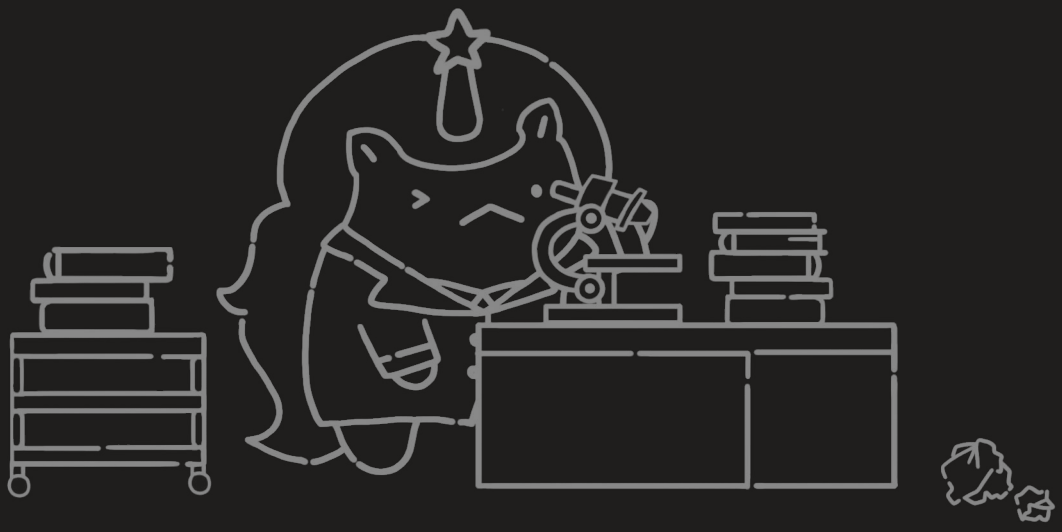
IB MAGAZINE Vol. 5



UNIST

Contents

Dean's Message

Hello to Everyone at the College of IB!
For this newsletter, I wanted to share a message inspired by the recent sensation, "Culinary Class Wars." As I watched the "Culinary Class Wars", I suddenly thought of our college. Just like a diverse group of talented chefs coming together to create a magnificent dish, we too are each leveraging our specializations to create something new. Isn't it fascinating how we all pour our passion into what we love and do well, all while enhancing our expertise?

This semester, how about trying something different?

🍀 Challenge Yourself with New Fields
Attend classes or workshops outside your major. You might discover a new perspective or an unexpected source of fun.

🍀 Find the Essence of the Problem
If your research or project hits a wall, take a moment and ask yourself, "What am I really trying to solve?" You can never overemphasize the importance of going back to the basics.

🍀 Enjoy Teamwork
Communicate and collaborate with friends from different majors. When we understand and respect each other's strengths, amazing results can be achieved.

🍀 Adapt Flexibly
Sometimes things won't go as planned. In such moments, take a breath and find a new way forward.

I hope each of you becomes a remarkable "chef" creating your own unique dish. When we work together, we can create something even more wonderful! I look forward to seeing new possibilities added to your research and academic pursuits. Let's make this a semester where we combine our expertise to produce innovative results.

Thank you!

Dean, College of IB, UNIST
Yoon-Kyung Cho

Advice for a Rewarding Graduate School Experience

The content I am introducing below is a collection of a few pieces of advice I'd like to share with current UNIST graduate students, whether you are preparing for graduate school or are already fully engaged in research. Since these suggestions are based on my personal experiences, I understand that they may not apply universally. Nonetheless, I hope that these words can be of some help to those reading.

Department of Biomedical Engineering
Semin Lee

Know What You're Getting Into at Graduate School

Surprisingly, many students start their research without fully understanding what kind of work is done at the graduate school or lab they wish to join. I recommend participating in an internship at the lab you intend to apply to, even if it is short-term. Not only is it important to understand the type of research being conducted, but it is also beneficial for grasping the atmosphere of the lab and the personality of the supervising professor. If possible, I suggest trying internships at three or more labs, as well as considering various internship programs offered by other universities, not just at UNIST. Since research is ultimately about working with people, it is crucial to understand whom you will be working alongside.

Set Detailed Short and Long-Term Plans

Most graduate students aim to gain in-depth research experience through their degree programs and then obtain employment in a company, research institute, or academia. However, I have found that many students lack concrete plans for graduate school and beyond. I encourage you to make as specific long-term plans as possible. This will help you set clear daily, weekly, and yearly goals and minimize wasted time. Naturally, plans can always change—your goals today might differ tomorrow. Still, always strive to have well-defined goals. If you understand what you ultimately want, your graduate school life will inevitably bring you closer to achieving that goal.

Is Graduate School a Place to Learn Knowledge?

Unlike undergraduate studies, graduate school is not a place where you simply read textbooks or attend lectures to accumulate knowledge. While building a solid knowledge foundation in your research field is important, that alone cannot be the goal of graduate school. Graduate school is ultimately where you grow to become an expert and an independent researcher in your field. At a minimum, in your specific research topic, you should develop deeper knowledge and practical research skills than even your advisor. Only then can your time in graduate school be considered meaningful. Instead of viewing yourself as learning from your advisor, think of yourself as leading the research and, in a sense, teaching your advisor. Of course, in the early stages of graduate school, there will be many things to learn, but even then, you should adopt a proactive approach to acquire the necessary knowledge and skills through interactions with your advisor and fellow lab members.

No One Will Know Unless You Speak Up

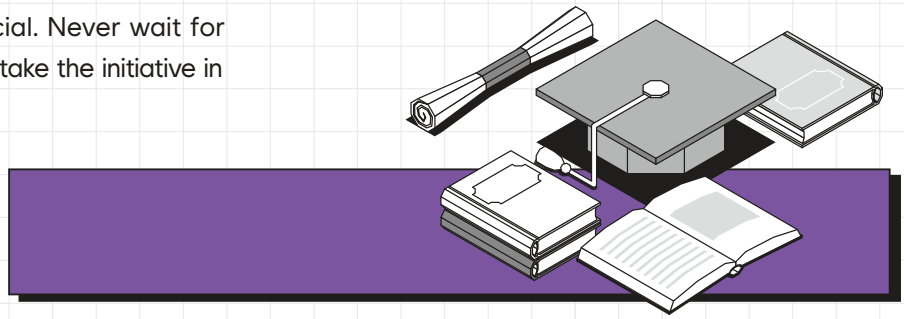
Looking back, I remember feeling anxious and cautious when discussing my research with my advisors. However, sharing your thoughts is an essential part of graduate school life. You need to regularly engage in discussions about your research results and direction with your advisor and colleagues. It shouldn't just be about reporting results; instead, you should share your interpretation of the results, their significance, and the direction for future research, allowing your advisor to provide constructive advice. Additionally, regularly sharing your research progress with lab mates and receiving their feedback is crucial. Never wait for someone to approach you first—take the initiative in communicating your ideas.

Being Part of a Research Community

In any academic field, researchers conducting similar types of research often form and interact through conferences, big or small. Rather than just referring to papers published by other groups for your research, I encourage you to attend conferences and directly interact with researchers in related fields. Focusing on a single research topic for an extended period can sometimes lead to losing an objective perspective on your research direction and interpretation of results. Preparing for poster or oral presentations at conferences gives you an opportunity to rethink the meaning and value of your research and can provide unexpected and valuable feedback. Furthermore, interacting with graduate students, postdocs, and professors in similar situations can offer you important information to advance your career.

Maintaining a Healthy Body and Mind

Although it may sound cliché, there's truth in the saying, "A healthy mind resides in a healthy body." Graduate school requires more physical stamina and focus than you might expect. Make an effort to maintain your physical health and a clear mind through regular exercise, preferably activities that make you break a sweat. Occasionally taking part in leisure activities unrelated to research to relieve stress is also beneficial. Ultimately, nothing is more important than health.



College of IB

🥳 MERGE 2024 Event Recap

Hello, This is the Academic & Student Affairs Team! We are pleased to announce that our largest event, "MERGE 2024", has successfully concluded once again this year, thanks to all of your support. We prepared a variety of experience booths, diverse souvenirs, and delicious snacks, and we are extremely grateful for those who joined us, enjoyed the event, and shared in the excitement. Our administrative team really put in a lot of hard work, but we kept thinking that the more effort we put in, the more enjoyable it would be for all of you. So, we managed to complete the event without any tears. Thank you for joining us and enjoying MERGE 2024 with us this year as well. As we are now in our second year of this event and have gotten a bit more used to it, we'd like to take a moment to share our experiences from preparing for this year's event. We have prepared reflections from the administrative team members who planned the event, as well as feedback from those who participated in the event (sorted in alphabetical order).

Academic & student affairs team Reflection

Team Leader, **Jung Dae Park**

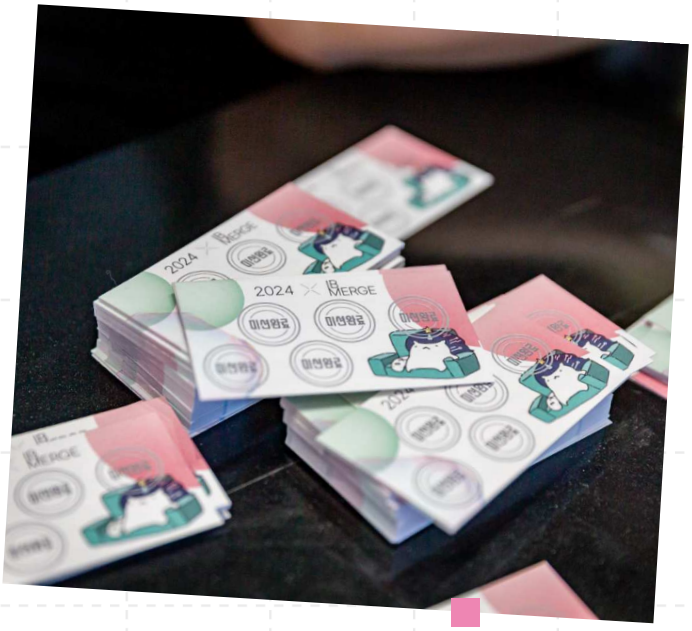
(With a very awkward expression) Personally, I ended up spending quite a bit of my allowance at "Jung-Daiso"... Honey, I'm sorry... To all the team members of our administrative team, when we first held MERGE, we pushed ahead without really knowing much. Seeing the staff struggling at times made me feel sorry for them, and I must admit that I was pretty anxious, not knowing what to do. However, I want to express my respect and gratitude to all team members for successfully pulling off the event.

Eun Jeong Kwon

Wow, the banner designer—I still can't forget it. There were countless moments where I almost grabbed them by the collar. We made a beautiful design and handed it over, but it came back looking so bizarre that I was completely shocked. The communication was so poor that at one point I started wondering if this person was even Korean 😭. But, somehow, we managed to pull it off and achieve a good result, so it all turned out well in the end. As far as design is concerned, it's always, without question, Chief Yang for the win. Chief Yang can handle everything. Oh, and I remember measuring booth spaces with my feet, hustling back and forth. Every time I measured, the length would be different 😭 Team Leader, can we please get a retractable measuring tape next year?

Solip Kwon

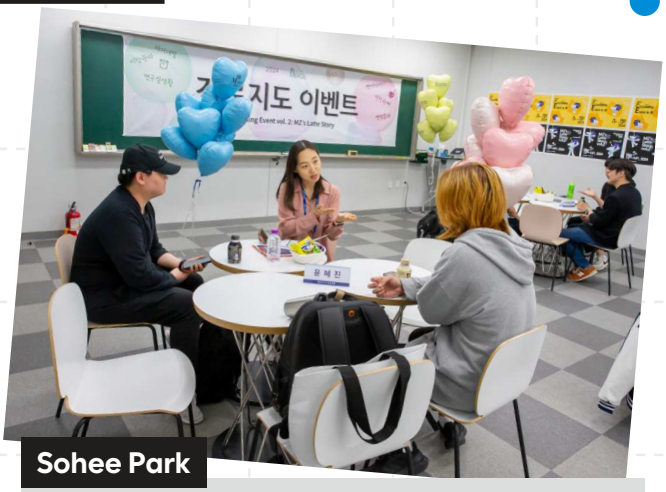
I'm generally not that strong, but preparing for the event really drained me—it was very tough. Especially moving the steel plates, carrying heavy boxes, and pushing myself beyond my limits. After doing all that, I'd find that more tasks were waiting for me. Mom, save me... I truly understood what it means to wring a dry rag. Toward the end, I wasn't sure if I was myself... or Superman... I thought I was using superpowers. Still, it was a joy to work together with my teammates, and I enjoyed preparing for the event because of that. (She was in charge of the paper dolls for our team, and in reality, almost flew away with the steel plates in the wind.)



Academic & student affairs team Reflection

Young-Hwa Kim

I was reassigned to the administrative team earlier this year, so this was my first MERGE event. I was in charge of the Jung-Daiso~ corner, where I had to sell donated items, and for three days before the event, I lost sleep worrying about how much we could actually make. But it turns out—I have a talent for sales! I was happy to see that the sales results were better than expected. With this momentum, I'd love to take charge of the Jung-Daiso~ corner again next year. (Not only did I push surplus items, but I also didn't hesitate to tell the department chair to go directly to the ATM to withdraw cash, achieving high sales figures.)



