Justin Gosselin

projects.vrac.iastate.edu/REU2015/

blog[33] – The last blog

Posted on July 31, 2015 by gosselin

Last blog, woah! Today we had the symposium and the interview videos. It was a good last day. The symposium was great. I really liked the structure of it and there were some excellent posters and topics around. I really like the structure of poster conferences and I will try to attend one sometime before graduate school.

So, this is our last day. I had so much fun here and I think it was the best thing I've ever done in my undergraduate career. Anyone reading this in the future who is thinking about applying should definitely apply! Overall, case study of this summer has been:

1) How fast 10 weeks go by

2) How twelve strangers can become good friends in 10 weeks

3) Iowa, enough said

And a bunch of other stuff. I'll miss all of you and hope we can stay in touch (reunion, maybe???). I've learned so much here and I have a lot of experience to take home now.

A big thanks to Desmond and Anna for everything they have done for us, from bringing us places to teaching us new stuff. And a big thanks to all the luncheon lecture presenters and facilitators of classes. Also a thank you to our graduate mentor, Tim, for helping us on the project. Without his help, I'm sure we would have been much more lost than we were. And, of course, a huge thanks for Dr. Winer and Dr. Gilbert for having us here!

Ninja Edit – forgot my spongebob reference….

It's shaping up to be a wonderful last day

Not your normal, average everyday

Sounds like someone built a new PC

Desmond, Anna, thanks for helping me

The group feels like it's saying their goodbyes

The UDCC always had frenchfries

This REU feels like the very first REU to me

There'll be luncheon lectures, programming, and plenty of research

Dr Dark's powerpoint slides probably have a perch

We all seem a little sad that we're leaving

Our apartments need deep cleaning

This REU feels like the very first REU to me…

That was pretty bad, but it's kinda there. Heh.

July 30…

Posted on July 30, 2015 by gosselin

Only one more blog left! I wasn't able to login on Tuesday again and Wednesday I forgot to blog. So on Tuesday we had our last luncheon lecture with Dr. Spikes, which was really cool. I like how he interacted with us and asked us questions and had us do the 2 facts and a fib icebreaker. Yesterday we worked all day on our paper and demo app, which are pretty much done now. We will probably have some final changes to make on the paper today/tomorrow based on feedback, so hopefully we'll have some time to fix that up.

That's pretty much it for today. Nothing too interesting. We will practicing our poster rehearsal today so that will help for tomorrow. I think we're confident enough to present our research. I mean, we have been working on it for ten weeks….

The last Monday

Posted on July 27, 2015 by gosselin

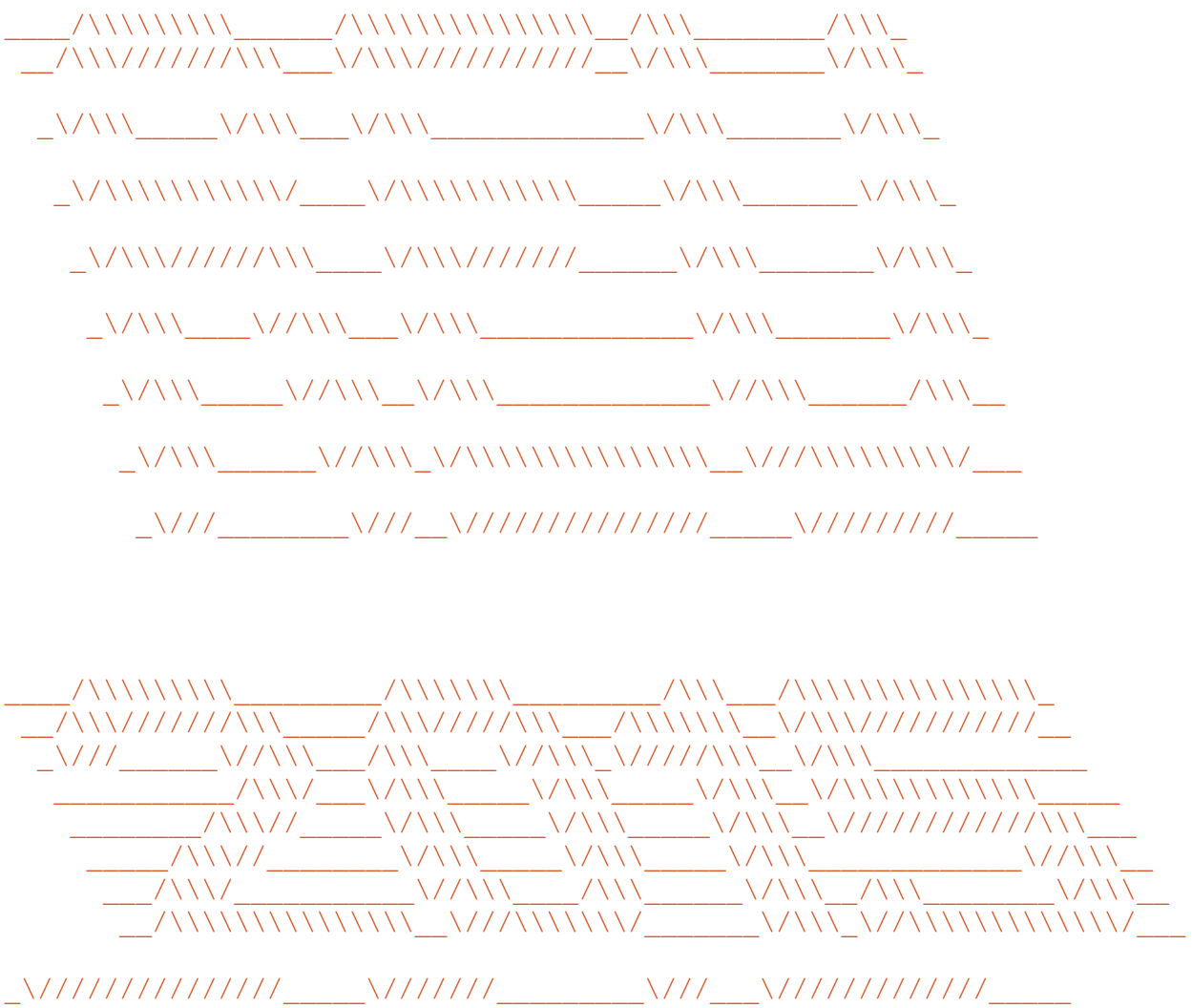
I wasn't able to blog on Friday as the system would not allow me to log in. So, here's a blog about the values reflection + this weekend + today. My values that I put on the paper during the ARG session have not changed. But they have got stronger through the program. Meeting everyone here at the program and becoming good friends with each of them definitely strengthened my friendship values. My other values weren't strengthened as much, but they were definitely affected by the program.

