# Samantha Morris

## So long, farewell…

Posted on **August 5, 2016** by **smorris1** August 5, 2016

"It's been quite the summer."

June has said this phrase multiple times, and it accurately sums up Summer 2016. Around 6 months ago I was notified of my acceptance to SPIRE-EIT, and I had no idea I would end up spending 10 weeks of my summer in Ames. This was my first exposure to the Midwest; I remember eating a juicy hamburger and watching Holly pour ketchup out of a glass bottle, discussing pop vs. soda at the table, and listening to Stephen and Eliot tell us that we were in for a grueling but pleasurable experience. I saw a bunch of faces, ID'd roommates and co-workers, and had a good feeling that we would all get along just fine.

Here I am, 19-years-old, bright-eyed and tired, in a state none of my family has visited, packing up an apartment I was thrown into on May 31 2016. I gave vegetarianism my best shot (but I couldn't resist the Four Meat Classic… thanks Jeff). I modeled the latest in EEG fashion. I listened to luncheon lectures, began developing a hobby in rock climbing, received my first paycheck, and discovered the wonders of a 9-5 job. Sometimes I don't feel like a different person from the one who arrived from the Des Moines airport, but looking back on my outlook in my first blog posts, it is undeniable that I have grown an incredible amount. I learned from Team Wireless EEG how to attack problems as they come. I learned from Eliot that being assertive comes with the territory of being successful. I learned from the other interns when to voice an opinion, and when to smile at the chaos we create for our everyday lives.

I am ready to pinpoint another place to run off to next year. Ames is not the place most people would expect to find themselves. It is unassuming, breezy, and quiet. But even in a pressure cooker, under deadlines and decisions, I have made wonderful new friends, professional connections, and hopefully, a positive impact on the people around me. I know they have done the same.

I am unafraid to travel across the rest of States – to explore the fields in both the meanings of the word, to make big decisions, and to not shy away at chances to grow. I hope to embrace failures and try harder. This summer has primed my mind and my soul for the upcoming school year. Let's get it.

p.s. if any of the interns are reading this, I will miss our little dysfunctional family. drop a "should I?" in the GroupMe every once in a while. ☺

Best of luck to everyone at VRAC, the kinesiology department, and the general Ames community. Thanks for opening up your world to me.

*"I want to talk to everybody as deeply as I can. I want to be able to sleep in an open field, to travel west, to walk freely at night…" – Sylvia Plath*

Cheers!

-Sam

p.p.s. as of this afternoon, Team Wireless EEG's spaghetti structure is still standing. hopefully it will remain as a template/omen/blueprint for SPIRE-EIT 2017. **#becauseMATH**

## Time is linear…

Posted on August 3, 2016 by smorris1August 3, 2016

*but not slanted.* I wish this line of days and memories could behave like a slash – forward or backward, I could slide to a past or future. But instead I sit in an office chair, within terrifyingly similar cloth walls. I glance at a spaghetti structure built on our first day at VRAC, and it remains despite the crushing weight of deadlines.

Iowa, why not We-owa? I tried to keep my puns and coffee addiction to myself, but when you spend 10+ hours a day with the same 11 people, your bodies get worn down to the skeletons, permanently laughing in a closet.

Our poster is complete, printed, and sitting in a bag in a roll. Our paper is drafted and awaiting feedback. I am sitting in an office chair that is capable of rotating infinitely, yet I am still. Dreaming of Thai food and boba tea, all I want is for light to come in through the window x many feet away. But alas, the blinds are linear and slanted downward. Backslash.

Tomorrow is the poster session.

Cheers!

-Sam

## The waiting game

Posted on July 26, 2016 by smorris1July 26, 2016

We managed to work at Forker for four hours this morning, starting with our first dry wireless EEG collection at 8AM. I marked Steve's data using MotionMonitor, and I ran into a few technical hiccups along the way. We will be walking back to Forker at 2PM for our team meeting with Dr. S and Andrew. Hopefully we can get some feedback on our poster and paper drafts and establish a feasible final goal for the project.

Later today we plan to work on our poster more and grab dinner at UDCC. Depending on how I am feeling, I might hit the gym afterward. Briana and I still have to work on our elevator pitch, but we have an article picked out on autism and HCI. I am excited to read the article tonight and start practicing with my awesome partner.

Sometimes when you are working, you feel like you are waiting. Waiting for what? An end? Results? A plane ride home? A chance to climb a wall? An hour to watch Netflix? A new year? A new Samantha?

Waiting is a game I am learning to play.

Cheers!

-Sam

## Bursts of Clarity

Posted on July 25, 2016 by smorris1July 25, 2016

Hi. Your environment can shape your motivation greatly, as I found over the course of the day. Team Wireless EEG

finished up signal processing at Forker, which involved a lot of clicking and saving. It is the type of manual work that pushes me away from the majesty of computer science and the pioneering power of research. Getting tunnel vision is a weakness of mine that I am working on sorting through.

Today's slow trek up a hill of files caught some air when we discussed our projects with USC via WebX presentation. As we explained our work, I felt a new energy invigorating our team. We have been conducting research all summer, developing our log of knowledge to address questions, and we have been putting work into understanding a sliver of a pertinent medical field: neurophysiology in people with Parkinson's disease. I look forward to presenting our poster to faculty here, because I feel most passionate about our work when discussing it with curious intellectuals.

This newfound motivation to enjoy the research process was sparked by an external source: the USC ICT REU projects. One in particular discussed integrating machine learning into an audience of avatars that react in real-time to a speaker with social anxiety. My inner psychoanalyst is fascinated with helping people with mental disorders live the lives they seek to experience, and machine learning has been a field dancing across my mind for a while. Now I am playing with the idea of sitting in an office at a university, tossing pages back and forth, searching for ideas for algorithms for solutions for understanding. You could say that a chain of fors is looped through my mind.

Sometimes I am able to sit in a room, stare at a person, hear a song, etc. and I have a burst of clarity. Often, it is an overwhelming sensation – I understand the inputs surrounding me on a physical level that incites my complete attention. During these bursts of clarity, I know. I know where a feeling is coming from, what it means, and its level of accuracy in relation to what I thought it meant. I can evaluate a relationship, a concept, or a state of mind, albeit at random times. I felt a burst in the VRAC conference room today. I want to explore machine learning. I want to address a field in dire need of computational exploration. I want to continue to apply the skills I have acquired over the course of this REU; it would be a disservice to myself to not engage fully in the exploratory resources of my university and beyond.

Inquiry is in the air.

Tomorrow is our first dry wireless collections (at least, fingers crossed). The day begins at 8AM. Coffee is beautiful tool.

Cheers!

