

# Craig Disselkoen

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## Last day

Posted on [August 2, 2013](#) by [cdissel](#)

We've reached the last day here at VRAC for us this summer. The poster session went awesome this afternoon, and my parents even came from Cedar Rapids to see our project. We got a lot of interest in our research, and many people thought that our demo was very cool. This whole summer has been a great experience, and I'm glad that we could end our time here on that note. It's been great, guys, and I'm going to miss you all.

## Mid-last-week

Posted on [July 31, 2013](#) by [cdissel](#)

We've reached the middle of the last week now. I'm very glad our project is where it is – we could be very stressed out right now with trying to get everything ready, but instead we're feeling pretty on top of things. Our poster was sent to the printer, our paper needs just a little bit more editing, and our application is pretty much demo-ready. There's not much else to say as we wrap up final edits on all of those things. Yesterday a bunch of us even went to see a movie (Despicable Me 2) – I'm glad that as a group we're finding time to have fun instead of working all day and all night on our respective projects. And I'm pretty excited for the demos on Friday, when we'll be able to show off what we've done this summer.

## Demoing

Posted on [July 30, 2013](#) by [cdissel](#)

Today we demoed (is that the correct past tense of “demo”?) our application for our grad mentor Meisha and our faculty mentor, Dr. Vance, at our weekly meeting. Our demo was a little underwhelming unfortunately... I'm afraid that the usability of our application is severely affected by a few things, so even though the underlying code is fantastic, robust, and amazing (of course, I might be a little biased since I had such a big part in writing it), you can't really show off an application very well when viewing angles are out of whack and the controls have a tendency to invert for some reason. It's the fundamental problem with demoing I suppose – everything has to be just perfect in order to show off anything at all. But I'm still proud of the application, and I hope it can work splendidly and give everyone else a good idea of what we did this summer when we show it off at the poster session on Friday.

## Only five days left

Posted on [July 29, 2013](#) by [cdissel](#)

Today marks the beginning of our last week here. It's weird to look back and see all that we've accomplished in the past nine weeks, while at the same time it doesn't feel at all like nine weeks. It's going to be even weirder this next weekend when everything is done and we're all going home.

This past weekend I went home and got to go to the wedding of a high school friend. It was a great event and I got to see a bunch of old friends. I also got to see my family, which was nice.

This morning I (tentatively) fixed the bug I was working on on Friday, which was the last “major” bug that I’m aware of, for the one-handed configuration at least. Feels good. I still have to verify that it is indeed fixed, and we have to do a bunch of testing and work on the other configurations yet, but overall I think our team is doing very well coming in to the last week. We should be ready for the demo and poster session on Friday.

## Fun and almost the weekend

Posted on [July 26, 2013](#) by [cdissel](#)

Game night last night was really fun. Played Dominion, Meisha has all of the sets which was an absolutely ridiculous collection of cards. Got to play with a bunch of cards I’d never been exposed to before. We also taught two people how to play and they both loved it... because strategy games are awesome. Afterward I played some Brawl and got destroyed for the most part – it’s not a strategy game haha.

This morning I killed another bug. One step closer to demo-ready.

Speaking of bugs, Meisha made me an awesome cake for my birthday that looked like a Windows logo... and it included ‘bugs’, that is, gummy worms embedded in the cake. It was fantastic. And it tasted good too.

Tomorrow I’m ushering for the wedding of one of my high school friends, back in Cedar Rapids. (Yes, my friend’s getting married on my birthday – it’s definitely a strange coincidence.) I’m looking forward to it, it will be a good time. I’ll get to see my family too.

## Happenings

Posted on [July 25, 2013](#) by [cdissel](#)

Yesterday was the Etiquette Luncheon where we all learned how to eat nice and proper in a fine restaurant on a job interview or business trip. The teacher was good and we all enjoyed it.

Lanya’s sick again today. It’s still way too quiet here in our team’s space. About by the time I get used to it and it stops being weird, she’ll probably be back. I hope that’s soon.

Participated in the cybersickness team’s user study this morning where part of the goal was to make you sick. I got to wear an HMD for the first time. I can’t really say much else about the study because I signed that I wouldn’t...

Tonight is game night / pizza night in the lab. It was called “video game night”, but I brought Settlers because it’s awesome too and great for groups. Meisha is bringing her Dominion set, she has all the expansions. Should be a good time gaming with and without screens.

Ryan came by today. He’s the one who did most of (all of?) the work to build VR JuggLua itself, so he’s a great guy to ask questions to. He was explaining stuff that I figured out on my own, and would have been helpful to have explained clearly back in Week 4 or something. He did like at least one of my ideas that I explained though.

Polishing the application for the one-handed Hydra configuration now. The other two configurations are still not working correctly – the Kinect because other JuggLua people are still struggling to get it ready, and the Wiimote head tracking because the bluetooth is still not working. But we did get new bluetooth receivers in. When Lanya comes back we’ll see if that’s working finally. The one-handed configuration is close to demo-ready though, which is awesome. Two or three more bugs.

## Quiet

Posted on [July 24, 2013](#) by [cdissel](#)

Lanya is gone sick today, only one day after I've been fully back. (No, she didn't catch anything from me – our symptoms are quite different.) It's making our pod here really quiet though... feels weird. I'm just sitting here plugging away at a few more miscellaneous bugs. Killed one this morning, that was good. Also Connie and I are still working on editing our paper – more Connie than me, she's doing an excellent job.