This weekend was our last weekend. On Saturday we went over to Seven Oaks to play some paintball. That was my first time playing paintball so it was really fun. It was so hot, though. I wasn't able to play the last game due to the heat. Wearing all those layers and the hot mask definitely didn't help. But I still had a great time. Hopefully I can play some paintball back home sometime.

On Sunday, my group and I went to the VRAC for a few hours to finish up our poster. Our results are limited as we ran out of time (we're still doing some results this week, though. hopefully…) so it's a little lacking there. But we did have some results that we reported and I think the poster looks great. Hopefully we can explain what we do this week to makeup for the missing parts of the poster during the symposium.

Today we worked some more on our paper. Our methods section is nearly done. Took a long time because we changed them a lot. So hopefully we can finish that up today and get going on the results section and finish our discussions/conclusions.

That's all for today. Here's some random ASCII art:



A busy Wednesday

Posted on July 22, 2015 by gosselin

Today has been a really busy day. We've been working since we got here without break (besides lunch). We've revamped our intro and that's pretty much done (fow now…). Next up we've got to revamp our methods based on our new method we used. We also worked on our poster today, which is nearing completion. Lastly, I made formatted paper in LaTeX with our new intro. It looks really nice. We just have to finish up each section, then we have a nice looking paper. Tomorrow we will be finishing up our last experimentation with accuracy and will be analyzing our results. We don't have too much to go off of, but we have enough to at least use some basic statistics on it.

Yesterday had a double luncheon lecture, which was really cool. I really liked the information both presenters presented. It was very interesting. And I am starting to see agile software development more and more. I've seen it here, and I keep seeing it on industry job postings. When I learned about it in my basic software engineering course last Fall, we were told it was something new that hasn't been tested to work good or not. But it seems that the book that said that was a few years old at the time, so it looks like agile is really taking off. That's something I need to really look at it, Scrum especially.

Posted on July 21, 2015 by gosselin

Haven't blogged in some time. Last Friday we went to the Science Center, which was really cool. Back in like 4th

grade, my class and I went to a space center in Georgia that had a lot of cool simulations. The Space Center we went to reminded me a little of that. I would have loved to go there as a kid, but even at 20 it was a really fun place to experience.

Saturday we had a game night where we played Resistance and Cards Against Humanity. That was really fun and I hope we can do it again before we leave.

Yesterday we worked a lot in METaL on our experimentation. We have a lot of data sets now and we have some various latency numbers. Some of the results were interesting. Last night we also built the computer which was fun. It came out well and it works, so that's good.

We only have ten days left! Goes by so fast.

July 16

Posted on July 16, 2015 by gosselin

This morning we worked on our latency calculations, using the five data sets we recorded on Tuesday using the steel ball on the ramp. We got an average latency across the five data set, which is more of a preliminary value. It's nice that we actually have a number now, though. It's relatively high for the Kinect 2, but Eliot mentioned to us that the latency of the computer is part of it. So we started comparing the latency numbers to physics calculations and found some interesting results.

Yesterday we had our presentation. Everyone did great, and the projects the USC interns are working on are really cool. It was a good experience and I'm glad we got to present our research before the symposium.

Today is a very busy day so we won't have too much time to work on our project. Tomorrow we're going to Des Moines again, so it may be difficult to find time to work on the project tomorrow as well. Work weekend, here we come.

Tuesday

Posted on July 14, 2015 by gosselin

Yesterday we decided to change up our methods a little since we had some trouble with our old one due to the age of the camera. Our new method doesn't rely as much on the quality of the picture, which is nice. We're on the right track to get some numbers for latency now. Then we can vary some parameters like different balls (wood, steel, tennis ball) and distance from the ramp.

Yesterday we also gave our practice presentation for tomorrow. I had a couple problems, so I'll definitely work on that tonight. We changed our powerpoint to reflect Anna's and everyone else's advice. We also worked on our poster today. It's coming along, but time is running out to do everything.

Pretty much it for yesterday and today. Just working on our project, doing what we can.

Week of Experimentation

Posted on July 10, 2015 by gosselin

Yesterday and today we continued working on our experimentation for our research project. We're still in a preliminary stage where we are determining the variables that we can change to produce different results. It's a cool little setup we've got going on over there in METaL. The high speed camera we are using needs a lot of external light, so we have to put some very powerful lights near the ramp to light it up. I just wish the computer didn't take like

20 minutes to save a 30 second video, but oh well. We've got two valid data sets that we will further examine on Sunday and Monday. Hopefully we can get a number for the latency in our preliminary experiment. Then next week can begin to vary certain variables and find the latency using different variables.

Today we also had our JC presentation. It was fun presenting it, though I am finding it difficult to present statistics. Something to work on, I guess. Thanks everyone for the questions, they were really good.

Next up we have HCI where we will present our Muffin Button. Tomorrow we are going to the Mall of America. Never been there, so it will be a fun experience. I think that will be as far north as I'll ever have been in the U.S. I went to northern NY once, but I think Minneapolis is still higher up than where I was in NY.

Wednesday

Posted on July 8, 2015 by gosselin

This morning we spent most of our time over at METaL working on our experimentation. We (tried) to setup a high-speed camera so that we can record the ramp and compare it with the Kinect's recording. Unfortunately, the camera is like fifteen years old, and the computer running it is just as old. So it's pretty slow. We couldn't get the camera to work at first. It was just showing a very dark video feed. We tried a bunch of stuff, but it ended up being the lighting (even though we tried more lighting). Turns out it needs a huge amount of light. Luckily, Tim had four powerful bulbs that we used. So it works now and we can begin recording stuff on it after picture time at 2. It takes forever to save stuff on it, though. We'll be going back there later to keep working on it. We'll probably be staying late today.

That's pretty much all for today so far. We will be testing Team 3's HCI thing in a bit. So that will be interesting.

July 7

Posted on July 7, 2015 by gosselin

Today we went to the Grad School Prep workshop, which was great. I'm glad we go to go to it as the information there is very vital for applying to graduate schools. I've been starting to formulate my list schools to apply for recently. There's so many considerations, and it's hard to find schools with researchers in the exact field that I want to research. I like the table that was presented to us today. I'll start using that on my list.

Later on we had luncheon lecture #10. The research Dr. Danielson has done is very cool. Learning about blood smears was interesting. I took a class last semester that partially used recorded lectures, maybe about 10 times the whole semester. I still prefer face-to-face meetings, but they weren't too bad. I still learned a lot, and having the ability to rewind a lecture is great.

We've got a lot of work this week and next week for the research project. We need to get numbers for latency and positional accuracy for a specific test case before next Tuesday to stay on track. Then we can begin identifying the variables in the experimentation, which will allow us to begin formal experimentation using our ramp. We'll be busy!

Week 7!

