SCAN THIS PAGE to step inside this building

INSIDE GAIA

A FIRST LOOK AT ASIA’S LARGEST WOODEN BUILDING ON OUR SUSTAINABLE CAMPUS

YOUR GUIDE TO
✔ ChatGPT
✔ Emojis
✔ Choosing a uni

INSIDE: WIN a smartwatch worth $468 (and other great prizes)
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Welcome to Gaia, the new home of the Nanyang Business School. We ask two student influencers from the school to show us their favourite spots in Asia’s largest wooden building.

Rewind back to August 2018. NTU had just unveiled its most ambitious sustainable construction yet – codenamed Academic Building South. We saw the artist’s impressions and read the specs. We knew it was big and bold. And now, we know it is beautiful.

Of course, it’s hardly been a secret. You’ve seen it from the outside as it has taken shape. You might even have voted when we polled for a name for the building. Recently, you’ve seen it from the inside too as you walked through it to get from The Hive to the (similarly wood-themed) bus stop. But oh boy, you’ve seen nothing yet!
A HINT OF HISTORY
Gaia stands on the site of the former Innovation Centre. But not all is lost because as a sustainable university, we have salvaged some of its bricks and used them in creating many of the walls here. In a retro nod to Gaia’s past, the exposed bricks make a great backdrop for an #ootd shot.

TIMBER ANATOMY
Gaia, named after the Greek goddess of the Earth, is the largest building made from mass-engineered timber in Asia, and the second such building on campus after The Wave, NTU’s sports complex. Gaia’s timber composition and how it was fabricated give it a much lower carbon footprint than traditional concrete buildings.

WOOD YOU LIKE SOME CONVENIENCE?
Not to throw shade at Yunnan Garden but commuting to NTU is a little more exciting and comfortable with this new bus stop replacing the one at Yunnan Garden. Dressed in similar au naturel wood, it also offers a direct covered route to the South Spine and The Hive.
STEP INTO SCANDINAVIA

Stretching from the first to the third storeys, and overlooking an outdoor amphitheatre, the bespoke grand staircase will leave you breathless for the right reasons. Its extravagant presence takes you a lot further than the next floor. Pause here for a moment and you might even feel like you’re at a Scandinavian ski lodge, no cap.

“Gaia has such a beautiful and timeless architecture that exudes a serene, natural atmosphere. I can already imagine our fellow NTU students creating a lot of memorable experiences here! The brilliantly designed facilities are a testament to NTU’s dedication to delivering a world-class education.”

- Final-year business student Chang Jit Wei

PICTURE YOURSELF HERE

Here’s an Instagrammable nook that overlooks the Yunnan Garden. Designed by a team of architects that includes Japanese maestro Toyo Ito, Gaia is full of spots like this one that bring the outside inside.
I’m sure the new building will be adored by many. Its architectural design highlights the use of natural light, creating an almost Bali resort-esque feel that could offer a much-needed escape from the daily school grind. I especially love the rooftop view overlooking The Hive and I highly recommend taking a few snaps up there! We are really fortunate to have this impressive building at the heart of our campus.”

- Final-year business student Hailey Teo

FRIEND ZONE
Friendships are what uni life is about and informal spaces like this are perfect for BFFs Hailey and Jit Wei, who have been pals since their junior college days, to catch up between classes. We hear this might be the site of a café in the future too.

LIQUID ASSETS
Enveloped in what sounds like a bubbling brook here, it literally feels like spring break. When those precious cool nights arrive, this is where you want to be – under the stars, surrounded by friends, and perhaps with a live performance in front of you.

SQUAD GOALS
With 68 breakout rooms in the building, there’s always a comfortable space for group projects, consultation with profs, or a study session with friends. Here’s an early tip from us: Find one with a view of Yunnan Garden for a generous dose of natural light and lush views.

FIRST CLASS FACILITIES
If you’re a business school student, lucky you. From next semester, classrooms like this one are where you’ll be ensconced – for interactive lessons and even log cabin-style fireside chats. Gaia is equipped with a 190-seat auditorium, 12 lecture theatres, 13 seminar rooms, five meeting rooms and more than 70 small study rooms. Just try not to get distracted by the killer views on offer.
Outdoor terraces on this six-storey building provide breathtaking angles of the hood. On one end, you’ll find The Hive, and on the other, panoramic views beyond the campus edge. Take in the sights yourself when Gaia opens, and see which you prefer.

