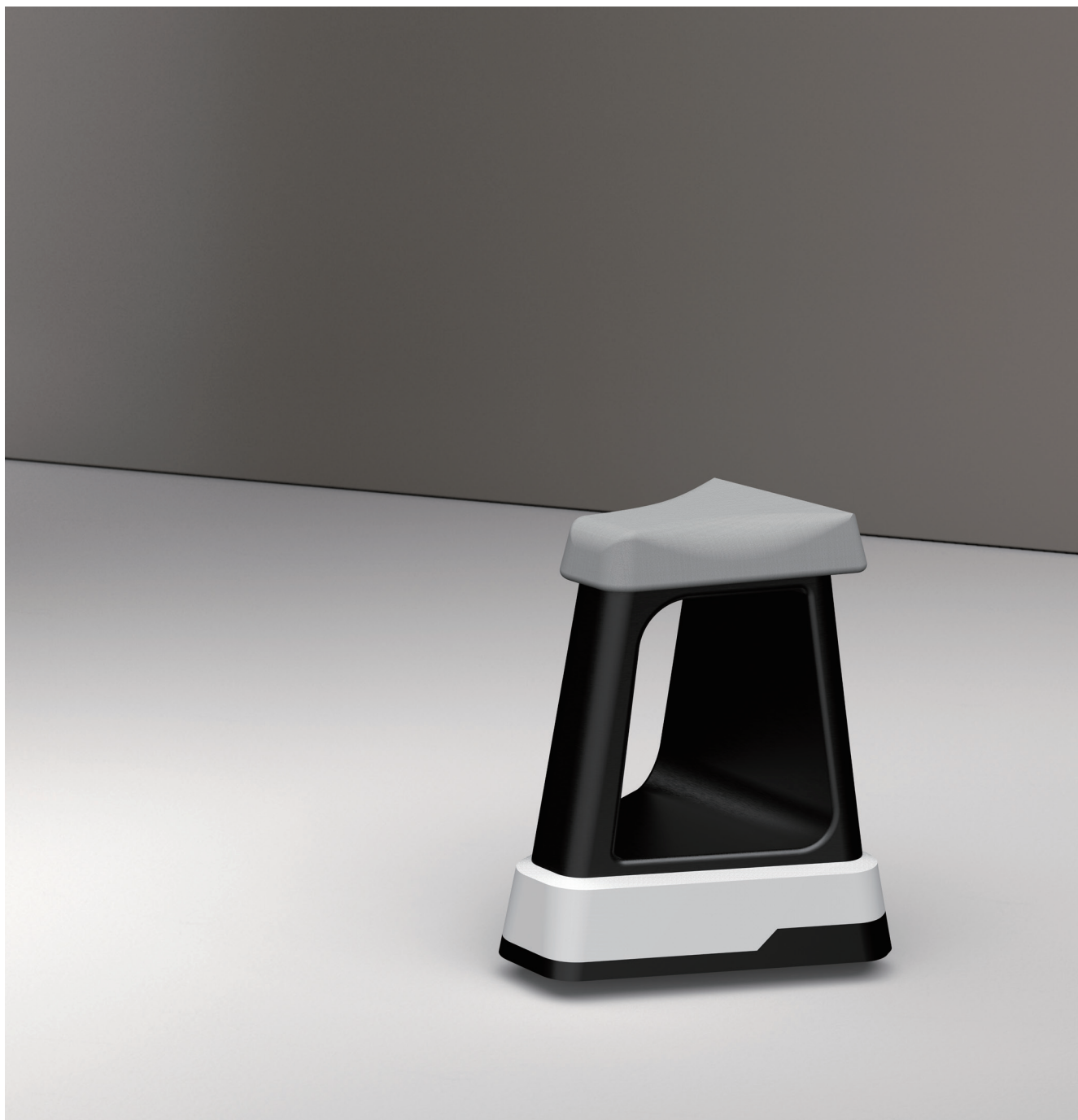


밈 [mi : m]



원[m:m]

Yoonjeong's Letter

Hi, I'm Yoonjeong who wants to do a design with humor. I have a lot of interests and things that I want to do, so I had a lot of worries while preparing for this work. During the winter vacation, I kept thinking about which project to do satisfactory graduation exhibition and graduation work. The reason why I decided to do a mobility project, which is so difficult and (physically) big, is because I thought it would be a project that I couldn't do without this opportunity. With the help of the lab and the excellent guidance of Professor Huisung Lee, I could finish the project successfully. It was a year of gratitude to the people around me.

