$new\ environment,\ new\ people,\ and\ all\ of\ the\ changes\ our\ lives\ are\ going\ through\ (especially\ coming\ from\ all\ people).$

over the place).

I feel: (good), (friendly)

go into the community

☐ Uncategorized ☐ 1 Reply

I feel: (chilly), (hard working)

seriously. I had an amazing time overall.

would keep starting over). (8th time's the try right?)

SolidWorks Morning Class

SolidWorks Afternoon Class

about holes? Ø(laugher)

the learning curve is steep.

very yummy. (happy)

□ Uncategorized □ 1 Reply

🛗 June 7, 2019 🛮 🚨 Lara Chunko

I feel: @(so happy) but also @(overwhelmed)

perfect bike for me. (a) (so happy)

Uncategorized Leave a reply

I feel: (good), (confused)

☐ Uncategorized ☐ 3 Replies

Wednesday June 5 m June 5. 2019 Lara Chunko

I feel: (good), (excited), (nervous)

to scan a quarter as my test run Tidbit(s) of informat

Uncategorized Leave a reply

June 4, 2019 Lara Chunk

☐ Uncategorized ☐ 1 Reply

Starting a Full Week June 3, 2019 Lara Chunko

programming!

information.

Dear Diary,

strand of hair is between 17-181 micrometers [1]).

Tuesday June 4th aka Basic Title

[1] Width of hair reference: https://hypertextbook.com/facts/1999/BrianLey.shtml

(some students went geocaching but I went the lazy route and threw a frisbee)

I'm not sure why I expected the day to be easy going since my schedule was booked from $9:00 \, \text{am-} 7:00 \, \text{pm}$. turns out it was a long day. Just to list everything we did today: Craft of Research class, lunch and lecture, pictures (much longer than expected! which is why my team didn't meet to do work), and then a barbecue

One of the classes we're taking is called Craft of Research. It's a great class which introduces us to what is rch, how to read and write research papers, and many other aspects regarding research. Today, we learned about the Institutional Review Board (IRB) which oversees the protection of human rights when using humans in research. We also learned how to write a problem paragraph which will be a part of our final presentation at the end of the summer! I understand I can't share the research I'm doing with you beyond generalizations, but I'm really excited to see the progress of our research. There are many mileston throughout this 10 week program and seeing each milestone contribute to the end project is really satisfying. As I mentioned the other day, we had our first lunch and lecture today! These are where professors come in to

Dear Diary,

Thursday June 6 June 6, 2019 Lara Chunko

Dear Diary,

were introduced to the complex topics of classes, objects, and inheritance

Friday June 7

Dear Diary,

A Creative Title June 10, 2019 Lara Chunko

Dear Diary,

Emmanuelle did a great job reaching the top!

Dear Diary,

17 Hours Awake and Counting

Now, we can return to the events of my day

communication is important. The way I understood what I would be doing was correct, but that was at the highest level of thinking. When you look at how we are reaching the end results, the methodology is different. didn't know these differences existed until sitting down and hashing out these misconceptions with Vignesh. Today is like a day of thanks. Thank you, Vignesh, for staying late and teaching me and helping me understand • I asked Vrinda earlier this morning if she had a deck of cards. She said no ... but while she was at the store today, she bought me a deck of playing cards! She remembered! She's so kind. Thank you, Vrinda • The dining hall had cookie dough bites as a topping for ice cream today! I bypassed the ice cream and got a bowl of cookie dough. \$\frac{1}{2}\$(love)

In a former post, I roughly estimated how long it would take for all three of us (in the 3D scanning team) to scan all of our data using the FVM system ... "If all three of us were to complete all of our scans at once, that's 45 hours" – Me on June 7th. Fast forward to today at 8:30am ... by 11:00am, Kelsey was only able to complete ten scans. My rough estimate was six minutes per scan, and the actual turns out to be more like ten-twelve minutes per scan ... which means almost 90 hours. Our graduate mentor, Vignesh Suresh is a little worried. He's now in contact with the professors to see if he can get them to lower the number of scans we need to complete. Here's