-Sam

## You can't spell Mickey without Me

Posted on July 22, 2016 by smorris1July

> *"We could run away. Swimming in the sunlight every day." – BØRNS, "American Money"*


Steve modeling the HD-72 (and looking fabulous)

This past week I've been missing Orlando a lot. While I am enjoying my stay in Iowa, I find myself craving shreds of distant memories. One that keeps entering my mind randomly is the thought of me riding a small train at Downtown Disney (now Disney Springs, but I haven't jumped on the trend yet). Last time I visited DD, I went with a group of people I had just met and my roommates. We ate Ghirardelli ice cream and walked among dipping suns and shrouded stars. I was dressed as John Bender from *The Breakfast Club*, and I was comfortable. There is a pin store at DD, at which I bought a small Mulan pin when I was a few years old, hair drenched with water from the communal Mickey fountain nearby. I was carefree and budding feminist, pretending I was Mulan in my front yard, swinging a broom and singing "I'll Make a Man Out of You." In October 2015, I stared at the array of pins, still shining and cheerful, adorned in plaid and leather, holding a conversation with a human I had just become acquainted with. Months before, I passed the pin store on a date, discussing political systems and the Hunger Games, my long blonde hair waving in the sunlight. I cut it off and dyed it dark and shed a skin that was no longer my own. I wonder who I will be next time I visit the pin store. Will it be a mystical, cool, Halloween night? A warm April day made even sweatier by the clasp of two uneven hands? Will my long hair sway like a wave at Cocoa Beach, afraid of the horizon and retracting into the comfort of homogenous grains of sand? Or will I step out of a car with a familiar face, dreaming of free chocolate samples and mental clarity?

All of these thoughts spin. It's time to put a pin in them.

> *"Oh, there's no time to sleep*
> *Oh, living in a dream…"*

## Time Stand Still

Posted on July 21, 2016 by smorris1July 21, 2016

*"Summer's going fast, nights growing colder*
*Children growing up, old friends growing older*
*Freeze this moment a little bit longer*
*Make each sensation a little bit stronger"* – Rush, *Time Stand Still*

**16:30ish:** We are currently working on our research poster in InDesign. It is nice to see all of the work we have accomplished over the last several weeks come together in a visual way.

**23:22:** Today consisted of a discussion on welding, a salad bar, and project stress. The usual. Apparently welding is one of the largest industries to utilize VR training. I enjoyed the universal application of today's luncheon lecture material, i.e. while VR is a wonderful learning tool, it may not be able to teach people physical skills on its own. I am almost out of milk and creamer (two essential items for coffee) so I may do a quick shopping trip tomorrow afternoon. We have nothing planned for this weekend, but Team EEG will have to meet up to practice our presentation for Monday's remote communication with USC.

Ironically, Friday has become our busiest day of the week. Yet, TGIF still applies, since it is easy to fall into a lull when working at our projects. Certainly tomorrow's GRE prep session and HCI course will jazz things up for us all. I

love Intro to HCI because it reminds me of why I wanted to do SPIRE-EIT in the first place: the technology here truly is cutting-edge, and there is an entire niche devoted to developing the visualization of ideas. Tomorrow will be new.

> *"Reality exists in the human mind, and nowhere else." – George Orwell, 1984*

Cheers!

-Sam

## Weekend, weekstart

Posted on July 19, 2016 by smorris1July 20, 2016

So much has happened in the last few days. On Saturday we went to Ada Hayden, a small park with a lake here in Ames. Briana and I strolled along a nice path around the lake's perimeter, and we spent the morning eating lunch and trying to occupy ourselves with nature. Afterwards, Briana, Angelica, and I went to a "beach" nearby (it was really a river and dirt, but I was missing Florida so even a fake beach did the trick).

The weekend was extended due to a spontaneous field trip day in Des Moines. I personally love the city, so I was excited to take one more trip there. We visited Principal Financial and learned more about their UX lab. It was interesting to learn about how studies and tests are done in industry, as the research approach is much more fast-paced and financially-driven than in academic research. Later, we had the opportunity to enjoy lunch at the top of the State Historical Museum of Iowa. I had cheese ravioli, a fruit cup, cream soda, and an absolutely delightful slice of turtle cheesecake. I did not think I could finish all of my food, but I ended up eating everything (and regretting my decision immensely shortly after). We wrapped up the day playing around at the science center, which was a blast. I felt like I was five years old playing around in the exhibits, and I remembered how much I enjoyed the science center in Orlando when I was younger. Museums, especially interactive ones, always excited me, and the science center in Des Moines did not disappoint. I ended Monday purchasing a pair of knee-high socks with formulas all over them and a postcard that says "Keep Calm and Wear Safety Goggles."

Today was a bit slow. We went to Forker to do some more data processing and ran into several roadblocks, so we weren't as productive as we would have hoped. After our first stint at Forker, we joined the rest of the interns at VRAC for a discussion on institutional racism. Dr. Spikes discussed many examples of how racism is prevalent in our society, which were convincing, but he spent minimal time discussing how we can all be better allies. Nonetheless, Dr. Spikes was an engaging speaker and brought up timely issues on power systems in education.

Team EEG strolled back to Forker (in the rain, once again) to work with EMSE one more time. We hit many more roadblocks and spent the remainder of our workday troubleshooting the software. Hopefully we can break through the technical difficulties and obtain useful data this week.

Cheers!

-Sam

P.S. Dr. Spikes showed us a Buzzfeed article on what it's like to be a graduate student. I can particularly relate to the coffee consumption in graduate school gif.

## Humanity is a thing

Posted on July 15, 2016 by smorris1July 15, 2016

Eliot hosted Ethics yesterday, and the discussion was super interesting. He has an uncanny way of capturing our

Eliot hosted Ethics yesterday, and the discussion was super interesting. He has an uncanny way of capturing our attention and challenging our ideas. During his presentation, I thought back to my first semester's Honor Symposium course, where I was told my opinions and beliefs would be "challenged." Yet, I didn't feel very influenced by the conversations held in my small groups at UCF. So it was a nice change for me when Eliot promised to challenge us and then delivered. I am still processing some things.

Online education was the hot topic at Journal Club, and, as a 10-ish year vet of learning through emerging interfaces, I felt the need to step in and dispel some perceptions and provide answers to open-ended questions. Throwback to explaining an unorthodox experience in homeschooling. I forgot how fundamental technology was to my development.

Just when you think something is irrelevant, you realize it only seems irrelevant because it has been embedded to your core self. Once unearthed, you witness that something unassuming may be helping you stand on your own two feet.



Me always.

Cheers!

-Sam

## Abstract? I prefer concrete.

Posted on July 14, 2016 by smorris1July 14, 2016

After blogging yesterday, the team cranked out an abstract for the poster session application. The writing process went pretty smoothly, and we managed to produce something before 4PM.

Today we went back to Forker at 9AM and did more data processing. We got a bit hung up on some difficulties with an R processing script, so we wrapped up later than anticipated and missed half of the luncheon lecture. We will head back tomorrow morning to tend to some exporting troubles.

We are nearing the end of week 7, and you can feel the intra and inter-group dynamics shifting in all different directions. Mannerisms are becoming routine, witty exchanges across boardroom tables are anticipated, and all of the interns communicate with their eyes and smiles. I am enjoying the familial atmsophere we have cultivated, but I am yearning to detach from the communal exhaustion. Chew gum. Drink more coffee. Lose more focus. We need more cake and thrill rides, if we can pry ourselves away from warm beds and 8PM naps first.

We will have ethics in an hour. Perhaps.

Cheers!

-Sam

## 10/10 would not recommend

Posted on July 13, 2016 by smorris1July 13, 2016

David, Zoe, and I headed over to peruse Sports Authority yesterday after work. I found nothing of note, but I enjoyed examining the (still) overpriced items and questioning my athletic ability more than I usually do. Afterwards we hit Walmart, where I bought my second pair of sunglasses of the summer (the $4 broke in a week, so I splurged for a $10 pair), and other supplies. I managed to run out of critical items, such as conditioner and coffee. That evening, order was restored and I fell asleep far too late.

