1 Student content

1.1 Constance Hendrix

Greetings. My name is Constance Hendrix. I go-by Constance. I'm a wife, an electrical engineer, a 30-year Air Force veteran, and a current Engineering Security PhD student here at UCCS (see Canvas picture in Figure 1. I'm com-

Figure 1: Constance, about to be fed, while on a overdue retreat!

ing in with a Masters of Science degree in electrical engineering with a focus in navigation systems from the Air Force Institute of Technology and a Masters of Business Administration from the University of West Florida. I'm also a licensed electrical engineer in the state of Colorado and a certified Project Management Professional. My overarching goal for graduate school is to make a significant contribution to my engineering field and lay the foundation for a future in academia. My research interests include reliable and accurate navigation, secure satellite communications, biologically-influenced design, artificial intelligence, and signal processing. I have yet to specifically identify my security research topic, but know it will include artificial intelligence, signal processing, and/or edge computing. I hope to select a topic by next semester and will be preparing for my oral qualifier next Spring as well. My goal for this course is to narrow my research focus for my degree, learn new and efficient ways to conduct research, and develop research questions. Outside of school, I work part-time as a position, navigation and timing (PNT) engineer, enjoy reading, working on stained glass creations, quilting, camping, fly fishing, hiking, cooking, and gardening. Quilting is a tradition for the women in my family. Even though I just recently started, I am excited to carry on this tradition.

Question from Jackie Hi Constance, you have a very impressive knowledge background. I do not know a lot about navigation systems, but I always have a question on how navigation works when two teams are digging an undersea tunnel toward each other and they align perfectly?

Answer to Jackie: Hi Jackie! Good question. Most of my knowledge assumes satellite navigation is available. Without Googling, one possible option

would be to map out the two locations via GPS, calculating relative bearing. Once you have the bearings you can begin. There will probably be a random drift if you used a magnetic compass, which would increase the possibility that the two boring machines won't meet up. There would have to be intermediate checks to make sure they don't drift off course. This is where my research would have to begin.

I've never been asked this – I'm sure someone has identified an optimal method. Interesting to think about. Thanks!

Question from Jordan Have you used git before? Most EEs I know end up in software at some point. I've only used Subversion before this year so git is still new to me.

Answer to Jordan: Yes, I use Git at work. I push up code on a regular basis to my team's repo. I've also used GitLab in a previous job (program manager). I only know the basics. Actually, I think I'm a rare case. I've been an engineer for about 20 years. I've been suck in program management and leadership positions during most of that time (military officer). Retired last year, so given this new freedom, I decided to get back to my roots. I have only been doing real engineering since Feb, so I'm somewhat of a novice. Never heard of Subversion... will have to look it up. Thanks for the question!

Third Week's Git Assignment

September 18, 2020

Abstract

This document provide a brief introduction to Maximus' personal life, his goals, and his love for privacy.

2 Background and Objectives for This Course

Maximus a.k.a. *"Cyber Gladiator"* works in the field of cybersecurity and is currently studying security this semester to focus on CPS/IoT designs, vulnerabilities, and flaws. As a student, he loves/ obsessed with privacy, and he hopes that he will become a more effective computer science researcher focusing on CPS/IoT systems by taking computer science research course this Fall.

Maximus' main area of interest includes (but not limited to) information systems' vulnerabilities, vulnerabilities in system design and implementations, cyber risk assessment of IoT systems, and management of the risk in critical information systems in the broader context of their daily effects on individuals.

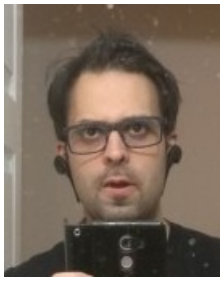

Figure 2: Maximus is currently looking at the mirror.

2.1 James Bond(Peng)

Before I study in UCCS, I was security solution architect and software engineer. I worked for Newegg, and Hewlett-Packard. I developed security for BIOS (basic input output system) and firmware in laptops, developed infrastructure security for fraud detection systems and search systems in E-Commerce. I also served in military, for cyber operation and radar systems for Coast Guard. I studied electrical engineering and energy systems in undergraduate and high school.

My recent research interest now is signal intelligence (SIGINT), and advanced persistent threats (APTs) in embedded systems. Fields I've done are:

- adversarial machine learning (artificial intelligence, intrusion detection and operation systems)
- lightweight provenance (operating systems)
- trust execution and zero trust architecture (cloud, privacy and cryptography)
- fuzzing for satellite embedded systems (vulnerability scanning, protocol state machine, flight software)

I like not only coding, reading but also sports. I did fencing in elementary school and, after high school, Greco-Roman wrestling, boxing, cage fight, and surfing (both long board and short board). Now in the mountains of Colorado Springs, I swim instead. I am glad to learn from you guys.