**VIEWFINDER**

**DOWN TO EARTH**

Gaia’s eco Scandi-style minimalism runs in every corridor, on every floor. Extensive open areas, terraces and air wells ventilate the building naturally. Energy-saving devices like LED lights, high-efficiency aircon chillers and heat-deflecting glass also help make Gaia the eighth building on campus, and one of only 16 in Singapore, to nab the Green Mark Platinum Zero Energy award, certifying that it consumes only as much energy as it produces.

**CONTEST TIME**

You’ve taken Hailey and Jit Wei’s tour of Gaia. Now it’s your turn to show us your favourite part of the building.

**HEY! SCAN THIS VISUAL**

to submit a creative shot or reel on “my favourite time of day at Gaia”, along with a caption, for a chance to win a Huawei smartwatch worth $468 and to see your work featured on our NTU social media channels.

**HEY! AR**

SCAN THIS PHOTO to catch the best views in the house.
Questions you should ask before you choose a university

Your varsity years will be some of the most transformative ones for you, and it begins with picking a university that fits your ambitions. But first, you need to ask the right questions.

Are overseas exchanges only for top students?
University isn’t just about getting a good GPA—it’s about discovering who you really are, making connections and learning life skills. And there’s no better way to do these than having a stint or two overseas. At NTU, every student, Dean’s Lister or not, has the opportunity to go overseas. Exchange programmes aren’t your only ticket overseas too. Language immersion programmes, internships and research stints abroad, and field trips to foreign places are other reasons why undergrads take flight. If your finances are tight, you can apply for financial assistance for these trips.

Am I guaranteed a room on campus?
In NTU, freshmen are guaranteed a room on campus. You can also apply to stay together with a friend or a sibling of the same gender. Beat the morning blues by waking up just before your lectures, gain real independence as you carry out everyday activities like laundry or meal planning, and perhaps most importantly, learn to manage your own time as you schedule study time between commitments to hall CCAs and social traditions like supper nights. Through it all, you’ll experience the joy of having buddies who will celebrate with you and help you navigate through any rough patches.

Are NTU graduates able to find jobs?
NTU graduates are in demand. More than nine in 10 graduates from the Class of 2022 secured full-time jobs within four months of getting their degrees. They commanded a mean gross monthly salary of $4,443, an increase from $4,000 in 2021. Graduates from NTU’s Data Science and Artificial Intelligence programme and the Double Degree in Business and Computer Engineering/Science programme top the charts with mean starting salaries of $6,647 and $6,307 respectively.

What percentage of undergraduates actually do professional internships?
All NTU undergraduates have to complete at least one internship as part of their curriculum. Whether with heavyweights such as Rolls-Royce and Dyson, or start-ups around the world, internships give you an edge in employability. How do we know? Almost a third of NTU students receive permanent job offers at the end of their internship stints. You may not realise it yet, but other than experience in the working world, internships give you incredible insights into your passions and interests. Some students who do multiple internships have even used these stints to suss out their career path with conviction.

Can I take a year or two off if I want to pursue another interest?
Taking a gap year is a leap of faith that has paid off for some NTU students and grads, who have taken leaves of absence to start their own businesses, pursue sports competitively, take non-credit bearing internships, volunteer for social causes, or even to work in another country. NTU students are allowed to take up to three gap years over the course of their studies, although some who choose this route opt for just a semester’s leave.

How are classes conducted?
You pull out a chair, bring out your notes and join a lecture—in the comfort of your home or hall and at your own time. In the flipped classroom approach used in many NTU modules, you go through the course content before in-person classes, which involves finding solutions to problems in groups in smart classrooms and mega learning studios. Your classes too might incorporate virtual and augmented reality technology. If you’re a hall resident, Residential Education gives you the chance to pick up skills at your halls, such as in app development, molecular gastronomy, fermenting beer and cheese, and even Latin dance and social yoga.