Our speaker for the lunch and lecture today was Professor Bernard Canniffe. He's a graphics designer, but his ntation today wasn't focused on his life. It was focused on the impact he's having on the lives of people living in impoverished/underrepresented/at-risk neighborhoods through his classes and his students. He's bringing designers, researchers, engineers, companies, and so many more together to connect with their communities. It was really awe-inspiring to hear about how majors (like mine) can be utilized to give back to communities and help others. He even mentioned some of his more technical students created little robots to

After yoga, Vrinda and Emmanuelle and I went rock climbing. Vrinda and I went on courses next to each other, and we both struggled. 🔣 (laughter) Even though we're not very good, it's so fun to exercise with friends

Sincerely, Lara

Sincerely. Lara

Sincerely, Lara

Sincerely. Lara

Sincerely, Lara

Edit

Lara

We had our last SolidWorks course today. I love the learning pace they set with our courses. It's fast enough so you don't get bored, but slow enough that you can follow what's going on. Do you remember the tutorial I started but couldn't finish? I finished it! With lots of help from Alex and fellow interns, I succeeded in completing a tutorial on how to make a candlestick holder (it even has a handle!). Thank you, Alex, for bearing with me holding my hand up for most of the time (errors and questions were frequent with my work).

Although SolidWorks came to an end, we jumped back into learning with a new course! Our next few upcoming courses will be in a 3D modeling software called Maya. There were a few hiccups with the software for some students, but I actually appreciated it. Since only some computers worked properly, students got to team up and work with others to use the software. I had a blast making abstract shapes and structures with Bradon. Before I left to go scan data, we had completed a very abstract, aesthetically pleasing, outdoor fireplace. We were also working on a table, and someone suggested our giant structure could be a circus. I left right before Bradon began working on an elephant. In Maya, you are truly only limited by your imagination. I love the way you are not constrained by manufacturing rules or physics with Maya unlike with SolidWorks. With my good mood, I felt capable of continuing scanning data after 5:00pm. The graduate mentor who was until 8:30pm talking with Vignesh about the research our team would be doing. This is another reason why

After rock climbing, we walked back to our dorms and I really enjoyed the company. One of the ironic topics we covered is how bad we are at ice breakers. I'm glad I didn't return home right after we were done for the day. After all the work I've been doing so far, it's important to remember to have a good work-life balance Tidbit(s) of information: $\bullet \text{ This title is because I was at work by 8:15am, and work technically ended at 7:00pm \dots but I went to the light of the last of the la$ gym and didn't get back until 8:45pm. Then I worked on my blog post, took a shower, made dinner, and still need to read a paper for tomorrow morning. · Vignesh Suresh spoke about his native language (Tamil) and about English in India, and it was really interesting. Many schools in India are taught in English and not the native language of the specific state. He also said there are 22 recognized languages in India ... but if you count all the dialects, the number of languages can reach above 5001 • I sat on hold with Delta Customer Service for an hour, because I locked myself out of my account. Then when a representative was available, she stayed on the line so I could login ... guess what, it worked. Why does technology never have a problem when someone else is watching? • This post is being posted at 11:30pm, but I'm getting my daily post in! Sincerely, Lara

I'm alive! I made it through the ropes course on Saturday, and it was super fun. We did a few team building activities, and thank you Jennifer for holding my hands across "lava" while I was blindfolded! We also got to go on this giant swing, and I felt like an airplane with my arms stretched out. It was so fun. When it came time to the 50-foot ropes/climbing structure, I turned into a tree hugger and realized I should probably take workouts more

We began our first class in Solid (doesn't) Works. It's a 3-D modeling software, and it can create so many cool designs (although I'm not sure how to make them). This is my first time using it, and needless to say, it's taking me a decent amount of time to figure out what all the buttons do. I've noticed the non-CS majors are killing it at SolidWorks, so congratulations! In the first five minutes of beginning the tutorial, these guys had complete models done and polished. Not a single error. Whereas, I think, I created eight different documents before finally figuring out how to properly create a fully defined shape (all former documents had too many errors, so I