Sohee Park

For the second consecutive year, I completed the Career Guidance Event - "LATTE Stories of MZs". I was curious to know if the event had meaningful content, whether the discussions were engaging, and if participant satisfaction had improved compared to last year. We conducted a feedback survey, and I was relieved that the results weren't bad. I also put a lot of effort into creating a cozy atmosphere at the venue, and I hope everyone felt comfortable thanks to that effort. ☺️

Hee-Jeong Ryu

Everyone, my apologies. If I were to share my thoughts, I would say I feel relieved. I'm busy taking care of my baby now, so that's all for me... Good luck, everyone! Keep up the good work!!! (Currently, Hee-Jeong is on maternity leave. She worked so hard to prepare for the event despite being heavily pregnant. Thank you, Hee-Jeong! Please raise Do-Ha beautifully~)

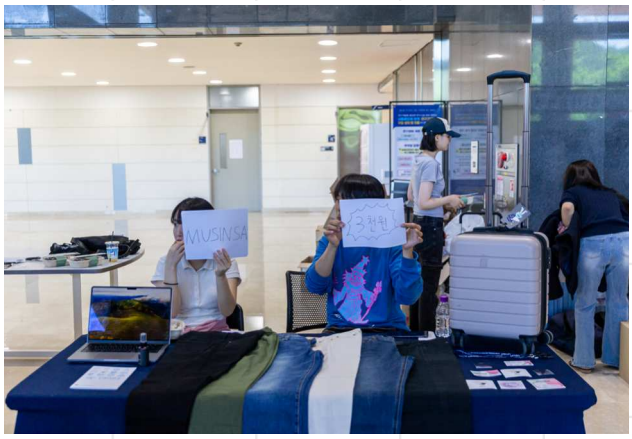
Academic & student affairs team Reflection

Areum Yang

Wow, somehow, we've done MERGE twice now. My past self, who pushed for this event... 😕 Why did you do that, past me... please... stay... Still, I got to try so many new things—making stickers, making candies, creating stamps, renting arcade machines, and assembling capsules. It was tough, but I enjoyed it, even though I was tired. You never know what life will throw at you... I should live well. Thank you so, so much to all my colleagues for supporting me in every way, even though I started so many things and couldn't manage them all alone. Love to the administrative team❤ And to everyone who enjoyed the event, I love you all too! ❤

Yoon-Jeong Lee

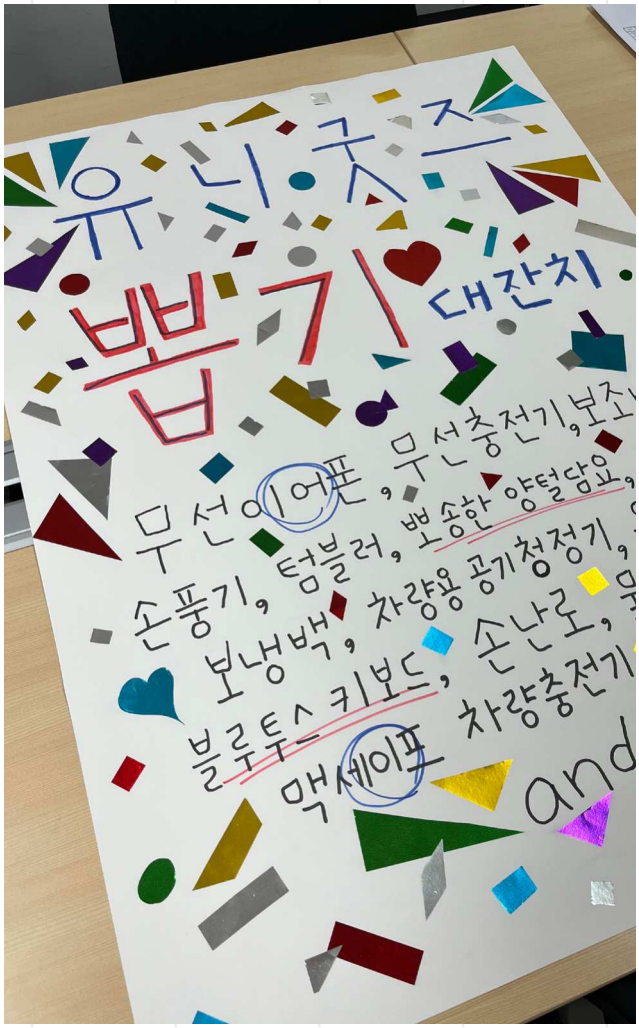
I was extremely worried before the event—whether the booths would be filled properly, and whether the students would participate actively. And that one booth I was concerned about from the start... it didn't end up happening in the end. Why do my bad premonitions always turn out right? Sob. Anyway, everything—the vendors we brought in, the events we prepared—came together perfectly, like just the right level of humidity and temperature, creating a harmonious balance. Now I am leaving (I have been reassigned to the College of Natural Sciences administrative team) but I will keep cheering for MERGE! Call me anytime you need me~



Im Kyeong Jin

This was my first time participating in the MERGE event. I worked alongside So-Hee to handle the career guidance portion, and it made me feel really proud that we were able to create a space for communication between students and professors. The games were more fun than expected, so I cheered enthusiastically, and I believe there were quite a few people who succeeded at the claw machine thanks to me. (Im fact, Im-Gyeong was seen staying close to the claw machine all day, cheerfully smiling from ear to ear.)

Participant Feedback



Ji-Hyang Kim (Administrative Office, Dept. of Energy and Chemical Engineering)

Last year, I was in charge of the event, but this year, I participated as an attendee. Seeing the students enjoy the event last year made me feel proud that the College of IB MERGE provided our students with vibrant laughter and memorable experiences, alongside their studies. And after participating myself this year, I found that the event was even more substantial, fresh, and enriched compared to last year. It was a wonderful event, filled with great fun and happiness, bringing us all together to create a shared memory. Truly, it was the embodiment of MERGE itself❤ (Ji-Hyang swept through all the booths this year. Thank you for your enormous contribution to the fundraising effort, Ji-Hyang!

Gi-Beom Park (Department of Industrial Engineering)

MERGE 2024, hosted by College of IB, felt like a small-scale spring festival to me. The various activities and food added excitement and joy to the beginning of the semester, and I loved getting my hands on unique school merchandise that wasn't easily available. I got a notebook and pen that I've found very useful :) However, it was disappointing that most activities were held inside the engineering building. I hope that next year, MERGE can be held outdoors so we can enjoy the springtime atmosphere on campus more fully.

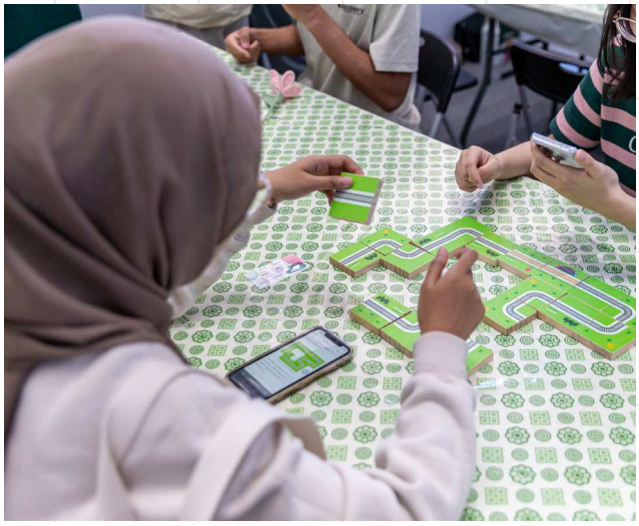
Participant Feedback

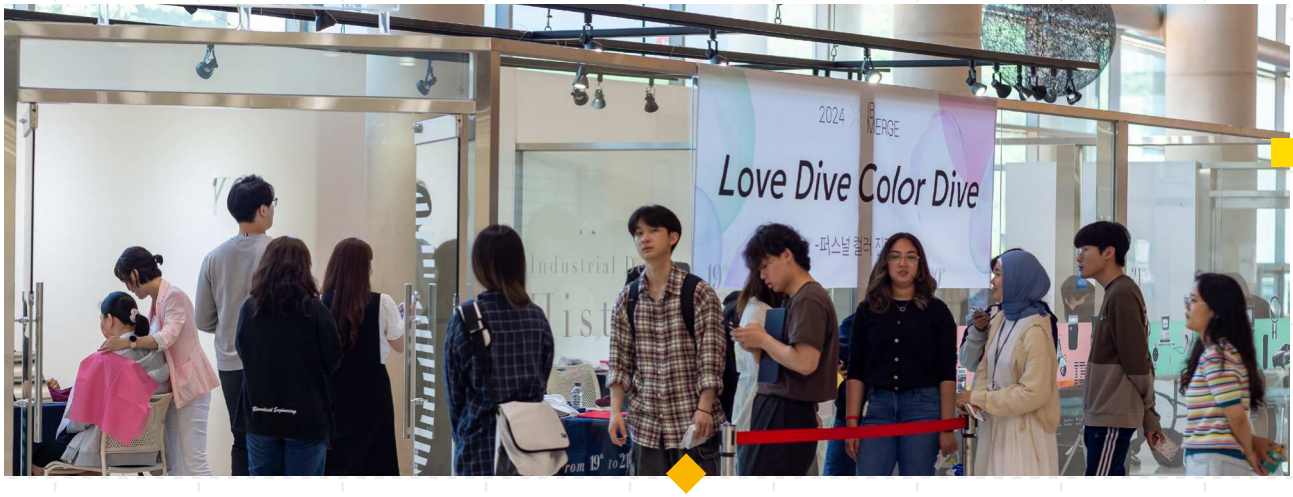
Do-Geun Lee (Department of Electrical Engineering)

It was an honor to participate in MERGE 2024 with my fellow College of IB members through various activities and experiences. I especially appreciated using the Ulsan Cup, which gave me a tangible sense of the impact small habits have on the environment. Working with others to implement this made me feel a strong sense of belonging and unity within the College of IB. Seeing everyone come together during the workshops and campaign activities inspired me to continue practicing sustainable campus living. I hope these activities continue, allowing the College of IB to lead UNIST in making progress, and I'd be delighted to contribute to this journey as well.

Yoo-Jeong Lee (School of Business Administration)

Participating in College of IB MERGE allowed me to deeply feel the importance and limitless possibilities of interdisciplinary studies. I have an interest in transferring to the Department of Industrial Engineering, and after talking with students in that field, my interest grew even further. The variety of activities was also fascinating. Additionally, listening to professors and students share their research stories helped me gain a deeper understanding of my major. Since the event was popular and well-participated, I noticed that some activities ended early due to high demand. I also missed out on some events I wanted to attend, so I think that if preparations are made to meet the demand next year, participation will increase even further.





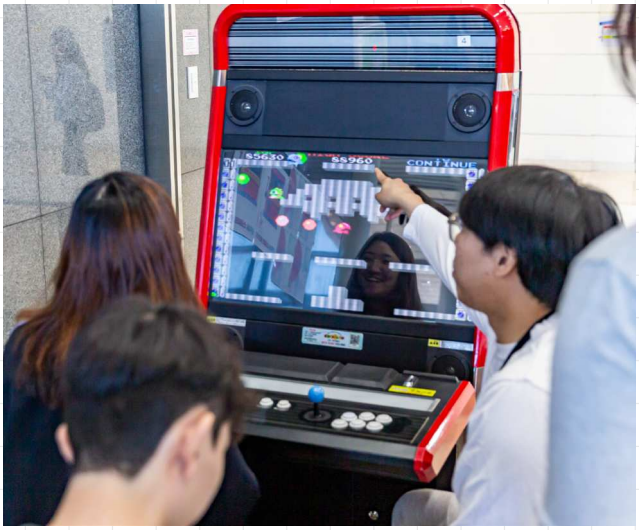
Participant Feedback

Hee-Song Hong (Research Support Headquarters)

The fresh excitement and lively atmosphere were great. However, there were a few disappointments. I was a bit sad when I had to give up after standing in line for a long time only to find that the materials had run out. It's understandable that materials run out, but I think it would be nice to show some consideration for those in line when it happens (like when you visit a popular restaurant, and they say, "This is where the line ends." A simple sign for the last person in line would suffice ^^;;; Just to prevent the people behind from wasting their time... By the way, I loved the Dragon Ball-style setup of collecting multiple items into one—it was great! ^^

Seong-Hee Han (Graduate School of Artificial Intelligence)

There were many different activities prepared, and it was really fun. There were so many interesting things to do, and the diversity of activities made it even more enjoyable. Among them, I particularly remember AI Tarot Reading, Soap Making, and Keychain Making. The food trucks were great, and activities like the Yoon Doll Claw Machine, Club Item Sale, Capsule Claw Machine, and President's Sale were all very enjoyable! For MERGE 2025, it would be even better if more clubs participated and if each research lab had its own activities. (It could serve as both fun and research lab promotion!)



Participant Feedback

Jung-Min Hwang (Department of Biomedical Engineering, not an actor)

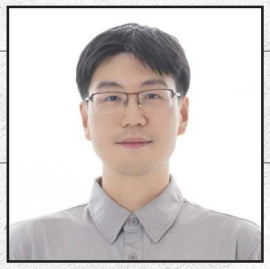
"It was like just adding a spoon to a perfectly prepared feast." When spring comes and the chill recedes, there is an event I look forward to—College of IB MERGE! If the students have their big festival, then MERGE is undoubtedly the event that everyone, from students to staff, can enjoy. From making natural mosquito-repellent soap to personal color diagnosis, flea markets, games, and other activity zones, there was something for everyone. Personally, being able to set a record on the classic arcade game Bubble Bobble made it special for me. I'd like to take this opportunity to thank Kim OO-Min, who competed with me, and Kim Gyeong OO, who funded the game. Thank you! And to all the administrative staff of College of IB for preparing this wonderful feast called MERGE—thank you. Let's meet again next year! (I was wondering who was playing the game so enthusiastically, only to realize it was you, Jung-Min!)

Jea Woo Lim (Department of Electrical Engineering)

Participating in the 2024 IB MERGE event made me feel happy as I created a new memory at school. I had an enjoyable time experiencing activities that are usually hard to come by at school, such as the various activity zones, flea markets, and photo booths. Among them, the booth where you could make keychains by recycling bottle caps was especially fascinating. It made me more aware of everyday waste, like bottle caps, that are easily discarded and sparked my interest in upcycling. The keychains were also so cute and well-made that they didn't look like they were made from bottle caps at all, which left a strong impression on me. I hope the MERGE event continues next year, and that many students on campus can have enjoyable and meaningful experiences.

“Some Reflections

Graduate School of Health Science and Technology
Professor Min Hyuk Lim



1. Sorting Through USB Drives

For some reason, I decided to sort through the USB drives I had at home. I kept plugging in USBs, looking at the contents, and either deleting or copying what I found. As I kept taking out USB drives from my desk drawer, it felt like I was confronting the result of buying drives indiscriminately, without considering the storage devices I already owned, as though I'd never had enough space to store data. My past self had a significant fear of losing data, and I had a habit of storing data across multiple locations—much like putting it to sleep, assuming it might be useful someday.

However, many of these USB drives could not fully preserve their data. Some could not be read at all, while others could not transfer files even when they could be read. In other words, these drives were limited—they had a lifespan. The virtue of a USB drive lies in its ability to transfer data at that moment, not necessarily in storing it long-term. It seems I had placed my expectations in the wrong place.

What one person produces cannot all be captured. I can't think of a better word than "things" to describe it because what is produced isn't limited to just data. Our memories might be data, but they might also be something else. We use data to transform the tangible into the intangible and vice versa, but if the processes of recording and preserving data aren't done safely—and, going further, if indexing and retrieval aren't done properly—then it's much like falling asleep without realizing it. It is impossible to record every aspect of life in its entirety, and storing it all as data is an even more challenging task.

Nevertheless, there are times when incomplete fragments of data are still quite precious. The pieces that we stumble upon by chance sometimes align with our memories, evoking feelings of nostalgia

and tenderness—and occasionally regret, sorrow, and sadness. Thinking of it as just being the way it is makes my heart feel a little lighter.

2. The Best of All Things

Even when each person does their very best based on their own judgment, I have learned that the result can still be far from the best—or perhaps even close to the worst. Knowing this intellectually is quite easy to claim, but understanding it on an emotional level is a completely different matter. What has passed is irrevocably gone. The countless depictions of time machines, parallel universes, or the concept of "what if" that unfold in various media ultimately suggest the same thing—that it didn't turn out that way, and it can't be undone. This narrative can be read as a symptom of helplessness.