Posted on July 6, 2015 by gosselin

Seventh week already! We had a pretty eventful weekend with it being the fourth and all. On Thursday night, Ogue, Maya, Allie, Alex, Sarah, and I went to the High Trestle Bridge over in Madrid (all the way in Spain! not really). First we walked in the wrong direction for about a mile. Then we had to walk 3 miles to the bridge, only to find out there's a parking lot a mile from it. Despite our "miscalculations", I still had a great time. The bridge was really cool when it was lit up. Walking back 3 miles at 11 PM in the middle of a forest was rather interesting. I'm surprised I didn't see much wildlife, mostly just bugs. One of Ogue's blogs has photos.

On Friday we had a little grill going. I'm glad I'm not the only one who doesn't know how to grill. I had a fun time there and the food was good. We then went to the fireworks show at Reimann Gardens. The finale fireworks were cool, and the screams/growls from the kid behind us was hilarious.

Saturday the rest of the didnt-go-home gang went to Des Moines for some shopping. I had a headache that morning so I didn't go. Alex said most everything was closed. I ended up watching the Copa America final game of Argentina vs Chile. It ended up going to a penalty shootout, where Chile won. They had some good penalty kicks.

Sunday I relaxed and watched the WWC game at home. Man, Japan really let their guard down in the first fifteen minutes. They played so bad defensively. And the US team took advantage of that. But it was a really good game. Japan put up a good effort, but that 4-1 defeat at halftime crippled them. Great game, nonetheless.

The weekend I also worked a little on our research project. We're working on getting individual frames from our recordings. We're almost there!

Last day of June

Posted on June 30, 2015 by gosselin

We had a rather busy morning today. First we had Dr. Gilbert's presentation on how to give a talk and make a poster. It was very informational and important. I learned a lot, and I think I feel confident enough for the presentations we will be giving this summer. I just have to practice and rehearse over and over again. Afterwards, we had our ninth (wow, already our ninth!) luncheon lecture with Professor Berghefer. I really like her presentation and her research is very interesting. I've seen some photorealistic rendering engines, and they are incredible. We're already often having trouble identifying fake images as real ones. I wonder where we will be in a few decades.

Next up we have our research team meeting. We have a good amount of topics to cover in this one, as time is dwindling down. We need to solidify the experiments we will be performing. Hopefully we will have time to form concrete results for all of our experiments. I think we will.

Monday

Posted on June 29, 2015 by gosselin

Last Friday we went over the METaL to begin experimenting. Stacy gave us a big ramp to use. We rolled some balls down it and recorded it using both Kinects. The depth sensor of the Kinects didn't pick up the balls too well, but it did pick them up when they reached the end. We probably have to play around with different angles of the Kinect. But, for now, we have some data we can look at. This morning we didn't have anything on the schedule, so we used the time to analyze our recordings. One of the recordings got corrupted, unfortunately, so we'll have to redo the experiment (we wanted to do that anyway, though). The other one seems to be good. We need to split it in individual frames to be able to analyze the latency and accuracy. We'll probably use MATLAB for that, but we're still trying to figure out how to convert the .xed recordings into a video format the MATLAB codec recognizes. In any case, we'll still be experimenting with the ramp.

I went to the webinar this morning, and it was really interesting. The moderator received some really good questions about research, mostly post-doctorate level. Nonetheless, the questions were good and I learned a lot from the laureates' answers. We also received our 3D printing today. It holds batteries pretty well. I'm definitely going to use mine. Next up we have ethics part II with Eliot, so that should be interesting. Tonight we have the Smash tournament at Desmond's house. I'm pretty bad at the game, but it should be fun.

(start + end) / 2

Posted on June 26, 2015 by gosselin

Well, week 5 is almost over, which means we're half way done. No idea how a month has already gone by, but that's time for you. This morning we had our modeling project presentations. Everyone did a really good job on their designs. Hopefully ours prints due to that issue with the face of the back piece. Making the battery holder was a fun, learning process. Measurements are pretty important. Afterwards we had JC, and Team Wearables did a great job in their presentation. I had questions, but I thought there was going to be a Q&A part at the end, so I violated rule 1 of JC. Oh well. I know for next time. We're up to present next, so we'll have to pick an article. We have some good choices, but we each did our own literature searches, so we will have to collaborate on whichever one we choose. Desmond will be hard on us since we have two weeks, so we'll take advantage of that extra time.

We will begin to experiment today, using a ramp and physics to test the feasibility of measuring latency. Then we go on to doing more advanced experiments, by coding a demo application and other stuff. Our intro draft is pretty much done, but we need feedback from our mentor and/or faculty before we're really confident with it.