Figure 3: Profile Picture on Office360

Question for James Peng from Constance Hendrix: Hi again, James. I saw you served in the Coast Guard as a Cyber Operator – very exciting! Where have you been stationed?

Answer from James Peng to Constance Hendrix: I was not cyber operator but cyber security specialist for intelligence and counterintelligence against China, stationed in Taipei—-a place near to Tokyo—-very far away from here Colorado Springs. Thank you for emailing me previously; because of that, I also found your Linkedin and already sent you a friend request. Please accept it when you have time. Your career background is also very exciting to me, too: My uncle worked at US Air Force Intelligence and Personnel for his whole career until retirement—-from US-Taiwan Command, German 7455th Tactical Intelligence Wing, Virginia, and NORAD—-, like you. And your current employer BAH happens to be my dream company/ firm has my dream position. I hope to join your company as a vulnerability security engineer after my PhD. Should be very fun!

Question for James Peng from Lori Babyak: Hi James. Thanks for fixing my problems in Babyak.txt - I appreciate it! You've done some interesting work - I hope you can explain it to me sometime.

Answer from James Peng to Lori Babyak: Hi, sure thing, anytime and anything. Feel free to ask me on any channel. Thank you for asking me question. By the way your background is also very very cool; not gonna lie. I feel all my classmates are extraordinary, wow!

3 Section 1

My name is Lori Babyak. I am a first year Computer Science PhD student at the University of Colorado, Colorado Springs. I hold a Bachelor's Degree in Computer Science from UT Austin and a Master's degree, also in Computer Science, from Texas State University. My goals for this course - CS 6000 Computer Science Research Methods- are to learn to research, read, and eventually produce research papers on subjects of interest in Computer Science. Additionally, I am looking forward to getting to know other students in the class and work collaboratively towards goals. Something personal about myself is that I have three grown children, two of whom live in the Denver area. Also, I took an extended vacation with a couple of friends in August. We visited Colorado Springs, Wyoming and South Dakota. In South Dakota, we visited Mt. Rushmore, the Crazy Horse Sculpture, and Custer State Park - where we saw free-roaming bison in their natural environment. I am happy and excited to be part of the UCCS community, and my hope is to make significant contributions to the field.

Figure 4: A photo of Lori Babyak in front of Crazy Horse sculpture, outside Custer, SD, August 2020

Question to Lori Babyak from Constance Hendrix: I traveled to Wyoming and South Dakota in July. Did you have the chance to see Devils Tower?

Answer to Question from Constance Hendrix: We drove through Wyoming and stopped in Torrington. We only had a couple of days in SD, so we visited Mt. Rushmore, the Crazy Horse Sculpture and Custer State Park. I don't think we saw Devil's Tower. There's so much to see there!

Question from Jackie Hi Lori, thanks for sharing. I went to those places twice. The first time was in 2013, and the second time was in 2018. To be

honest, I did not see much progress on the Crazy Horse. My questions would be: since you are in Colorado Springs, are you going to snow ski? If you already did, how much you enjoy the mountain views at the top? the cog train is a fun ride, too.

Answer to Jackie from Lori Babyak: Hi Jackie, I guess I never mentioned that I actually live in Austin, Texas and am doing everything remote this semester! As far as skiing, I have not skied in CO Springs. I have skied Keystone, Breckenridge, Copper Mountain, Vail and Park City, Utah. I am not an expert by any means, and I mostly enjoy the outdoors on the trips. I took the train to the top of Pike's Peak, and the views are amazing (but, it's very cold up there). I think my favorite mountain top view was in SW Colorado, in the four-corners area, where I got a view of 4 states at once - maybe it was in Mesa Verde? Anyway, I really enjoy travelling and CO!

4 Something About Me

I am a first year PhD student in the UCCS. I am a photographer in my leisure time. I started this hobby from 2012. Throughout the past few years, I have helped friends recording the moments for their wedding, graduation parties, newborn baby, housewarming party, Halloween party, etc. When I travel, I enjoy capturing the beautiful nature. Beyond this, I like to disassemble and reassemble things then make improvements that fit my needs. If the product does not exist, I create my own. I sometimes play games with friends; this is a way of getting out of the busy life and relaxing and rebounding with friends. Snow ski and water ski are the two sports I enjoy. One is for winter and the other for summer. Here is a picture of me taken by myself.

Figure 5: Portrait of Kelei Zhang

Question from Jordan: When I first read this, I missed the bit about you being a photographer. I was confused because it seemed like grad school was a hobby from 2012! :) What is the coolest picture you have taken? Hi Jordan, thanks for asking the question. I think one of the coolest pictures I had taken was the Big Boy Steam Train. 2019 was the 150th anniversary of Big Boy on the railway. and it was snowing on the day I took the picture. With the team engine and the snowy day, it was quite a beautiful and unforgettable scene.