I enjoy nights here, because I spend them recharging on my own. Sometimes I am productive and read books from the library, other times I watch shows on Netflix, but more recently, I've been just mindlessly relaxing at night. My brain gets a bit overloaded with tasks and nebulous deadlines. Staring at rain droplets and sipping tea to Halsey is my new routine. Who knew doing nothing could make you feel like everything.

Today we went to Forker for data analysis. Marking the TMS data gave me a lot of trouble, because the position axis was inverted and the FDI was not picked up very well. I had to remark all the TMS data manually, overriding some of the work I did yesterday and all of it I did the first half of the morning. I think Zoe is to MATLAB as Sam is to MotionMonitor.

Looking forward to rock climbing after work. Hopefully I will make progress there. But for now, we have to write a abstract in 2.5 hours. Fun times, fun times.

Cheers,

-Sam

## Cake for breakfast is a questionable idea

Posted on July 12, 2016 by smorris1 July 12, 2016

Yesterday we took a trip to Forker to do some data marking with MotionMonitor and coding to automate the marking. I finished marking all of the data at about the same time Zoe and Steve wrapped up our Java program. All in all, the day was productive. We went rock climbing for a while after the excursion, and I headed home to eat mac and cheese and fall asleep.

This morning I cleaned up, commented, and edited the Java code. Afterwards we had lunch with Dr. Gilbert, who discussed his work with intelligent tutoring systems. He also touched on the graduate school admissions process, which was enlightening. It goes to show that most things in life require an intriguing personality and an abundance of connections.

Next up we are headed back to Forker to attempt our first dry wireless EEG. We will see how it goes!

Cheers,

-Sam

P.S. We own the last spaghetti structure standing, which looks less tasty compared to the confetti cake Zoe brought for breakfast this morning. I regret consuming so much buttercream frosting.

## Trying to have class

Posted on July 11, 2016 by smorris1 July 11, 2016

Today we had an etiquette lunch at Memorial Union, where we were basically told how to eat food according to Western expectations while we ate our lunch. The lunch was quite informative but also amusing. I have discovered that I don't hold my utensils in a standard way, and that cutting chicken via "stroking" is difficult. Lunch was yummy

nonetheless. ☺

This weekend consisted of watching Netflix (I wish everything in life had a free trial), reaching out to people at home, and adventuring. I called my parents and attempted to Skype my best friend under a tree before the WiFi turned my face into a conglomeration of chunky pixels. Fed up with technology, I strolled over to the library and found an abandoned, dusty room of books on cybernetics. I checked out a few books, went home to watch a TED talk on "designing for disabilities," and fell asleep to more Netflix.

We're headed over to Forker soon to do more Java fun. I wish it was Tuesday or Thursday so I could grab Caribou on the way. The coffee addiction is at its peak, as my teammates are discovering. It's hard to cover my tracks when I want to go to HyVee specifically for thin mint creamer.

Cheers!

-Sam

## I could use some cognitive assistance and a milkshake

Posted on July 8, 2016 by smorris1July 8, 2016

This morning we discussed automated versus cognitive support systems. The discussion sparked an inner mental tangent on in what ways systems utilizing machine learning may develop biases. For example, would a cognitive assistant advise against a plane flying over countries that have recently shot down jets? Perhaps more influential, would the assistant avoid making travel suggestions over entire regions based on the political relationships of the country where the assistant was developed?

I ate vegan curry for lunch, as well as a yummy corn muffin.

2PM marks our first session of Intro to HCI. I am intrigued to discover more about HCI conceptually, since our project focuses less on the relationships between humans and computers and more on the relationships between electrical signals. I hope to bring the human element of computation to the forefront of my mind.

Tonight involves bouncing and (veggie) burgers. The thought of milkshakes is preventing me from getting too tempted by succulent hamburgers.

Cheers!

-Sam

## Same data, different results

Posted on July 7, 2016 by smorris1July 10, 2016

A large portion of yesterday was spent coding in Java. Team Wireless EEG is currently trying to automate the process of marking MOVE data. Typically, we would mark the EEG data using MotionMonitor, which is a time-consuming process. It is nice to be working in a programming language that I am more familiar with, and I feel like we have a mini-goal to work toward. This is a nice distraction from the MATLAB mayhem we have recently been engaged in.

Today we discussed online veterinary education with Dr. Danielson. The presentation itself was filled with tables and data, and I was not particularly engaged in the subject matter, even as someone who has an extensive background in online learning. Nonetheless, I found my discussion with Dr. Danielson over lunch to be quite intriguing, especially our exchange on depression in professional school students. June pointed out that Dr. Danielson contributed to a

study on depression and anxiety in graduate and professional students, and that veterinary students were more likely to suffer from depression than students in medical, law, or graduate school. Notably, 75% of veterinary students at ISU are women, and women are statistically more likely to suffer from depression than men. However, there are many other lurking variables at play when it comes to mental illness and one's personal predisposition to it. We are all given the same lumps data, but we can infer different results. The excitement is carving your own maze from a forest of disparate information.

Next up on the agenda is Craft of Research, during which we will talk more about the inherent flexibility of data, a living and growing digital organism.

"The human brain is unique in that it is the only container of which it can be said that the more you put into it, the more it will hold." – Glenn Doman

Cheers!

-Sam

## The Countdown

Posted on July 6, 2016 by smorris1July 6, 2016

Clocks tick. So do I.

Do you ever feel like you're waiting for something, but you can't decide on what? Today at the "How to Apply to Graduate School" seminar, Ms. Thelma mentioned that it is vital to understand your career goals before applying to any programs. Yet one day I am this, the next I am that. I get excited by the idea of not knowing where I belong.

5 year plans.

4 more weeks of witnessing healthy (?) debates at UDCC.

3 more years in undergraduate limbo.

2 semesters at a time.

Wonder.

Cheers!

-Sam

## Tuesday is the New Monday

Posted on July 5, 2016 by smorris1July 5, 2016

Today is our first official day back at work (even though I went VRAC yesterday afternoon). We spent this morning working on independent research for our projects, and then we had one-on-ones with Dr. Gilbert. I enjoyed our discussion on extreme programming and Agile, the set of principles most people in industry follow during the software development process. I hope to apply some of the concepts we discussed to Team Wireless EEG.

Friday afternoon June, Zoe, and I ran some errands at Sports Authority and Walmart. I invested in some 88 cent baking pans, and Zoe and I spent the evening making a delicious confetti cake. Desiring free food, we pitched the idea of having a group potluck on Saturday, and we enjoyed an array of yummy foods with our cake. Sunday consisted of attending the City of Ames firework show and doing some work on our group's methodology section.

The group headed over to Jeff's Pizza Shop for some late night dinner (a second dinner for me). I fell asleep with a full tummy.

The fourth was a relaxing day overall. It was my best friend's nineteenth birthday, so I spent the morning (afternoon, but I slept in) Skyping her. Skype is probably one of my favorite applications of HCI here, as it connects us with people who matter instantaneously, even if they are over 1000 miles away. If only I could have put on an HMD and have had an even more immersive celebration.

I took a walk and found myself between VRAC and a cemetery. I turned toward VRAC and helped June with our deeper dive program, sipped near-black decaf coffee, and fumed at EEGLAB's lackluster documentation. Frustrated and hungry, a few of us went to Hickory Park, a quintessential BBQ joint here in Ames. I went home to some reading and the warmth of my bed, wished my best friend happy birthday one more time, and then fell asleep.