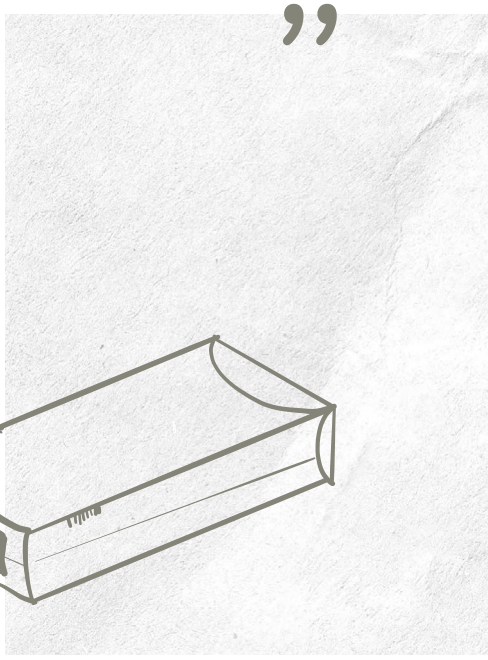
The phrase "a better best" might sound strange, but I've come to think that the idea of doing one's best can still be pushed further. Of course, facing the finite span of life, with the available time dwindling, the idea of improving upon what we call our best can be somewhat anxiety-inducing. Yet, I wonder—what other choice do we have? Leave it be, put it to rest, and then remember.

3. Afterimage

I tend to think that people do not easily change, but I also believe that, under certain circumstances, people can change as though they've taken a quantum leap. The passage of time means that these kinds of opportunities to change are more likely to occur. Ten or twenty years is enough time for such transformations. When you meet someone after ten or twenty years, you approach them with the most recent memory you have of them (even if that memory is from ten or twenty years ago). However, our experiences suggest that, with enough time, the likelihood that the other person has experienced something significant is high, and even if we don't know exactly what that "something" is, we expect that it has changed them or perhaps helped them grow.

That's why, when I see people after a long time, I sometimes feel cautious, or more precisely, I carefully observe them. It's not simply about being trapped in the past (in the past image) and trying to find the sameness between who they were and who they are now—I'm curious to see how they have grown. The past is like an afterimage, and sometimes these afterimages help spark conversation. However, if we only focus on these afterimages, we may become insensitive to or even miss the changes and growth in the other person. Therefore, I take care not to let that happen.

Suddenly, I realized that more time has passed since I graduated from high school than the time I spent from birth until graduation. I never imagined that a time like this would come, but it already has. As this latter span of time grows longer, I believe that many of the people I remember have become more indifferent in some areas, more delicate in others, and have grown in yet other aspects. I, too, must have changed in some ways. I hope that my changes have been in a direction that is better than the afterimage I carry of myself.



Exchange Student Life in Vienna : A Collection of Small, Simple Tips

Department of Biomedical Engineering **Jiyoon Lim**

It's already been two months since I came to Vienna, Austria, as an exchange student... During this considerable time, I have had many memorable experiences in this beautiful city, and I'd like to share some useful information that might come in handy.

1. Transportation

As an exchange student, you can purchase a 'semester ticket' for €75 from ÖBB (the Austrian Federal Railways), which allows you to use most forms of public transport for an entire semester. (Some trains aren't covered, so be sure to check before boarding!) Unlike in Korea, you don't need to tap a transportation card—whether it's a tram or the U-Bahn (subway), you simply board, and occasionally, ticket inspectors will come by, and you show them your ticket. However, if you attempt to ride without a valid ticket and get caught, you'll have to pay a hefty fine—so it's best not to risk it!

2. Supermarket Tips and Precautions

Eating out in Vienna is more expensive than in Korea 😭, so whether you're here for travel or study, you'll likely end up cooking your own meals after shopping at the supermarket at least once. There are various supermarkets where you can buy groceries, such as SPAR, BILLA, and HOFER. Personally, I just go to the one closest to my house. Honestly, back in Korea, I was never much into cooking. But after coming here, I started watching YouTube recipes, learning how to cook, and I've come to appreciate the satisfaction of making meals myself. A lifelong teacher: Baek Jong-won!

A few precautions to note :

1) The type of water we usually drink is 'ohne'. Even if it says 'mild', it still means that it contains some carbonation. Be sure to look for 'still' or 'ohne' when buying. (That said, Austria has excellent water quality, so drinking tap water is perfectly fine.)

2) All supermarkets are closed on Sundays. However, some supermarkets located in major stations may remain open on Sundays, so if you're in urgent need, head to one of those.

3) 'AKTION' means discount. Sometimes discounts apply only if you buy more than one item or meet specific conditions. If you're unsure, it's a good idea to ask an employee.

3. Keys = A Part of Your Body

Not just in Austria, but in many European countries, keys are commonly used instead of card keys or keypad entry systems. In fact, within just three days of moving into my dorm, I accidentally locked my key inside my room. I had to call a locksmith, and it cost me a whopping €300... (If you think my fingernails look like they're crying, you're absolutely correct...)

4. Let's Become Cultured

Vienna is home to many famous art galleries and museums. I haven't visited all of them yet, but personally, I really enjoyed Albertina. It holds a diverse collection of works by artists like Cézanne, Matisse, and Renoir, and after admiring the pieces, you can also enjoy a beautiful night view of Vienna, including the opera house, which is a great experience.

The Vienna State Opera House was also incredibly impressive. I bought a standing-room ticket on-site for €15 to see Romeo and Juliet, and I was very satisfied. Online standing tickets go on sale at 10 a.m. on the day of the performance, and if you're buying in person, arriving about an hour and a half before the show starts is usually fine. When I went, quite a few people left halfway through the performance, so by the end, I managed to watch from a really good spot... haha. No matter how good the seat, if there's a bar or railing in front, it can be uncomfortable, so it's a good idea to check the view on the official website before reserving your seat!

If you're in Vienna as an exchange student, getting a year-long unlimited access ticket for selected art galleries and museums (€99) is also a great idea. Even though I'm only here for one semester, the ability to visit the same place multiple times, along with the fact that most key locations are included on the list, makes it quite worthwhile. It's a lot of fun to explore without feeling pressured, especially on those days when you don't have classes for a day or two!

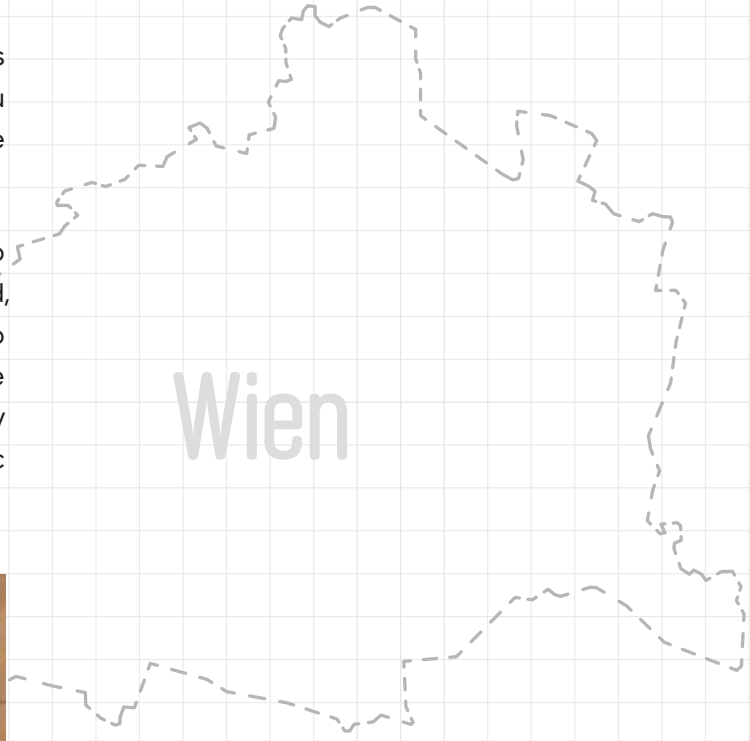
5. Austria's National Drink: Almdudler

This is a carbonated drink that I fell head over heels for after coming here! With a brand recognition rate of 99% within Austria, it's on the menu at practically every restaurant, which makes me so happy. It's highly carbonated but not overly sweet, making it refreshing to drink. The herbal aroma combined with a subtle apple flavor is so addictive that I would often stock up with three 1.5L bottles whenever it was on sale. The photo shows the Almdudler I brought along on my trip to Prague because I couldn't bear the thought of going four days without it. :)

6. Cute Traffic Lights

The traffic lights in Vienna are really cute. As Austrians place great importance on diversity, you can find couple symbols not only for male-female pairs but for a variety of gender combinations.

On a separate note, pedestrians here don't seem to strictly follow traffic signals. Even if the light is red, about 90% of people will cross the crosswalk if no cars are coming. However, it was quite impressive that almost all drivers (no matter how far away they are) yield to pedestrians at alleyways without traffic lights, ensuring that pedestrians can cross first.



Though I still have more time left to stay here than I've spent so far, I've tried to write as much as I can about my experiences to date. While I hope you won't rely 100% on this information, I also hope it can be at least a little helpful! They say you only realize the importance of something after you lose it, and I know that when I go back to Korea, I'll be sure to eat Malatang, which I've missed so much. Then again, when I'm back home, I'll probably find myself missing Almdudler. Today is another day when I remind myself to appreciate the present.

Looking Back on Realizations About the Basics of Student Societies

Department of Design **Daehun Lee**

Recently, I was contacted by a friend who plans to run in the upcoming undergraduate student council elections at my alma mater. The friend reached out to seek advice and the necessary help. Since I wasn't in a position to provide practical support, I shared my thoughts on what I personally consider an ideal student council. For me, an ideal student council is one that is "unique to our school."

The student council undertakes a surprisingly large number of tasks during its term. Why do they do these things? The goal is to foster school spirit so that even just one more student can love our school a little more. To achieve this, they strive to improve education, welfare, and culture, even if just slightly. However, there are people who claim that the student council's role is to pursue visible changes through successful projects. While this is true as a means, I do not believe it should be the ultimate purpose.

Why pursue change? Why strive for something better? The answer to these questions ultimately comes back to fostering school spirit. At the same time, fostering school spirit cannot be achieved solely through successful projects.

School spirit, and patriotism—these emotions are exclusive in nature. To put it simply, we love the country we live in because other countries exist, and we love the school we attend because other schools exist. Therefore, to foster school spirit, we must fundamentally discover and develop what "exists only at our school and nowhere else."

One of these unique aspects could be the student council itself during its time. How many people know the name of the student council president at their university? Not many. Of course, if someone has committed numerous actions worthy of criticism, they might become infamous, but that would hardly contribute to fostering school spirit, so let's set that aside. For a student council to be one that "exists only at our school," the student council president must actively reach out to the students. Even if it means becoming a mere clown, that's okay.

If students genuinely view the president as their "student representative" and feel comfortable approaching them with concerns about the issues facing the student community, and if direct communication is possible, that alone would make the student council unique. Students don't expect the student council to accomplish "many things." Simply standing "on the students' side" is enough. Even if the student council accomplishes something significant, students will simply see it as something they were supposed to do anyway, because they are the student council. The key is not just what is accomplished, but how it is done—how it is done in a student-like manner. Protecting student rights, improving the quality of education, expanding student welfare initiatives, developing cultural content on campus—I'm not denying that the success of these initiatives has a positive impact on fostering school spirit. But as I keep emphasizing, if the problems of the student society are not identified "from the students' perspective" and are not solved in a "student-like" way, then in the eyes of the students, the student council becomes nothing more than just another department somewhere in the university administration.

Students no longer want representatives who charge ahead recklessly without understanding the context, like in the old days. Even if they do charge ahead, they must do it in a "student-like" way, on the students' side.

Scenes

Department of Industrial Engineering **Siun Park**

This piece is written like an exhibition of my experiences during my travels around the world.

I have included photo titles, descriptions, and excerpts from my travel journals throughout the text. I hope you enjoy them as you read. If I were to summarize my journey, various scenes intermittently come to mind. In life, too, we remember many different scenes. Often, it is these scenes that make up who we are. My journey was no different. Just as a movie unfolds scene by scene, sequence by sequence, a few unforgettable moments made up my travels. Here, I share the scenes that left the greatest impression on me. I hope you enjoy them.

Dawn in the Himalayas, Nepal

Chapter 1 Scenes That Froze Me in Place - Journal from Trekking the Himalayas





Standing in front of the majestic snowy mountains, I always felt like an infinitely small being. Gazing at the mountain's pure white peak soaring into the sky, blending into the dazzling blue, my whole body seemed to freeze. All I could do was take in the scenery with my small eyes, utterly overwhelmed. Especially the snowy mountains I discovered at the end of sweating profusely and enduring altitude sickness—those were scenes I could never forget.

"What kind of emotions will I feel when I face the giant snow-covered mountain? Will it be overwhelming joy? Sadness? Happiness? A sense of accomplishment? Nostalgia? Something complex? Whatever it may be, it's a feeling I'll surely remember for a lifetime. I will press it firmly into my heart, my mind, and every vein in my body. Ah, I have finally arrived—Himalayas!"

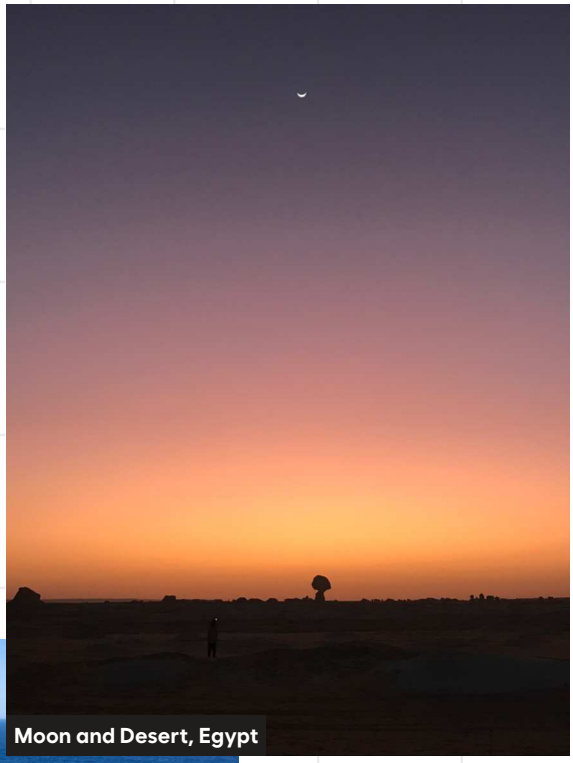
Beyond the snowy mountains, every time I witnessed the Earth's incredibly beautiful landscapes, I found myself frozen in awe—whether in front of glaciers, grasslands, deserts, or in the midst of puzzling terrains. Nature, as a product of endless time, is something that is beyond comprehension. With a heart as small as mine, I couldn't contain the feelings it evoked, so I was endlessly overwhelmed by emotions I couldn't even express. Those scenes also made me deeply grateful for this life.