I spent an hour trying to finish a tutorial ... I got through two pages of it? And then we got assigned a reading

The amount of reading the 3D scanning team has been assigned has made us turn to laughter to ease our struggles. We get excited over articles which are less than ten pages, and I read a nine page article in an hour (and I had even read it before)! s(sad times) All the professors and graduate students say it will get better, but

• I'm trying to adult and learn how to cook, and I made my own granola bars this weekend. They turned out

• The VRAC center can get chilly. I have goosebumps, so I should bring a hoodie. We got paid on Friday, and I picked up my check today! (happy)
Stepping onto a log when you're blindfolded is really hard.

Later that day, a few of us got together and watched A Star is Born. It was a good movie. I cried

Studio before, and Jack is a wiz at trouble shooting! Later in the afternoon, our team had our first group meeting. Before going in, I figured this was where everyone (professors, graduate student mentors, and undergraduate interns) came together and discussed how everything was going (weekly updates, next week's goals, setbacks). We weren't sure what to expect, but I know I'm a little overwhelmed. Each week, one of us will be giving 15-20 minute presentations during the group meeting, and if I thought I was the lucky one not presenting that week ... turns out, the other two interns, who are not the main presenter, still present 2-3 slides. We've also been given more research papers than I've ever seen in my life to read and understand. $And \ although \ it's \ Friday \dots \ it \ doesn't \ feel \ like \ Friday. \ Tomorrow, \ we \ all \ wake \ up \ bright \ and \ early \ to \ get \ on \ a \ bus$ at 8:00am headed to an all day ropes course activity. Here's hoping this isn't my last blog post Tidbit(s) of information • What I've learned when a weird error occurs in Microsoft Visual Studio: "Try turning it off and back on again" (works a treat!)

• I enjoy time management and calculating how long it takes to complete tasks ... however, I'm not sure my teammates enjoyed the statistics I provided them today. Based on a rough estimate of six minutes per scan (for the FVM system including set up, scanning, and saving) ... 150 scans (per person) ... that's 900 minutes or 15 hours. If all three of us were to complete all of our scans at once, that's 45 hours. • *Aladdin music to A Whole New World* "A whole new biiiiiikkeee, a dazzling ride I never knew, but when I'm riiiding on, it's crystal clear, that now I'm on a whole new biiike". Haha, the moment I thought of that, I knew I would add it to today's post. I walked out of work today, and my front tire was flat ... luckily for me a few other students were going to see Val at We-Cycle today! Lucas was super kind and was also able to drive my bike to Val's. Val told me there was a problem with the rim of the wheel, and it needed to be replaced. She couldn't find a replacement, BUT new donations had recently come in ... and there was a

In my last post, I mentioned starting Matlab soon. This morning we had a few hours of free time, and I spent it doing programming problems. It was a little ... rough. With a Java/C++ background. Matlab was definitely a change. I hope to become more familiar with the language throughout my time here, and I'm excited to see my progress. However, progress might have to be rapid since our graduate mentors have given us a programming

We had another lunch and lecture today. Professor Evrim Baran came in to speak with us. It's so inspiring to hear success stories from women in engineering. Professor Baran is researching how technology can be used to further the advancement of learning and connecting with students. She's also worked in multiple countries

This afternoon Kelsey, Jennifer, and I went to scan more data using the structured light system (SLS). Once we were done, we went to the focus variation microscopy (FVM) to scan the same data. The reason we're doing this is to find the similarities and differences between different 3-D scanners.

• Matlab has this cool function called magic(n) where it will create an nxn matrix where the sum of each • During game night tonight, we played Pictionary. We scored each other by how long it took the group to

figure out what the object was. One of my times was eight seconds with the word boba

[1] Matlab tidbit: https://www.mathworks.com/help/matlab/ref/magic.html

task due on Monday (and the task isn't to simply multiply a few numbers together).

before! She's worked in Canada, Turkey, and Germany.