Question for Zhang from James Peng: Hi, Zhang, that's awesome to obtain an ability of photography. I'd like to know how you guys capture or design the "composition" of certain moment? For example, in like 3 seconds, you need to decide what moment and how much and what things should be in your frame. This is amazing. How do you guys improve your decision making on the matter? Hi James, this is a very good question. I think the most important thing to take a good picture is to learn your camera and master the basic operation. Photography is split into different fields: portraiture, landscape, event, studio, action, etc. I think your question is more about event and action/sports photography where the person has to capture the subject very quickly and also compose perfectly. Well, that almost never happens. For these situations, either the photographer take a series of pictures to capture then select the best one, or they pre compose and wait for the moment. Sometimes, they sit still hours after hours, just like snipers. When they have a clear image, they usually crop to make a better composition.

Figure 6: Jordan Scott

5 CS6000 Journal - Jordan Scott

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https://github.com/jordanmscott/uccs

About Me I am just starting my PhD in Security program. My goal for this course is to get into a research frame of mind, learn the modern tricks and tips, and help refine my dissertation topic.

I am really interested in learning more about zotero and latex. I gained some experience with zotero last year, but previously I've only been aware of manual tracking and editing. It's nice to know that technology has evolved quite a bit with research and data management.

I have done stand-up comedy twice. My set was mostly cybersecurity related and I received a number of laughs. I'm not sure if my comedy career will continue, but my career will definitely be full of comedy.

Questions Question and Answers

Question 1 - Hi Jordan, I am just beginning my PhD program this year also! I am learning a lot, trying to wrap my head around many things. Dr. Kalita is my faculty advisor and I am studying AI. I don't have a definite plan of study yet. I'm learning so many things from this class about research. Another learning curve. I don't know about you, but I am spending endless hours figuring out LaTex and github. I'll get there, though. What are your impressions so far?

Answer 1 - I like how the research methodologies have used software best practices to advance. The learning curve definitely exists though. I think this class has done a great job in getting us on the same page and moving towards using the tools properly. I suspect it will be a huge help later down the line when we are in a hundred page documument with hundreds of references.

Question 2 - Question for Jordan Scott from James Peng: Hi, Jordan, I

would like to ask you what is the most challenging experience/ things when you are in comedy industry? I always feel you guys are awesome, like "positive/ joy-sharing version of lawyers", very good at public speaking, rhetoric, and know very well with the "jury".

Answer 2 - Comedy is some awkward balance of saying what is on your mind, taking risk regardless of opinions, timing, and getting people into a mood. I think it probably has some of the same science behind it as music. Instead of beats per minute, its laughs per joke. My biggest challenge is memory though. I have a hard time remembering a script so I do more reading than natural delivery like the pros. I can talk and just keep going without a script, but the timing and order of things matter enough to where scripts have advantages. I think that's something I will just have to keep working on.

Merge Conflict Notes: Not having access to the project seemed frustrating and took a bit to even figure out that was the problem. For my setup, I chose to use TeXstudio on a virtual box. The git clone part was easy. Getting the Assignment3 file to build was not. There were dependencies I needed to download/install into TeXstudio which was a challenge in itself, all related to the csvsimple function. Eventually got all that working. Then trying to figure out git itself... Got the commit part, the pull, the merge (had to install and configure a compare tool), and then the push. It's all working now and I definitely have a better understanding of git. The branches and stuff will get more interesting too. Anyways, I think I'm ready to start developing reports using this IDE/Git setup instead of manually transfering from overleaf.

6 Example of Easy Tables

Time (s)	Rel. time (s)	X Pos	Rel X Pos	Raw Y Pos	Model Y Pos
43.97	0	734	528	14.22624	18.26294
44.01	0.04	731	525	14.11335	18.14345
44.04	0.07	729	523	14.03819	18.06389
44.07	0.1	726	520	13.9256	17.9447
44.11	0.14	720	514	13.70096	17.70686
44.14	0.17	718	512	13.62624	17.62774
44.17	0.2	714	508	13.47704	17.46974
44.21	0.24	711	505	13.36535	17.35145
44.24	0.27	706	500	13.1796	17.1547
44.27	0.3	700	494	12.95736	16.91926
44.31	0.34	696	490	12.8096	16.7627

Better formated Tables

Time (s)	**Rel. time (s)**	**Y Pos**
43.97	0	18.26294
44.01	0.04	18.14345
44.04	0.07	18.06389
44.07	0.1	17.9447
44.11	0.14	17.70686
44.14	0.17	17.62774
44.17	0.2	17.46974
44.21	0.24	17.35145
44.24	0.27	17.1547
44.27	0.3	16.91926
44.31	0.34	16.7627