User_HCI: Team Mittens

Posted on June 25, 2015 by gosselin

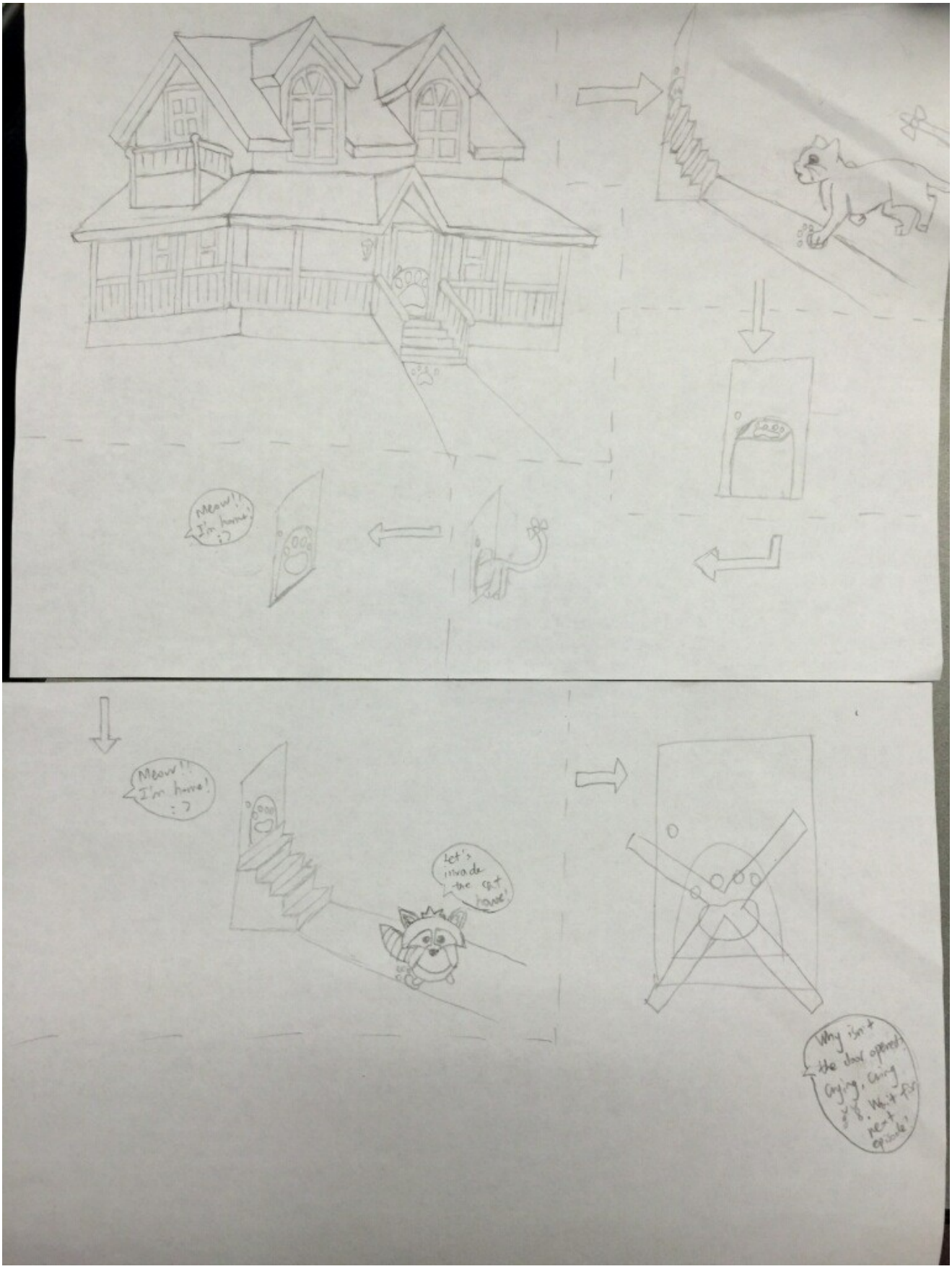
Team Mittens: Nancy and Justin

Description: A door for cats to enter and exit their house, much like a dog door. The door is opened from the outside through a paw-print scanner that is located on the ground outside of the door. The cat walks on the scanner, which scans the cat's paw print. If the cat's paw print is recognized by the system, the cat door opens upward, and the cat is allowed to walk inside. The door then closes downward. If any animal other than the cat registered to the system walks on the scanner, the door will not open.

Target audience: Cat owners

User considerations:

- The paw print scanner must be sufficiently large such that the cat's paw can be scanned whenever the cat walks toward the door
- The paw print scanner must be resistant to weather
- Cat owners must be able to easily add their cat's paw print to the system
    - This can be done when first installing the device
- The door must open quick enough for the cat to get inside
- The door must only close if nothing is underneath it, like a garage door
- The door must be able to be opened from the inside
- The door must not open for animals other than the registered cat
- The door should be sturdy and reliable



Wednesday

Posted on June 24, 2015 by gosselin

Today we worked a little on our intro paragraph before heading to the ethics class. We've still got a lot of work to do

on the intro and method paragraphs, but I think we know what we are going to say, so it's more of a matter of doing. Hopefully. The ethics class was interesting and Eliot posed some good questions on controversial topics. After the ethics class, we had the etiquette lunch. I learned quite a bit there. I've only been to one etiquette lunch before. Eating like that every day would be rather annoying, but people used to do it all the time a long time ago. I think it's good to know that stuff for formal lunches though. I'll be sure to apply what I learned in a job interview or a business lunch or something like that.

Yesterday we had our team meeting, and I think things are coming together. We've still got some more to read (never really ends, actually). But we know what we're doing now, so that's good. After the meeting, Tim showed us some code from METaL, which was written in Lua. Lua is a weird scripting language, but I'm happy to learn it if needed. I like learning new languages, unless it's Python. Tim also showed us his networked Kinect program, which has a lot of code, but the relevant pieces that we will be using does not seem too bad. I'm glad we will be exposed to some coding soon on our project for testing/experimenting.

It's been raining all day. Reminds me of home.

Maya Monday

Posted on June 22, 2015 by gosselin

This morning we continued our lectures on 3D modeling. Eliot's lecture on computer graphics principles was really interesting. It's amazing how we can produce such realistic renderings today. Computer graphics is such an evolving field, and at a crazy rate. Real-time rendering seems to be always a tier behind offline rendering in quality (like a video game vs. an animated movie), but I do not think it will be long before real-time rendering in video games takes the form of the images we were shown today. For me, I love seeing realistic fluid simulations in games. Fluid simulations in video games are usually pretty bad, but some of them have some really nice ones (Crysis and GTA V come to mind). Still, understandably, these simulations are watered (heh) down since there is no need for them to extremely accurate. But compare the water in a game from 2004 to a game today, and there is a stark difference. I'd love to do research in this field.

Later we had a look at Maya. I like it and it seems like you can make some cool things with it. It's a bit overwhelming at first, like any Autodesk product, but it's not so bad after some playing around with it. On Sunday we came into VRAC to finish our OpenGL project. It's… not great, but it works, kind of.

