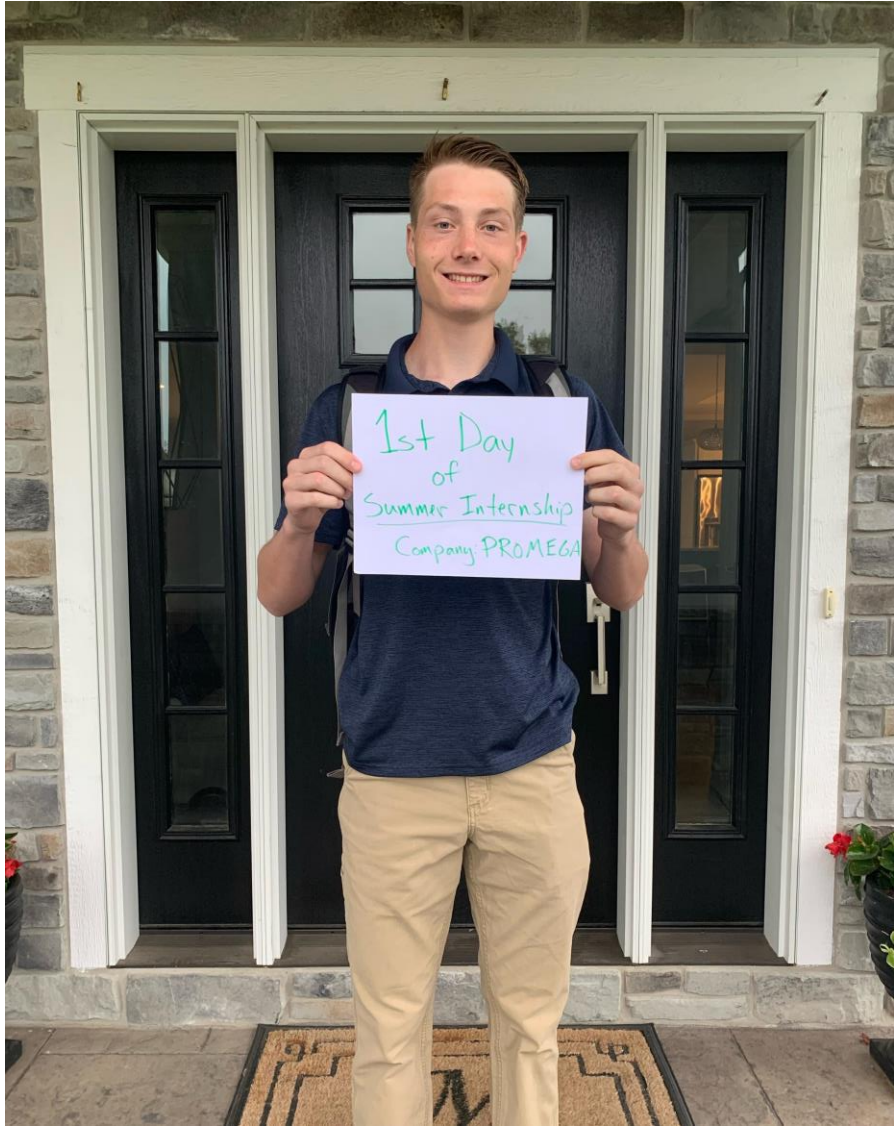


# Colten Palkon Portfolio

Section B

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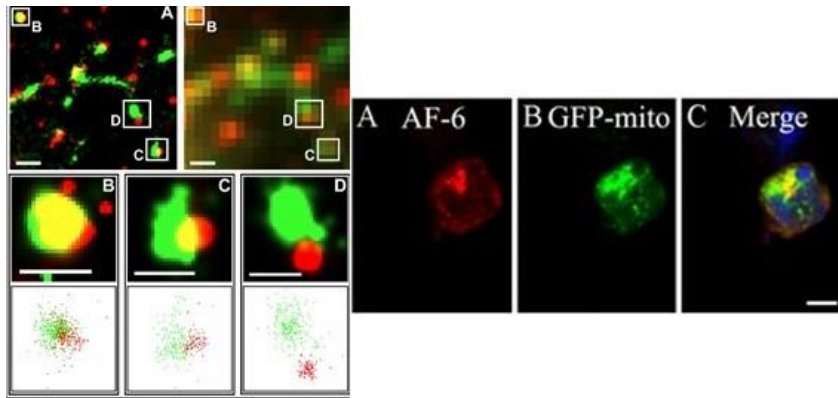
# Introduction

Hello my name is Colten Palkon, I am a biomedical engineering student at Georgia Tech. This portfolio is a compilation of impactful projects I have completed in my time of being a biomedical engineer. I would like to share with other students my current journey as an engineer and my future plans in the field. By making this portfolio I am reflecting on my past experiences so that I can be in tune with and grow my skills for the future.

# Exercising Curiosity in Research

BME 1000 artifact: Research of fluorescence microscopy

- Explanation: I investigated research done by GT professor Shu Jia on how algorithms can be used to better filter fluorescence images so only desired information is displayed.
- By looking into this research, It grew my curiosity on fluorescence as well as research as a whole.
- I learned what a research study looks like and the process it takes to conduct one. I also learned more about signal filtering which is an interesting topic to me.