Rocky Mountains of Mount Sinai, Egypt

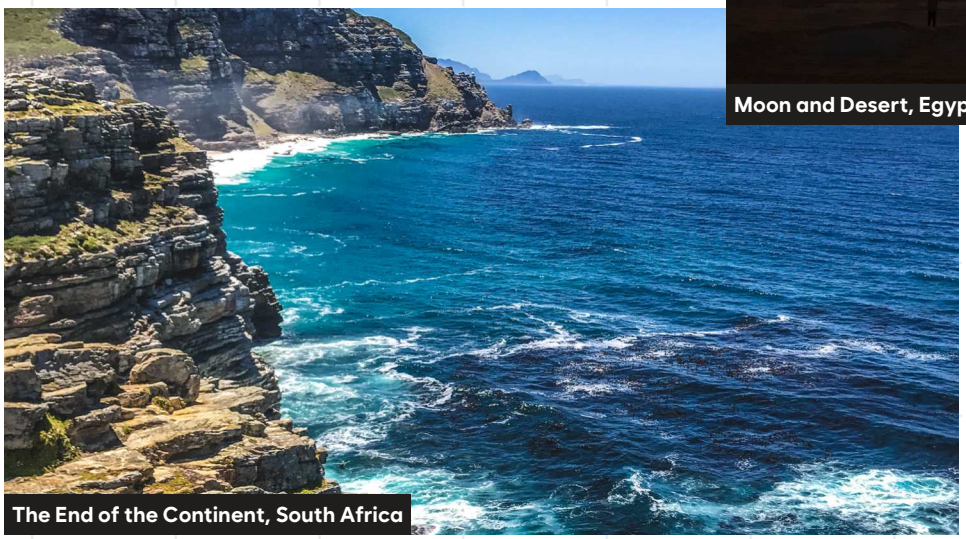
Glacier, Argentina

Such a strange place—there is nothing here except the sea. There is nothing but the travelers who gather here, drawn by the love of the sea, of diving, and yet everyone ends up loving this place. There must be something here that swallows up the courage and determination to leave.

I love the sea. I love the endless horizon, the waves that roll ceaselessly, the salty air, and the sense of life that fills the depth of the ocean. We are beings that once originated from the sea, and perhaps that's why we feel comfort while gazing at it, just as we are also destined to return to the sky, which makes us lift our eyes upward in awe.

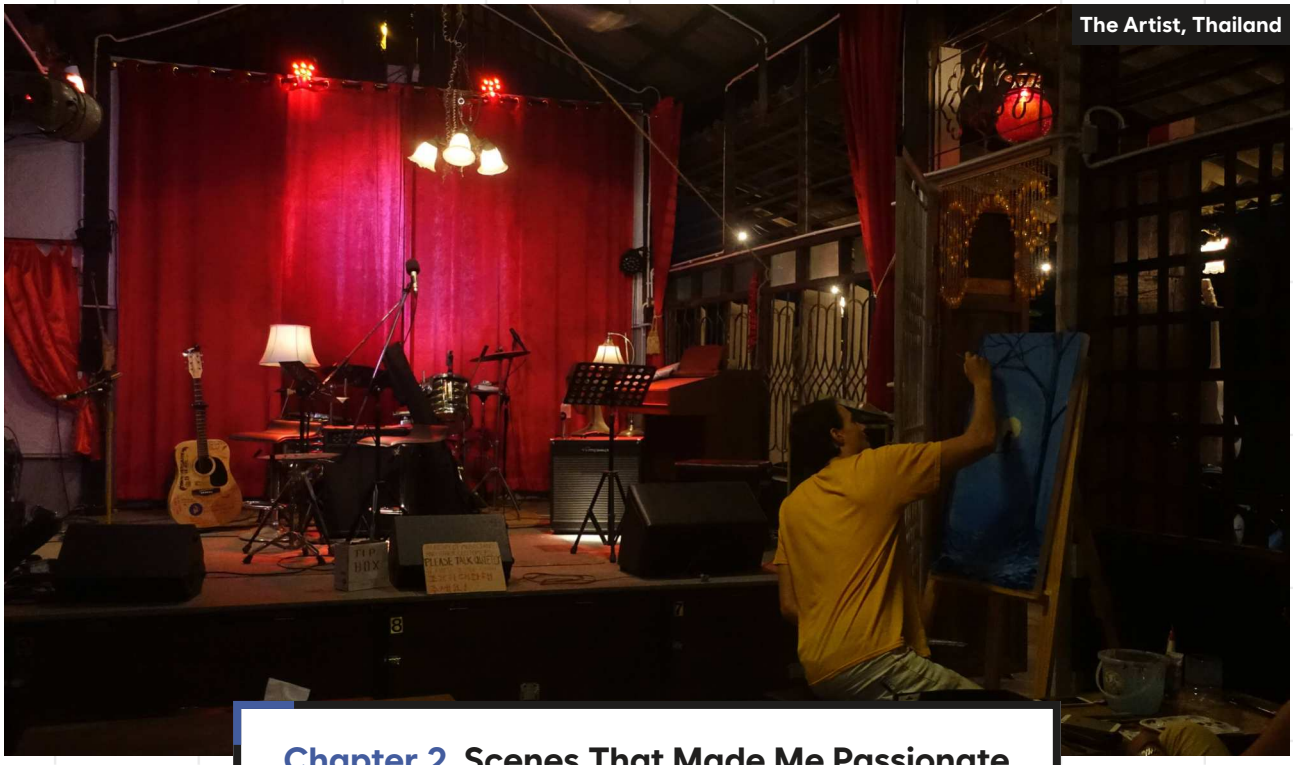


Moon and Desert, Egypt



The End of the Continent, South Africa

The moment when we traced the stars, trying to recall each constellation's name, and introduced them to each other, feeling our hearts ache with happiness. The times when we listened to songs that made us so happy it almost hurt, and confessed our gratitude to one another.



The Artist, Thailand

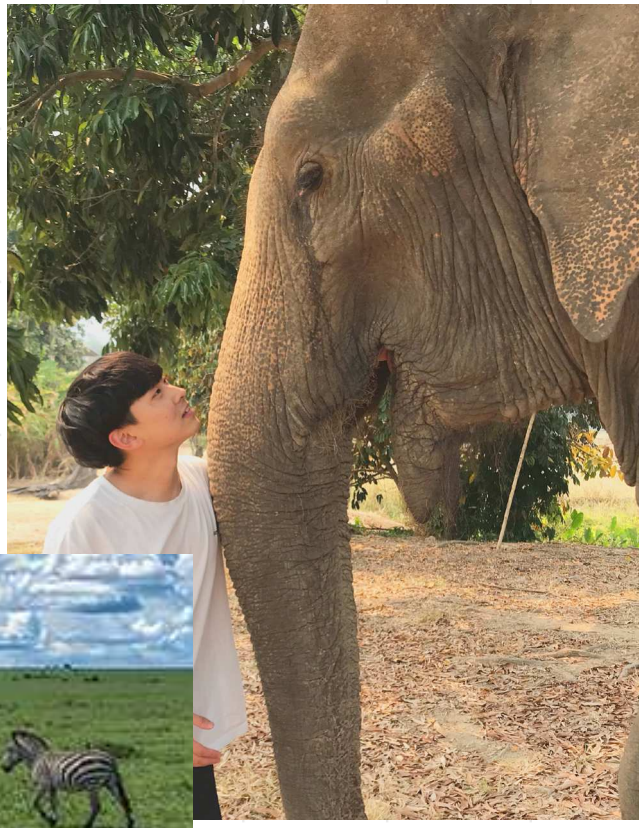
Chapter 2 Scenes That Made Me Passionate

Traveling, in the end, was all about encounters with new beings. I strongly believe that travel is made up of those encounters with people. Some of these connections have continued to this day, while others became just fleeting relationships that lasted only a day. But no matter the nature of the encounter, none of them were forgettable. Not a single one lacked value. Is there anything more valuable in travel than witnessing the life of someone living an entirely different daily routine in a far-off place?

A Train That Encapsulates Life, India

A place where one can observe the lives of countless Indians. Of course, it was nothing more than being covered in dust and lying there drenched in sweat, but I enjoyed the feeling of melting into their space, which made me love this place.

On the Savannah of Kenya



I felt an inexplicable pleasure while watching the animals. I was happy that they were not unhappy, and it was fascinating to see them as beings who possessed the strength to live well on their own. Their habitat was clean and expansive, but their lives seemed so brief in comparison, which made them shine even brighter.

Moments of Death, Bosnia and Herzegovina & India

I recall countless deaths that I brushed past. Perhaps the most frequent thoughts I had while traveling were about life and death. Complex worries never came to mind; rather, it was about being thankful for the fact that I was alive—so many days spent just appreciating that. Why does it feel so precious to simply eat, breathe, and feel?

Sky Lake, India

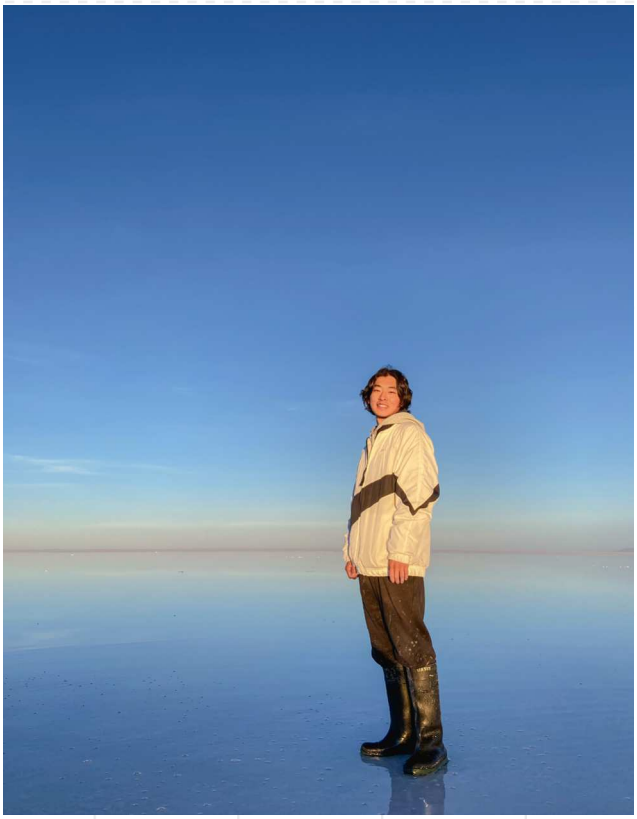
Chapter 3 Scenes Where I Came to Know Myself

While traveling, I had a lot of time to think about "myself." More precisely, I had many moments where I confronted myself. In all those scenes before me—whether in front of vast nature or in front of someone else's life—it always led me back to reflections on my own life.


Sand Dunes, Namibia

Freedom, Argentina

When I think about the past, it is often the worst parts of myself that I remember most vividly. I think of myself as mature now, but back then, I was always naive and weak. I still have many fears, and I admit that I still don't fully understand how to navigate relationships or communicate well. I make a renewed determination not to be like that anymore.



I feel like I've gained the strength to look at myself more objectively. Perhaps it's because it's a slow-paced activity, but I seem to have learned how not to rush. Perhaps happiness doesn't require such grand conditions after all. Sometimes, just one breathtaking view of nature is enough to make me happy, and I find joy even in the smallest things.

The crescent moon, which had elegantly hung in the sky just days ago, has filled out a bit now and will soon become a half-moon in a few days. Beside it, Venus shines brightly. Even after I return to Korea, the moon and stars will always shine upon this place and all the places I've visited. I too will find that much has changed when I go back to Korea. Still, just as that moon always remains in the sky, I will remember my travels. I will create a small room in my heart and decorate it with all those days when I lived in a dream. Whenever I miss traveling desperately, I will lift my head and gaze at the moon and stars. The moon will still shine brightly on all the places I visited, and I will borrow its light to recall those memories.

Department of Biomedical Engineering
Minyoung Kim

It's an Autumn Night

Walking along a street draped in darkness,
A cool breeze grazes by, lifting my gaze,
And only then do I see the twinkling stars.
The black sky, filled with starlight,
Suddenly spills over into my eyes.
Those distant, scattered glimmers—
How many eyes have lingered at their end?
The brilliance, so clear against the dark—
How many hearts has it illumined?
Following the traces of countless moments,
That starlight, carrying endless stories of many,
I hope tonight it lights up someone's darkness again.
On a street wrapped in shadow,
I walk the starry path of an autumn night.

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Department of Computer Science and Engineering
(Graduate School of Artificial Intelligence)

Prof. Taesik Gong

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Hello, Professor. Welcome to the College of IB at UNIST. Could you please introduce yourself and briefly explain your specialization and research areas?

Hello, I'm Gong Taesik, and I joined UNIST this August as a professor in the Department of Computer Science and Engineering at the College of IB, with a joint appointment at the Graduate School of Artificial Intelligence. My research focuses on Ubiquitous Artificial Intelligence, centered around the question, "How can we better leverage AI in everyday smart devices?" My key areas of interest include human-centered AI, personalized AI, and on-device AI systems. To explore these topics, I lead the Ubiquitous Artificial Intelligence Lab (UAI Lab: https://sites.google.com/view/uailab). Before coming to UNIST, I conducted research in these fields at Bell Labs in the UK and the University of Cambridge.

What motivated you to pursue a career as a professor?

The biggest reason I chose the path of a professor is my deep passion for exploring new knowledge through research and education while mentoring the next generation. Before entering graduate school, I had a vague goal of becoming the top expert in my field. After completing my degree, I believed becoming a professor would allow me to realize that dream. However, as I conducted research, I came to understand that being a professor is not merely about being an expert; it also involves embracing the responsibilities of an educator.

Initially, this responsibility felt overwhelming, but mentoring interns and junior researchers as an early member of a research lab brought me great fulfillment as I witnessed their growth. Watching researchers develop and envisioning their future as exceptional scholars solidified my belief that this path would make for an incredibly meaningful life. That conviction led me to commit to the journey of becoming a professor.

If there was a particular reason you chose UNIST, what would it be?

UNIST is a research-focused university that has achieved remarkable growth in a short period, which left a strong impression on me. I was particularly drawn to its emphasis on interdisciplinary research, its forward-looking research environment, and its well-established support systems. Additionally, UNIST has a vibrant and dynamic faculty, providing abundant opportunities for collaboration. I look forward to advancing my research in this environment, tackling new challenges alongside students, and achieving meaningful outcomes.

What do you think is the unique strength of the College of IB?

The greatest strength of the College of IB lies in its promotion of interdisciplinary research through collaboration among diverse fields. The environment, where disciplines such as artificial intelligence and biological sciences work together to produce innovative research outcomes, is truly remarkable. Additionally, the College of IB addresses critical technologies for the future and provides knowledge that is highly valued in industry. This results in abundant opportunities for collaboration with industries and research institutions, along with robust research support. I believe these aspects greatly aid students in gaining both academic growth and practical knowledge and experience essential for their careers.

What was the most challenging aspect of pursuing your research and academic career? Many students at UNIST aspire to become researchers or faculty members. Could you share advice that might help them?

The most challenging part of my research journey was overcoming repeated failures and setbacks. Research often requires significant time and involves unexpected obstacles. Maintaining perseverance and a determination to keep trying despite difficulties is crucial. I firmly believe that resilience and persistence in the face of setbacks are more important than intellectual capability in research.
I recommend setting clear goals, not being discouraged by small failures, and cultivating the habit of steadily accumulating small achievements. Additionally, collaboration and networking are invaluable for encountering diverse perspectives and ideas. Rather than trying to solve everything on your own, it's important to grow together by communicating with fellow researchers and advisors. Failure is a natural part of the process, so don't fear it. Use those experiences to foster your personal growth, and eventually, you'll find yourself stronger and more capable.

