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Yu-Wei Lin's Academic Portfolio

Taipei Municipal Zhong-Lun High School

Course Name
Applying Technology

Instructor

Mr. Huang (黃敦紀)

Brief Introduction
This is a course where we build several different types of models using Onshape for the purpose of getting to know engieering method better.

I. Motivation

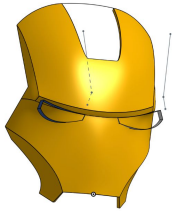
RECAP– Reasons to Choose these projects

I’ve always been interested in math and engineering since they are filled with creativity and imagination and so this course of technology has been truly intriguing to me along the way. In this technology assignment, I chose to design and build an ironman helmet as my first project because I certainly enjoyed watching Ironman series when I was younger, and that somehow led me into the world of science and technology. Once I finished the ironman helmet, I had found my desire in building model. As a result, I then designed another model which was iPhone case for iPhone 14 Pro Max, as I’m addicted to apple products and want to dedicate myself into designing their products. After finishing the iPhone phone case, I then decided to build an automato as my final project since it was not so challenging but actually really cool to build.

II. Engineering process that helped me along the project

- **Define the problem:** This technology assignment required us to do a model or more.
- **Conduct Research:** I then started to think about the things I love as my designing ideas.
- **Brainstorm and conceptualize:** When it came to engineering and technology, I thought about Ironman and Apple Inc. right away.
- **Create a prototype:** I found some materials and tutorials on the Internet to imitate their designs as my prototype.
- **Select and finalize:** After reading and seeing the online materials, I started to realize what were the good designing techniques and what were not.
- **Product analysis:** On Onshape, there's a feature where it allows users to check interferences, and I used it to make sure my models are fine.
- **Improve:** Through making more models, I gradually learned the different ways to design models, which made me improve my projects among all.

III. My projects 1- Ironman Helmet



Linking to the project itself: https://shorturl.at/fCDIQ

Like how I mentioned earlier in my motivation of doing this project, Ironman is the principal gate bringing me into the world of science technology and English with no doubt and so I decided to design and build the ironman helmet to show my love for Ironman and acquire more knowledge and different skills to apply on Onshape. However, building this whole ironman model with a bunch of exquisite curves was extremely demanding to me as a beginner and so I did some research, finding some online material as well. Finally, I managed to finish the model by learning from Youtube tutorials. As a result, this design wasn't originally from me, I did do some research on the Internet and learn from other references. This is the link that I learned from: https://youtu.be/A6ubh2zDfCc

Nonetheless, I'm really glad to have finished this model since I did learn a variety of new useful techniques on Onshape through the process.

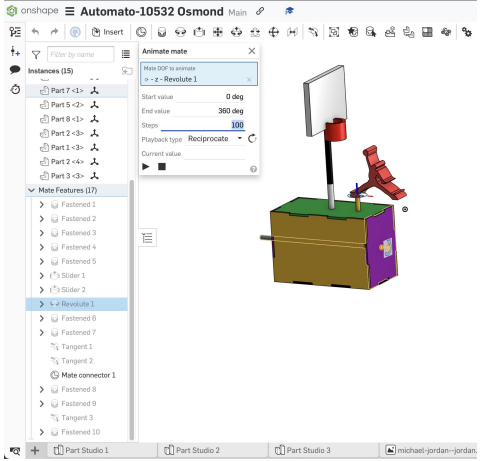
III. My projects 2- iPhone Phone Case

Linking to the project itself: https://shorturl.at/fuyJ8

Apple Inc. is indeed the game changer in millennial and the crucial turning point in modern technology development that has totally changed the way people think and live.

First, I wanted to design a look-alike apple product; however, I soon realized that I haven't had the ability to make one useable mobile phone since I still got a lot to learn. After a few days, I ended up changing my mind and in turn designed this beginner-friendly phone case at the very end. It only took me a few hours to finish the phone case since the case itself doesn't require too much technique. For I've made my mind to work in the computer science field and dedicate myself into Artificial Intelligence in my future career, this iPhone design actually gave me the opportunity to know more about the step of model designing and of course the engineering method.

III. My projects 3- Automaton



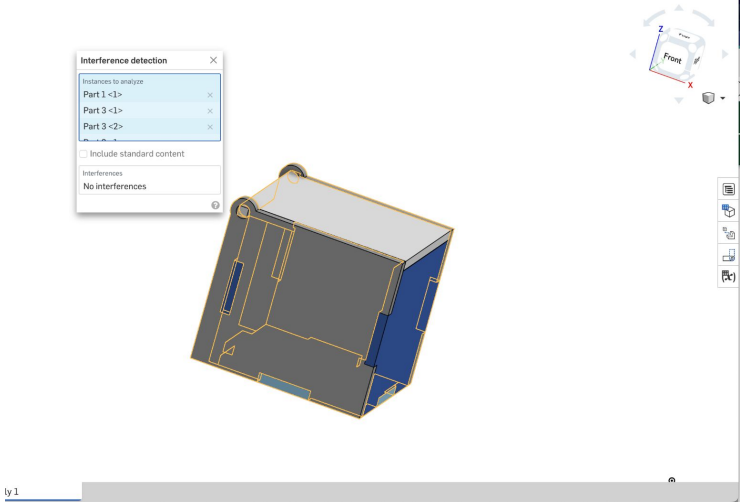
Linking to the project itself:https://shorturl.at/kALQ9

After I finished the Ironman helmet and the iPhone phone case, I found that it would be really cool if I could recreate the scene that Jordan did the free throw line dunk. Therefore, I came up with the idea of using automatos to make the entire scene vivid. To recreate the scene and finish the automato, I actually spent a lot more time on the Jordan model than the automato itself, anyways it was really interesting to build the Jordan model using a feature-Spline. To finish this entire project more efficiently, I used a website called Makercase-https://en.makercase.com/#/ to help me build up the 6 boards for the automato. By using that tool, I saved plenty of time on some pre-steps, which allowed me to finish the project much more quickly.