Friday

Posted on June 19, 2015 by gosselin

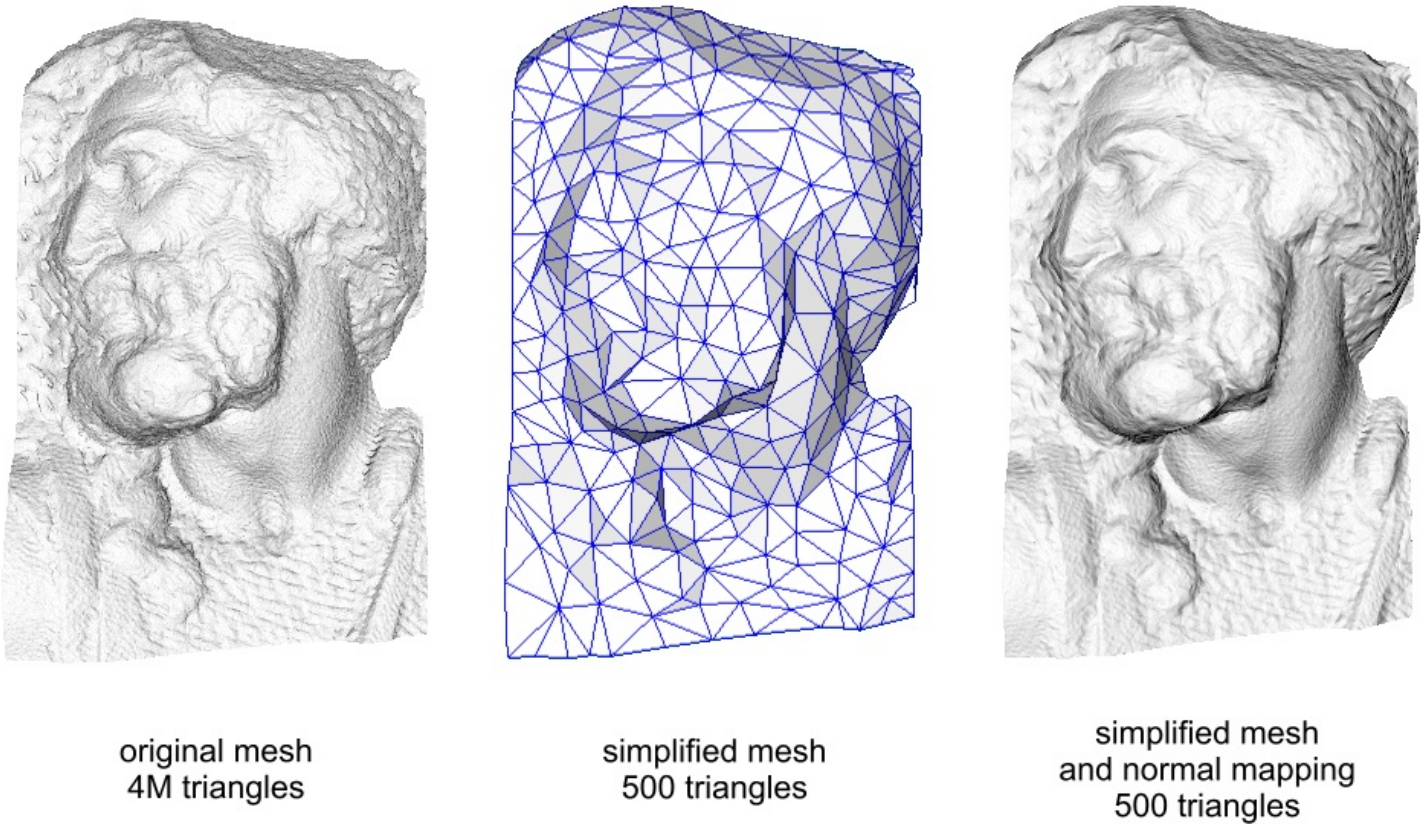
Today we worked a little on our OpenGL project (little bit behind on it). We've got a box for our jack-in-the-box, and a button, but we still have to add the actual jack. Most of the free models of it that we've found are like super creepy. So we're still going to have to find a model for that. We want to add a skybox, which is what I'm working on now. Hopefully we can finish it this weekend. This morning we also worked on our research question. We came up with a couple and will decide on one soon.

Earlier we had our JC presentations. Group A gave a great presentation. We went a little over the time (more than a little, sorry). I thought both articles were interesting. Looking up all the statistics stuff last night reminded me of my time in stats two years ago. I like stats, but I forgot almost everything from that class. It was a good refresher for a lot of it. And probably helpful since I'm taking an advanced stats class in the fall. I should probably review more stuff before then.

June 18

Posted on June 18, 2015 by gosselin

Today we had our last lecture of OpenGL, which was texturing. I thought this was especially interesting, since it makes your boring, flat shapes into much more. I like how texturing can be used to mimic high polygon models. This picture from Wikipedia really shows that. They went from so many triangles to just 500, and using normal mapping, it looks pretty much the same. Really cool.



After our OpenGL lecture, we had our sixth luncheon lecture with Dr. Lee. I never thought VR would ever have an impact in apparel design. That's a really cool and creative use of VR. I really liked the apparel that was designed from the bacteria. Very interesting how a whole leather-like textile was made from that. After our luncheon lecture, we had Craft of Research, and I learned a lot about the introduction and methods sections of a paper. Hopefully when we start writing ours we won't run into the problems we've had with our problem area. I'm confident we can put together a good literature review, though. We've read a lot and can definitely make some good arguments using our references.

Interface HCI

Posted on June 17, 2015 by gosselin

Interface 1: Surface Pro 3 Keyboard/Type Cover

Task: Interface with the Surface Pro 3 (SP3) through a physical keyboard

Context: General computer use

What is working:

- Small
- Transportable
- Flexible (can be separated from the SP3 and can also wrap around it)
- Most major keys are on it
- Appealing design
- Perfect layout of keys
- Backlit keys
- Interfaces easily with the SP3
- Protects SP3 screen

What isn't working:

- No brightness level keys (the ones that look like it are actually for backlighting the keys)
- No PrtScn key
- Touchpad sometimes gets pressed when typing
- No volume control keys

What would make it better:

- PrtScn key
- Brightness level keys

- I find the share key utterly useless, but that’s just me

Interaction principles:

- Design values:
  - Everything fits together; spacing is perfect
  - Wrists rest on the keyboard
  - Smooth material
  - Bordering gives it shape and protection
  - Keys are thin
  - Satisfactory noise when you type, almost like a mechanical keyboard, but not quite
- Conceptual principles:
  - Works as intended: you can use it as a keyboard for the SP3
  - Doesn’t have all the keys a full keyboard has, but it has more than enough for most usage
- Behavioral principles:
  - All the keys should work as intended
  - There’s a light for caps lock
  - Pressing Caps Lock + Fn switches the function keys
- Interface-Level principles:
  - All the keys are labeled
  - All the keys are backlit
  - Media keys have respective icons
  - Magnet to indicate where to connect it to the SP3

Interface 2: USB Fan

Task: Provide cooling (I use it to play games on my Surface; it helps a lot!)

Context: Gaming/computing environment

What is working:

- It cools very well; spins fast
- Bendable base
- USB is very convenient
- Small
- Transportable
- Easy to use

What isn't working:

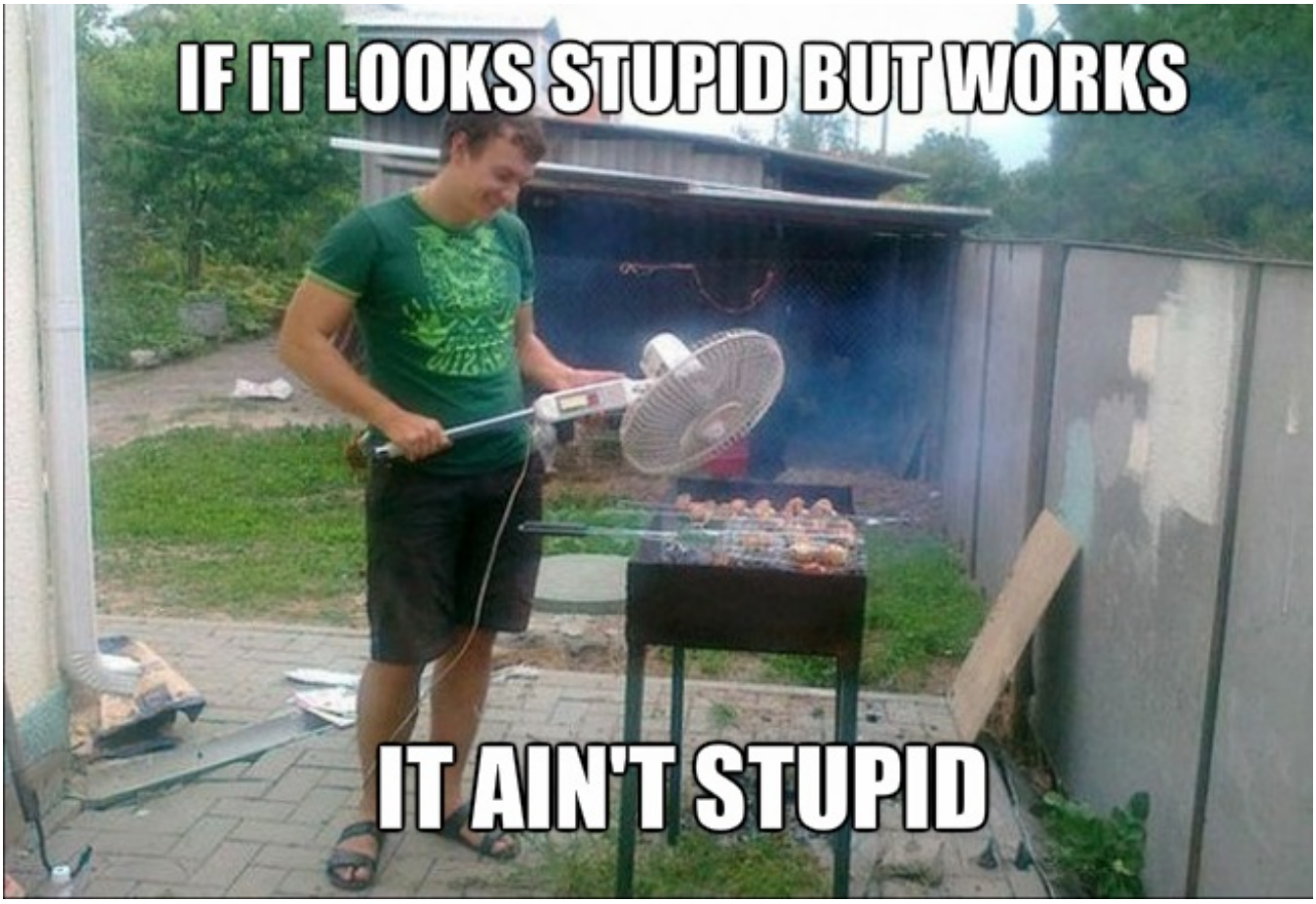
- No guard around the blades
- A bit top heavy

What would make it better:

- Something around the blades to protect it from interference (it’s hit my hand a few times)
- Ablility to turn it around 180 degrees

Interaction principles:

- Design values:
  - Color scheme is nice
  - Simple design
  - Bendable base
  - Thick blades
- Conceptual principles:
  - Works as intended: you can use it to cool something, like a computer
  - Spins fast enough to create a nice breeze
- Behavioral principles:
  - The blades should spin when plugged into a USB port
  - The blades should NOT cut your fingers off if you accidentally touch the blades
- Interface-Level principles:
  - USB icon to indicate the correct position to insert into USB port
  - CE mark ‘cus legal stuff



Luncheon #5

Posted on June 16, 2015 by gosselin

We've been here for three weeks now! Today we had our fifth luncheon lecture, as well day 2 of OpenGL programming. Today in OpenGL we learned transformations and animations, which were both interesting. I've always liked computer graphics programming due to its mathematical nature, and today gave us a small exposure of the math used in it. Even if it is mostly something that happens in the background, it's still something that should be known when programming in OpenGL. I love how the matrix math is used in transforming. Animation is also neat. It seems pretty easy to get a basic animation rolling, but I imagine it's quite complex when you have all sorts of animations going on.

Our fifth luncheon with Dr. Winer was great. I like the format he did today with the Q&A. He has some great stories and advice. His medical imaging research is very interesting. Maybe that's the future of medical imaging. It's crazy that surgeons and medical professionals still use 2D imaging. I never realized that. That's pretty much all for today, so far. Next up is our research team meeting.

Four Blogs in One

Posted on June 15, 2015 by gosselin

I didn't get a chance to blog on Friday due to the problem statement, and a lot happened since Thursday, so here's a combined Friday, Saturday, Sunday, and Monday blog.

On Friday we finally managed to finish our problem statement. After writing it, we have some direction and a better

understanding of what exactly we are trying to accomplish. I think we should start experimenting several latency-detection methods this week and develop one that works the best. After we have a method and analyze the results of it, we can go on to researching the user effects due to that latency, which will require IRB stuff. Hopefully we will have enough time to analyze both the user effects of latency on skeletal tracking and gesture and voice recognition, as well as user tolerance on those modalities. After work on Friday, many of us went to Buffalo Wild Wings, which was great (never been there prior to Friday). After that, Allie, Gabe, and I went to Gamers, where we each bought a different Pokemon game. I also bought a Gameboy Color, since apparently I gave mine to some random person when I was like 6. Then we went to see Jurassic World, which was a pretty good movie (I'd give it 4 milkshakes). We watched it in 3D and that was my first time watching a 3D movie. Didn't notice any difference after a while.

On Saturday we all went to the Ropes Course which was a fun team-building exercise. We pulled off the spider web thing very well. The Swing was not nearly as bad as I thought it would be. Put all your trust in those cables, I guess. I didn't climb the tower though, but I still had fun backup belaying. Overall, I had a good time there. After that we went to David's parents' house for lunch. They prepared a great meal for us!

Sunday I did nothing.

Today we had the graphics course, which I'm really excited for. I've been interested in this field for awhile now, but I find it hard to self-learn it. I think I just lack motivation though. But I'm glad we are learning it here, as we get some exposure to OpenGL. Hopefully after the course, I can continue learning OpenGL and maybe learn DirectX and some shader languages in the near future. I wish my school had a class on computer graphics. We do, but it hasn't been offered since like 2005, so it's pretty much an archived class.

This week we also have to continue working on our literature review. I read a few papers on Friday and Saturday, but not many. Today will be a day of reading more papers. Pretty soon we will construct a pre-lit review to combine all of our findings together. That way we have a head start on the real lit review that's due soon and we have an idea of what people have researched.

Luncheon #4

Posted on June 11, 2015 by gosselin

It felt weird this morning to have no courses at 9. But it was kind of nice, as it gave me some time to read another paper and look over the Craft of Research slides. Allie also finished the model for the battery dispenser this morning. Hopefully our measurements are correct and that it will actually hold the batteries. Not that we end up printing it and it's smaller than an actual battery. I think it's good though. After that, we had luncheon #4 with Dr. Dark. I've never taken a psychology course before, so it was interesting to see all these things that the human mind does. I liked the visual tricks that she showed us. It's interesting how we adjust for shadows and perspective. I'm going to be one of those seniors who still need gen ed classes this year so maybe I will take the intro to pysch class. So that's pretty much today so far. I'm looking forward to hearing what the graduate students will have to say tonight.