I want to leave this series of stories to convey the process of my worries and the process of my project to the next generations and to myself in the future. I don't know if I will laugh, be shy, or enjoy reading this book in the future, but I want to leave it as my record anyway.

Please enjoy our chronicle.



밈 [mi : m]

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**Personal mobility
with intuitive control of kicking
the ground**

Yoonjeong Kwak

Prologue

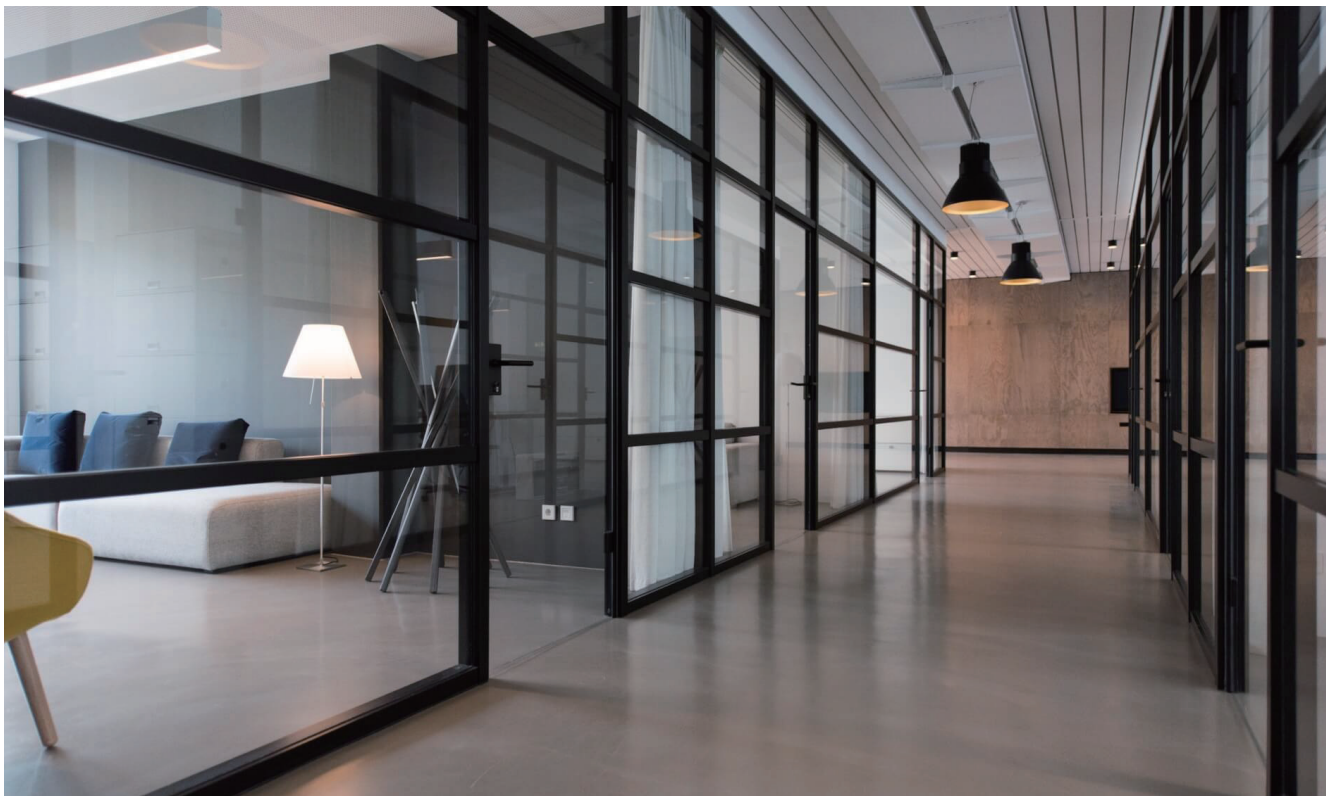
Two years ago I bought an electric kickboard, and I hear a lot of news about the accident around me. I also got hurt in the fall of that year when my clothes got caught in the controller. When my friends sometimes said they wanted to ride my electric kickboard, they were surprised or hurt by pressing the controller without listening to all my explanations. I thought, one of the problems with existing mobility vehicles was that it wasn't intuitive about speed. It could be a problem with how existing mobility visualizes their speed, but with a separate controller, there is a mismatch between real speed and controller. This can lead to accidents, such as sudden movement at unexpected speeds.