Any final thoughts you'd like to share?

In the upcoming era of artificial intelligence, we will need to tackle increasingly complex and challenging problems. I hope that UNIST students grow into global leaders who combine academic depth with practical skills—qualities that cannot be replaced by simple AI. I will do my utmost to support your growth through research and education. Thank you!

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Department of Design

Prof. Dajung Kim

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Hello, Professor. Welcome to the College of IB at UNIST. Could you please introduce yourself and briefly explain your specialization and research areas?

Hello, it's a pleasure to meet you. I'm Dajung Kim, and I joined the Department of Design this August as a new faculty member. My academic background is in Industrial Design, and my research focuses on Human-Computer Interaction (HCI). This field examines how user interfaces, interactions, and ultimately user experiences can be designed to bridge the gap between new technological products and people's needs, values, and mental models. Recently, with AI-based products and services evolving from mere tools to actors playing key roles in decision-making, the design of human-AI interaction and experience—reflecting users' needs and values—has become even more significant. In this context, I'm dedicated to conducting research that contributes to creating a better future for all of us.

What motivated you to pursue a career as a professor?

That's a surprisingly difficult question to answer! While I can't pinpoint a single defining moment, looking back, I think meeting inspiring mentors during my undergraduate years was a key starting point that sparked my interest in design research. As I progressed through graduate school, I gained a deeper understanding of the academic and practical value of design, and through various experiences in academia, I naturally found myself on the path to becoming a professor. I genuinely enjoy the process of working with students, exploring ideas, and growing together. What captivates me the most is the opportunity to envision how technology will shape our lives while academically investigating enduring human values and designing ways to reflect them. This blend of intellectual exploration and practical impact has always been incredibly appealing to me.

If there was a particular reason you chose UNIST, what would it be?

Globally, design departments rooted in engineering are extremely rare, and that uniqueness is what sets UNIST's Department of Design apart. I was drawn to the department's distinctive strengths and its potential to thrive with the exceptional talent and colleagues gathered here. After earning my Ph.D., I had the chance to work in Europe with researchers from diverse fields, which gave me exposure to new knowledge, cultures, and experiences. I wanted to share those experiences with design students in Korea and help develop them into something uniquely ours, and that vision ultimately brought me to UNIST.

What do you think is the unique strength of the College of IB?

The greatest strength of the College of IB lies in its vision for "convergence," as reflected in its name. Developing technologies that have a positive impact on the world requires diverse academic perspectives, which are invaluable but challenging to integrate in a meaningful way. Despite these challenges, the College continues to pursue this vision of convergence, providing a solid foundation for collaboration among outstanding faculty and students. This gives me a sense of reassurance and inspiration. I also hope that this newsletter serves as a starting point for connecting with other members of the College of IB, fostering productive synergies and collaborations.

What was the most challenging aspect of pursuing your research and academic career? Many students at UNIST aspire to become researchers or faculty members. Could you share advice that might help them?

The hardest part for me was dealing with self-doubt. Research and academics often feel like a battle with oneself, and the process can sometimes (or often) feel lonely. In those moments, I'd encourage students to share their struggles with those around them. Even if immediate solutions aren't available, knowing that others share similar challenges can be comforting, and sometimes it can even lead to unexpected breakthroughs. I also suggest finding your own way to manage uncertainties about the future while staying grounded. Discovering a personal method to stand firm through difficulties is crucial, and I wholeheartedly support you as you navigate this process.

Any final thoughts you'd like to share?

I'm delighted to have this opportunity to greet the members of the College of IB through this newsletter. I look forward to frequent communication and collaboration with you in the future. Wishing everyone good health—thank you!

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Department of
Industrial Engineering

Prof. Youngdae Kim

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Hello, Professor. Welcome to the College of IB at UNIST. Could you please introduce yourself and briefly explain your specialization and research areas?

Hello, I'm Youngdae Kim, a new faculty member in the Department of Industrial Engineering. My specialization is in mathematical optimization, and my research focuses on designing optimization models that support optimal decision-making in business through mathematical foundations, as well as developing efficient methodologies to solve these models. Optimization plays a critical role in improving system efficiency across various fields, including artificial intelligence, logistics, manufacturing processes, biotechnology, and energy systems. Recently, I have been particularly interested in mathematical optimization methodologies leveraging graphics storage devices optimized for parallel computing, integrating artificial intelligence with mathematical optimization to create synergistic effects, and developing optimization models for carbon reduction in energy systems.

What motivated you to pursue a career as a professor?

I had the opportunity to gain experience in both academia and industry, and after exploring these paths, I realized that satisfying my intellectual curiosity brought me the greatest fulfillment. This realization led me to choose the path of a professor. Additionally, I was drawn to the appeal of being able to independently lead and advance my research.

If there was a particular reason you chose UNIST, what would it be?

I had heard that UNIST provides an excellent environment for both research and raising children. After joining, I found this to be true. The teaching load here is lighter compared to other universities, and the flexibility in allocating time for lectures allows for efficient time management to focus on research. Additionally, the on-campus daycare provides a safe and trustworthy environment for childcare, which has been reassuring. Despite being a relatively young university, I was also drawn to its affiliation with the Ministry of Science and Technology and the proactive investment and support aimed at future growth. This atmosphere of forward-thinking development played a significant role in my decision.

What do you think is the unique strength of the College of IB?

Although I am still new to my position and have much to experience, I believe the greatest strength lies in the College's structure and approach to interdisciplinary research. As seen in recent Nobel Prize-winning work by AI researchers and those applying AI in biotechnology, the influence of AI across industries is only expected to grow. The College of IB's setup, bringing together related departments to enable integrated research, is a key advantage that aligns well with these trends.

What was the most challenging aspect of pursuing your research and academic career? Many students at UNIST aspire to become researchers or faculty members. Could you share advice that might help them?

The most challenging part for me was dealing with the uncertainty of research and my future. Looking back now, I wish I had been less impatient and spent my time in a more productive and proactive manner. My advice would be to avoid wasting too much time exploring without direction. Instead, focus on setting clear goals and dedicate absolute time daily to consistent effort. With steady work and focus, I believe your hard work will undoubtedly lead to rewarding outcomes.

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Department of
Electrical Engineering

Prof. Heechun Park

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Hello, Professor. Welcome to the College of IB at UNIST. Could you please introduce yourself and briefly explain your specialization and research areas?

Hello, I'm Heechun Park, and I joined the Department of Electrical Engineering at UNIST in March 2024. I completed my bachelor's, master's, and doctoral degrees at Seoul National University, followed by postdoctoral research at Georgia Tech in the United States. Before coming to UNIST, I held various roles as a researcher, research professor, and assistant professor at different institutions. My research broadly focuses on "semiconductor circuit design," with a specific emphasis on "VLSI (Very Large-Scale Integration) design automation." This is often referred to as EDA (Electronic Design Automation) or CAD (Computer-Aided Design). To explain further, my research aims to develop the most efficient design blueprints for semiconductor chips by optimizing their configuration and structure.

What motivated you to pursue a career as a professor?

I wish I had a meaningful or impressive story to share, but honestly, there wasn't a particular defining moment. I've thought about this question again for this interview, but there's truly nothing specific. After finishing my undergraduate degree, I went to graduate school without much thought. Near the end of my doctoral studies, I happened to get an opportunity to do postdoctoral research in the U.S. at Georgia Tech, and I thought, "Well, I've made it this far—why not give it a shot?" Although there wasn't a special moment that pushed me toward this path, that doesn't mean I took my studies or research lightly. I've always tried to give my best to whatever tasks I was assigned, and I believe that

consistent effort has led me to where I am today.

If there was a particular reason you chose UNIST, what would it be?

Rather than saying I chose UNIST, I think it's more accurate to say that I was fortunate enough to be selected through my efforts. My advisor, Professor Tae-Hwan Kim, greatly inspired me with the way he joyfully conducted research with his students. Watching him made me aspire to lead a lab and collaborate with graduate students in research. Coming to UNIST has allowed me to create such an environment. Receiving frequent inquiries from excellent students who wish to join my lab has further affirmed the high value of the university. Additionally, I was drawn to UNIST's youthful and dynamic image, the appealing school logo and mascot, and several other reasons combined. On a personal note, my hometown is also near Ulsan, which makes it even more special!

What do you think is the unique strength of the College of IB?

I was initially drawn to UNIST because of its youthful and dynamic image, and after arriving, I found that it truly lives up to that reputation. Externally, the university has a positive image driven by active research and the acquisition of large-scale projects. Internally, the environment fosters open and respectful interactions among professors and staff members, which I believe is its greatest strength. This atmosphere promotes collaboration not only between labs but also across departments. As a result, the College of IB as a whole can work more dynamically and move forward with a unified vision.

What was the most challenging aspect of pursuing your research and academic career? Many students at UNIST aspire to become researchers or faculty members. Could you share advice that might help them?

Looking back on my undergraduate and graduate studies, I can't pinpoint a single "most" difficult moment. That's not to say it wasn't hard—every step of the way was challenging as I gave my best effort in each moment. What helped me was my personal motto, "This too shall pass." While each moment felt difficult, everything eventually passed, and in hindsight, I hardly remember the struggles. Once I realized this, I could face difficult moments without resistance, gradually overcoming them and finding fulfillment in the process. Of course, this mindset has a side effect of tempering my excitement during happy moments, but this even-keeled approach has become my greatest strength in sustaining my research journey.

For students, there are so many things I'd like to share that it's hard to summarize, but if I had to pick one piece of advice, it would be: "Don't look too far ahead—just focus on what needs to be done now." For example, while AI is currently revolutionizing every field, 10 years ago, very few people imagined the world we see today. Researchers who worked on deep learning—a topic few paid attention to at the time—are now winning Nobel Prizes in Physics and Chemistry. Instead of worrying too much about how your research might be used years from now, I encourage you to dive into a subject that has depth and truly interests you. As you immerse yourself, opportunities will inevitably arise, and being prepared will allow you to seize them.

A more practical piece of advice is this: rather than focusing on finding what you "want" to do, prioritize identifying what you "absolutely don't want" to do. Desires often change, but strong aversions rarely do. When choosing your research field, rule out areas you know you truly can't stand, and then make your decision based on other factors, such as potential career paths or your surrounding environment.

Any final thoughts you'd like to share?

Through this interview, I had the chance to reflect on my initial aspirations, which I hadn't thought about in a long time. Thank you for giving me this meaningful opportunity. If anyone is curious about me, my research field, or our lab (the Semiconductor Design Automation Lab), please feel free to reach out. I'll do my best to respond sincerely and thoroughly.

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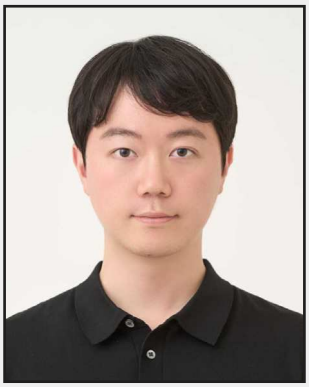
Department of
Electrical Engineering

Prof. Joon Hee Lee



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Hello, Professor. Welcome to the College of IB at UNIST. Could you please introduce yourself and briefly explain your specialization and research areas?

Hello, I'm JoonHee Lee from the Department of Electrical Engineering. My field of specialization is Power Electronics, which involves the design and control of electronic circuits to manage electric power efficiently. My primary focus is on motor drive systems and grid-connected power conversion devices. As humanity's energy consumption continues to grow exponentially, most of this energy is now produced, stored, and consumed in the form of electricity. This trend is accelerating further with the rapid increase in demand for data centers, driven by advancements in AI technologies. Addressing the climate crisis and achieving carbon neutrality requires diverse technologies, such as the electrification of vehicles and the expansion of renewable energy adoption. The common denominator among these technologies is the need for power conversion. For instance, electric vehicles convert the direct current (DC) from batteries into alternating current (AC) to drive motors. Washing machines transform 60Hz power into variable-frequency AC to operate drums, and solar inverters convert the DC from solar panels into AC for the power grid. My research focuses on designing and controlling these power conversion systems to make them more efficient, economical, and intelligent.

What motivated you to pursue a career as a professor?

During my doctoral studies, I discovered a deep interest in research. While it was often painful to wrestle with problems that remained unsolved for long periods,

the sense of accomplishment upon finally solving them was so rewarding that it overshadowed all the difficulties. At that time, I envisioned continuing my work in the power electronics field within the industry after graduation. Given the close connection between power electronics and industrial applications, I was eager to directly apply new technologies to real-world industrial settings.

Working in industry, I enjoyed collaborating with experienced colleagues and developing technologies that could be implemented in actual products. However, I found that research topics were somewhat limited and needed to align with corporate goals, directions, and timelines. This led me to miss the joy of research that I experienced during my doctoral studies. Ultimately, I decided to return to academia, believing that as a professor, I could explore the topics I was truly passionate about and approach research in ways that align with my interests and directions. This autonomy and creativity made the path of a professor very appealing to me.

If there was a particular reason you chose UNIST, what would it be?

The field of power electronics, which I specialize in, is closely connected to industry. UNIST's location in Ulsan, the industrial capital of South Korea, surrounded by leading companies like Hyundai Motor Company, HD Hyundai, LG, and Hanwha in nearby Changwon, offers an ideal environment for collaborating with industries at the forefront of technology. This opportunity to conduct research with cutting-edge industrial partners was the primary reason I chose UNIST. As an engineer, I find the greatest fulfillment in seeing the technologies we develop being applied in real-world industrial settings and implemented as products. Additionally, UNIST is home to many highly motivated and academically driven students, who inspire me to work harder and stay motivated alongside them. I believe UNIST provides the perfect environment for pursuing my vision of researching impactful technologies alongside exceptional students and contributing to advancements in industry.

What do you think is the unique strength of the College of IB?

The greatest strength, in my opinion, is the presence of many excellent and warm-hearted professors. Beyond their own research, they genuinely care for their colleagues, including myself, as well as the students. Witnessing their kindness and support has made me feel that this is a place filled with humanity. In the Department of Electrical Engineering, we hold monthly faculty meetings, which provide many opportunities to meet and communicate with other professors. Through these interactions, I've received tremendous support in adapting to the university environment, for which I am always grateful.

What was the most challenging aspect of pursuing your research and academic career? Many students at UNIST aspire to become researchers or faculty members. Could you share advice that might help them?

The most challenging aspect for me was dealing with uncertainty and fear about the future. In my late 20s, while I was in graduate school, I often felt anxious seeing many of my friends already succeeding as professionals or startup founders. Remaining a student made me feel restless, and I threw myself into my research to prove that the path I had chosen was not a mistake. As a result of this dedication, I had moments when my research achievements were recognized by companies or academic societies, which helped reassure me and gave me the confidence to move forward.

Another great source of strength during my graduate years was my lab colleagues, who shared similar struggles. I believe that fellow graduate students are the ones who can best understand each other's challenges. During difficult times, we shared our concerns, comforted one another, and even found reasons to laugh together. Thanks to those moments, I remain close with my lab peers, seniors, and juniors even to this day.

To the students at UNIST who may be facing similar concerns, I would emphasize the importance of talking to those around you and sharing your struggles. Surround yourself with people who can offer advice and encouragement during tough times. Walking this path together with supportive individuals will make the journey much more manageable and fulfilling.