Diary of a Research Intern

Posted on June 10, 2015 by gosselin

Today was a pretty eventful day. We started off talking about 3D printing. I learned a lot about the processes and different stuff you can do with it. I saw a video a while ago about someone who 3D printed (ABS) a gun and IIRC it kind of worked. That's crazy. Not to mention the metal 3D printed one that actually works really well. How long before we have laws on what we can and can't 3D print. For the printing project, we chose the battery dispenser. It's a practical thing to print, plus the geometry of it is mostly square. We will be working on that in the coming days.

After lunch we met Tim who showed us the C2 which really has 3 walls but I guess it's still the C2. It was a little different that the C6, but we each got the opportunity to use the tracking glasses. Tim showed us both stereo (two eyes) and mono (one eye) rendering modes. He didn't tell us the differences between them, so when he switched to the mono version, something felt different. It was hard to explain it, though.

Later, we met with Eliot in his office to clear up some questions about our project. I feel pretty good now, and after reading some papers for our literature search, I think I have a better understanding of what exactly we are trying to accomplish. It is difficult to always ask yourself why you are doing something the way you are in research, but that's all part of it. It is challenging to find quality, relevant papers, but I just finished reading one that I found to be very helpful in describing the effects of latency in virtual environments. It's a bit dated though, so I'm actively looking for a newer one that discusses that issue.

So that's pretty much today. Research is fun! But frustrating. Very, very frustrating. That's why I like it though.

Last Minute Post on a Busy Day

Posted on June 9, 2015 by gosselin

Today was really busy. We had modeling day 2 in the morning, which was a good lecture. I'm understanding SolidWorks better now, and it's a really cool program. Next we had the third luncheon with Dr. Jordan. She talked about her research which I found to be very cool. I like how she envisions Facebook taking the avatar route in the near future. I believe this will happen as well. Later, we had our research team meeting. Elliot told us a lot of things we should do to stay focused on the research on hand, and I'm glad he did. We've got a ton of stuff to read and do now, but I'm looking forward to seeing the research take shape soon.

The planetarium and star gazing event in the evening was awesome. I used to be really into astronomy a long time ago. Even had a halfway decent home telescope that made for some awesome moon views. I wish I still had it ▨ The graduate students over at the physics college seem very knowledgeable about astronomy. It was cool seeing Saturn's rings, as well as Jupiter and Venus. Maybe I'll get back into astronomy sometime. Just wish the telescopes weren't so expensive.

New Week… Week 3

Posted on June 8, 2015 by gosselin

Today we had day 1 of the modeling course. It was really interesting and I learned how useful CAD is. It's crazy how we have progressed the last 25 years with technology. I took four years of drafting courses in high school, three of which were with AutoCAD. I really enjoyed it; making floor plans and electrical plans and mechanical designs was really fun. I never used AutoCAD again after that, unfortunately, so I don't remember how to use it much anymore. We also used AutoCAD 2006, which was old even when I took those classes. In any case, I'm glad that we are taking this course, as I get to be exposed to AutoCAD and new CAD programs and topics again. SolidWorks is really nice. I love the interface and how smooth it is. I was amazed that it could generate drawings from 3D models. That's crazy. We always did those by hand in drafting.

The weekend was fun. On Friday we went to the Art Walk in downtown which was neat. We went in a couple of the shops and saw some interesting stuff. One of them was a thrift store that had some old vintage items, like a radio and a camera. There were also some old postcards. I didn't buy anything, but it was cool to see some old technology and pictures like those. We also listened to some of the concert they had going on.

Saturday, of course, we went to Skyzone. Never thought jumping around on a bunch of trampolines would be both so much fun and so much exercise. I had a great time there. Then we went to Zombie Burger. They had really good burgers but the wait was crazy long. Must be a really popular place in Des Moines.

Sunday we had the picnic which had a lot more people than I thought. The food was good and we played some frisbee with some other REU students. All in all, it was a fun weekend, albeit a little exhausting. Tomorrow we are going to the planetarium which sounds really fun.

For our research project we have to get a hold of some stepper motors and maybe an Arduino so we can make the arms movable by motor. That's Allie's line of work, though (such is life as an EE major).

Friday

Posted on June 5, 2015 by gosselin

Friday already. Today we had a brief look at a file I/O in C++, which reminded me how much I dislike file I/O. I've barely used it since I took intro to programming two years ago. I'm sure it's an important topic, but I don't seem to use it all that much in projects. Regardless, file I/O in C++ is certainly a lot shorter than it's Java counterpart. Java has like 5 classes for reading and writing files. It's kind of annoying.

Last night we had the light painting which was really fun. We made some cool paintings. Today we are going to the art walk downtown which should be interesting. Tomorrow and Sunday we've got some events planned so it's a somewhat busy weekend. Journal club today was good, we had some good discussions about the article.

Our C++ project is almost done. We just need the diagonal win and checking for no winners. It would be cool if we could incorporate the Kinect into it, because, you know, we're team Kinect and we're making Connect 4. But the code for the Kinect's voice recognition seems hard to implement in the few days we have left.

We've begun to experiment for our research project, as I'm sure all of you have noticed our cardboard mannequin. The Kinect does pick it up, and rather accurately as well. It's cool how the Kinect is able to approximate the skeleton accurately on the mannequin.

Luncheon #2

Posted on June 4, 2015 by gosselin

Today we learned pointers in C++. I understand them so much better now than when I took a C++ class. They're simple, but confusing at the same time. I'm glad that we learned memory management today as well, as that was something completely new to me. I guess it's both good and bad that you have direct control over memory management in C++. You get that low-level access, but it can be a real annoyance sometimes.

After the lecture we had our second luncheon lecture, which was awesome. A lot of my questions about graduate school were answered by Dr. Oliver. I understand graduate school funding much better now, as well as the application process. I'm looking forward to when we talk to the graduate school admissions office about the application process. I'm still a little unsure of what specific field I want to research in graduate school, but I know I want to go to graduate school. I'm happy to hear that there are a lot of funding opportunities. Hopefully I can get a fellowship. The decision between industry and academia will be difficult for me. I think it will be good to be exposed to both before making a decision. I think that being here at the REU is a small taste of what academia is like.

Craft of Research II is up next. Learning about literature review will be very useful for our research projects, as well as any future research.

Wednesday

Posted on June 3, 2015 by gosselin

Today we learned Object-Oriented Programming in C++. The syntax of classes in C++ is pretty similar to Java, but it

will take me a while to get used to how the access modifiers are written. Inheritance is similar as well, but the whole : thing is new for me. In Java you just write “extends”. But I guess it’s less to write in C++. Putting the constructor of the superclass after the constructor of the subclass is different too. I’m sure with some practice I’ll understand it much better.