III. My projects 4- Box

Linking to the project itself: https://shorturl.at/hlnoQ

I did this extra project with Mr. Huang as a practice. Even if this project wasn't so demanding, it did thicken my foundation of engineering.



III. My projects 3- Automaton

Linking to the project itself:https://shorturl.at/kALQ9

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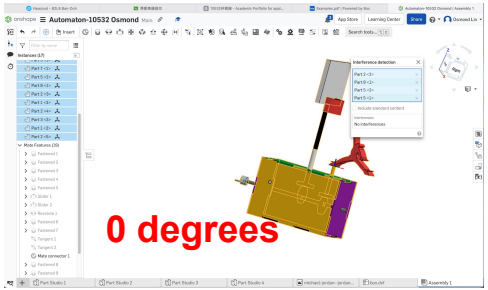

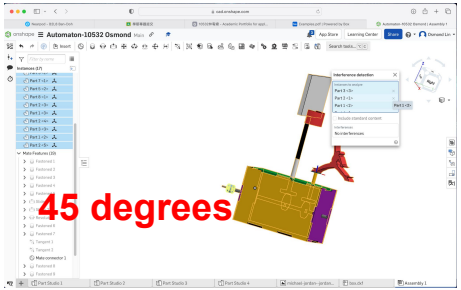

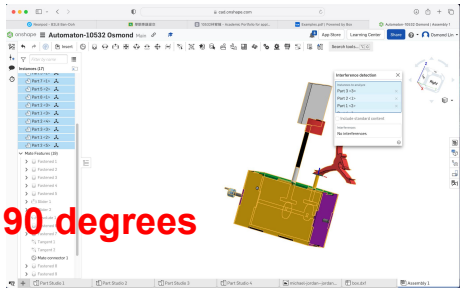

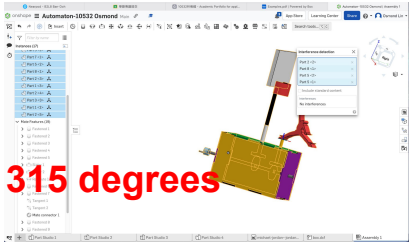

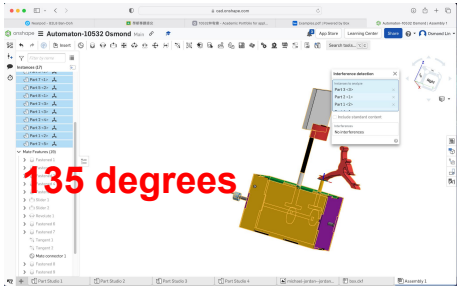

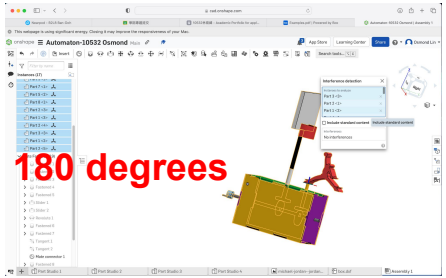

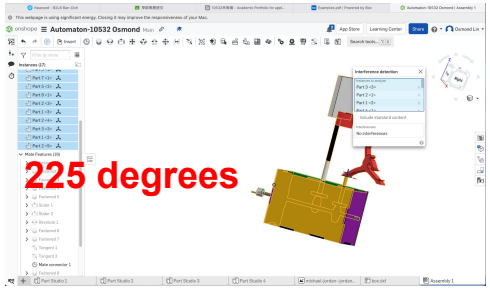

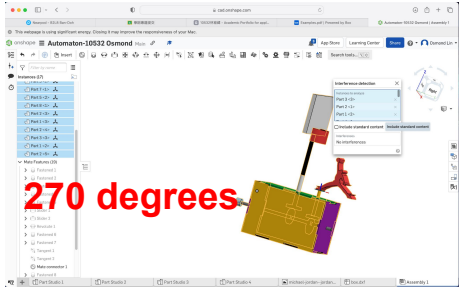

IV. Difficulties/Challenges

When I first started out the project, I knew exactly what I wanted to do, howsoever there were times that I was wondering if I was being way too ambitious since I actually knew it would be extremely demanding for me to build the Ironman helmet as a beginner. Yet, it wasn't until I finished the Ironman helmet did I realize the truth that the sky is the limit, and it always is. We always have to set goals and have faith in ourselves, for you will never know whether you will make it if you don't try. Nonetheless, while making all these models on my own, it wasn't like the smooth path at all. On the contrary, I quite met with lots of different obstacles, such as the problems of interferences and extruding. That said, failure is the mother of success, and I totally agree with this after finishing the entire project on my own. It was all the errors and mistakes that taught me how to improve my models and built them in a much better way.

V. Reflection

From the very beginning to the very end, I spent about a month working on the projects, and I did face a lot of different obstacles during the process; however, they all teached me different things and gave me new ways to think at the end. Throughout the entire project, I have learned a great number of logical thinking skills and problem solving method. All these skills I learned are indeed vital when it comes to science and engineering. I honestly believe that this onshape program will help me a lot in the future when I’m applying for engineering school and is useful as a tool as well. Moreover, I will definitely keep on using Onshape whenever I have the needs to design a model or even just for fun. I have gradually grown my love for engineering throughout the whole assignment, and I will consistently acquire more knowledge and make the progress on engineering now and in the future.