2024 UNIST IB News

provide you with updates on the 2024 UNIST IB

What were some highlights of IB that shone bright this year?

College of IB

UNIST College of IB and Yonsei University College of Nursing Sign MOU

The College of IB at UNIST has signed a Memorandum of Understanding (MOU) with Yonsei University College of Nursing to advance the domestic medical industry and nurture professional healthcare practitioners. Through this agreement, the two institutions will collaborate on joint education programs for healthcare professionals, conduct research on healthcare-related topics, and promote inter-university exchanges to build a robust nursing industry ecosystem. Dean Jae-Young Shim of the College of IB stated, "By collaborating with Yonsei University College of Nursing, we aim to lead the development of medical technologies that reflect the needs of the field and take the lead in establishing a sustainable nursing industry ecosystem." Dean Eui-Geum Oh of Yonsei University College of Nursing added, "This agreement will greatly contribute to nurturing professionals with the expertise and skills to adapt to future changes in the healthcare environment."

College of IB

Recharge Fusion Energy with 'College of IB MERGE 2024'!

The College of IB hosted the "College of IB MERGE 2024" event from May 13 (Monday) to May 14 (Tuesday). This year's theme focused on in-house resource circulation and upcycling waste materials. The event featured various experiential booths and dialogue programs that facilitated interaction between students and faculty. Popular commemorative items such as "R-pet upcycled bags" made from recycled PET bottle materials and "mini hand towels" aimed at reducing paper usage garnered significant enthusiasm. Events related to on-campus resource recycling were fully booked as soon as they began, demonstrating the active interest of the university community in resource circulation. For the second consecutive year, proceeds from the event were fully donated to the development fund, marking "College of IB MERGE" as the first internal event to donate its earnings to charity.

Graduate School of Health Science and Technology

UNIST Partners with Seoul Rehabilitation Hospital for Digital Healthcare Innovations

UNIST is taking a significant step forward in digital healthcare by strengthening its collaboration with clinical institutions. The university recently signed an MOU with Seoul Rehabilitation Hospital to co-develop cutting-edge rehabilitation medical technologies and conduct joint research. The agreement, formalized during a ceremony held at UNIST's main building, outlines plans for the two institutions to work together on various rehabilitation technologies, including platform services spearheaded by Seoul Rehabilitation Hospital's Functional Research Center. The collaboration will also focus on validation studies and the practical application of advanced rehabilitation solutions. Through this partnership, UNIST aims to gain valuable opportunities to demonstrate and refine technologies such as diagnostic and preventive systems, rehabilitation robots, assistive devices, and AI-powered digital healthcare services.

Graduate School of Health Science and Technology

UNIST Hosts Digital Healthcare Hackathon to Foster Startup Ideas

The Graduate School of Health Science and Technology at UNIST, in collaboration with the Ulsan University College of Medicine, held the inaugural "Digital Healthcare Hackathon." This event brought together student teams from diverse academic backgrounds to collaborate intensively and generate innovative startup ideas in the digital healthcare sector.
Key hackathon topics included self-monitoring and management, medical image diagnostics, telemedicine, emergency care, and drug selection. The grand prize was awarded to Team GTA for their app designed to improve communication with individuals on the autism spectrum. Four additional teams—DODO, NEBULA, STEM, and USU—were recognized as outstanding teams. All five teams will have the opportunity to participate in a study tour to UCLA and other U.S. institutions in January.

Department of Biomedical Engineering

UNIST Selected for Two Global Advanced Bio Research Center Projects

UNIST researchers have secured funding for two groundbreaking global collaborative research initiatives. Professors Yoon Kyung Cho from the Department of Biomedical Engineering and Jaeil Lee from the Department of Biological Sciences have been selected for the Ministry of Science and ICT's "Advanced Bio Global Research Center Initiative." With this selection, the two professors will each receive a total of 2 billion KRW over three years to conduct joint research with leading institutions in Europe and Asia on promising biotechnology fields. Professor Jaeil Lee's team will focus on developing synthetic lethal cancer therapies by identifying gene pairs that induce synthetic lethality when combined with existing genetic mutations in cancer cells. Professor Yoon Kyung Cho's team will develop a multi-scale composite system optimized for treating muscle injuries.

Department of Biomedical Engineering

Breakthrough in Antiviral Therapy: 'Blocking Virus Infections at the Source'

In response to the ongoing threat of emerging viruses post-COVID-19, a groundbreaking compound that prevents viral infiltration into the human body has been developed. Professor Kyungjae Myung's team from the Department of Biomedical Engineering at UNIST, in collaboration with the Institute for Basic Science (IBS) Center for Genomic Integrity, has discovered the compound "UNI418," which inhibits coronavirus entry into human cells. UNI418 regulates genomic integrity to block viral penetration, offering a novel approach distinct from existing treatments that target viral proteins to inhibit replication—often with limited efficacy against variants. This study is the first to demonstrate the potential to disrupt the viral infection process in stages, paving the way for therapies effective against both COVID-19 variants and other emerging viruses.

Department of Biomedical Engineering

Behavioral Science Sheds Light on Climate Change Perceptions

A research team led by Professor Dongil Jeong from the Department of Biomedical Engineering at UNIST and Professor Sunhye Seol from the Department of Psychology at Pusan National University, collaborated with 255 international researchers from 63 countries to analyze perceptions of and behavioral responses to climate change. Their analysis revealed that messages emphasizing a bleak future are effective for information sharing on the internet and social media but have little impact on policy support or changing personal beliefs. Such negative messaging can even hinder actions like tree-planting campaigns by inducing a sense of helplessness, highlighting the challenges of fostering behavioral change regarding climate action.

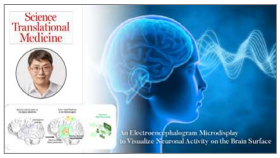
Department of Biomedical Engineering

"Organ-on-a-Chip" Technology Maximizes Drug Delivery Efficiency

A research team at UNIST has leveraged "Organ-on-a-Chip" technology to significantly enhance drug delivery efficiency. Professors Tae-Eun Park and Taejun Kwon from the Department of Biomedical Engineering have demonstrated that replicating the blood-brain barrier with organ-on-a-chip technology can improve the permeability of therapeutic drugs. The researchers expect this technology to contribute to the development of targeted therapies for various organs, including the liver, kidneys, and lungs. "Organ-on-a-chip technology closely mimics biological environments, making it a powerful tool for identifying drug carriers with targeted functions," said co-first author Jungwon Choi. Co-first author Kyungha Kim added, "Our findings also show the potential for organ-on-a-chip technology to model human biological tissues with high precision."

Department of Biomedical Engineering

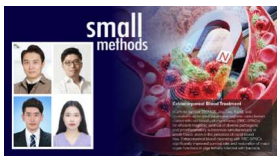
Real-Time Brainwave Display to Improve Brain Surgery Success Rates



Professor Youngbin Choi's team has developed a groundbreaking technology to visualize brain surface neuron activity in real time. This innovation allows surgeons to distinguish between normal and abnormal tissues, significantly enhancing surgical precision. The intracranial EEG-microdisplay (iEEG-microdisplay), created by Professor Choi's team, measures, interprets, and visually displays cortical surface activity in real time. This technology enables an in-depth understanding of brain structure and function during surgery, paving the way for numerous neurosurgical applications."This innovation opens up possibilities for accurately identifying areas of the brain to preserve or excise during surgery," said Professor Choi. "When applied in clinical settings, it could greatly improve outcomes for brain surgery patients."

Department of Biomedical Engineering

Magnetically Extracting Sepsis-Causing Pathogens from Blood



Professors Juheon Kang and Jinmyung Joo from the Department of Biomedical Engineering, in collaboration with Professor Jaehyuk Lee from Bundang Seoul National University Hospital, have developed a novel extracorporeal blood purification technology using red blood cell-superparamagnetic nanoparticle systems. "This research demonstrated that our technique not only reduces sepsis-causing agents in the blood but also improves key cardiovascular and hematological clinical markers while restoring vital organ functions," said Professor Kang. "It effectively removes various pathogens and inflammatory agents from blood and major organs without requiring prior diagnostics, offering groundbreaking therapeutic effects." Professor Kang also highlighted plans to obtain medical device certification for clinical applications.

Department of Biomedical Engineering

Using Brainwave Patterns and Ultrasound to Treat Brain Disorders

A new method for controlling brain neurons using ultrasound stimulation without the need for surgical intervention has been proposed. Professor Jumin Park's research team from the Department of Biomedical Engineering has developed a technology that uses two brainwave-mimicking ultrasound patterns to regulate brain neuron activity. This method employs two brainwave-mimicking ultrasound patterns to regulate brain activity effectively. Compared to existing non-invasive electromagnetic stimulation methods, this technique can penetrate deep into the brain and sustain its effects over time, making it highly promising for treating brain disorders and advancing related research. Our study has not only developed a safe and long-lasting neurostimulation technique but also uncovered the molecular mechanisms underlying ultrasonic neuromodulation," said Professor Park.

Department of Biomedical Engineering

Treating Canine Disc Damage with 'Supine Gel'

Department of Biomedical Engineering Professor Jungbum Kim's startup, Supine Therapeutics, has launched the world's first medical device for spinal surgery in pets, named "Supine Gel," in June. This device, based on biopolymer technology, prevents scar formation in neural tissues, promoting nerve cell regeneration and improving paralysis symptoms. Dogs treated with Supine Gel regained motor function in their legs within an average of two weeks, and no relapses were observed even after two years. "I'm delighted to bring good news to suffering pets and their owners," said Professor Kim, who also plans to expand the product to international markets. His research team is also developing spinal cord injury treatments using patient-specific stem cells and biopolymer materials. With over 30 registered patents, they are advancing toward creating the world's first hydrogel-based treatment for spinal cord injuries.

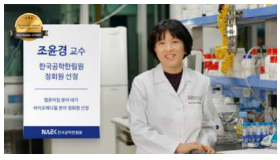
Department of Biomedical Engineering

Jinyoung Yeom Receives Top Academic Award in Radiological Science

Jinyoung Yeom, a doctoral student in the Department of Biomedical Engineering under Professor Joonmo Yang's guidance, received the "Top Academic Award" at the Korean Radiological Science Society's annual conference. This prestigious award recognizes outstanding research contributions in radiological technology and science that advance the field in Korea. Yeom was honored for her presentation titled Photoacoustic-Ultrasound Imaging Technology for Early Cancer Diagnosis. "I am grateful for my advisor's meticulous guidance, which allowed me to delve into promising new medical imaging technologies like laser-ultrasound (photoacoustic) imaging," said Yeom. "I will continue striving to become a leading expert in radiology and medical imaging innovation."

Department of Biomedical Engineering

Professor Yoon Kyung Cho Inducted as a Fellow of the National Academy of Engineering of Korea



Professor Yoon Kyung Cho from the Department of Biomedical Engineering has been inducted as a Fellow of the National Academy of Engineering of Korea (NAEK), the most prestigious engineering organization in the country. On November 25, NAEK announced its 2024 cohort of 50 new Fellows, comprising 25 individuals from academia and 25 from industry. Fellows are selected through a rigorous review process based on their exceptional research and technological innovation contributions that advance national development. The membership is capped at 300 members. Professor Cho was recognized for her groundbreaking work in lab-on-a-chip technology, a field in which she has been named to the Ministry of Science and ICT's "Top 100 National R&D Achievements" three times in the past five years.

Department of Biological Sciences

"Targeting Leukemia Cells Only" – Development of a Nanoparticle Treatment

A collaborative research team led by Professors Sebyung Kang, Eunhee Kim, and Seongho Park has developed nanoparticles capable of selectively targeting and destroying leukemia cells. This protein nanoparticle treatment minimizes side effects by specifically removing cancer cells. "This technology significantly reduces side effects by selectively targeting cancer cells, which marks a major advancement in leukemia treatment," said Professor Kang. First author Heejin Jeon added, "Our study lays the groundwork for developing a safe and targeted therapy for acute myeloid leukemia." The research was published online in the international journal Nano Today on September 4 and was supported by the National Research Foundation of Korea and Ulsan Metropolitan City.

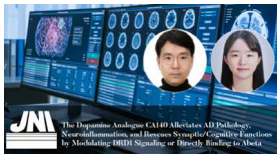
Department of Biological Sciences

REXO5 Gene Opens New Possibilities for Leukemia Treatment

Professor Hongtae Kim's team from the Department of Biological Sciences has identified the role of the REXO5 protein, which is overexpressed in chronic myeloid leukemia (CML). CML arises from genetic mutations in hematopoietic stem cells, leading to the uncontrolled proliferation of abnormal blood cells. While targeted cancer therapies have improved survival rates, resistance to these treatments or disease progression to the acute phase often results in fatal outcomes within a year. The team discovered that the REXO5 gene is significantly overexpressed in acute-phase CML patient samples, marking the first time the link between leukemia progression and DNA damage response has been elucidated. "This discovery of REXO5's molecular mechanism provides foundational insights into leukemia control strategies centered on the DNA damage response," explained Professor Kim.

Department of Biological Sciences

Dopamine–Based Compound 'CA140' Found to Alleviate Alzheimer's Symptoms



Professor Jaeik Kim's research team from the Department of Biological Sciences, in collaboration with Director Hyang-Sook Heo's team from the Korea Brain Research Institute, has demonstrated the efficacy of a newly synthesized dopamine-based compound, CA140, in mitigating Alzheimer's disease symptoms. Dopamine, a key neurotransmitter involved in functions like movement, reward, and memory, has recently been linked to Alzheimer's pathology. When CA140 was administered to animal models, it reduced the accumulation of amyloid-beta plaques and tau protein tangles, key hallmarks of Alzheimer's disease. The treatment also alleviated brain inflammation, restored synaptic function and plasticity, and improved memory deficits. "We have confirmed that dopamine analogs may have significant therapeutic potential not only for Parkinson's disease but also for Alzheimer's disease," said Professor Kim.

Department of Biological Sciences

UNIST Dept. of Biological Sciences Signs MOU with Daegu–Gyeongbuk Advanced Medical Industry Foundation for Drug Development

UNIST (President Yonghoon Lee) Department of Biological Sciences and the New Drug Development Support Center of the Daegu-Gyeongbuk Advanced Medical Industry Foundation (Chairman Jinyoung Yang) signed an MOU on June 11 to collaborate on drug development. The signing ceremony, held in the foundation's conference hall, discussed establishing a cooperative framework to develop treatments for various diseases. The Department of Biological Sciences plans to actively promote joint research, mutual technical support, and the establishment of a drug development network. Additionally, both organizations will work to foster tailored professionals by integrating life sciences with pharmaceutical expertise through active personnel exchange. "This MOU marks a crucial step toward realizing the ambitious dream of transitioning our research achievements from foundational studies to actual drug development," said Dean Changwook Lee.