Other than that there's not really much news this beautiful Wednesday. (Seriously, isn't the weather great today?) They're trying to make plans for "Video Game Night in the Lab" tomorrow night, the problem being that zero of the interns brought consoles or games to contribute... I'm sure they'll get it worked out.

## Wishes granted

Posted on [July 23, 2013](#) by [cdissel](#)

So it looks like both of my wishes from yesterday were granted. I am feeling much better – actually, contrary to my stated intentions yesterday, I did go out to dinner with everyone for Connie's birthday, it was very good and I ate more than I had in like the previous two days combined. And the bug in our code is also fixed (yay!) thanks to a joint effort between me and Lanya. Great stuff.

Luncheon Lecture today was about the grad school application process. I'm glad I still have a year to think about what I want to do or where I want to go, before I have to start applying to places in earnest. But I will definitely be thinking about those things this coming year.

After today, we have only 8 weekdays left to work. That's pretty scary, but I do think that everything will come together. Not in the wrapped-up complete way that we had all imagined during about Week 5, but into a state where we can show a good demo and leave our work as a good foundation for others to build on and add to. I'm comfortable with that and proud of what we've accomplished in these first 8.3ish (haha) weeks.

## Catchup

Posted on [July 22, 2013](#) by [cdissel](#)

So, like many of the others here, I realized that in all the hustle and bustle of the last few days of last week, I forgot some blog posts. Time to do some catchup. Here goes...

Thursday was a mass meeting of three REU sites (including us) via Google+ Hangout to meet each other and mostly to share our research with each other. The two sites we were sharing with were Rutgers' REU on perception, and UPenn's REU on robotics. Seeing the presentations from UPenn was especially fascinating to me as I actually applied to that REU this year, and even got an interview there, after I had already accepted the invitation here. (And I love it here. No regrets at all – this summer has been absolutely fantastic and I've made great friends, learned tons (especially about grad school), and overall had a great time. 📖 But since I was thinking about doing another REU next year somewhere else, I had a good chance to evaluate whether I might want to apply to UPenn's REU again, and I think I very well might. It seems like some good research, and enough different from the research here at the SPIRE-EIT REU that it would be interesting and a good experience as well. Wherever I end up, I want to get some type of different angle on where I could go or what I could do for graduate education, so I can explore all of my options.

But enough of that future stuff. Who thinks about their future anyway? Friday we had two tours. The first was of Principal Financial in Des Moines. They seem like a really impressive company – at least judging by the architecture of their buildings and their apparent budget for art to fill them. The tour focused on UX evaluation, which is interesting but not where I'm looking at heading into at all. Our second tour on Friday was the Des Moines Science Center, which was actually a really great facility where (primarily kids, really) can get enthused about all the things science can do. It was a really well-designed facility, and I came out of there thinking that every kid

everywhere should experience something like that some time during their formative years. More people going into science careers! Yay!

By the time we got back from that I was feeling pretty sick, and I didn't do much of anything from then till today at noon because I was fighting some bug or other. I unfortunately missed the Omaha Zoo on Saturday and what sounds like some great bonding time, from reading the other blog posts. But at least I'm feeling (mostly) better by now. Still going to make sure I get a bunch of sleep tonight, and I'm not going out to supper with everyone tonight for Connie's birthday because I'm not sure how my stomach would handle restaurant food – sorry Connie!. But I expect to be back to normal tomorrow. Hopefully by the time I finally beat my pathological bug, I'll also have beat my software bug, which I'm still working on (in between helping to edit our research paper)...

## Bugfixing

Posted on [July 17, 2013](#) by [cdissel](#)

Bugs are really unique things in software development. Simple bugs are expected, routine, normal. Bugs that result from typos or forgetting to comment out some code are harmless, and you can usually even be amused at yourself for making those silly mistakes. Other bugs are actual logic errors, as opposed to syntax, and they're usually not that difficult to find if you look hard enough. Sometimes one might put up a fight, but by and large they are no match for a skilled programmer.

Then there's the big bugs. The bugs where you examine the code that you think should be causing the bug and can't find it. Where you test the pertinent module by itself and it checks clean. Where information you get during debugging about the contents of different variables, or the status of a thread, just seems to directly contradict itself or what you see in the code. The bugs that just make no sense and shouldn't be happening. That you can spend hours trying to figure out where possibly in your code the error could reside, because it's nowhere among the places you expect.

These bugs are at first intriguing and interesting – it's like a mental challenge. Man vs. bug. A game of wits to see how quickly you can seek and destroy your enemy. But after a while it's just frustrating. And after an hour or two you have to take a break and work on some other part of the code. And when you come back you hopefully see something you didn't before, or at least think of another approach to looking for it. But if that still doesn't fix it, it's almost like the bug won.

The funny thing about these bugs is that the longer this process goes on, the better it feels when you finally fix them. The more of a struggle, the sweeter the success. Victory is most rewarding when most hard-fought. But during the fight it's frustrating and demoralizing because you just feel like you're stuck. And hopefully you eventually get to the point of triumph, but the part in between is where the struggle lies.

Therefore the name of the game is persistence. You have to be sure of your eventual triumph over the bug, and allow nothing to get in your way. It's all about determination, guts, strength, and the will to continue in any circumstance. It takes a valiant warrior to triumph over a nefarious enemy. And above all, you must never give up. This is the path that few can travel. It is the path of the programmer.

