fubs through DFM for a good portion of my work term, but I also learned to code in Perl, as well as how to use various other tools for circuit timing and noise analysis.

Intel’s co-op program requires you to come up with a training plan, or a list of topics you would like to learn about. You then have to find people to administer trainings on those topics. Sometimes other co-ops would set training sessions up and invite all the other co-ops to come. In addition to these training sessions, I would have weekly training sessions with my mentor where he would go over everything I need to know in order to complete my assignments as well as other things that may be important or interesting to me.

At Intel, they assign you three people to assist with the whole co-op process. They are your mentor, co-op coordinator, and manager. Your mentor is the person you work with most on a daily basis. He or she is the person you get your assignments from and go to with questions, etc. The co-op coordinator is someone you can go to with any general, non-technical questions about the company or comments/concerns about your co-op term. Your manager is the head of the group you’re working in, but you may or may not see them or interact with them a lot. For most of my questions, I asked my mentor because he assigned me all of my work. However, he would sometimes refer me to other people.

My major is Electrical and Computer Engineering, and want to concentrate in computer architecture or circuit design so working at Intel was a great fit for me. At work, I was able to get some training in computer architecture as well as the various aspects of circuit design. My actual work consisted more of testing circuits and analyzing the results than of circuit design, but
I enjoyed it nonetheless. From working at Intel, I found that the profession of engineering is all about adapting to change. For instance, I started off working on the noise analysis end of circuits, but then had to switch to working on Design for Manufacturability because certain things were not ready. You need to be flexible and accepting that things will change.

Working at Intel has definitely given me an insight what it’s like to work in a professional environment. I was assigned tasks, and I alone was responsible for completing those tasks and reporting my findings. If I didn’t know how to do something, it was my responsibility to go and find someone who could help me. This improved my self confidence and my networking skills.

I searched for housing at a few sites online, such as rent.com. Two other co-ops and I ended up finding housing at Stone Gate apartments. The apartments there are very nice, and there is a swimming pool, basketball court, and 24 hour gym there for your use. We really enjoyed living at Stone Gate, but it was a little expensive. A bunch of the co-ops at Intel were able to find housing on Main Street in Marlborough. The apartments weren’t quite as nice, but they were a lot cheaper than our apartments. As for transportation, I brought my own car and would highly discourage people from coming up here without a car. It’s possible to find a ride to work, but it can be inconvenient since you have to work on the other person’s schedule and may cause problems if you need to leave early or stay late. You also need to remember that you need to be able to go to the grocery store or to any other activities you want to partake in. If you’re living with some other people, it’s easier to catch a ride to work or to the grocery store, but if you decide to live by yourself you would definitely need a car to get around if you don’t want to be calling a cab all the time.
There's not a whole lot to do in Marlborough, but we found ways to occupy ourselves. I regularly went to the gym at our apartment complex, and used the pool and basketball court while the weather was still nice. Solomon Pond Mall is nearby as well as Sawyer's Bowlerama, which is a lot of fun. If you love to shop, I would recommend going to the Natick mall, which is about a half hour away. I also played poker and soccer every week with the other co-ops. Other than that, we would occasionally go into Boston for dinner and to hang out on the weekends.

Intel has its own community service group, which is easy to become involved in. I helped out at the Thanksgiving dinner at a local senior center and participated in a Wii Tournament for the United Way at work. I also played soccer with a bunch of other co-ops and employees from Intel. RCGNet, a group for recent college graduates but includes the co-ops, plans out a lot of activities for us. For instance, we went apple picking, ice skating, and got to carve pumpkins during lunch.

I really enjoyed working at Intel because it was a great working environment. Everything was very laid back, and as long as you got your work done on time it was really stress free. I was assigned the right amount of work so I wasn't overwhelmed with getting things done on time. Plus, my assignments were actually interesting to me since I worked on some very different topics and learned how to use several different tools and programming languages. We also had fun group outings with our group members and other co-ops like playing paintball or going into Boston for lunch and a movie. Overall, it was a great experience and I really enjoyed working at Intel. I can't really say that there was anything bad about working there and would gladly go back.