Where can I get groceries and meals?
With more than 100 food stalls and F&B outlets on campus, you’ll never go hungry. The list of stalls and cafes is constantly being refreshed too—the latest chain to come to NTU is Domino’s Pizza at Hall 1. And if you are preparing a meal for yourself or your hall mates, you can get fresh meats and vegetables from two fully-stocked supermarkets on campus, Prime Supermarket at the North Spine Plaza and Giant at Hall 2, which also has a 7-Eleven that’s open round the clock.
The harsh truth about Antarctica

The frozen continent may seem distant to most of us, yet what happens there has implications on coastal regions worldwide. PhD student Tan Fangyi reflects on her week-long expedition to the remote land in February.

Climate scientist Tan Fangyi is no stranger to the wonders of nature. Navigating around rocky beaches and diving underwater are all in a day’s work for her.

But years of such outdoor escapades could not prepare the postdoctoral student for the landscape that greeted her in Antarctica.

“It took my breath away. I felt like I had landed on a whole different planet. All I could see around me was barren grey to greenish-grey bedrock,” Fangyi says.

The youngest member of an NTU expedition team, Fangyi was on a mission to study the effects of climate change. With a bag full of equipment for air sampling in tow, she braved fierce winds and frigid temperatures.

It was the first time NTU had sent researchers to the remote land to observe first-hand the melting Antarctic ice sheet, which is causing sea levels to rise.

From their lodging of a large cruise ship, they set out daily on a small inflatable dinghy to collect data on microorganisms in the air.

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Fangyi using a portable air sampling device to collect atmospheric samples from the cruise ship that she called home for seven days.

A penguin colony.
Recounting her trip, Fangyi says one indelible memory was the unblocked view of the pristine environment. “The ice sheets look exactly like those we see in schematics in papers. The scale of it was phenomenal,” she says.

But as a geology student, Fangyi was also quick to notice worrying signs of the climate crisis. For example, she noticed heavily crevassed and fractured ice shelves, with the ice cliffs collaring their edges on the verge of collapse. The potential collapse of marine-based ice sheets in Antarctica poses uncertainties about future sea levels.

Samples taken during the trip are now in NTU’s laboratories, where Fangyi and an interdisciplinary team of researchers are working to unravel the secrets of the frozen continent.

“The West Antarctic ice sheet alone has enough ice to raise sea levels by three to five metres, and that ice sheet is a lot bigger than what we saw in the Antarctic Peninsula,” Fangyi explains. She adds: “Seeing the processes up close has left me with new perspectives and given me a renewed sense of purpose. Our research contributes to a better understanding of how the melting of ice sheets has impacted Singapore in the past, providing important context for future sea levels.”

The potential collapse of marine-based ice sheets in Antarctica poses uncertainties about future sea levels.
**FYI**

**SCENE**

**HEARD**

“As we approach the completion of our education journey at NTU, let us leave behind a meaningful legacy by contributing to Class Gift 2023. This is an opportunity to give back to the community that has supported us, and to make a positive impact on future generations of NTU students. Our collective contribution, no matter the amount, can make a significant difference to the lives of our juniors.”

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**GLOBAL CLOUT**

NTU’s commitment to deepening interdisciplinary research to address humanity’s grand challenges has been recognised as it placed seventh globally among research organisations most cited by the world’s top innovators. The university is the only Singapore organisation in the top 10. Scientific intelligence firm Clarivate, which released the list in February, also recently named NTU as the Singapore institution with the largest number of influential scientists.

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**SCENTS OF BELONGING**

We’ve captured NTU memories in photos and conversations with NTU students, faculty, staff and alumni. Scents of Belonging is a fragrance that takes us back to campus, wherever we are. Fresh citrus top notes are blended with soothing floral scents of rose and freesia, with base notes of wood and musk representing our modern infrastructure and heritage buildings. Smells good? Snag a bottle by joining any of the NTU giving programmes this year.