## Status of the VR JuggLua project

Posted on [July 16, 2013](#) by [cdissel](#)

So today we had a meeting with Meisha and Dr. Vance. We talked about where our project is at and what still needs to be done or can be done in the last two and a half (whoa!) weeks that we're here. Unfortunately, our progress lately (and this whole summer) has been characterized too much by problems outside our control – simple things like firewall permissions on our lab computers, and more serious things like the Kinect integration with VR JuggLua

still not being ready despite all the work that others in Dr. Vance's group have put into it. Our application works fine with keyboard-and-mouse controls but suffers from some serious issues when we try to use VR input like the Hydra system – which was the whole point of our project – and we're not even sure of the origin of those bugs, whether they reside in our code or in some of the framework code that has been provided for us. I hope they're in our code so that we can try to fix them. But it's going to be a busy two and a half weeks trying to get the Wiimote head tracking and Kinect configurations going (neither of which are even ready for us at the moment, because of the problems outside our control that I mentioned earlier); as well as working on a final research paper and a poster for the final demo session. I hope we can still manage to create a final product that will be useful and that will continue to be used and developed after we're gone.

## Future plans

Posted on [July 15, 2013](#) by [cdissel](#)

One of the themes on my blog this summer has been how much more I know and understand the grad school research environment than I did before. Today I'm going to follow the lead of some of my REU-mates and talk about my future plans and how this new knowledge and experience has affected them.

Coming in to this program, I was pretty sure I wanted to go to grad school. That's a large reason why I was so determined to get into an REU this summer in the first place. But now, I'm very sure. The most interesting, fun, and impactful job opportunities involve a Master's or Ph.D. – and getting one will be fun too.

Coming in, I was pretty sure I wanted to go to grad school straight away out of undergrad. Now, talking with and hearing the stories of both the grad students and the faculty here has convinced me that that is definitely the best path for me. There's no point in waiting a few years working in industry. Counting on a job to pay for your grad school is not the best way to approach it, as it will take a long time to get a degree if you're also working full time, and it will also lock you in to that company for a while. And I'm certainly not burned out on school at this point. (I'm not sure I ever will be.)

But being around this environment has caused one major change – or rather uncertainty – in my future plans. Coming in, I was certain that I wanted to work in industry, after I was done with either a Master's or Ph.D. But now, I'm not so sure. I've been able to see how cool being a research professor or someone else in academia might be. Research is of course always interesting from a technical point of view, and it's also a way in which I could do a lot of good for the world. I feel a little bit like work in academia is what I'm cut out for. I'm far from decided, and I certainly don't need to decide at this point in my career, but what was definitely a “no” coming into this summer is now a solid “maybe.”

## Miscellany

Posted on [July 12, 2013](#) by [cdissel](#)

Yesterday six of us went to a meeting of the Ames IT Collaborative, a group that gets together once a month to talk about technology and their work. The guys speaking this time were from EnSoft, a company that develops a flexible static analysis tool called Atlas. Although we got lost and ended up about fifteen minutes late to the talk, missing the intro and overview, I still thought that what they were doing was useful and unique, and it seemed like pretty exciting work to be involved with. They're DARPA-funded as well, and DARPA is just plain awesome.

Our second of two ethics classes was later in the afternoon yesterday. As with the first one, it was thought-provoking and I'm glad that they worked in that particular class into our summer schedule while not overwhelming us with it.

This morning's Journal Club included a short talk by two grad students who were working on a rapid prototyping tool remarkably similar to what our Low Cost VR team is working on, except for they weren't trying to do 3D input (which

is our focus). It might potentially be cool to see our two projects put together, combining the strengths of each of them. Theirs looks really slick, and represents a whole lot more man-hours, funding, and expertise than ours though.

Our project is finally getting to a point code-wise that we have most everything functional. There are some persistent problems dealing with viewpoint, control sensitivity etc., but we're doing pretty acceptably well for the end of Week 7. I'm proud of where we've come with this.

## Trip to John Deere

Posted on [July 11, 2013](#) by [cdissel](#)

Yesterday we had a "field trip" to the John Deere Engine Works in Waterloo. We first got to see one of their VR facilities, and the guy who runs it gave us a demo and talked about how John Deere uses VR. In the afternoon we got a tour of their manufacturing plant, which at a million square feet was absolutely huge. We had to get a tour on some carts pulled by a small tractor because there's no way we could walk to everything. One of the most fascinating parts of the tour for me was seeing all the use of automation and industrial robots. The tour guide joked that the robots are the best workers they have, they don't ever get vacation and they work all night – but they have excellent health care plans: if they get broken they're always fixed. Another interesting part of the tour was when he mentioned how they can compensate for small mechanical deviations, like a nozzle made slightly too big, by customizing the software for the controller on that particular engine, for instance to make that nozzle fire slightly less long each time. Doing this wrings out even more fuel efficiency and performance from the engine while driving down emissions. Stuff like that is just cool.

I don't think I mentioned the Luncheon Lecture we had last Tuesday. Dr. Eliot Winer spoke about his career and his work. His story was fascinating – I really like hearing how the different faculty here have ended up where they are, what turns their career has taken, what experience they've gained, how they found or took advantage of career opportunities. It makes me think hard about what I want my future to be like, and to realize that sometimes you've just got to jump in and take a big risk when it's offered, even when it's sudden – like Dr. Winer did when he started one of his startups. You can't plan for everything, you just have to follow the Lord's leading and be always ready and watching if and when the great opportunities come.