I was working on the mobility project in the lab, I got interested in this issue when I encountered the problem of the controller being unintuitive, and I wanted to actually implement and suggest ideas.



↓ **Context**

As for target context, desk research and short interviews were conducted targeting the studio, and insight was found that the inside of the studio was not able to ride mobility due to safety issues, but rather had more moving lines between the studio and the office. Mim was designed to target such moving corridors.



Concept

So I want to create a new way of controlling mobility without a controller. The motivation of my project is an office wheeled chair. Sometimes I used to run and ride on a shopping cart in a mart, or kick the ground on an office chair and ride it. I started with the idea that I could apply such a fun experience to mobility.

By kicking the ground without the controller, Mim can offer an intuitive and fun driving experience by addressing the controller-to-actual mismatch that can often be found in conventional mobility solutions.

Keywords Easy, Comfortable, Fun



Design direction and ideation of concept

What I tried to design is a new method of controlling the speed of mobility. By suggesting a controller-free personal mobility vehicle, Mim, it can be used like last-mile mobilities. It can be used for short but cumbersome walking or for traveling long distances. Context, which is currently designed, is a corridor that connects the studio and the office, so it is designed in stool form to be used for frequent movement.

Design Development

Function There are only two functions: forward and stop. There is a drive switch for safety, and if you press the switch and move the mobility, it will maintain the speed. The method of maintaining speed is that a hall sensor attached to the BLDC motor reads the rotation speed of the wheel, and a voltage is sent from the MCU to maintain that speed. The maximum speed was maintained, and feedback control was made to overcome the friction of the wheel. Release the switch to stop it. Because it moves with one wheel in the center, you can turn left and right by tilting your body and moving the center of gravity while moving. You can also rotate in place when it is stopped.

Usually, you can sit down and use it as a stool. Because the mobility moves by being pushed with legs, it is designed in a saddle shape that is good for moving legs. I made a structure to put the legs on it. When driving the mobility, the switch is placed in the position where the saddle is held, so that the user can easily push and release the switch.