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**PROPELLING TO VICTORY**

A team of aerospace engineering aces flew the NTU flag and took top spot in an aircraft design competition organised by the American Institute of Aeronautics and Astronautics, the first time in recent years a university outside the US has emerged as champs. Under the wing of Dr Chow Wai Tuck, Class of 2022 grads Tang Wen Yue, Ler Puay Him, Tock Wenhui, Tamas Szecsenyi, Kenneth Neoh and Lee Chering En wowed the judges with their entry, a purpose-built firefighting aircraft equipped with the latest technology for safe low-level flying, while still being economical to operate.

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**A SCHOLARSHIP FOR THE TALENTED**

Are you a performer, an athlete or an entrepreneur, or gifted in other ways? The new NTU Talent Scholarship might be for you. Set to be introduced next year, it provides a pathway for undergraduates who have demonstrated their success and passion beyond the classroom can apply for the scholarship, which offers benefits like coverage of tuition fees and allowances for living and accommodation, as well as a $5,000 grant that can be used towards nurturing your talent. Keep your eye out for it!

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**THE RAIN TREE MAKER**

NTU’s contributions to NPark’s OneMillionTrees movement and the Green Nation Pledge continue with an initiative to replace about 30 of the campus’ unhealthy rain trees and to plant more than 200 new ones, sponsored by a local plant nursery. The exercise has already commenced with more than 60 young rain trees put into the ground and complements the planting of 100 new trees late last year and another 100 saplings during NTU Service Week this year by the NTU community. Have you spotted these sprouts?

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**STUDENT IN THE LIMELIGHT**

Flying off to Los Angeles to attend an awards ceremony is exciting enough, but imagine what it would be like to have the movie you made screened during the event. This was what final-year media arts student Maggie Huang lived out as she was nominated for best student filmmaker at the inaugural Sony Future Filmmaker Awards. Way to go!
Enter any library and peer at the laptop screens of students writing their research papers and cramming for their exams. On some of the displays, you might find a familiar green logo emblazoned on one of the tabs.

As someone who has used ChatGPT, I appreciate its many practical uses. For example, I can use it to speed up my workflow, or to get inspiration when I feel weighed down by a mental block.

Here, I share some ways you can use the platform responsibly to help you navigate university life, not just academically, but also in other aspects, such as preparing for internships or co-curricular activities (CCAs). A caveat though – the bot has been known to occasionally spew fiction instead of the facts you’re expecting. Also, when it comes to using ChatGPT for school, it’s best to follow the guidelines from your course instructors.

**USE CHATGPT TO…**

**… PROOFREAD YOUR FINAL DRAFT**

It is 2am. You have just finished churning out a 3,000-word essay on environmental degradation. The submission is at 9am and you are too exhausted to check the paper a final time before uploading it onto NTULearn.

Okay, you have an excuse to let ChatGPT comb through it for basic grammatical errors. The chatbot can clean up your work and rephrase awkward sentence structures to make the draft more ready for submission. And it corrects spelling errors.

Example prompt: “Check the spelling, grammar and sentence structure of this essay, using British English: [your text]”

**… SUGGEST THE STRUCTURE YOU NEED FOR A RESEARCH PAPER TO HELP YOU GET STARTED ON IT**

Ever received a topic for your academic essay but have no idea where to begin? ChatGPT can speed up the legwork on days when you’re particularly strapped for time, although you’ll be doing yourself a favour by pondering the topic without help first. Key in the details of your paper’s subject matter as the ChatGPT prompt to get a suggested outline.


With the recommended structure, you’ll have a better sense of what to research outside of the platform to fill up the gaps in your knowledge. This will give you a direction to work towards and tweak along the way as you get more familiar with the topic.

Remember that you should always add your own unique take, which will secure you a higher grade. So don’t just stop at blindly following what the web platform proposes – ChatGPT is not a sentient thinker, unlike you.

**USE CHATGPT TO…**

**… BRAINSTORM IDEAS FOR PHOTOGRAPHY SHOTS**

Any university event would not be complete without photography. With the end of pandemic restrictions, NTU events are back in full swing. Taking shots that capture your CCA’s essence during their signature events is an important consideration.

ChatGPT can aid you in the brainstorming process. Key in the details of your shoot and ask for potential photo ideas for the event.