## Four Weeks Left

Posted on [July 8, 2013](#) by [cdissel](#)

Hello, Week 7. It seemed like Week 6 was really short – probably because it was. The end of the week consisted of a long 4-day weekend in which several of us went off campus to have adventures. Some went to Michigan or Chicago and some stayed here at ISU, but I went up to NW Iowa to visit my girlfriend which was really fun. I also have a lot of extended family up there, and my immediate family came up from Cedar Rapids to see them and me for two of the days. All in all it was a great weekend.

Now that we're back though, it's really hitting home that we only have four weeks left at Iowa State. That's not a lot of time and we still have a bunch of work to do. So we'll just have to be good and also quick at the same time. But hey that's exactly like what real life is like right?

## Presentation and Ethics

Posted on [July 2, 2013](#) by [cdissel](#)

Most of the time I've spent working since last blog post has been creating and rehearsing our presentation. We're giving it today to the faculty and grad students in the Vance Research Group, and then tomorrow to pretty much

everybody including another REU via teleconference. (I was wrong yesterday – it's UNC-Charlotte's REU in HCI.) About the only other thing we've had work-wise was our first course in Ethics, which was pretty good and resulted in some decently good discussions. It's always good to hear those with more experience than us talk about what working in industry or academia is like, at Luncheon Lectures, Journal Club, and now Ethics. This REU has been really informative for me in that respect, and I'm glad for it.

## Fun weekend; busy short week

Posted on [July 1, 2013](#) by [cdissel](#)

Last Friday we had a speaker for Journal Club (I don't think I mentioned that in my previous blog post), who was very knowledgeable in the field which the article-of-the-day pertained to. He was able to explain to us what the article was actually saying, and help us understand the technical details of the article, which we totally wouldn't have been able to parse on our own. It was really nice and I thought it was a great improvement to the Journal Club format we've had in the past.

Saturday we went to Ledges State Park, which I'd actually never heard of despite being from Iowa. It's a really nice park with lots of hiking, and actually cliffs and a stream that winds its way through a valley. Plus there was a fantastic overlook over the Des Moines River that was basically just a big rock perched on the cliff. It was a great park and we had a good time.

Today we are launched back into the swing of things for the brief three days until the 4th of July. In addition to quite a bit of work we're doing on revising our research paper draft, we also have to prepare a 10-minute midsummer presentation on our project and our work so far on it. If it works out, the groups here at VRAC are actually going to be presenting our work not only to each other and our mentors but also to the groups at another REU, at USC, via Skype. Should be fun, but we've got a lot of work to do creating and rehearsing our presentation. And somehow in addition to all of this, we still need to get more coding done on our application this week – that never stops. Busy busy. Here's hoping we'll have a good and productive three days.

## Halfway

Posted on [June 28, 2013](#) by [cdissel](#)

Today marks the halfway point of the summer. It's going so fast. But I'm feeling a lot better about our project after this week, we've made a lot of good progress on it. We've got a decent start on the research paper too thanks to the intermediary deadlines that were set. Everyone's got a midsummer presentation to do next week, on how it's going so far and on the substance of our research, but based on how much we were able to put together in just an hour yesterday I know we'll end up fine. And next week will feel really short with Thursday and Friday off. Everything's flying by, I'm having a ton of fun, and I'm actually really happy with all the progress we've made.

## Teamwork and diversity

Posted on [June 27, 2013](#) by [cdissel](#)

Over the past day or two it's been cool to look around my team's pod here and see how we're all working together but in our own element, in our own strengths: Lanya next to me with her Bamboo Wacom sketching tablet, making our graphical menus look awesome; Connie across, poring over an academic article with pen in hand; myself, running a simulation on one of my two screens while watching a display of rapidly-changing numbers on the other. It's really cool to work on an interdisciplinary team like this – we can work together without stepping on each other's toes, doing complementary work rather than all trying to do the same thing like so many other group projects. We've each got our own valuable assets to bring to the team, and together we are definitely more than the sum of our parts.

## Wednesday, Week 5

Posted on [June 26, 2013](#) by [cdissel](#)

OK, I gave in to the conventional numbering system for weeks, where this is Week 5. Since everyone else uses that system, it's too hard to be contrary... I gave in to peer pressure I guess.

Today we had our last HCI class, a grad student named Chase came to talk about UX research (user experience). It was interesting, but a large portion of the class overlapped what he had talked about the first week when we had our tour of VRAC. UX research is a really important field as computers and mobile applications become even more widespread and part of our everyday lives, and it's growing extremely fast evidently. But it's not for me – I'm more of a functional, mathematical kind of programmer or computer engineer. Not that I don't appreciate UX. But I'm much more interested in how to make things work than in designing a user interface.

## A completely unscheduled day

Posted on [June 25, 2013](#) by [cdissel](#)

So today is a really weird day, because for the first time ever this summer... we have absolutely nothing scheduled for the whole day! The photo session that was supposed to be at 10 this morning was cancelled due to weather, and my team doesn't have a research team meeting this afternoon because both Meisha and Dr. Vance are out of town. So it's a day of nothing but working on our projects. It feels really good, and I think we're all making really good progress again today. But it also makes for a day of nothing much to post on my blog... so I'll just keep working. See ya all later.

## A Hydra – no really, a 'real' one

Posted on [June 24, 2013](#) by [cdissel](#)

Our final project in Maya (which was due today) was to create a coat-of-arms or statue representing the team. Our team chose to make a statue of a Hydra, since we work quite a bit with the Razer Hydra. But we didn't model the Razer Hydra – we modeled the real mythological monster with multiple heads (we each made one head). Thanks to Kayla for pointing out that 'real mythological monster' is an oxymoron. Our model is very real, thank you – you can see it on the screen. It really exists ... inside the computer ... as an abstract stream of ones and zeroes... never mind.