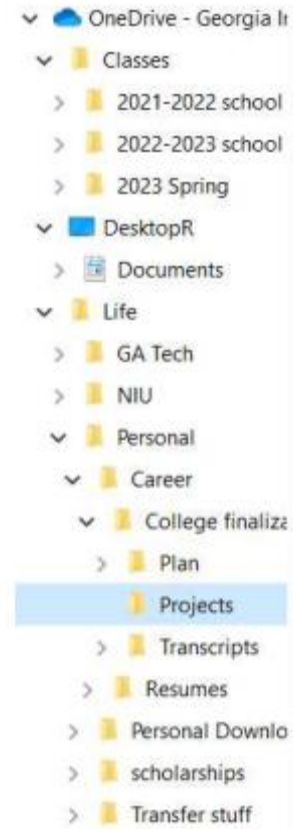


# Exercising curiosity in an Internship



- Artifact: Spectrum Instrument is a device that first rolled out last summer during my internship at Promega.
- My knowledge of electronics, problem solving, and the business side of companies expanded my curiosity in the production process.
- By helping build, test and sit in on meetings I was given an accelerated understanding of the steps it takes to go from the initial idea to packaging up the final design.

# Identifying unexpected opportunities to create value in file management



- BME 1000 Artifact: Creating a file system
- A filing system is a way to organize past works to have easy and insightful access
- When I originally set out to organize my files, I did not expect to find any value, but in the process of going through my past works I not only reflected and reminisced about the past but had the chance to think about what projects are next to come.
- This growth in reflection from simply organizing my files allowed me to learn about myself in the way that I organize my day-to-day life and what I prioritize now and will continue doing.

Identifying the unexpected opportunity to come to GT and accepting the challenge to create value

Colten,

Congratulations! You have been accepted to the Georgia Institute of Technology. On behalf of the Undergraduate Admission Committee, I am pleased to offer you admission as a transfer for the **Spring 2023** semester with the major of **Biomedical Engineering**.

- Coming off a great year at Northern Illinois I was in a pretty good spot to continue my education there but figure I would apply to GT just to see what would happen. I ended up getting accepted and decided to make a big life change and jump on the opportunity.
- From my first semester of college to where I am now, I have really grown as a person, and it has allowed me to be where I am at now. I had to be willing to risk all that I had going for me and go into unfamiliar territory when making this decision and I am glad I did it.
- I have learned a lot about myself and my ability to adapt to new situations and I look forward to building upon this skill.



# Learning from failure of judgement

Product Archeology Canvas			
Product: <u>urine cup</u>		Team members:	
Purpose	Stakeholders	Requirements	Impact
What does this product do for the user? <u>Catches and stores urine sample to be tested.</u> What value does this product create? <u>A test for substances</u>	Who are <u>all</u> the stakeholder groups? What group traits are relevant to this product? <u>Doctor, patient, testing lab</u> <u>Manufacturing company</u>	How does the design meet the needs you identified in the previous column? <u>Function: plastic is light weight and holds liquid.</u> <u>Form: shape is small but large enough to catch sample.</u> <u>Manufacturing: can be produced easily in a mold.</u> <u>Life Cycle: antibiotics added.</u> <u>1 line use.</u> <u>Regulatory: not that easy to be sanitary.</u> <u>Other:</u>	What are the impacts of this design? <u>Good storage</u> <u>for a tiny liquid.</u>
Characteristics	Needs		
What things about the product can you observe? <u>it is plastic and a cylinder with a lid.</u> What is made of? <u>plastic</u> What can it do? <u>store liquid.</u> How do you interact with it? <u>hold it up and dispose with sample into a container.</u>	For each stakeholder group/traits, what needs does the product design address? <u>Doctor - method of storage to close testing</u> <u>patient - medium to deposit sample or their health.</u> <u>testing lab - container used to ship to and place in the string.</u> <u>Manufacturing - a product sold to make money.</u>		

- BME 1000 artifact: Original Design sprint plans vs final plans
- Our initial design plan was to make the urine cup more economical and safer for the environment. But after going through the design process, we realized focusing on helping pregnant women and the elderly we could create a more impactful product.
- At first we failed to differentiate our product from others enough to make it worth producing. Overtime we grew our idea into a more specialized product intended to help specific stake holders.
- I learned that having a specific goal in mind to fix is the best way to create a product that will better the needs for all. Often helping one group will make the product better for all

Stakeholder	Physiological	Sustainability	Usability	Cost
Patient	The cup should have a wide opening that allows for easy deposit of urine.	Cup can be a biodegradable material but make sure it does not degrade in patients hands or for multiple weeks.	Cup should be simple and easy to collect urine from without making a mess. <sup>1</sup>	Cup should not cost the patient anything and be cheap enough where insurance would just cover it.
Nurse	The cup should be <u>light weight</u> and easily retrieved to be given to the patient.	Same as patient	The cup needs to be able to be used with minimal complications by the patient so that	Cup should not cost so much that it comes out <u>of nurses</u> paycheck if it

# Learning from failure engineering project



- Artifact: Brace for input tray. I worked on making changes to the design of a brace to keep the input from bending.
- Originally, I tried bulking up one side of the piece, but the bending persisted. So, seeing that failure I bulked up both sides and used a stronger filling in the 3D printer to get a successful piece.
- I learned about the engineering process and what it takes to model the piece to figuring out what parts of the brace need to be stronger to support the tray. I also learned that although a test run may fail the knowledge learned through attempting it will help on future iterations till eventually the product works.