Interaction

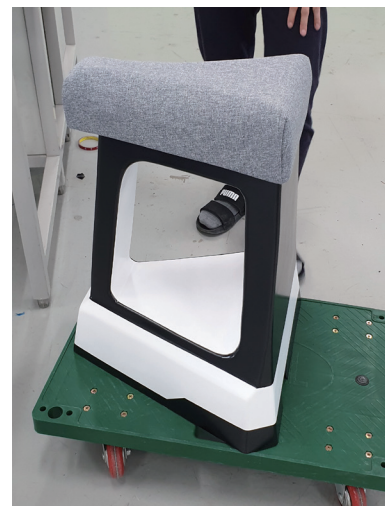
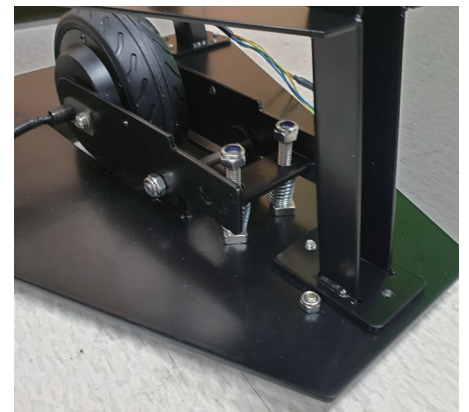
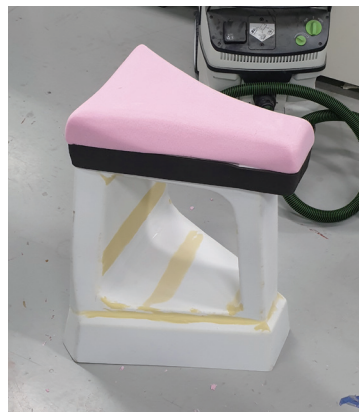
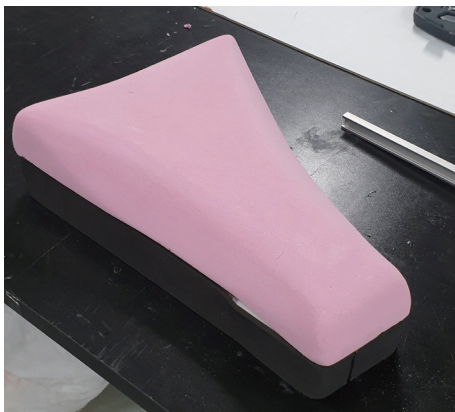
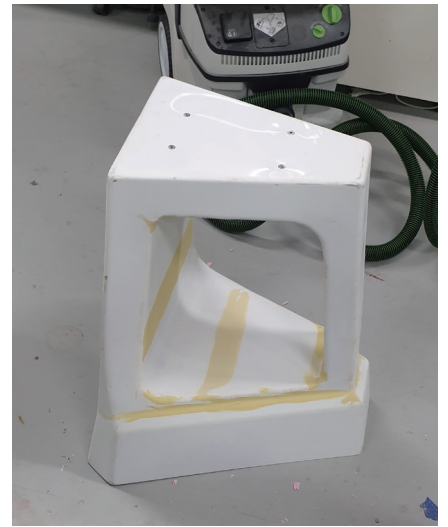
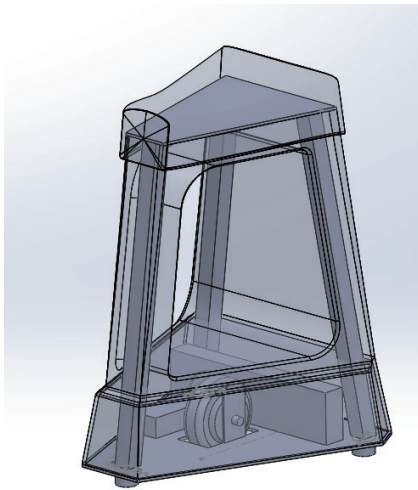
Ideation about the posture that fits the function and context. I thought about many ways like this, but I thought it would be appropriate to sit in a chair and move for the indoor, so I decided the sitting position. To match the context, I thought that the feeling of the chair should be designed bigger rather than the feeling of mobility, and I did a sketch by looking for references to various types of chairs. For CMF, I select to use a gray scale, so that it can make the modern feeling of office space and mood of mobility, such as convenient and fast.

Style



Concept sketches

At first, I tried to use the spherical wheel to make it possible to push anywhere, and design it based on a circular shape for that. However, as I proceeded with the mechanical design after the mid-term, I changed the design to use one-way normal wheels due to technical problems and practicality issues with the use of spherical wheel. As a result, concept sketches have changed a lot.



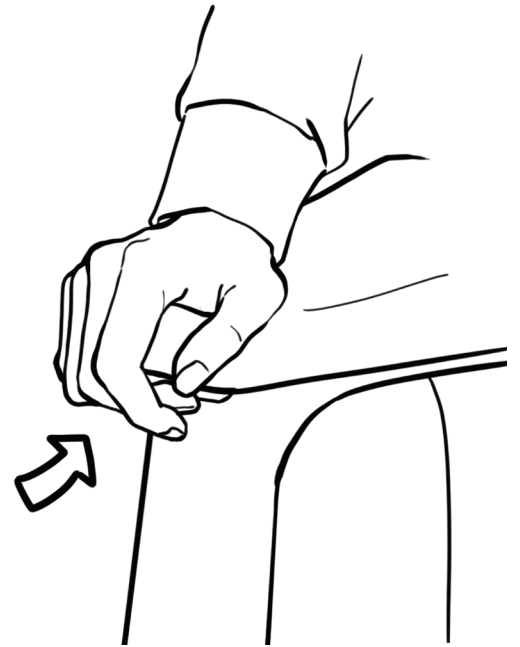
Making Progress

Because of the mobility that carries people, the frame design is essential. While designing in this project, I had the opportunity to design the mechanical structure to realize the idea and communicate with the company, which was a good opportunity to learn about frame design and housing work.