Our team got together over the weekend to discuss division of labor and set a bunch of deadlines for ourselves for our major project. I'm really glad we did that – it gives us a much clearer idea of what needs to be done and when. It reminds us of how large the task is, as well. But if we work hard and stay motivated I'm sure it is possible. I'm off to a good start myself in that I'm already almost done with everything I was planning to have done for Friday – maybe only an hour or so of work left until I finish everything involved. (Not that I'll stop, of course. I'll need that time lots later, so I'll get as far ahead as I can.) I made a lot of progress today, and it felt really good – we all made good progress I think. It felt really productive.

## Week 3 / 4, in summary

Posted on [June 21, 2013](#) by [cdissel](#)

So it's the end of another week. Just thought I would reflect on this past week a bit since there isn't any particularly exciting news since yesterday.

A week ago I hadn't even started using Maya. Today I actually feel pretty confident using it; it's a lot easier to model complicated things in Maya than I thought it would be (and more fun). I have decent self-efficacy that I can produce



cool and somewhat-realistic looking things, especially if I'm working from a photo or drawing. I like the array of tools available, and the user interface, while not perfect, is certainly serviceable. Thumbs up for Maya. 3D is very cool.

We had an array of other classes as well. Some were useful, some were interesting, some were less so (for me, anyways). Some of us also attended a Master's defense, and that was both interesting and informative, giving us an idea of what to expect if we do our own defense in the future. The Luncheon Lectures were somewhat interesting too, as always – my favorites of the Luncheon Lectures so far have been the first two (James Oliver and Nik Karpinsky), which really captured my interest and/or felt useful in the knowledge I gained. But this week's were fine as well. Kelli and I facilitated the Journal Club today, which was an interesting article, but the discussion last week over autonomous cars was more lively in my opinion, because I feel like we all got into that discussion. Today's was fine.

On the main-project front, it doesn't feel like we're significantly farther than we were a week ago. We do have a better idea of the point and focus of our project since the team meeting on Tuesday. We spent a while trying to get the Kinect up and running, which required quite a bit of help from the friendly IT guys as well as another helpful grad student in Dr. Vance's group, Patrick. But it's still not working correctly and we don't have much to show for our efforts there. We have just started on some of the major writing that we'll have to do for the project, a bunch of which is due next week, so it's good we have a start. We've also just started actually coding for our demo, but that process has been marked by trying to understand the documentation rather than gang-busting progress. Mostly, our project has felt like it's sort of on hold, as the vast majority of our time has been devoted to the other activities I talked about in the previous paragraphs. I feel like that's teaching me a lot about grad school – it seems like we would be laser-focused on one goal, one big project, but in reality there's always all sorts of other demands on our time. I feel like it's the same for grad students, who have lots of classes and other commitments on top of their main thesis. It's good and all, but it's different than what I expected, and probably pretty faithful to the actual grad student experience, I feel like. Therefore it's good experience for me, to get a feel for what grad school is like.

Overall, I'm really glad I'm here at this program. It's teaching me a lot, and I'm gaining a lot of valuable experience. I'm more excited about, and committed to, grad school than I was a month ago when I hadn't arrived here yet. And the stuff we're working with is just plain cool. Can't wait to see what our final project ends up looking like – I hope we can build something really cool in the time that's left.

## Defense and... yet more Maya

Posted on [June 20, 2013](#) by [cdissel](#)

Yesterday several of us were able to attend Jordan Herrema's master's defense. It was very interesting, and it was great to see what a defense is actually like. It was especially cool to see his results since we all were participants in the study he did for his thesis. And I was quite surprised to hear, as he was being introduced, that he is actually an alumnus of my college, Dordt. I actually know his brother and sister – his brother is an engineering major a year ahead of me. Crazy small world.

Most of the rest of the time since I last posted has been consumed with classes. We had HCI class after the defense, Maya this morning, Luncheon Lecture after that, Craft of Research this afternoon. A substantial portion of our main research paper (for our VR JuggLua project) is due by the end of next week and it feels like we only just figured out our topic. But at least we do have an idea (more or less) of exactly what our final paper topic will be by now. Baby steps, right. It's already Week 4 though... crazy.

Maya homework for the day. I didn't spend too much time on this, due to actually wanting to work on our project, so this is pretty much just what I did in class today 9-11 plus another maybe half hour this afternoon. Some of the others here are spending a lot more time in Maya, and it's paying off huge for them (just look at their blog posts for the week) – I'm really impressed. Great job, guys.

## Totally can't think of a title today

Posted on [June 19, 2013](#) by [cdissel](#)

The theme of the day for Maya was “character” – movie character, cartoon character, whatever. I'll put that teaser at the top and make you all read to the bottom to see the pictures, which we're supposed to post again.

VR JuggLua has still been frustrating for the lack of documentation. All the documentation is for the C++ libraries underneath it – OSG and Juggler for the most part. But then we have to figure out how to get Lua to do the same things. We had a small breakthrough yesterday when we figured out how to access the ‘properties’ table for each object – they're actually simple instance variables in Lua. We're still having some troubles getting the correct overloaded C++ constructor to call for some objects though. It would be so nice if there were actually VR JuggLua docs, written for Lua application programmers. However, I'm still excited about working in Lua, and it's nonetheless easier than writing directly in C++ would be, by a long shot.