Today was the last day for our C++ classes. I can't believe how much material we covered. Crash courses are a little insane. For students who have never programmed before, in less than 12 hours in the classroom, they

Adam Kohl did a great job taking the tougher concepts slowly. Even though I had covered inheritance before Adam had great analogies and I have a much better understanding of how inheritance is used. Also, a big thank you to Jack for being another mentor going around and helping people. I've never used Microsoft Visual

lines of data!) to read and manipulate data Around 11:00am today, I went to go the lab where the structured light system (SLS) is to begin scanning some 3-D printed parts. A really interesting fact I've learned recently is that not all 3-D printed materials are made of plastic. While the most common 3-D printers use plastic, other 3-D printers have the ability to 3-D print meta parts, electrical circuits, pottery, food, and even more! It's really fascinating to learn about the diverse ways 3-D printing is being used. I was able to finish the preliminary scans today, and I believe I will begin coding to analyze the data this week! I'm really excited and a little nervous since it will be in a new programming language! Matlab here we come!

mentioned in a former post, Jennifer had gone to another lab to learn about the focus variation microscopy (FVM). Today, it was my turn. I got to meet with Xiao Zhang and he taught me how to use the 3-D scanner. I got

• I rode my bike today! With air in the tires, there's a huge difference! Thank you Alex for sharing your bike pump!
• Xiao Zhang said the FVM system can measure as small as 2 micrometers (for reference: a single

Another C++ day! Toward the end of the day, Adam Kohl gave us a massive data set challenge (over 20,000

(bees)! My teammate, Kelsey, and I got to learn the procedures of how to operate the structured light s (SLS). We need to be very careful though, because the projector we're working with is over \$1000!!! My other eammate, Jennifer, got to learn how to use the focused variation microscopy (FVM). In the upcoming days, Kelsey and I will also learn how to use the FVM Tomorrow we have our first lunch and lecture! Professor Eliot Winer will be speaking, and while I don't know that to expect, I'm really excited. I'm so happy we're being given so many opportunities to grow and learn during this REU. · Happy birthday, Maggie! (She's my sister) She turns 15 today! Although I'm not at home to celebrate her birthday on her actual day, I did get her a present before going. I also got to FaceTime her and sing happy birthday to her. (happy) (celebration) One of my roomnates realized this morning that the tires on my bike are flatter than a pancake... I just thought I was out of shape. I hope to find a bike pump soon! $\bullet \ l'm \ formatting \ these \ entries \ using \ HTML/CSS, \ and \ I \ spend \ more \ time \ formatting \ than \ actually \ adding$

for myself or for classes where the audience is established and I know the formality and tone which I should be writing in. At this REU, we weren't given any instructions other than to post everyday. They suggested covering our thoughts and feelings about what we're doing. I feel like I'll be writing diary entries except they're public to the world. Hopefully I feel: ⊕(happy), ⊕(nervous), ⊕(excited) Today is the fourth day that the REU students have been here. We're coming from all over the United State and even have a student from Puerto Rico!

work-work attitude, but they have a great team dynamic of friendship, openness, and humor. I'm really excited to Tomorrow we'll get the opportunity to help fix some bikes so we can borrow a bike for the summer! There's also a summerfest. I heard there might be goats? If you've taken a chance to look at our schedule, you'll know our days are jam packed so I'm sure I will have at ast one tidbit of information to include that's new and exciting. In the blank spaces, my project team will be meeting. With nonstop activities, I hope my brain is ready to be bombarded. • The Iowa State campus is very big. The walk from our dorm to the VRAC center is almost a mile! • LinkedIn is very public if not more than this blog post, because it's one of the top hits for someone's name when googling them. I say this because one of my graduate mentors asked how I knew what

college he went to for his bachelor's. I told him I found the information on his LinkedIn profile. I wonder if he thinks I'm a stalker ... Overall, I'm so excited for this summer Sincerely, Lara