Tuesday is the new Monday, I suppose.

Cheers!

-Sam

## ZoEEG Take 2, Biodegradable Fashion, and Reaching for the Yellow Hold

Posted on June 30, 2016 by smorris1 June 30, 2016

Unfortunately, Zoe's EEG data had to be scrapped (partly due to my under filling of the cap, I believe). So this morning we trekked over to Forker to run another EEG. Everything went much more smoothly this time, and we were out of the building in a little over an hour and a half.

Today's luncheon lecture was my favorite thus far. Dr. Young-A Lee discussed technology and HCI applications in the apparel industry, and she introduced us to the myriad uses of 3D body scanning. I was particularly intrigued by the use of body scanning in health and fitness evaluations, and I can easily visualize many medical applications of the tool. I was also interested in her discussion of biodegradable clothing. She mentioned a leather replacement made from a gel-like mat of cellulose fibers produced from kombucha tea. There were many obvious pitfalls, such as the material's tendency to degrade quickly after absorbing water. However, as someone who is personally motivated to protect animals and integrate social sustainability measures into our everyday lives, I could not help but ponder on the environmental and moral benefits of reducing leather production worldwide.

Yesterday Zoe, Steve, and I went rock climbing; I finally reached the yellow hold (somewhat consistently near the end) and I am feeling myself improve each time we go. We also went on Monday, and since the whole group is required to work out at Lied tonight, we will be taking on their wall next. 3 climbing days in one week? Yeesh. I'm constantly a little sore, but I am excited to continue getting stronger.

Cheers!

-Sam

## Parallelism

Posted on June 29, 2016 by smorris1 June 29, 2016

Parallel != equivalent.

Parallel computing allows for many discoveries per second. Parallel disciplines, particularly those within the STEM

field, often yield parallel paradigms. Yet, this REU contains probably the most disparate set of minds I have ever encountered. For example, our conversations at lunch jump from the gender spectrum to nostalgic childhood tales. Our roots, some old, some new, are planted in the soil of a disconnected collection of states, under an umbrella of conflicting opinions in a paradoxically "unified" country. We all grow at fluctuating speeds, under myriad circumstances, and we cannot use our statuses in college, our ages, or our arbitrary coursework to defend or propel the validation of our thoughts. Reality is universally sensed yet relatively perceived. Sensation and perception operate perpendicularly, but they are experienced in parallel. We think separately, yet we coexist within an assortment of dissociated internal and external outbursts. The only thing we have in common is difference.

Today we will attempt to work on our methodology section, but this afternoon is dedicated to MCA work.

Cheers,

-Sam

## News, questioning reality, and data collection

Posted on June 28, 2016 by smorris1 June 28, 2016

Good news: I was selected to be a Hopper at the Grace Hopper Conference this year, so I will be working as a volunteer in Houston in October. Also, I recently found out that my favorite college professor is teaching my Computer Science 2 class in the Fall. It's been a week of good news.

Today we drafted our introduction section, and I am really excited for this paper; everything is shaping up quite nicely. Shortly after we had a luncheon lecture with Sherry Berghefer. The discussion revolved around our inability to distinguish among digitally-altered, digitally-created, and "real" images. She was an engaging lecturer, but I was also intrigued by the subject, as it forced me to delve into perception and our individual ideas of what constitutes reality.

Afterwards, we did Kayla's EEG. A few middle schoolers came into the lab to observe our setup, which was a little distracting, but we got through the EEG pretty quickly regardless.

Got some coffee before heading back to VRAC. I only wish it was boba tea.

Cheers!

-Sam

## 2 boba teas in 24 hours ft. programming justice

Posted on June 27, 2016 by smorris1 June 27, 2016

I drink a lot of boba tea. I am convinced that I have a problem.

On Friday afternoon Team Wireless EEG worked on our literature review. Since the lit review is only supposed to be one paragraph long, we clammed up at the task and couldn't decide how to incorporate our article findings into the problem area paragraph we had already written. Vaguely defeated, we called it a day and I hopped on a bus to Target for fruit and canned beans. Forgot to buy a can opener, so S/O to Zoe for grabbing one for me yesterday. Now I can have chickpeas and refried bean burritos galore. #pescatarianproblems

Admittedly, I slept for most of Saturday. At 3PM we drove to Des Moines for the art festival, and I had a wonderful time. The food trucks smelled incredible, I bought a Thai tea with boba (throwback to my many boba-tasting adventures in Orlando), and I saw stunning works of art. I was also pleasantly surprised when I sat at a bench and

spotted a Microsoft office (not the application, but a legit office owned by Microsoft).

Sunday was a pretty laid back day; I read some research papers on spatial filtering for EEG, and I did some independent work on Udacity MOOCs. I also read a fascinating NYT article by Kate Crawford on the importance of diversity in teams of people who are developing machine learning algorithms. The piece, while a bit prone to over exaggeration, was certainly thought provoking. Machine learning is an enigmatic field that intrigues me, but also incites my innate cynicism and fear of releasing control to machines. How can we program equality? How can we code social decision-making based on the ideal human tendency toward acceptance, not cold, quantitative trends? You can barely teach human beings how to give others the benefit of the doubt; how could you possibly shape 0's and 1's into equal signs?

My thoughts were interrupted for (another) brief boba interlude. I took a bus to Campustown, stocked up at TJ Cups, and explored campus until I finished my drink, eventually finding my way back home.

Today's goal is finishing the lit review. Let's see how it goes.

Cheers,

-Sam

## Getting Unified in J-Club

Posted on June 24, 2016 by smorris1June 24, 2016

Yesterday we had Craft of Research, during which we explored journals that are relevant to our projects. It was nice to have a break from thinking about the rut we are facing with MATLAB, but I feel like now we are getting back on the right path. Team Wireless EEG is unstoppable!

As a follow up to my USPS troubles, I finally have some decent news. I received a wonderful care package yesterday containing adorable socks with cats all over them and some delicious treats. I suppose I no longer need to invest in a passenger pigeon, but the birthday present is still somewhere in the U.S. that it should not be.

I fell asleep at 9PM last night, before I could finish reading the article we would present on for Journal Club (affectionately known as J-Club, in my head). As a result, I woke up early this morning to finish reading up on the benefits of wireless EEG systems. The article was digestible and relevant, so I had high hopes for our J-Club session at 11AM.

At 9AM we began our deeper dives work. My group, consisting of Steve, June, David and I got a crash course in GPGPUs. There was a lot of information thrown at us at once, and I was trying to take notes, so it was a bit tricky staying on top of all of the details. However, the topic is very interesting: I learned about making shaders in Unity, which is going to be super helpful later down the line when I play with the interface more. I also tapped into the world of parallel processes and image rendering. I am glad I ended up on this project and I can't wait to "dive deeper" in roughly 40 minutes from now.

I dragged my brain away from memorizing GPU terminology and tinkering with Unity to join the rest of the interns for J-Club at 11. Steve, Zoe, and I facilitated a conversation on wet versus dry EEG systems, and I think the conversation went quite beautifully. We discussed noting conflicts of interest in papers, meta analysis, and even the difference between sex and gender (we got a little off track, but I am all for educational and socially-beneficent discussions). We concentrated on the pitfalls of both the wired and wireless systems, which helped me think more critically about the relevance of the work we are doing to the field of medical technologies. I surprised myself with how much my knowledge base on EEGs has grown since arriving here, and I am much more excited to discuss our work during our mid-project and culminating presentations. I think that as a group, our professional communication is quite strong, so it will be a great experience presenting our findings in the next few weeks.