On the way back from lunch today a bunch of us saw some kind of raptor sitting just over eye level in a nearby tree. We were literally about ten feet from it. We're not sure if it was a hawk or an eagle or what; my guess is a hawk. It was awesome though. God's creation always amazes.

Now for the Maya homework, which I know you all having been waiting for with bated breath. (Seriously, don't get too excited – it's not that good.) I'll post the image of my model as well as my inspiration.



## Picking a Journal Club article... and more Maya

Posted on [June 18, 2013](#) by [cdissel](#)

The Journal Club is a class that meets once a week, and we discuss scholarly articles, typically about HCI. We discuss the articles' content, but also read with a critical eye for what we think they did well or could improve, what the background of the author(s) is/are, where the funding for the research probably came from. Every week two of us are tasked with finding an article to discuss, and for this Friday's class I'm one of those two people. I spent a while yesterday looking for an article and I found one that I think everyone will find interesting. It caught my imagination anyway. I'm a little excited for Journal Club on Friday.

This morning was our second Maya class, and the theme for the homework was dinosaurs. With no further comment, here's my final product.

## End of OpenGL, start of Maya

Posted on [June 17, 2013](#) by [cdissel](#)

Our team finished our OpenGL project. It looks really good actually! I'm pleased. I got to use some vector math that I learned in Calculus III – I love when math and computers merge.

Today was also the first day of the Maya crash course. For some reason Maya is giving me a fatal error when I try to run it (although it installs fine). They suggested I try Maya 2013 instead of 2014, so I downloaded that and we'll see how that goes. For today, I worked on a different computer a little bit away from the group. We were told to post screenshots of our work on our blogs so I'll add that at the bottom. We had to include snowmen, so be prepared



haha. I feel like (for me) learning Maya will be just as useful for getting used to manipulating stuff in 3D as it will for drawing and making stuff, seeing as I'm more of a coder than an artist. It's good to get used to moving around with pan, zoom, and rotate to get a feel for the real object. And some of the Maya features will no doubt turn into (indirect) inspiration for our own VR JuggLua project.

Speaking of that project, we've mostly been just getting everything set up on our own computers here at the pod. The Hydra stuff works well, but the Kinect setup gave us a few snags. Lack of admin privileges on the towers here is annoying for Lanya and Connie. But I feel like we'll get the setups working pretty quick. We're all ready to go on Hydra stuff right now, so I'm hoping we'll actually get to start writing code soon, today or tomorrow maybe.

Here's the promised picture. The thing in the middle is just a design I was using to fool around with creating and rotating different shapes, before they told us to include snowmen. For really epic and awesome snowmen scenes check out some of the other blog posts from today.



## Another week done

Posted on [June 14, 2013](#) by [cdissel](#)

Wow this has been a packed week. But like I've said before, I love it that way. It's way better than not having enough to do.

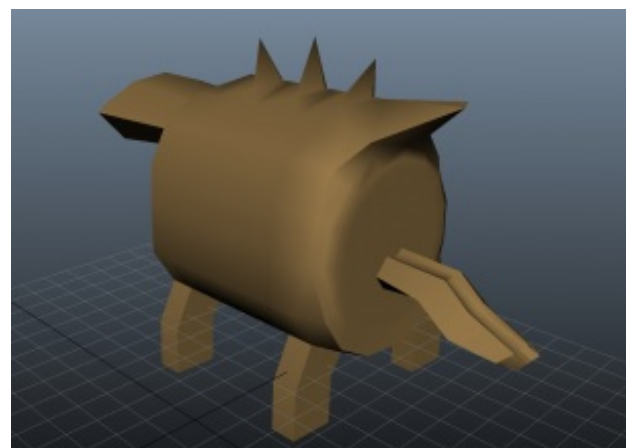
As I get further into the program, I'm realizing more and more just how much time and effort the program coordinators (in particular) put into it. It's a lot of time and effort, and furthermore they're really busy people. They have a lot of stuff to do, with their own research, supervising grad students, even participating in startup companies on the side or consulting. But yet they take a lot of time to make sure that our experience is as good as possible and that we really experience research and learn more about grad school rather than just banging out work. They really care. I'm really appreciative of them and I hope I can take full advantage of the resources I've been given in this program.



## Classes and more classes...

Posted on [June 13, 2013](#) by [cdissel](#)

I've been looking a lot at OSG (OpenSceneGraph) tutorials and the reference manual since yesterday, and that's a lot of "classes and more classes". But the title of today's post actually has a double meaning – it feels like we're spending more and more time on our curricular classes. here Of course we have our crash course in the morning every day for two hours (not counting considerable homework), which last week was C++ and this week is OpenGL, but we also have Craft of Research, Journal Club, and now they've added an Intro to HCI course for us, two hours a day when it meets. It's starting to feel like all our time has to be spent attending these classes (and working on homework) when I really want to be spending most of my limited time working on our major project. Speaking of that project, we're still trying to hammer out exactly what it should look like (and what stuff we should get working first); we're getting a case of conflicting visions. But regardless, I find myself wishing for more time to work on it and figure out VR JuggLua and OSG. We're so busy with 'classes and more classes.'