Example prompt: “What photos can I take for a solo dance performance by a male ballet dancer for an open house showcase?”

The answers can guide you on what to look out for while you are behind the viewfinder. While the list that ChatGPT generates is not exhaustive, it is a good starting point. You can also use this method if you are taking photography courses.

**… PREPARE FOR INTERNSHIP AND JOB INTERVIEWS**

Going for interviews is part and parcel of any internship or job hunt. Going unprepared, without any idea of what interviewers are going to ask, can be a nerve-racking experience. Use ChatGPT to reduce some of that uncertainty.

Just describe the context of the interview and ask ChatGPT for likely questions. The AI chatbot will provide a response better tailored to your needs if you state your academic background and key in the detailed requirements of the role you’re applying for.

Example prompt: “I am a chemistry major with a strong interest in sustainability and I am going for an interview for the following job: [list job title and full job requirements]. What are some interview questions that could come up?”

The output may not be perfect. But you can always edit the copy and put your own flourishes to the text once ChatGPT has completed the main revamp.

**USE CHATGPT TO…**

**… REPHRASE YOUR TEXT FOR A SPECIFIC PURPOSE, LIKE AN EMCEE SCRIPT**

Not everyone has the best command of language. And even seasoned writers get stuck sometimes when thinking of alternative ways to convey an idea. Instead of ripping your hair out at the screen, use ChatGPT to get you past these roadblocks more quickly.

If you need to whip up an emcee script for your CCA’s event, ChatGPT is your friendly sidekick. Come up with a rough draft of your main points, no matter how unpolished it may sound. After that, you can direct the chatbot to rewrite the whole text in the tone and style of your choice.

Example prompt: “My school club is putting up a charity concert at Sentosa to encourage staff and students from my school to donate money to animal shelters in Singapore. Rephrase this text for the event’s emcee script: [your text]”

The output may not be perfect. But you can always edit the copy and put your own flourishes to the text once ChatGPT has completed the main revamp.
USE CHATGPT TO...

... CREATE FLASHCARDS TO HELP YOU REMEMBER KEY CONTENT FOR EXAMINATIONS

Making flashcards does not have to be a manual process anymore. Just ask ChatGPT to help you generate a quick list for you to refer to before heading into the exam hall.

Example prompt: "Create flashcards for a university-level neurology examination."

Along the way, you can modify the prompt to make it more specific if you need flashcards for additional concepts. Additionally, remember to double-check the answers against your lecture notes beforehand to ensure that what ChatGPT has given is accurate.

... EXPLAIN COMPLEX CONCEPTS IN SIMPLE TERMS

Sometimes, we may come across concepts in a course that we have difficulty understanding. Even explanations offered by lecturers may still be confusing. As a next step, why not get ChatGPT to provide a simpler description of the tough idea?

The trick is to ask ChatGPT to explain the concept to a young child. The AI platform will adjust its tone and cater to the learning level requested.

An example prompt is: "Explain existentialism to a 10-year-old."

With ChatGPT’s simplified answer, you can then try to look at your professor’s notes again and gain a deeper mastery of the new concept. Remember that learning is a journey.

USE CHATGPT TO...

... DEVELOP SCHEDULES TO PLAN YOUR TIME

Your finals are weeks away, yet you feel that you have not been studying adequately and are not prepared for the exams. So how do you ensure that you cover the course content in a limited period?

Tell ChatGPT the days that you are free, at what time you like to study and the topics you need to complete by a certain date. ChatGPT can come up with a plan for you to revise content-heavy subjects in a short time span.

Here is an example prompt: “I’m free on Mondays, Tuesdays and Saturdays. I have only 2 weeks left for my final exam. I need a crash study plan for my ‘Introduction to Gender and Diversity’ class. While every topic should be covered equally, I need some extra focus on the topic of disability studies. I’ll have 6 hours to study on each free day. Provide a revision plan in the schedule.”

To improve the results, you can ask ChatGPT to refine the schedule and allocate more or less time to specific topics. You can also request to add short breaks during study hours. Good luck!
Hey! received a warm reception when we made pit stops at Hwa Chong Institution and Yishun Innova Junior College back in March. So what did the students think of Hey!?