Department of Biological Sciences

Genomic Instability Linked to Leukemia Identified

Professors Hongtae Kim and Jaill Lee of the Department of Biological Sciences, along with a team from The Catholic University of Korea led by Professors Yoojin Kim and Myoungshin Kim, have identified the role of mutated DDX41 proteins in myelodysplastic syndrome (MDS), a type of blood cancer. Their research reveals the connection between increased genomic instability and the onset of leukemia. "This study provides a detailed understanding of the molecular role of the DDX41 mutation frequently observed in blood cancers and lays the foundation for leukemia control strategies," said Professor Kim. Supported by the National Research Foundation of Korea and the Samsung Science & Technology Foundation, the findings were published online in the prestigious journal Leukemia on March 21.

Department of Biological Sciences

Innate Immunity Sensors and Pathogenic Virus Infections

The mechanisms by which multiple pathogen- and damage-associated molecular patterns activate inflammasome complexes during innate immune responses have been reexamined. This research provides insights into twin and multi-demic scenarios where infectious diseases overlap. Professor Sangjun Lee's team from the Department of Biological Sciences highlighted the operation of multi-sensor inflammasome complexes in recent and current studies. "Our findings shed light on the activation mechanisms of multiple sensors and reaction patterns in inflammasome regulation," said first author Kyungjoo Yoo. "This study serves as a pivotal starting point for understanding the simultaneous outbreaks of COVID-19 and influenza, as well as multi-disease epidemics," added Professor Lee.

Department of Biological Sciences

Eye Drops for Diabetic Retinopathy Treatment

Professor Byeongheon Kang's team from the Department of Biological Sciences, in collaboration with Professor Dongho Park's team from Kyungpook National University Hospital, has developed a groundbreaking treatment for ischemic retinal diseases such as retinopathy of prematurity and diabetic retinopathy. Unlike existing treatments, this innovation is applicable to a broader range of patients and can be delivered as an easy-to-use eye drop. "This study confirms that excessive production of vascular endothelial growth factors is caused by altered mitochondrial properties," explained Professor Kang. First author Soyeon Kim, a researcher at UNIST, noted, "Targeting and regulating hypoxia-induced HIF-1 alpha and mitochondria is a completely novel approach. The developed compound normalizes vascular endothelial growth factors and promotes vascular restoration."

Department of Biological Sciences

Key Cell Discovered to Suppress Breast Cancer Metastasis

A new discovery has identified cells that directly regulate the growth and metastasis of breast cancer, offering promising applications in early diagnosis and therapeutic development. Department of Biological Sciences Professor Jiyeong Park's team revealed that cancer-associated adipocytes in the tumor microenvironment play a significant role in the survival and metastasis of breast cancer cells. "When FAM3C secretions increase during the early stages of breast cancer, the survival of cancer-associated adipocytes improves, while fibrosis is suppressed," explained Professor Park. "Our research demonstrates that these adipocytes regulate breast cancer growth and metastasis through FAM3C secretion." First author Sahee Kim remarked, "This study offers a new perspective on using cancer-associated adipocyte secretions for early diagnosis and metastasis suppression of breast cancer."

Graduate School of Artificial Intelligence

From AlphaGo to LoL : Introducing 'LoLGPT'

A groundbreaking AI model capable of precise match predictions and strategic recommendations has been unveiled. Professor Joo-Yeon Kim from UNIST's Graduate School of Artificial Intelligence, and founder of ARI.ai, introduced "LoLGPT," the world's first generative AI model for eSports. LoLGPT was trained on over 300 million match records from professional players and top-tier users, surpassing human experts in understanding League of Legends (LoL). When players or champions are selected, the model analyzes all historical match data, player and champion characteristics, combinations, expertise levels, and patch updates to predict game dynamics and determine the likely winning team. "Previous AI services for League of Legends struggled to meet the technical demands of professional teams," said Professor Kim. "LoLGPT offers insights beyond human expertise, poised to revolutionize the eSports industry."

Graduate School of Artificial Intelligence

AIGS Professor Seungryul Baek's Team Wins First Place at ECCV Challenge

Professor Seungryul Baek's team from UNIST's Graduate School of Artificial Intelligence achieved first place in the ARCTIC track at the Hands Workshop Challenge during the European Conference on Computer Vision (ECCV). The team, including students Jeongwan Won, Kyunghwan Kwak, Geunyoung Kang, Hyein Hwang, Suhyun Hwang, Junwook Cha, and Jaewook Han, developed a 3D reconstruction technology that minimizes distortion, even from side angles. "Precise 3D mesh reconstruction of human hands is critical because hands constantly interact with objects in real life," said Professor Baek. "This technology can contribute to creating more immersive virtual reality and metaverse experiences."

Graduate School of Artificial Intelligence

"High-Performance AI on Low Power" – Innovations in Light weight Design and Automation

Professor Jaejun Yoo of UNIST's Graduate School of Artificial Intelligence has outlined a vision for the future of AI, ranging from lightweight design to automation. His team presented three groundbreaking papers at the European Conference on Computer Vision (ECCV) 2024 on October 4, demonstrating significant achievements in maximizing AI performance, AI model compression, and multimodal AI for automated design. One of the team's notable accomplishments was compressing GAN (Generative Adversarial Networks) models by up to 323 times without compromising performance. "This opens the door for high-performance AI applications even on edge computing or low-power devices," said Professor Yoo. Sangyeob Yeo, the first author of the research, added, "This achievement significantly expands the potential for high-performance AI implementation on limited resources."

Graduate School of Artificial Intelligence

"Global AI Scholars Gather in Ulsan" – UNIST AI Workshop Concludes Successfully

The Graduate School of Artificial Intelligence hosted the "2024 AI Technology Open Workshop," bringing together academic and industry leaders to discuss collaborative models for advancing AI technology. The event showcased the latest trends in AI and presented recent research achievements from UNIST's Graduate School of Artificial Intelligence. Fourteen participants, including scholars from the University of Oxford and the University of Birmingham, experts from HD Hyundai, and UNIST professors, joined the workshop. Attendees experienced lectures from global scholars and participated in hands-on AI technology demonstrations.

Graduate School of Artificial Intelligence

Grid Diffusion AI Model: Creating Cinematic Videos with Just 1% of Data

Professor Taehwan Kim and his team at UNIST's Graduate School of Artificial Intelligence have developed a "Text-to-Video" technology capable of generating high-quality video content with only 1% of the usual data and minimal computational resources. This model enables efficient learning, allowing for the generation of lengthy videos from limited datasets. Its practicality is enhanced by its ability to adapt existing image editing methodologies for video applications and its scalability in resolution, making it suitable for a wide range of uses in education, entertainment, and other media industries. "The grid diffusion model demonstrates that small-scale labs or companies can also conduct competitive AI research," said first author Taekyung Lee. "AI-generated videos have enormous potential for diverse applications in everyday life and across various industries."

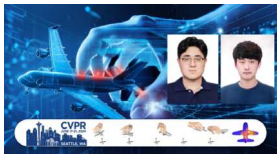
Graduate School of Artificial Intelligence

Protecting Privacy Amid AI Advancement with Federated Learning

As AI technology advances, concerns about user privacy infringement have grown more severe. To address this issue, a groundbreaking federated learning technology has been developed, providing a key solution to safeguard personal information while maintaining AI performance. Professor Seunghwan Yoon's team at UNIST's Graduate School of Artificial Intelligence introduced "Federated Learning for Global Flatness (FedGF)" technology, which enhances AI performance without compromising user privacy. "Federated learning technology will serve as a crucial stepping stone in solving the privacy concerns surrounding AI," said Professor Yoon. First author Taehwan Lee added, "FedGF allows companies to achieve high-performance AI models, making it essential for industries such as IT, healthcare, and autonomous driving."

Graduate School of Artificial Intelligence

"Control Hand Motions with Text Prompts" – 3D Motion Inter–action Technology Developed



Professor Seungryul Baek's team at UNIST has developed a cutting-edge technology called Text2HOI (Text to Hand-Object Interaction), which generates precise hand and object interaction movements based on a simple text prompt. This breakthrough is expected to accelerate commercialization in the 3D virtual reality space by enabling detailed control of complex hand-object interactions through minimal input. "This technology has potential applications in VR/AR, robotics, and medical fields," said Professor Baek. "We will continue conducting research that contributes positively to society." First author Junwook Cha stated, "We hope this research lays the groundwork for more studies exploring the relationship between text prompts and hand-object interaction generation."

Graduate School of Artificial Intelligence

"Transforming Southeastern Industries with AI" : 'AI Innovation Day' Held

The Graduate School of Artificial Intelligence at UNIST hosted "AI Innovation Day," an event showcasing the achievements of the AI Innovation Park initiative and strengthening collaboration with regional stakeholders. The event attracted over 200 participants, including local business leaders, researchers, university professors, students, and Ulsan city officials.

During the event, successful case studies demonstrated how AI has been used to solve real-world challenges in manufacturing and biomedical fields. UNIST professors highlighted projects in quality innovation, process optimization, energy efficiency, workplace safety, disease prediction, and advanced material development, all aimed at enhancing the AI capabilities of local businesses.

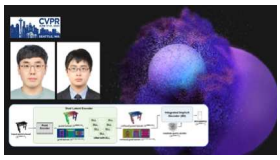
Graduate School of Artificial Intelligence

AI Technology That Retains Existing Knowledge Revolutionizes Autonomous Driving and Security Systems

Professor Seungryul Baek's team at UNIST has developed a cutting-edge technology called Stability Diffusion-based Deep Generative Replay (SDDGR), which allows AI to retain existing knowledge while learning new information. This innovation significantly enhances AI's ability to recognize objects accurately in fields such as smart appliances, robotics, and healthcare. In particular, the SDDGR technology is expected to play a vital role in autonomous vehicles by enabling them to identify various objects on the road and navigate safely. "The SDDGR model will greatly improve the accuracy of continuous object detection across multiple industries," said Professor Baek. First author Junsu Kim added, "This technology will help companies develop superior AI models with lower costs and shorter timelines."

Graduate School of Artificial Intelligence

High-Precision 3D Modeling Technology Opens New Possibilities for Cultural Heritage Restoration



Professor Kyungdon Joo's team at UNIST has developed Dual and Integrated Latent Topologies (DITTO), a cutting-edge 3D modeling technology that precisely reconstructs objects' shapes. This method combines point cloud modeling, which maps objects using points, with grid-based modeling, which encases objects in grid structures. DITTO converts point cloud data into grid forms and simultaneously utilizes both data types to extract critical features. Using the Dynamic Sparse Point Transformer tool, the technology analyzes point cloud data with high precision, enabling the accurate modeling of complex or thin objects. "This research not only improves 3D reconstruction accuracy but also offers innovative approaches for technologies that rely on 3D data," said Professor Joo. "It holds significant potential across industries such as the metaverse, CAD/CAE, and beyond."

Department of Electrical Engineering

Professor Kyuho Lee's Team Wins Prime Minister's Award at Semiconductor Design Contest

Department of Electrical Engineering Professor Kyuho Lee and his Intelligent Systems Lab team (comprising graduate students Jueun Jeong, Seungbin Kim, Wooyoung Jang, Bogyung Seo, and Sangho Lee) received the Prime Minister's Award, the second-highest honor, at the 25th Korea Semiconductor Design Contest. This is the first time a UNIST team has won this prestigious award. The team's submission, a system-on-chip semiconductor for LiDAR sensors, excels at processing spatial information. Compared to commercially available mobile computing platforms used in robotic systems, their design reduced energy consumption by 99.89% and achieved real-time computational speeds up to 54.3 times faster. The innovative design was highly praised for its creativity, technical sophistication, business potential, and completeness.

Department of Electrical Engineering

Professor Kyungrok Kim's Startup Ternel Wins Grand Prize at 'K-Deep Tech Startup Competition'

Ternel Co., a startup founded by Professor Kyungrok Kim, has been awarded the Grand Prize in the Faculty Startup category at the "K-Deep Tech Startup Competition" held on October 17 at COEX in Seoul. Ternel has revolutionized AI semiconductor architecture by developing the world's first ultra-low-power ternary semiconductors, which utilize three values—0, 1, and 2—unlike traditional binary semiconductors. "We will do our best to help Korea take the lead in the system semiconductor market, based on UNIST's research achievements," said Professor Kim. The competition featured innovative startups from Korea's five leading science and technology universities—UNIST, KAIST, GIST, DGIST, and POSTECH—evaluated for their technological innovation and business potential.

Department of Electrical Engineering

Biosensor Revolutionizes Disease Diagnostics and Epidemic Control

Professor Jongwon Lee from the Department of Electrical Engineering, in collaboration with Dr. Jooyeon Jung from the Nano Lithography Research Center at the Korea Institute of Machinery and Materials, has developed a groundbreaking biosensor that dramatically improves protein detection sensitivity. The sensor leverages a metasurface absorber that reacts sensitively to light, allowing accurate protein concentration measurements even in complex biological structures. Unlike conventional methods, this biosensor eliminates the need for bio-markers, enabling fast and precise protein detection at a lower cost. "With surface-enhanced infrared absorption spectroscopy, we can detect trace amounts of protein using strong coupling effects," said Professor Lee. "This technology offers a quick and affordable diagnostic tool, making it easier to manage health during medical diagnosis and treatment."

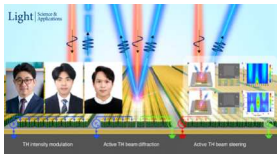
Department of Electrical Engineering

Diagnosing Sleep Apnea in Minutes with a Smartphone App

A team led by Professor Youngjae Byeon from the Department of Electrical Engineering has developed a smartphone app, Sumirang, capable of accurately diagnosing sleep apnea. This innovative system uses an electromagnetic wave-based sensor attached to the abdomen, which detects changes in various biomarkers with remarkable sensitivity. The app provides a convenient alternative to traditional sleep center tests, achieving over 91% accuracy in diagnosing sleep apnea. By simply attaching the sensor and using the smartphone app, users can analyze their sleep data and self-diagnose the condition. "Our goal is to enhance people's health and quality of life with advanced biosensor technology," said Professor Byeon. "Research should not stay confined to the lab; it must be commercialized to realize the true value of science and technology."

Department of Electrical Engineering

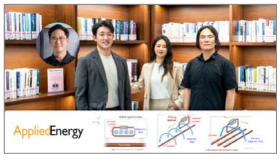
Quantum Light Sources on Ultra-Thin Metasurfaces Controlled by Electricity



Professor Jongwon Lee's team from the Department of Electrical Engineering has developed active transformative nonlinear optical metasurface technology, made of structures smaller than the wavelength of light. This breakthrough is expected to significantly advance fields like quantum light sources and medical diagnostic devices, as well as next-generation communication technologies. The metasurface allows for the creation of optical devices that are compact and lightweight. Using artificial materials thinner than human hair, the team has fabricated paper-thin laser devices. Researcher Sungjin Park noted, "The metasurface surpasses the limits of traditional optical devices by controlling not only the frequency of light but also its phase and amplitude." "This is the first time that the intensity and phase of a nonlinear third harmonic have been controlled electrically," said Professor Lee.