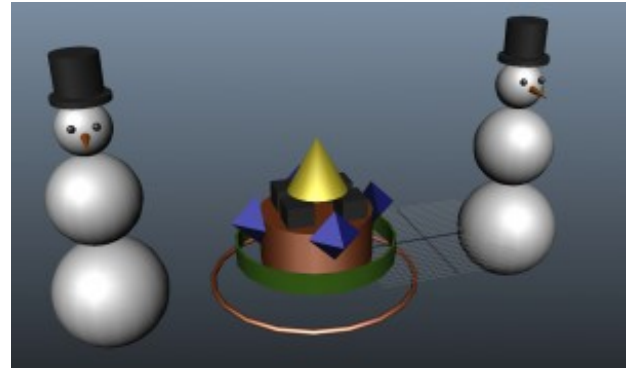


I didn't say anything about the light painting last night, but it was really fun and some of the pictures turned out awesome. I'm hoping the best ones get posted to Facebook eventually. I think they will speak for themselves much better than I could describe the experience.

## Finally, a concrete idea!

Posted on [June 12, 2013](#) by [cdissel](#)

So after at least a week of brainstorming and researching about VR systems (lit review), we have finally settled on what kind of app we want to build this summer in VR JuggLua. Basically, we want to make a rapid 3D sketching app. So, sketch outlines, stretch them into 3D, move them around, carve out pieces or stitch together pieces to make more complex shapes, etc. Maybe even solids of revolution later. And all of it will be done with your hands. It's going to be super awesome. It's also super ambitious, so we'll just see how much functionality we can put in before the end of the summer. But we're all excited about it and eager to prove just how much we can do.



## just chugging along

Posted on [June 11, 2013](#) by [cdissel](#)

Day 2 of OpenGL class was today. I was reading stuff about OpenGL yesterday and I discovered that the version of OpenGL that we're learning has been basically obsolete for years, no one uses it anymore.

(<http://gamedev.stackexchange.com/questions/34108/opengl-vbo-or-glbegin-glend> for anyone who wants me to cite that information.) And the newer versions of OpenGL are evidently completely different, require an entirely different style and approach. Buzzkill... I thought we were learning a popular, important tool for graphics programming. But no. An OpenGL tutorial site I found says basically that if you learned [the way we're learning now], they recommend that you simply forget as much as possible everything you know about it in order to make learning modern OpenGL that much easier. So it feels slightly useless to be learning this stuff...

But enough of that somewhat depressing train of thought. Our team won't even be using OpenGL for our major project. I was working on learning VR JuggLua yesterday, and I'm starting to get the hang of it. It's easier to use than OpenGL anyway (it was designed to be). We're going to be able to get honestly cool stuff done this summer.

## OpenGL and ... yeah I guess just OpenGL.

Posted on [June 10, 2013](#) by [cdissel](#)

Today was our first day of OpenGL class. I like that we're learning OpenGL because it's a powerful, popular graphics library that's used for real applications, unlike libraries I've used before like Java Swing or Python's Tkinter that can mostly be used just to build basic GUIs with buttons and textboxes. Like everything else here, it's both cool and legit. As part of our homework today, we had to write our name using OpenGL primitives, and then "be creative" and add whatever else we wanted. Lanya and I were amused that she was experimenting with cool gradient, color, and shading effects, whereas I was experimenting with incorporating programming loops to make geometric drawings based on cosines and sines of angles etc. It showed the complete difference between our personalities and interests; I suppose that's why we make a good team. Anyways, we had a good laugh about it.

## End of Week 2, or 1

Posted on [June 7, 2013](#) by [cdissel](#)

I'm not sure whether to call this Week 2 or Week 1 that we're just finishing. Technically, we've been here for most of two weeks, but the first week felt much more like an extended orientation and introduction to our projects than like real work. This week felt like the first week of the actual internship, and it's been both stimulating and just plain a lot of fun.

It's simply amazing how much can happen in just one week here. I learned most of C++ and most of Git; our 'SoleSweeper project went from not-even-an-idea-yet to almost-reality (and it will be real by Monday); I read a lot of articles on VR and 3D tracking; we had our first two Luncheon Lectures, both of which were incredibly helpful and interesting; and somehow I managed to still get pretty decent sleep every night. If this is what grad school is like, that's awesome. I love being able to learn so much in a short time. The expectations are high here, but it's awesome because low expectations can so easily hold you back and keep you from learning as much as you can. We'll be learning much, much more while we're here – there's some more one-week crash courses like the one in C++, for instance. They're in topics that I've never worked with before – OpenGL (3D graphics programming) and Maya (3D modeling). It's going to be challenging, but I am completely up for the challenge. And, of course, we'll be learning a lot about low-cost VR too.

## C++ and Another Cool Luncheon Lecture

Posted on [June 6, 2013](#) by [cdissel](#)

Learned a lot more about C++ in the past day. It's crazy how quickly you can pick up a new programming language once you're familiar with a couple. I'm starting to really appreciate C++ – you can write fully OOP just like Java, without messing with the JVM and with tons more efficient code than Java. In fact, one of the things that I heard today was that the new C++11 standard can be even faster than C, which just blew my mind. That's amazing. C++ seems like a really, really useful language, especially for high-performance stuff, which I'm interested in. I'm glad I know it.

Today's Luncheon Lecture was really interesting again. We had Nik Karpinsky, a grad student who got his masters here and is almost finished with his PhD. His research was fascinating and involved 3D scanners and 3D video compression. Not as in stereo 2D, like movies, which only store two 2D videos (one for each eye), but as in full 3D models with all of the 3D information, so they can be rotated and textured and worked with in their 3D forms. As part of his master's thesis he improved the video compression from nonexistent for this particular system (developed at VRAC) to as much as 40:1 losslessly, and eventually to several thousand to one with some lossy techniques. Enough that a full 3D model can be streamed over the Internet in real time, allowing true "holographic" 3D conferencing. In the type of 3D where you can move your head see a different angle on the image – VR. Coincidentally, our project with VR JuggLua also deals with that type of 3D, and I'm getting even more excited about it the more I see of what goes on in VRAC. It's sweet.