Uncategorized Q 2 Replies

<< 1 2

degree (meaning a paper on what not to do since his research wasn't reaching a conclusion). One of the main takeaways from today's lecture is how happy he is with his job. It took him some time to find the job where he was really happy, but he never stopped striving for it. After the presentation, he spoke about how research is changing and advancing technology. One of the interesting questions he asked is "if a computer (with a human voice) can respond in a way that makes you feel like it's being empathetic, does the computer have empathy?". One student said "no, because I know it's a computer and I wouldn't feel a connection [to something that isn't sentient]". Professor Eliot Winer responded, "What if you don't know it's a computer?" Around 2:00pm, we were scheduled to take "Photos with Paul". No one knew what that meant, and it turns out Paul took us to get Iowa State t-shirts and then we took group photos. I think we were all expecting maybe one or two photos, but it turned into various locations, multiple poses, team photos, roommate photos, spelling words with ourselves, and a Titanic photo. One of the photos we took will go on the homepage of this website. I haven't looked through all of them yet, but surely at least one, in what feels like hundreds, turned out well. • I found a bike pump! Someone in the VRAC center had a bike pump, and I'm so thankful. Although I didn't ride my bike today, I'm excited to soon! • I didn't fall asleep when writing this post! Sincerely,

Sincerely, Lara Uncategorized Leave a reply **Figuring Out Everything**

We've only been here for a few days, but we've already done so much! We've gone on a scavenger hunt, we've begun learning about research papers and what goes into one, and we've been taught out how to navigate

talk about their careers as a professo Professor Eliot Winer came in today and spoke about his career path into research. One aspect I really appreciated about his presentation was that he included more than the basic outline of where his career has taken him. For each major turning point in his life, he included his thoughts and feelings and many anecdotes When he began his undergraduate degree, he didn't know he wanted to go into academia. Before becoming a professor, he was a D-1 athlete, an entrepreneur, and almost had to write a negative thesis for his masters

Dear Diary, I feel: \$\varphi\$ (sleepy), \$\noting{\subseteq}\$ (ready to celebrate), \$\varphi\$ (happy) This weekend we went to We-Cycle. We-Cycle is a bike repair shop for old/used bikes. Val, the manager, fixes up the bikes and donates them to the homeless and at-risk individuals For the summer, she is loaning us bikes so we can ride them around Ames. I'm really thankful for the opportunity, because it cuts my transit time to get to the VRAC center in half!

On Sunday, I went to church and also read an article on structured light systems (SLS) that Yi Zheng (one of the graduate student mentors for the 3D scanning team) shared with us. It went a little over my head, but I hope, in

Today, we began our first class! We're starting with C++. I've already worked with C++ before, but this is a nice refresher to the language. For those with more experience, we're also being given the opportunity to explore more complex applications of C++. Looking ahead at our C++ crash course, we'll also cover classes and possibly inheritance and superclasses. I wish the best of luck to REU students who are brand new to

The REU events ended at 4:00pm today, but it wasn't five yet, so my team utilized that extra hour. Busy 🗳

the weeks to come, I'll become more familiar with the mechanism and how it truly works

🖮 May 31, 2019 🛮 🚨 Lara Chunko Hello. To quickly introduce myself, my name is Lara Chunko and I'm a rising sophomore at the University of Colorado Boulder majoring in Computer Science. I'm on the 3D scanning tea This is my first time blogging, and it's a little weird to not know anything about my audience. I've really only ever written you will enjoy these "diary" entries. I hope to be detailed without being boring. Dear Diary,

campus (although I still get lost). We've even taken a personality test to get us thinking about how we interact with others and perceive the world. We've also gotten to try VR (HTC Vive and Oculus Rift), AR, and this really cool immersive VR experience called the C6! We've also met with our professors and graduate student mentors for the respective projects we will be on. I'm on the 3D scanning team with Professor Beiwen Li, Professor Hantang Qin, and graduate student mentors Yi Zheng, Vignesh Suresh, and Xiao Zhang. Although we have not met Professor Beiwen Li yet, Professor Qin and the graduate student mentors are extremely nice! I was a little nervous that they would be strict with a work