Department of Electrical Engineering

Electric Vehicles That Charge on the Go: Dynamic Wireless Charging Technology



The era of electric vehicles that don't need charging stations is nearing reality. Professor Youngjae Byeon's team from the Department of Electrical Engineering has developed a "wireless power supply track" capable of delivering uninterrupted power to moving vehicles. The system generates a wide and strong magnetic field using wires, eliminating the need for expensive ferromagnetic materials, while enabling seamless movement in all directions. "This technology addresses the challenges of long charging times and limited driving range," said first author Hyunkyung Cho. "By reducing battery size, we can also minimize environmental pollution from resource extraction, contributing to sustainable use of natural resources."

Department of Electrical Engineering

Ultra-Low Power Micro Electronic Nose for Gas Detection and Concentration Measurement

An ultra-low-power microelectronic nose has been developed, capable of identifying gas types and concentrations with high precision. This innovation opens up applications in air quality monitoring, healthcare, food safety, and environmental protection. The research, a collaboration between Professor Jaejoon Kim from the Department of Electrical Engineering and Professor Heungjoo Shin from the Department of Mechanical Engineering, combines nanofabrication with deep learning technology to create a cutting-edge gas sensor. "This ultra-low-power gas sensing device can be used in diverse applications, including real-time wireless monitoring systems," explained Professor Kim. The findings were published in the journals Small and ACS Sensors, with the electronic nose technology featured as cover articles in June 2024.

Department of Electrical Engineering

"Seamless Power": Wireless Power Transfer Technology for Wearable Devices

A new wireless power transfer technology has been developed, offering the potential to extend the usage and efficiency of wearable devices. Professors Jimin Kwon and Yongwoo Lee of the Department of Electrical Engineering have created a method to ensure long-term stability in polymer Schottky diodes, overcoming performance degradation caused by exposure to moisture and oxygen. Lead researcher Yongwoo Lee stated, "While wearable device research has advanced significantly, stability issues during wireless power transfer have remained unresolved. Our newly developed technology enables flexible wireless power transfer that maintains performance for months, marking a substantial contribution to next-generation wearable device research."

Department of Electrical Engineering

Professor Kangil Byun Becomes First Korean Recipient of IEEE AP-S Young Professional Award

Professor Kangil Byun from the Department of Electrical Engineering has been honored as the "Young Professional of the Year" by the IEEE Antennas and Propagation Society (AP-S), becoming the first Korean recipient of this prestigious award. IEEE AP-S is the most respected society in the antennas and propagation field and selects only one young researcher worldwide annually. In addition to this accolade, Professor Byun was named the first Korean "Young Professional Ambassador" in 2023. "I'm thrilled to receive this significant recognition from the leading society in antennas and propagation," said Professor Byun. "This demonstrates that young researchers from Korea can achieve recognition on the global stage with determination and effort."

Department of Computer Science and Engineering

"Catching Bugs to Victory" : S2LAB Wins ICT Challenge Minister's Award

The S2LAB team, led by Professor Yuseok Jeon from the Department of Computer Science and Engineering, consisting of students Jiwon Min, Dongyeon Yoo, and Sungyoon Jeong, won first place at the "ICT Challenge 2024" and received the Minister's Award from the Ministry of Science and ICT. Held from September 23 to 25, the competition featured 69 teams comprising 207 master's and doctoral students from 27 universities across the nation. The team's work, focusing on improving memory safety in programming, was accepted as a paper by the world-renowned IEEE S&P 2024 conference. Team leader Jiwon Min remarked, "It was meaningful to transform our research into a prototype, and we will continue striving for better research outcomes." Professor Jeon added, "We hope this technology serves as a foundation for safely integrating memory-safe languages like Rust into everyday applications."

Department of Computer Science and Engineering

Myungkyun Han Appointed as Professor at Kyungpook National University

Dr. Myungkyun Han, an alumnus of the Department of Computer Science and Engineering, who earned both his bachelor's and doctoral degrees under the guidance of Professor Woongki Baek, has embarked on his academic career as a professor. Starting September 1, he will begin his journey at the School of Computer Science within Kyungpook National University's College of IT, dedicating himself to mentoring the next generation of students. Dr. Han's research has focused on system software for efficiently managing heterogeneous hardware resources in AI and cloud computing. During his time at UNIST, he published eight first-author papers in prestigious conferences and journals under Professor Baek's guidance.

Department of Computer Science and Engineering

Doyeol Oh Wins Minister of National Defense Award at Public Data Competition

"Staying up late every night at the Cyber Knowledge and Information Room in my remote military unit has finally paid off." Doyeol Oh, a student on leave from the Department of Computer Science and Engineering, won the Minister of National Defense Award at the "2024 Public Data Utilization Competition" for developing an AI-powered map service designed to benefit military personnel. His entry, Military Life Map, is an AI-powered map service that provides various benefits, such as discount locations for soldiers, their families, and friends. To enhance user convenience, the service also includes an AI chatbot feature. "I was motivated to create this project because I felt it was unfortunate that retailers offering benefits for soldiers were not well-known," said Oh. "I am thrilled to have won this award, as it reflects the hard work I put in during late nights at my remote base's Cyber Knowledge and Information Room."

Department of Industrial Engineering

"AI Predicts Fuel Cell Productivity" : First Place at INFORMS QSR Manufacturing AI Case Study Competition

Kyungho Kim, a doctoral student from Professor Seonghoon Lim's lab in the Department of Industrial Engineering and Graduate School of Artificial Intelligence, won first place at the 2024 INFORMS QSR Manufacturing AI Case Study Competition. This competition, organized by the Institute for Operations Research and the Management Sciences (INFORMS), focuses on solving real-world industrial problems using manufacturing data. Kim developed a machine learning-based predictive algorithm by analyzing the physical and geometric properties of MFC anode structures. Additionally, he created a deep learning algorithm utilizing 3D structural information. By combining these algorithms into an ensemble model, Kim achieved a prediction accuracy of over 95%. "These prediction techniques will be further developed into academic papers, and their application in manufacturing is expected to have a positive impact across industries," said Kim.

Department of Industrial Engineering

"AI to Pioneer Personalized Financial Services Era": UNIST and KB Securities Sign Agreement

Amidst the transformative impact of AI on financial services, the Department of Industrial Engineering has partnered with KB Securities to advance innovation in financial AI. On October 18, UNIST and KB Securities signed an agreement at KB Securities' headquarters in Yeouido to establish a foundation for AI customer service research and analysis. "With UNIST's outstanding AI research capabilities, we aim to expand AI applications in finance and develop innovative services," said Sungil Kim, Department Head. Professor Yongjae Lee, leading the joint research, added, "This collaboration won't stop at short-term industry-academia projects but will build long-term partnerships to enhance R&D in financial AI." The agreement also includes plans for joint research in AI technologies, identifying exemplary use cases, and fostering scientific talent.

Department of Industrial Engineering

UNIST Partners with Korea Credit Information Services for Financial AI Research

UNIST and Korea Credit Information Services (KCIS), led by President Yusam Choi, have joined forces for financial AI research. On June 14, both organizations signed an agreement at the KCIS headquarters to collaborate on generating and evaluating synthetic data. Professors Yongjae Lee and Saerom Park will utilize pseudonymized data provided by KCIS to conduct their research. "KCIS's data offers comprehensive insights that individual financial institutions might struggle to achieve," said Namhoon Kim, Department Head, and Professor Lee. "When combined with UNIST's AI expertise, this collaboration is expected to deliver tangible benefits to the financial sector." In addition, the partnership aims to establish a network for talent development through student internships and recruitment. Both institutions plan to expand data development and cooperation with other organizations.

Department of Industrial Engineering

Learning Technique Developed to Prevent Performance Degradation in Time-Series AI Models

Professors Sungil Kim and Dongyoung Lim, from the Department of Industrial Engineering and Graduate School of Artificial Intelligence, have developed a new learning technique to address performance degradation in time-series AI models caused by data drift. "Data drift can significantly degrade the performance of time-series AI models, creating a major obstacle in using time-series data across various industries," explained Professor Kim. Professor Lim added, "With the increasing prevalence of data drift due to dynamic environments, this research provides a methodology to train AI models to be robust from the outset. The technique has been both theoretically and experimentally validated." First author Yongkyung Oh remarked, "We plan to continue developing related technologies such as time-series data drift monitoring and learning data reconstruction techniques to make this technology widely usable for domestic companies."

Department of Industrial Engineering

Department of Industrial Engineering Professor Sangjin Kwon's Team Wins Grand Prize at Industrial Management Systems Competition

A team led by Professor Sangjin Kwon from the Department of Industrial Engineering won the Grand Prize at the 22nd University Student Project Competition, hosted by the Korean Society for Industrial and Systems Engineering, on May 10. The team presented an optimization model for rapidly distributing relief supplies during large-scale disasters by integrating trucks and drones. Using mathematical optimization, they proposed deploying drones to areas inaccessible to trucks due to road collapses, effectively overcoming limitations of traditional relief systems. "This award demonstrates the exceptional research capabilities of UNIST students," said Professor Kwon. "We will continue to conduct in-depth research on integrating various mobility methods."

Department of Industrial Engineering

PhD Student Kyungho Kim Selected as Presidential Science Scholar

Kyungho Kim, a PhD student under Professor Seonghoon Lim from the Department of Industrial Engineering, has been selected as a first-term Presidential Science Scholar for graduate students. This new scholarship program, established by the Korea Student Aid Foundation, identifies promising graduate students and supports their growth. This year, 70 PhD and 50 master's students were selected, each receiving a presidential scholarship certificate and a monthly stipend of 2 million KRW. Kim focuses on applying AI to smart manufacturing, developing solutions to challenges such as data scarcity and uncertainty in manufacturing environments. "It is an honor to be selected as a Presidential Science Scholar," Kim remarked. "I will continue to pursue leading research in smart manufacturing and AI, contributing to advancements in both research and industry."

Department of Industrial Engineering

Shining Example : Professor Seonghoon Lim and Amore-pacific's Lighthouse Factory

Professor Seonghoon Lim from the Department of Industrial Engineering successfully guided Amorepacific's Beauty Park to be recognized as a Global Lighthouse Network by the World Economic Forum. This designation is awarded to manufacturing facilities that integrate core technologies of the Fourth Industrial Revolution to lead the future of manufacturing. Amorepacific's Beauty Park is now the fourth such factory in South Korea, joining POSCO, LS ELECTRIC, and LG Electronics. Professor Lim played a pivotal role in the entire process, from documentation submission to on-site evaluations and the final selection, offering technical expertise to showcase how advanced technologies are applied in the field.

Department of Industrial Engineering

Professor Yongjae Lee's Team Wins Best Poster Award at ICAIF

Professor Yongjae Lee's research team from the Department of Industrial Engineering received the Best Poster Presentation Award at the ACM International Conference on AI in Finance (ICAIF). Their research explored using large language models (LLMs) such as ChatGPT to analyze securities analysts' reports. The study demonstrated that LLMs can extract valuable insights from analysts' reports, showcasing their utility in financial analysis. "This award reflects the collective hard work and dedication of our students," said Professor Lee. "It's rewarding to see our research gaining international recognition in the rapidly evolving field of AI in finance. We will continue striving for excellence in this domain alongside our students."

Department of Design

Professor Chajung Kim's Team Develops 'Device to Prevent Depression'

A breakthrough device has been developed by Professor Chajung Kim's team from the Department of Design, enabling individuals to manage negative emotions and prevent depression. The team found that around 20% of the population exhibits anxious attachment tendencies and created a device to help these individuals alleviate negative emotions in their daily lives. "This device offers a novel method for individuals with anxious attachment to independently alleviate negative emotions, potentially serving as an alternative to professional psychological counseling," said Professor Kim. The research was published online in the International Journal of Design on August 31 and was supported by the National Research Foundation of Korea.

Department of Design

Department of Design Wins Four Awards at the Red Dot Design Awards!

Among the winning designs was Respa Chups, an innovative inhaler for children with asthma, designed in the form of a lollipop. This inhaler features a color-changing film that allows children to visually confirm whether they are using the correct inhalation pressure. For winter safety, the department developed Safie, a smart ice safety detection device that measures and displays ice thickness and stability, with color changes to warn users of potential hazards. Another notable creation, Lumivita, is a wearable device designed to prevent suffocation accidents in industrial settings. It detects toxic gases and alerts workers through blinking lights and color changes, with compatibility for attachment to safety helmets. Lastly, Careever is a digital service aimed at assisting the elderly and their caregivers. This service reduces loneliness, facilitates family communication, and includes a calendar for care scheduling and a feature for sharing caregiving records with family members.

Department of Design

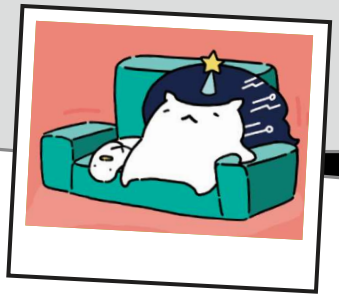
Department of Design Collaborates with MMCA for Climate Crisis Policy Development

In collaboration with the National Museum of Modern and Contemporary Art (MMCA), the Department of Design of UNIST explored policy solutions for addressing the climate crisis. Led by Professor Seungho Lee, the team hosted a participatory workshop where 164 citizens proposed actionable ideas, such as carbon-neutral regulations for the museum. These ideas were refined through subsequent workshops targeting different age groups, from children to decision-makers, culminating in comprehensive carbon-neutral policies. "This project exemplifies design thinking, testing future ideas while grounding them in present realities," said researcher Hyori Lee. "It highlighted the value of creative approaches to addressing carbon neutrality," added researcher Minjoo Han. Researcher Byungguk Kwak emphasized, "Identifying and aligning with citizens' visions for a carbon-neutral future was particularly meaningful."

Department of Design

Department of Design Hosts Joint Workshop with University of Tokyo DLX Lab – "Charting New Horizons in Future Mobility"

The Department of Design at UNIST collaborated with the Design Led 'X' (DLX) platform design lab of the University of Tokyo to host a workshop aimed at combining educational and research capabilities to create future mobility design concepts. The workshop explored the potential of 6G technology in advancing future mobility and focused on innovative use cases for real-life applications. Bertha Barrera and Da-bin Lee, graduate students from the Department of Design, shared their experiences: "The workshop allowed us to explore concept design incorporating 6G technology and ubiquitous systems. We also learned the importance of communication in design through prototyping and presentations." Eun-ho Kim, a freshman student, commented, "The workshop provided valuable experience in concept development and collaboration. I realized the significance of clearly conveying ideas to others."



Editor's note

벌써! 5호가 되었습니다. 이번 소식지 디자인은 어떠신지요? 흑백요리사를 디자인적으로, 그리고 내용적으로도 같이 버무려볼려고 했는데... 디자인에는 반영을 하였으나 내용적으로는 음... 세상일이 참 마음대로 안되더라구요... 그래도 소식지를 만들때면 다사다난했던 한 해를 마무리하는 느낌이 듭니다. 내년에도 만들 수 있겠지요?
본격적인 추위에 건강 조심하세요 여러분. 곧 다시 만나요!

OMG! It's the 5th issue. How do you like the design of this newsletter? I tried to blend the "black-and-white chef" concept in terms of design and content... I was able to reflect it in the design, but as for the content... well, things never really go the way you plan in life. Still, whenever I create the newsletter, it feels like wrapping up a year full of ups and downs. I hope we can make more next year. Please take care of your health in this sharp cold, everyone. See you soon!

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