## 'SoleSweeper and Other Stuff

Posted on [June 5, 2013](#) by [cdissel](#)

Our Interfaces for VR team has another project other than our ... er ... interfaces for VR project. Specifically, we have to build a simple console-based game as the final project for the week-long C++ crash course we're all participating in. We decided to build a console-based mimic of Minesweeper, hence the name 'SoleSweeper. It's going to be good practice coding as a team, splitting up the project (which we accomplished by first figuring out what classes we were going to need and then splitting it up by who does what class), and working together. I'm looking forward to Lanya's promised "fairies and dancing and rainbows" tomorrow as our first project milestone. Working on this should be fun, and a brief aside from our main focus, which is VR JuggLua.

Figured out how Git and GitHub work now. It's pretty sweet.

Google Docs also ftw, as we were able to work collaboratively on a project proposal, brief presentation, and program design docs for the 'SoleSweeper project.

More lit review this afternoon – reading up on background technical papers related to Virtual Environments (VE's), tracking systems, VRPN, etc. Should be good.

## Jugglua, Git, and Luncheon Lectures

Posted on [June 4, 2013](#) by [cdissel](#)

Yesterday after I posted we had a team meeting where we brainstormed a bit for our project and then worked on getting to know the tools and environment in which we will be working. Ryan helped us install VR Jugglua, the Lua interface to VR Juggler that we will be using, and took us through some demos. We got the hacked Hydra working on Lanya's computer, and it should work just as easily on any of our computers. Pretty awesome. There's also some coding examples that demonstrate Jugglua which are really helpful. We're going to be hosting our project on GitHub, which we haven't spent much time trying to learn. I've been poking around and I'm confused a little by it – I get the concept, but there seem to be major functions I can't find, like add an existing file to the repository. I just need to spend some time actually reading up on it. Today we had our first Luncheon Lecture – Dr. Jim Oliver, director of VRAC, talked with us. It was extremely interesting and helpful; he talked about grad school, about M.S. vs. Ph.D., about grad school funding (TA vs. RA vs. fellowships), about general career path. Turns out 70-80% of Ph.D.'s graduating today get jobs in industry not academia, a statistic which surprised a lot of us. It was a super helpful session and I feel like I know much better what I'm getting into if I choose to go the grad school route (which seems pretty likely at the moment). I'm really glad I'm here for this summer learning cool technical stuff, getting information about grad school and a taste of its environment, and of course having fun putting together an awesome and ambitious project with cool people.

## First Weekend and First Monday

Posted on [June 3, 2013](#) by [cdissel](#)

This past weekend we all went to the Iowa Valley Adventure Course (at least I think that was the real name of it?). It was a ton of fun and some great team bonding. They had a 30-foot swing which we all pulled people up and then they let go and swung down... it was a little scary for some of us but really fun, I think everyone ended up enjoying it by the end. They also had a rock-climbing-ish tower that we all climbed and/or belayed each other on. Today (Monday) seems like the first "real" (non-orientation) day to me. We had our first 2-hour C++ class this morning and pretty soon we're going to start brainstorming ideas for our project. We've also started reading some background articles on different tracking technologies. I'm hoping that we can figure out something really cool to do for our project as we brainstorm this afternoon.

## More first impressions

Posted on [May 31, 2013](#) by [cdissel](#)

OK, they really do have a lot of great facilities and projects here. Color me impressed. Yesterday we got a tour of the facility called C6. It's a cube ten feet on a side, with images projected onto all six walls (including floor and ceiling) in stereoscopic 3D. They use a system of 24 4K projectors – that's ridiculous. And of course, they use active stereo, with shutter glasses, not the movie-theater polarization type of stereo. It's a lot more realistic and just easier on the eyes. To top it all off, they have head tracking, so whoever is wearing the tracking glasses has the view change according to where they're looking – so they can actually walk around a 3D object, look underneath stuff, all that. I'm super impressed with that facility. We also saw some great ongoing research projects involving 3D image capture, other things in VR, and the like. I'm excited to work in this facility where they obviously know what's going on in the world of VR. My team's project involves much more off-the-shelf technology, which will still be exciting (and probably

much more manageable) to use. I'm looking forward to getting familiar with the technology, learning some new programming skills, getting experience with research, VR, a new programming language, working with an interdisciplinary team... and having fun of course, but I think that's pretty much a given here.

## Orientation stuff

Posted on [May 30, 2013](#) by [cdissel](#)

Hi everyone, I'm Craig Disselkoen and I'm a summer intern here at the VRAC at ISU. We've had a busy day or so here already getting oriented and such. I'm really impressed by the facilities here – the Howe Hall is an amazing-looking building inside and out, the VRAC labs are laid out very nicely, it seems like there's lots of high-quality equipment here. I'm looking forward to the tour of C6 that we're supposed to get today, because it just seems awesome from what they've said. The project that I've been assigned to the team for also seems really cool, and I'm looking forward to working with Kinect and/or the Razer Hydra and/or Wiimotes. I've also read up on the documentation for Lua, the language du jour for our project, and it looks cool. I always like learning new programming languages. So yeah, I'm very excited for what this summer will bring.