Cheers!

-Sam

P.S. Ate some yummy salmon for lunch, chugged a little more coffee, and managed to not bump in the spaghetti structure, which, as expected, is still standing.

#becauseMATH

## ZoEEG and imPASTA syndrome

Posted on June 23, 2016 by smorris1 June 23, 2016

Yesterday we continued with our adventures in Unity; notably, we played with animation and manipulating objects with lighting. Unity has definitely been my favorite crash course, and I am excited to download it to my laptop and continue playing around.

This morning I (reluctantly) woke up to Bon Jovi's "You Give Love a Bad Name," scrambled to make some coffee, threw on clothes, and forgot about breakfast, all before 8AM.

Steve and I journeyed out to VRAC and snagged the dry wireless EEG headset from the front office. Once we got to Forker, we dropped off the headset at the neurophys lab, then we headed across the way to do Zoe's EEG. I had a couple of hiccups, namely forgetting to take off the sticky on the back of a sensor (I kept pushing the sensor behind Zoe's ear before I figured out it wouldn't stick), and not filling the cap fully with gel. I was trying to prevent a gel overflow, but it yielded a lot of noise in our signal. We troubleshooted and were able to do the EEG anyway, and now that I have both overfilled and underfilled the cap, I am confident I can strike a happy balance next time.

Shortly after this morning's EEG, we had a luncheon lecture with Dr. Krishnamurthy. He discussed GPUs and medical imaging, and unfortunately, most of what he discussed was quite over my head. As I snacked on three delicious breadsticks (to make up for my lack of breakfast), I awkwardly twirled my pasta and remembered Dr. Gilbert's discussion of imposter syndrome. Most days I feel qualified to be here, but other days, I can't even think of intelligent questions to ask our presenters. I have been working on feeling more confident in the research-oriented work environment, but I suppose it is only natural to question one's abilities when one is in the shadow of niche professors who have dedicated their lives to improving the technology we are only now learning how to use.

Personal notes: I didn't go to the gym yesterday (go figure) and instead took a 2.5 hour naps shortly after getting home. I read up on cognitive engineering, something I have taken an interest in lately, had a nice discussion with June and Karo about college and robots (they go hand in hand), and ate yet another hummus and soy patty naan bread sandwich. I am (proudly?) surviving on coffee and meat-free products, both of which I hope to acquire more of in the next few days.

Still hungry, and while the spaghetti structure is still standing, it is looking more delicious by the minute.

Cheers!

-Sam

## I ship it (or not)

Posted on June 22, 2016 by smorris1 June 22, 2016

Today we continued with Unity, and I am feeling better about the experience, especially because Karen is a great teacher. I hope I can design some semblance of a video game this summer, because coding in C# is not too difficult,

and the game engine is getting easier to use.

A few weeks ago I ordered my best friend her birthday present through USPS, and after having it accidentally ship to Minnesota and end up in Ames two times (so close, yet so far), it is being shipped back to the seller due to an incorrect shipping label address. I am close to giving up on sending and receiving packages here. I guess it's time to invest in a passenger pigeon.

Speaking of difficulties, our research project is getting more and more complicated, as MATLAB has next to no decent tutorials online. The urge to switch to Java is strong, but I still feel like designing filters in any programming language is leagues out of our comfort zones. I am not really sure of how to go about the coding at this point, as brute force is not yielding clearly accurate results.

On a personal note, my entire body is sore from rock climbing the other day. I think it will take a while to recover from the physical stress. Nonetheless, I plan to cycle after work today, as that is a less strenuous task. I have been doing a great job keeping up with my pescatarianism; no burger at UDCC can (successfully) tempt me.

Cheers!

-Sam

## A sense of direction

Posted on June 21, 2016 by smorris1June 21, 2016

Today was our fourth team meeting. We discussed the articles we found on wireless EEG headsets, and in general, I think we are all getting a stronger grasp on our research topic. We will be leading a discussion on the dry wireless system on Friday for Journal Club, and I am excited to hear the inputs of the other interns on the technology we are utilizing.

Sometimes when you get wrapped up in a task, such as writing a program in an unfamiliar language or animating a snowflake in a scene, it is easy to lose your overall sense of direction. When you lose direction, you are more vulnerable to frustration, because every little pitfall or annoyance is magnified when your focus is narrow. However, today I was asked "What do I want to accomplish with your research project?" and I hesitated when I answered. Afterwards I realized that I was getting so hung up on the minute details of our MATLAB program and other shortcomings that I became disconnected from my overall motivation. This disconnection is undoubtedly a primary source of personal stress. I hope that the project will result in an accurate signal for the wireless headset, and that one day we can use it on people who have PD. I want my work this summer to analyze the brain activity of patients with Parkinson's, so that more developments can be made in research on the disease, and so more medical technologies can be created to further the progress of the resulting research.

Cheers!

-Sam

## Just keep swinging

Posted on June 20, 2016 by smorris1June 20, 2016

I woke up at 7AM on a Saturday to bright lights and an enormous desire to stay in the comfort of my plush bed. But instead, I threw on some athletic wear and ventured out to the high ropes course in Marshalltown with the crew. The experience started with some team building (on the ground). First, we were challenged with maneuvering through a "spider web" as a team. Eventually we came to the conclusion that we needed to lift each other up to complete the task, so I was shoved through a net by several REU interns. It was hard giving up control to so many people, but I

realized that I had to allow others to take over if we were going to accomplish the task at hand. Other activities included building a bridge of planks, creating a "human pendulum" by literally pushing each other around, and maneuvering through a "maze" blindfolded.



Team: built.

Shortly after we bonded, it was time to do some things in the air. I was very reluctant to go on the "swing," as at first sight, I was unsure of how well-designed the mechanism was. I let others go first and observed their swinging techniques. Eventually, I chose to swing. Since I decided I was just going to go for it, I strapped on a shoulder harness and flipped upside down to get the full experience. If the high ropes course taught me anything, it is that I have major trust issues with people, but not with gravity, and if I commit to something crazy, I make sure to milk the opportunity to indulge in the wild.

We also took some time to climb the tower, which was super fun. Interestingly, climbing up was not a problem for me, as I was able to stay calm by focusing on getting to the top platform. I trusted myself to get up to the top, but when I had to jump off and let Angelica send me down, I froze up. I want to work on relying on other people, but I am proud that I don't let myself give up, even if I am a little nervous about what I am doing. Overall though, I enjoyed the climbing experience, so Zoe and I are going climbing after work today. But this time, there are no harnesses (which are unnecessary when you are climbing ~10 feet, or lower if you are a novice like me).

Sunday was relaxing. I called home (Happy Father's Day! Shout-out to dad if you are reading this.), then Team Wireless EEG went to the office to work on some MATLAB and our literature review. I am glad we took some time

yesterday to get work done, since it can be hard to concentrate during unstructured work time. I feel more confident with our position in our project now that we have the bandpass and notch filters (hopefully) working on Steve's resting data. After our baby work day, I ran some errands and did my aerobic spinning routine at the gym. Later, Stan the Man made a wonderful teriyaki and jasmine rice dinner for everyone. Hopefully we can have more dinner parties over the course of the next few weeks! I could finally make my vegetarian gyros again.