Outcome

Abstract Mim is an indoor mobility solution that can be operated by sitting on it and kicking the ground without the need of a controller. The intuitive control is made possible, as Mim maintains the speed set by users kicking the ground.

Benefit of the design By removing the controller from mobility vehicles, it offers an intuitive and fun driving experience by addressing the controller-to-actual mismatch that can often be found in the conventional mobility solutions.



User Scenario

(1) User can use it like a stool. (2) When moving, press button to switch to driving mode.
(3,4) When you foot the floor, the Mim keeps its speed. Release the button to stop.

میم [mi : m]

클래식한 방법의 모던한 표현, 밀어서 가는 직관적인 모빌리티
Personal mobility with intuitive control of kicking the ground



To move around, press the button to activate Driving Mode.

시트 아래의 버튼을 눌러 주행모드로 전환한다.



Kick the floor to drive while keeping the button pressed.

버튼을 누른채로 바닥을 발로 밟는다.



Mim will maintain the speed you created.

사용자가 밟고 정한 속도를 유지 유지한다.



Feel free to touch or sit on Mim. If you would like to try driving Mim, please come back during the test-driving hours.

만지고 싶거나 앉아서도 좋습니다. Mim을 타보고 싶으시다면 테스트 운전 시간에 다시 방문해주세요.

Test-driving hours: 14:00-15:00





Conclusion

Vision The main point I suggest in this project is this way of operation, and although the current design and prototype have been designed to target the indoor in stool form, I hope it will be used in outdoor mobility (such as electric kickboards and skateboards) in a variety of ways that can be used to remove the controller and to experience the classic enjoyment of foot-pushing.

Reflection The design that I learned in school is the process of developing from the context and target user that I want to solve the problem. Since winter vacation, a year before the graduation exhibition, I have been looking for what kind of graduation work I should make and what problems I can solve. I had many ideas, but I decided to do what I like.

Although it might be different from what I learned, for the only graduation exhibition, I wanted to do what I like. In addition, I decided to do the mobility project because I thought it would be the only chance to do such a big project.

In fact, there are many loopholes in terms of design and there have been a series of concerns in the design process. In particular, there were problems to solve, but starting with no context to persuade, I agonized over the context until the end, and it is also the part mentioned in many feedbacks. Since it was not a project that started as a context, I thought it was not suitable for the design process, but the feedback from the feedback session in the class said that it would be helpful to define one by one (like context, target..) based on basic ideas even if it is not starting as a context. Also, I received feedback that it would be better to think about the system by looking at the product a little more distance than the product itself.

Epilogue

민[mi:m]



“Wanna be Artist, Designer, Engineer.
By engineering, Do design like art.”

How do you feel about finishing your graduation exhibition?

Finally, we did this. I still have one more semester left, but it felt like I was graduating. It was a year when I realized the importance of the people around me again.

What is DESIGN you think?

The design I learned was a problem-solving process that began with a problem. In a way, I think the beginning is such as an engineering approach. But I think the difference between invention and design is in the process. Rather than simply developing technology or product, I think the design is the whole process of consideration to what users and how they use it in what context, the aesthetic of elements, the reason for existence, etc.

What are your plans after graduation?

I still have one semester left, but I want to go to graduate school. The DECS lab I'm in now is a lab that exactly suits my interests, so I want to work in the lab as I do now. In the far future, I want to have my own studio and design like art.

What is your design direction?

I want to design something like art. If the design is a problem-solving process that considers usability, I want to be a designer who does a humorous design that puts a story or message in it.

“I hope you have the courage
to do what you want to do.”

**What do you think the convergence
of engineering and design means?**

I still have a dream of being an engineer. I have long admired engineering students, and I think it is the closest study of everyday life. Because it is a study close to such daily life, I think convergence with the design creates great synergy. Engineering designer. It's a name that seems to be capable of anything. I think designers need to connect with engineering or communicate with the engineer in order to do the real design, not just a dream.

**Anything you want to say to future
generations?**

I hope you have the courage to do
what you want to do.

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* All other visual contents were created by Yoonjeong Kwak, the author of this issue.