“After reading the magazine, I am now more interested in NTU. I think the use of AR is very creative and certainly would be appealing to many others.”

Key Lin, JC 2 (centre)

“Hey! is very vibrant and it’s unique in being a magazine that incorporates augmented reality features. I’m open to studying at NTU and am considering the business and economics programme.”

Soh Zhao Meng, JC 1 (centre)

The winner of the hottest item in the Hey! readership survey lucky draw has been crowned. NTU student Anthony Chew collects his prize – a brand new Huawei notebook – and shares his thoughts on Hey!

It turns out that nabbing an exclusive NTU T-shirt during the Hey! roadshow in March was a mere appetiser for this NTU undergrad. As the grand prize winner of the 2023 Hey! readership survey lucky draw, Anthony has skipped away with a sponsored Huawei Matebook 16s worth more than $2,200.

With over a thousand other participants picking the laptop as their preferred prize from among the set of over 100 freebies up for grabs, fortune really favoured the second-year School of Computer Science & Engineering student, who revealed that this was his first time winning a lucky draw. He also tells Hey! that he plans to replace his ageing laptop with this new one.

His first experience with Hey!’s augmented reality (AR) capabilities was during the roadshow.

“I most enjoyed the AR elements I could physically interact with, such as the 3D bunny,” he says.

Fittingly, this led him down a rabbit hole.

“I like reading about campus life, students’ achievements and especially food, and found Hey! to be a good source of information for these. So after reading this issue, I went to look for past issues on the Hey! website,” he lets on.

One food article he relished was a story (published eight years ago!) in which food influencer and NTU alumna Miss Tam Chiak returned to campus for a food hunt.

And what would he like to see more of in Hey!, besides satisfying nosh?

“As a computer science student, I would like to see more on tech developments like blockchain and NFTs. And of course, more 3D AR objects.”

Roger that and congratulations again, Anthony. We hope you enjoy your prize and the bumper crop of 3D AR elements in this issue.

For a chance to win a Huawei smartwatch, flip to page 12. And keep up to date on Hey! roadshows with exclusive giveaways by following NTU’s socials.
A RUNNER’S GUIDE TO THE NTU CAMPUS

Get both an endorphin rush and a fill of nature with these campus running routes recommended by Muhammad Syafiq Bin Haniss and Ngor Cheng En from the NTU Runners’ Club.

**Long roads, running tracks and sheer biodiversity – NTU makes for a great location to squeeze some miles in while discovering a whole other side of campus not usually seen while rushing from class to class. Whether you’re a casual runner looking to get a leg-up on your fitness goals, or a serious marathoner gunning for a new PB, NTU’s campus has a route for your needs.**

**ROUTE 1**

**The quick workout route (3km)**

A quick jog can shake off the day’s fatigue, enhance your mood and even make you more creative. This flat, easy route near secondary forest is perfect for casual runners who want to squeeze in a quick run with minimal hills and enjoy NTU’s proximity to nature.

**Tips:**
- Get on the blue track, which provides a safe, easy route to follow, says final-year communication student Cheng En (right).
- You can speed up along Nanyang Crescent as there is almost no need for road crossings and it is not very high in human traffic.

**ROUTE 2**

**The scenic route (5km)**

Take in the lush greenery and scenic sights on this route through some of NTU’s best outdoor highlights.

**Tips:**
- At Yunnan Garden, go easy as you weave in between the greenery and heritage structures. Rehydrate at the outdoor water coolers and visit the fitness stations for a full-body workout.
- Be mindful of the changing terrain, from the pavement to the boardwalk to the paved stones and trails within the garden.

**ROUTE 3**

**“King of the hills” route (7km)**

Training for a 10k, marathon or some other race? Looking to smash your PB and mix with the greats? Put on your racing shoes and get ready for a tough workout that covers NTU’s hilly terrain.

**Tips:**
- The steepest inclines are from the southernmost part of the campus past the School of Biological Sciences (appropriately known as “Heartbreak Hill” on Strava) and from The Hive towards the University Health Service building. Give yourself ample time on the flatter parts of the route to warm up.