Today we started our adventures with Unity. I didn't peg myself as the game design type, but I am loving the software and how multifaceted it is. We are learning the basics of a game engine that can be utilized by something as commonplace as a cell phone to something as powerful as the C6. It's insane and ultra exciting. Can't wait to get back to Unity in 30 minutes.

Cheers!

-Sam

## Just another Friday, feat. ADVENTURE

Posted on June 17, 2016 by smorris1June 17, 2016

Today we completed our 2nd SolidWorks session. SolidWorks is giving me a lot of trouble, because I don't feel like I am grasping the concepts as quickly as they are being taught. It is a little unnerving feeling behind, not just because other people are ahead of me, but because I am losing the desire to catch up. I enjoy tinkering, but this interface is challenging my patience. However, we will have two additional hours today to play, so hopefully I can become more comfortable using the software.

We took a break from modeling to do Journal Club this morning. In general, the discussions have been interesting. A lot of points pertaining to ethics and technology I have already considered, so my interest in some of the side tangents is negligible, and I wish we would not get off track from the task at hand. Hopefully our discussions will get more streamlined each week. Team Wireless EEG has to find an article related to our research for the cohort to read next week. This will be an easy enough task since we are doing our lit review currently anyway.

While today has been a bit tedious, Zoe and I found a little slice of heaven during frisbee golf yesterday. I wasn't too great at "frolfing," and there was a beautiful river staring me in the face through the bushes across the way. So, Zoe and I went off course and attempted to skip rocks by the river. I even got a few lovely shots of the scenery.

We might have gotten separated from the group, but we found a shortcut back to the apartments, so all was well. I preferred soaking in the scene to tossing a disc anyway. Plus, we saw a little girl with (supposedly) her dad throwing an itty-bitty disc. It was so cute, and I am using that lovely mental image to get me through the next few hours of this Friday.



Cheers!

-Sam

## I sense some new perceptions…

Posted on June 16, 2016 by smorris1June 16, 2016

Today I modeled the EEG cap (now medium large, apparently) for our second data collection of the summer. The

EEG process went much more smoothly this time, as we had a better idea of the steps involved. It was really difficult staying still when the actual data collection was happening, and I probably blinked during the 10 second intervals. However, I am excited to see my brain activity graphed out in MATLAB!

After our hour long EEG, we joined the rest of the interns for a fourth luncheon lecture. Dr. Veronica Dark, a psychology professor and Iowa State veteran, discussed sensation versus perception. She also shared various photos of aquatic wildlife from her scuba diving adventures, which was a treat. I really loved the lecture, and it made me have a greater appreciation for cognitive psychology. I have been toying with computing fields to explore during my remaining years as an undergraduate, and I am intrigued by HCI more now that Dr. Dark discussed the human side of interaction.

Dr. Dark also encouraged us to take classes and find a general pattern of what type of information "sticks" best. She started as a chemistry major, but she did not naturally understand the material. Once she took an honors psychology class, she found that the material just "made sense." Some would argue that psychology is an "easier" field than life sciences, computer science, and engineering. I know for a fact that this is false, as some social sciences do not naturally click with me, just as many STEM people do not naturally understand history or English. We all have very different ways of processing information, and some academic tracks will cater to our personal learning strengths better than others. Sometimes I feel that CS just "makes sense," as I tend to think very logically and literally, but I am intrigued by fields that require flexible processing and finding validity in interpreted concepts, such as sociology and psychology. I guess there is only one way to find out what paths stick – try a little bit of everything.

Cheers!

-Sam

## Headsets, coffee, MATLAB, and 3D (super)modeling

Posted on June 15, 2016 by smorris1June 15, 2016

Yesterday Team Wireless EEG skyped Mike to learn more about properly assembling the wireless EEG headset. Once again, Steve modeled the equipment and let Zoe and I poke him with sensors. Unfortunately, our wireless EEG set was missing a battery charger, and one of the wires was broken, so we took the headset to VRAC for repair. Thankfully, our lack of the wireless system will not hinder us from collecting data over the next two weeks, since we are currently focusing on utilizing the wet EEG.

After the second research team meeting of the day, I stocked up on some iced coffee from Caribou, and the team dove into interpreting Steve's resting data in MATLAB. At first we were overwhelmed with the number of files provided to us, and we were unsure of what resources to use. Eventually, we just played with Zoe's computer and looked up various commands for reading in Excel files, and after some trial and error, we were able to import the data correctly. We are still in the early stages of coding, but I am excited to learn more about MATLAB.

Today was our last Maya session. Last time was a bit challenging for me to follow, but today we learned how to add color and texture to our scenes, and I got the hang of the software. Overall, I enjoyed the experience and I can't wait

to try out SolidWorks next. I have discovered that I learn best by jumping into the unknown and fearlessly pressing buttons. We have Ctrl+Z for a reason, and it allows for endless exploration.

Cheers!

-Sam

## It is all coming together

Posted on June 14, 2016 by smorris1June 14, 2016

This morning was quite productive. Zoe, Steve, and I met up with Dr. S, Andrew, and other independent researchers to discuss neuroscience articles related to our wireless EEG project. We did a quick crash course on what we learned, and then we made an action plan for the project. Soon we will analyze resting data by performing an FFT with either MATLAB or Java. Everyone seems to be leaning toward making Java work, but MATLAB has so many built-in functions specific to analyzing EEG data. I am intrigued by both options, because while I am familiar with Java, I would be interested in using it to analyze big data sets in a research context. Alternatively, I have no experience in MATLAB, and I am always looking for new skills to pick up.

It is a relief to have direction for our research project. I feel more motivated now that we have a clear action plan and have better defined the goals of this summer's research. This week we hope to draft our research question and problem area paragraph, which is completely manageable since we have already laid out the basic ideas in our Google Drive. I am a little nervous about churning out the FFT program in a week, but I am confident in our team's ability to rise to the challenge presented to us.

In 40 minutes we will be Skyping with Mike and discovering more about the functionality of the wireless EEG headset. One of us even gets to model the headset! It will be a bit nerve-wracking to wear it or set it up, as it is quite expensive, but we have to get used to handling the technology at some point.

Yesterday I went to the gym again after work, and pushed through another aerobic cycling routine. It was much easier this time around, and I ended up accidentally running from apartments to the bus stop, which was also easier to do. I think my (almost) vegetarian diet and my utilization of the exercise facilities here is beginning to pay off.

It is all coming together.

Cheers!

-Sam

## Moving forward

Posted on June 13, 2016 by smorris1June 13, 2016

The start of this weekend was marked by some nice times; I attended the Ames Farmer's Market with the other interns, sipped coffee on a shady, grassy knoll, and laughed at obnoxious trains passing by. There were smiling dogs, potted plants, and an abundance of sunshine. Afterwards, Zoe, Briana, and I went to Potbelly Sandwich Shop, which I had been craving since I went there in D.C. a few years ago.

I came home to the news that Christina Grimmie, a favorite singer of mine, was shot in my hometown. The information shook me, but I spent the remainder of Saturday trying to be productive.