Our C++ project is coming along. We just have to check for winning moves and then do some testing. Yesterday we had our research team meeting with our mentor which went well. I think after reading some papers, we are ready to try an experimental method. Hopefully we can get the stuff together and get it to work.

That’s pretty much it for today. If anyone has ever wondered what it would be like if programming languages were vehicles… http://crashworks.org/if_programming_languages_were_vehicles/

June 2

Posted on June 2, 2015 by gosselin

Hard to believe that one week ago I was on a plane flying here. Time goes by so fast. Today we had part II of the programming lecture series. It was good; lots of useful information. Tomorrow will be fun when we learn Object-Oriented Programming, as I have barely been exposed to that in C++.

Our research project is coming along. I think we have a little direction now, which should be furthered during our research team meeting today. We played around with the Kinect SDK yesterday, which was fun. The latency on the Kinect is rather noticeable. It will be interesting to find out exactly what this latency is, and how it affects users. Different poses and sizes also likely make a difference in the latency of the Kinect. The old Kinect also seems to have a much higher latency than the new Kinect, though that is expected.

Dr. Stone’s lecture was great. He knows how to add just the right amount of humor. The projects he has worked on with his team are really cool. I have become interested in the aerospace industry recently, so it is interesting to hear about some current research projects that have gone into this industry. He is a really great presenter and his tips on presentations were very helpful. I will try to follow them during my next presentations. He’s got some interesting stories, that’s for sure.

First day of June

Posted on June 1, 2015 by gosselin

Today we started the day off with the first lecture in the C++ programming series. I thought it was well taught and organized. I’m looking forward to the future lectures, and the project. Hopefully we can complete our idea (if accepted) within a week. I think we can.

After the lecture, we took the UX lab tour which was really cool. First we went to the UX lab, which, although small, seems like a really cool place to work. It’s very interesting how those eye-tracking monitors/cameras work and how researchers use that data to create more effective user interfaces. It makes me wonder how many of our favorite websites have gone through similar processes to determine the best organization of features. We’ve all seen some terribly designed websites, and it really makes us not want to further visit the site. Proper interface and flow is extremely important for websites, and programs. I would be interested in reading some research papers regarding this research on UX so that I am able to incorporate these ideas into the user interfaces that I make for projects.

Next, we went to the third-floor area (I forgot what it was called – the center, I believe). There’s some neat technology in there. The haptic feedback devices area particularly interesting. I like how Dr. Gilbert explained the current problems in haptic feedback research, and how existing products are very large and cumbersome. This is a great example of current research problems in the field.

Lastly, we went to the MIRAGE room. Hopefully we can see a demo on this someday, as it was very interesting. The whole room seems to be a place of creative work, with the whole way that the trackers are positioned and how the rooms are L-shaped such that they can be restructured. Even the way the brick panels can be removed from the wall. I think it's neat how the US Army uses this VR application in their training. Another example of how computers and technology are expanding their influence. The room for VR-assisted assembly was cool too. It seems like a really great idea for assembly workers that definitely could be implemented in the near future. Very cool.

Saturday!

Posted on May 30, 2015 by gosselin

This morning we went to the Farmer's market in downtown Ames. I actually wasn't expecting it to be the way it was. The few farmer's markets I have been to were mostly just farmer's selling grown fruits and vegetables and stuff. The farmer's market this morning was a lot more… festive, I guess. A lot of cool places to eat and buy stuff were setup. Music too. Downtown Ames is nice. I like all the little shops that are around. It seems you can always do something there. I enjoyed the trip, although it was *really* early (the mornings are evil). I also saw a train that had "happy bday deb" graffitied on it. What other way is there to say happy birthday to someone than spray painting it on a train?

I also read some papers for our Kinect project today. They are really interesting and actually not so hard to read if you take them slowly. Naturally, I got distracted while doing that and ended up watching way too many episodes of The Office and playing too many games of Counter-Strike. Ah, well. Always tomorrow to do more readings.

May 29

Posted on May 29, 2015 by gosselin

Today we had the VRAC tour and it was really interesting. Coming from a school that has very few labs and equipment, it was really cool to see some high-tech equipment in action. I really liked the demonstration with the F/A-18 jets. It's amazing how the use of the mirrors and glasses really bring things into perspective. The sound system was really immersive as well. I can see how the C6 is very useful for the things that Iowa State, Boeing, and others are researching. It's amazing that the jet project was put together in a few weeks.

The tour where we were shown the virtual assembly of 3D printed items was really neat. I wonder how that's programmed such that it knows how to put the pieces together, just from looking at them through a camera. That would be really useful for putting things together. Maybe in the future we can use tools like that to be able to show us how to assemble desks or chairs without paper instructions. Very neat.

I also found it impressive that the CAD program used for the C6 was created from scratch in-house. I really liked the interface, as it wasn't cluttered with all those hundreds of tools that AutoCAD and other CAD tools have, while still retaining major features needed in CAD software. It is also interesting how models created in the CAD program are able to be sent to the C6 through a network.

The journal article we were assigned to read for Journal Club was interesting. It was a little hard to read as there was a lot of jargon aimed toward the audience of the paper. I liked how structured it was and how the data analysis was performed both quantitatively and qualitatively. I also liked how the conclusion section really brought all the findings of the research together. The use of the tables, graphs, and illustrations also helped me understand the article a little more. It was very well written, but hard to comprehend at times, at least for me. The small font doesn't really help that much either, but it seems nearly all journal articles are written that way.

The C++ pre-test we had reminded me how glad I am that we will be reviewing C++ next week. I've taken a bunch of Java courses, but only one C++ course, and although they are very similar, certain rules and constructs differ. It will be good to receive a refresher on C++, as it's been over a year since I took a course on it. I'm sure I will learn a lot

of stuff during the course.

blog[0]

Posted on May 28, 2015 by gosselin

So today, May 28, was the third day in the program. I don't know what it is, but I have been so tired everyday since we started. It's not even the hours; I've had much worse hours in school. Maybe it's the time zone. Anyway, today was a good day at the Lab. Meeting our mentors and learning about our project was fun and I am looking forward to researching our project. Our graduate student mentor gave us some research papers to read to get an idea of what problems people are currently researching in the fields related to our project. I think this is a very pivotal starting point in the research process that will help familiarize ourselves with the project. I'm looking forward to understanding these papers and others. The project will be difficult, but it is awesome that we, and everyone in the REU, are given the opportunity to research great projects and ideas.

Anna's craft of research lecture today was helpful as well. It is good to start off with a lecture on plagarism rather than incorporating it later. That helps us keep it in mind and ensures that we are always aware when writing. I liked her tips on how to avoid it, as it is something that can happen without notice.

The building a computer activity was fun. Building Betty will be interesting.