Unfortunately, things went from bad to worse. I woke up on Sunday to a sunny room and a news story that left me in utter shock. I heard that 59 people were murdered and 53 were injured, once again, in my hometown. The deadliest shooting in U.S. history occurred miles from where I was born. I spent the remainder of Sunday wishing I could do something, calling my friends from home, and watching Facebook slowly inform me if my friends were marked safe, or if they were unaccounted for. I am unsure of how to feel at this point.

Today we submitted our milestones for Wireless EEG. It is nice to have other things to think about besides the grotesque violence and terror in Orlando right now. We also started learning Maya, which has been tricky but quite fun. Hopefully I can download the student version for free and continue playing with the software. I love how creative I can be in designing my own world; it is a comforting feeling to be in full control of an environment, especially after this weekend's events. I am trying to stay as immersed as possible in enjoying the company of the other interns, and in participating in the work at hand.

More later,

Sam

## printf("TGIF");

Posted on June 10, 2016 by smorris1 June 10, 2016

Today we are wrapping up our C++ coursework. While I was familiar with all of the concepts we discussed, I had some issues executing the OOP elements of C++. This was partly due to the fact that Visual Studios crashed my computer, so I was unable to pay attention to all of the technical explanations. However, I received help from Stacy and was able to understand how to connect header files to cpp files. Next I will continue my adventures with C++, and try to improve my knowledge of the syntax. We start our venture into Maya on Monday, and I can't wait to face the challenge of 3D modeling.

Yesterday we had Craft of Research, which was very informative as we discussed how to properly conduct literature reviews. This session was much more focused than the last one, and I am looking forward to next week's class. Today we had Journal Club and discussed how to effectively skim technical articles. While I had trouble understanding the article's dense information, I am motivated to improve my skimming techniques. I am also more excited to do my own research on journals to read, so I can get more familiar with technical writing and explore fields in computing that I am intrigued by.

On a personal note, yesterday I went to the State Gym for the first time. The facilities here are incredible, and I felt much more capable and in control after my cycling and elliptical workout. I will make it a priority to bring gym clothes to work so I can workout after 5pm, since it is mentally clarifying and a fantastic habit to get into.

Tomorrow we will head out to the Ames Farmer's Market, a 2 mile walk from our apartments. I can't wait to acquire

some fresh produce and incorporate it into my experimental dishes.

Cheers!

-Sam

P.S. Speaking of food, it's day 11 and the spaghetti structure is still standing ☺ Zoe, Steve, and I make a great pasta engineering team.

## Escaping, Experiments, and Grad School (a.k.a. EEG)

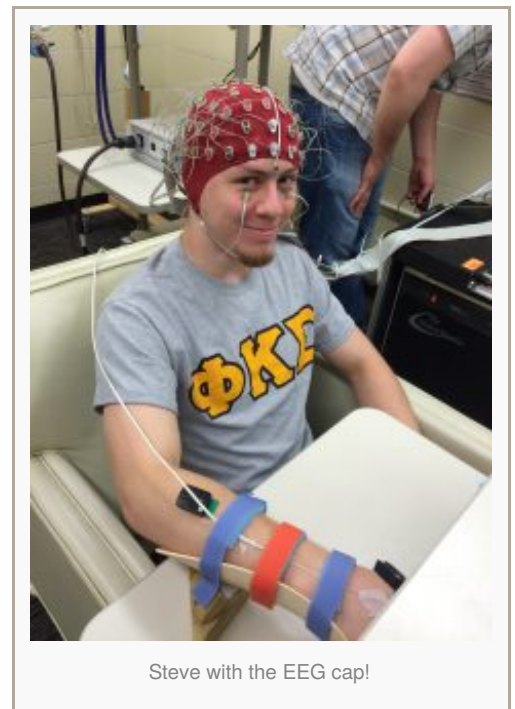Posted on June 9, 2016 by smorris1June 9, 2016

I had been meaning to explore Iowa as soon as my plane landed last week, but even still, I found myself comfortably laying in bed, my laptop resting on my stomach, and my headphones gently hugging my ears. Once I had spent an hour procrastinating and dreaming, I decided to run. I grabbed my keys and my phone, popped in some earbuds, and wandered along a vaguely-familiar strip of University Blvd. As I walked along the road, my destination became clear: I had to get to Brookside Park's flower garden and swing set. *I had to take a moment from my day to be alone and fly.*

Sometimes you just need to leave. Sometimes you know where you're going, other times you don't. Sometimes all you know is what you need do, whether that's doing research or soaring on a swing set. I enjoyed taking this time for myself to breathe in the outside air and watch the sun go down. It had been a while since I had experienced that kind of inner peace, and for the first time, I felt relaxed here in Iowa, 1300 miles from home. Hopefully I will go on many more little adventures here, both by myself and with others.

Today we performed our first EEG on Steve, and he was a great sport throughout the entire process. It was a bit difficult using the wired headset, because the conductive gel we put inside of it kept oozing out. Also, being watched while setting up the equipment was a bit unsettling for me, so I began critiquing myself when I didn't do my part quickly or cleanly enough. This self criticism, I realize, does nothing to improve the current situation, so hopefully the process goes more smoothly as I gain experience setting up the EEG.

I am looking forward to running more EEG tests. I would like to get better at setting everything up and understanding the programs that Andrew ran to collect the data.

This afternoon we had a luncheon lecture with Jim Oliver, who was very entertaining and informative to listen to. He discussed how to pay for graduate school, and he made a very convincing argument on why everyone in STEM should attend. While I could get a job with a Bachelor's degree, I could easily finish my Master's in 5 years at UCF, and receive a PhD with some type of full funding and a stipend. I could get paid to do research, and if I wanted to be an industry mogul in the long run, I would have even more doors open with a higher level degree. Plus, once I enter the workforce, I may get too accustomed to the lifestyle of a salaried worker and lose the desire to utilize higher education as a stepping stone to a better career. While Dr. Oliver was compelling, I am not letting myself get too enamored with one track or another while I am here. As I told Angelica today, I am just processing the information as it comes and keeping my ears open to all opinions on the options.


Steve with the EEG cap!

Cheers,

-Sam

*P.S. Today's lunch was fried chicken and fries, and it was nice to have a taste of the South up here in Iowa.*

## Designing shirts, moods, & lifestyles

Posted on June 8, 2016 by smorris1June 8, 2016

Yesterday we visited our labs, and then I bought half-priced Toffee Mocha coffee and sat outside to prepare for the impending collaboration. We were tasked with coming up with a summer t-shirt design, complete with quotes, graphics, and color combinations. Naturally, the brainstorming process with such a large group of people was a bit tedious, but I believe we have some solid plans in the works, and I am excited to see the final product.

Today is a near carbon copy of Monday, as we are continuing our C++ coursework, and I am learning techniques I utilized during Monday's class (data structures, primarily). I hit some major hurdles with Visual Studio, and the technical difficulties were rather frustrating. I tried to follow Eliot's advice on accepting failure as a new challenge, but that did not improve the troubleshooting process instantaneously. I hope I can get better at not getting emotionally-invested in my work so I can avoid showing my feelings about my shortcomings on my face, as this concerns the people around me. Masking frustration is extremely difficult, unless one can stop feeling it in the first place.

In my free time, I have been doing some self exploration regarding my career goals. I have trouble pinpointing what work truly excites me. I am more intrigued by the ideas of classes and jobs than the execution of either. I am unsure if this hesitancy to understand what I enjoy stems from a lack of work and educational experience in the field I am currently in, or if it stems from a fear of settling for a career that is secure, but my heart may not thrive in. I always thought my goal in life was financial security. While this is still a huge concern of mine, I have realized that I can make money in pretty much any sphere of computing. Eliot mentioned that most people switch careers five years into their time in the workforce, which gave me some comfort. Sometimes I forget how young we all are, and that we need not remain at one desk for the rest of our lives. Realistically, the job I will have in a few years may not even exist yet. The tools I will need to master to succeed are probably not ones I will acquire in college or at my jobs as an undergraduate. Everything is up in the air, and both fortunately and unfortunately, I have always identified myself as a grounded person.

So the question is, does research excite me? It depends on the field. If I have learned anything in this first week, it is that you need to love what you are discovering, or your work will not amount to much. The intensive yet unstructured schedule is something about a career in research that I did not fully grasp before coming to SPIRE. I am an inquisitive person, and I enjoy developing new ideas. But the simplicity of industry is appealing, while the potential success in research is overwhelmingly tempting. As a student, I am pulled in many directions regarding my future. At an internship, you are thrown to dollar signs and structured days with little room for mobility. At an REU, you are tossed into an ocean of potential creativity that has beautiful views of sunset that you can only see if you teach yourself to swim. I will be the first to say that I don't know what my future holds, but if I know anything about myself, it is that I can become so used to the blurriness of confusion that the scene becomes clear.

## Day 8 and the spaghetti structure is still standing

Posted on June 7, 2016 by smorris1June 7, 2016

I'm back! Today we had our first excursion into the neurophysiology lab. We took a tour of the facilities and discovered that the kinesiology building is a labyrinth. While we haven't worked with the wireless EEG headset yet, we had the opportunity to see the equipment.

At the lab, I volunteered to do an EMG test. I sat at a desk and wrote my name on a piece of paper, while sensors recorded my muscle movement. This data was then graphed on a simple plane, and since 4000 data points were taken, the graph rendered a near identical copy of my handwriting. I was also fitted for EEG caps. My head is 51.5 cm in circumference and I fit in a medium size cap, for those of you keeping score.

I have been taking many photos of my time at ISU. I finally found the quintessential brochure lawn on campus, featuring a gorgeous green space and clock tower.


Look at this tower!

Shortly after our lab tour, we attended a luncheon lecture with Eliot Winer. In general, we discussed his ventures into the business world, his medical imaging technology, and, more surprisingly, American Ninja Warrior and curling. I was quite pleased with the lecture, as it was nothing like a lecture; we were encouraged to ask questions about research, cooking, and work-life balance. The most important thing I took away from the discussion was something I already knew, but often forget to reference in my everyday life. Don't be afraid of failure. I was a bit intimidated coming into this REU program, especially after only finishing my freshman year of college. Did I have the skills to succeed? Did I develop the mindset of a tenacious, hardworking, inquisitive researcher over the course of my first year? Deep down I know I have, and I am only going to continue to improve over the next 9 weeks. I just need to continue to fail, to learn from mistakes, and to always look for opportunities to grow.

Cheers for now!

-Sam

P.S. We built a spaghetti and marshmallow tower on our second day here, and Team Wireless EEG had the second tallest structure. It was rickety at fist, so we made the structure slanted and flipped it over to create a stable tower. It's still standing, and hopefully by the end of the summer, we are too!

## std::cout << "Case of the Mondays";

Posted on June 6, 2016 by smorris1June 6, 2016



After a tedious few days of getting acclimated to the ISU campus, I experienced my first weekend in Ames. My first task was pushing through some research training webinars, which incorporated information on EEG, seizure guidelines, and setting up the TMS. Once I accomplished that, I headed out to Summerfest, a local block party featuring (free) root beer floots and delicious Mexican food. To my surprise, there was a miniature petting zoo, and I befriended a baby pig, a smiling llama, and a haughty camel.

On Sunday, all of the SPIRE participants partook in a REU picnic, so I was able to meet other undergraduate researchers. We played a card game called "Kings in the Corner," which took me a while to get the hang of, but was enjoyable nonetheless.

Now we are entering the first marathon of crash courses. Today we began learning C++, a powerful object-oriented programming language. Since the course assumes we have no prior programming experience, we have been covering rather simple topics. However, the class will certainly rev up quickly, and the slower conceptual pace will allow me time to get used to the language's syntax. Also, the mentors here have been wonderful about helping me with technical issues and
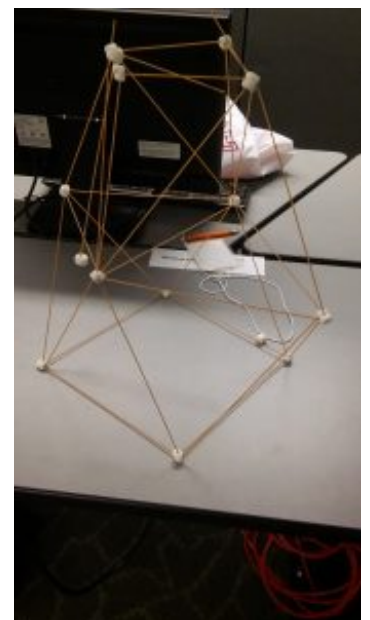
giving me additional programming challenges since I have coded before. We have been given the opportunity to a. learn by doing and b. learn by collaborating. This has been rewarding to me because it allows me to assist my peers and learn how to communicate technically during the troubleshooting process.

I am looking forward to the upcoming crash courses in Maya and Solidworks, since I have no experience with 3D modeling. I am particularly intrigued by the 3D printer a few paces away from me, and I want to get my feet wet in the "deeper dives."

That's all for now. Let's C(++) what happens next.

Cheers!

-Sam

## System.out.println("Hello, it's me");

Posted on June 3, 2016 by smorris1June 3, 2016

Today is the fourth day of the REU program, and I am already feeling more acclimated to the new Midwest environment. So far I've bowled, played laser tag, and explored the magic of CyRide. But more importantly, I toured the VRAC facilities, sat inside an computer-generated jet engine, shot zombies with my eyes, and contributed to a beautiful virtual world.

While we have spent most of our time inside the VRAC, I have enjoyed every minute of being outside in the gorgeous town of Ames. The campus is picturesque, and, coming from humid Orlando, the cool mornings are always a stellar way to start the day.

I have come to realize how interdisciplinary the program really is, not just in terms of the projects, but because of the diverse backgrounds of the participants. When the minds of psychology, computer science, physics, mathematics, and engineering majors come together, classroom discussions take wild creative turns, and I can't wait to learn more from the peers sitting around me now.

There are many things to learn over the next 10 weeks. From C++ to HCI, our classroom periods will be infused with new skills and ideas. I am interested in myriad fields of CS, including AI, so the HCI course will really open my eyes to a potential career path. I hope to learn more about the life of a researcher and the process of graduate school applications to ensure the path of academia and inquiry is the correct one for me. Finally, I am incredibly excited for the Wireless EEG research project, because not only will I gain new skills in MATLAB, but I can work on a project that makes a tangible impact on people affected by Parkinson's disease. We can all only hope to make scientific breakthroughs in the following weeks, yet I certainly wish that we can all contribute something special to the HCI & VR bodies of knowledge here at ISU, all while discovering more about ourselves as scientists, collaborators, and human beings.

(Note: I've also learned how to use a Keurig machine, which may be one of my new favorite discoveries.)