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**GENERAL RUNNING TIPS**

- Synchronise your breaths with your steps to avoid getting breathless.
- Try a three-step breathing technique: one quick inhale through the nose, a short open mouth exhale and then a forceful blowing exhale.
- You know you’re running at a comfortable pace when you can have a conversation while running.
- Take shorter, quicker steps and land with your foot below your centre of gravity to better conserve energy.
- Relax your shoulders and swing your arms.
- To truly enjoy running, choose a comfortable pace that does not get you panting so quickly. This way, you will find yourself more aware of your surroundings and will be able to enjoy and take in all the sights around you.
IF IT’S GREEN, YOU BATT HE’S ON IT

Undergrad and serial innovator Carlo Charles is bringing an innovation from NTU’s labs to life with his NTU allies. And that’s just the tip of the iceberg for the man who’s on a mission to save the Earth.

The paper battery, a technology developed by NTU scientists, is a real game-changer and Carlo, an NTU undergrad, has plans to bring it to the world.

“When I first read about the paper batteries in an article, I couldn’t sleep the whole night. I kept thinking about its potential. So I searched for the study’s co-lead author Prof Fan Hongjin’s email and invited him to lunch the next day. We met and talked for several hours and realised that our values and visions were very similar,” says the second-year mechanical engineering student.

Soon after, the parties would sign a letter of intent, giving Carlo’s mechanical engineering student. Soon after, the parties would sign a letter of intent, giving Carlo’s commitment to sustainability comes from what he experienced as a child in the Philippines before he moved to Singapore in his late teens and became a Singapore citizen. He says: “I grew up in a place where we suffered from natural disasters like typhoons and flash floods. We saw our friends’ lives change overnight. They could be happy with their family one day and grieving the loss of someone or of their home the next. Can you imagine seeing your entire house fly away? It almost happened to us once too. We didn’t have water and electricity for a week and even got robbed. As I got more mature, I started to question why this was happening. When I learnt it was because of climate change, which is ultimately our doing, it just made no sense to me. I wanted to make a change and that’s when I started tinkering around.”

He joined Makerspace Manila, where he learnt not only innovative thinking and human-centric design, but a valuable lesson from its CEO — to not let his young age or anything else limit him. His first creation at 14, an air purifier made from recycled materials, cemented his passion for invention. Another at 16, a tiny device designed to bring light to people without electricity with just an antenna, caught the attention of National Geographic magazine.

PITCHING TO THE BIG GUNS FOR CHANGE

Carlo’s commitment to sustainability comes from what he experienced as a child in the Philippines before he moved to Singapore in his late teens and became a Singapore citizen.

Carlo’s prototype for AquaLoop, an off-grid marinelife buoy that gathers and transmits relevant ocean data to the shore.

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And a week before he enlisted in National Service, he presented to Google and the US Embassy plans for a device to wirelessly study the results of climate change in oceans, securing their investments in it.

He has continued to pitch his ideas to the big guns, such as the United Nations and members of India’s Prime Minister’s office, opening doors for paper batteries to be tested in other countries.

CONNECTING WITH SUSTAINABILITY SOULMATES

At NTU, Carlo – and Flint – have an even bigger stage and more tools at his disposal to work towards his ambition of changing the world. He gets his hands dirty at the innovation labs on campus, such as Garage@EEE, the Mechanics of Materials Lab and labs at the School of Physical & Mathematical Sciences, and finds support through NTU faculty like Assoc Prof Andy Khong, Prof Ooi Kim Tiow and Assoc Prof David Fan.

The NTU DNA runs deep in Flint too. Its co-founder, Jeremy Wee, is a computer engineering graduate from NTU and its Chief Sustainability Officer is final-year materials science & engineering student Tan Shi Zhou, who is also a Global Sustainability Consultant at Razer and former President of Earthlink NTU. In Flint’s pipeline are plans to use the NTU Smart Campus as a testbed for future products.

“We are looking at introducing compostable bags to replace plastic bags on campus. But first we are speaking with vendors and analysing the bag’s life cycle to see if it is truly sustainable,” says Shi Zhou, who was involved in the development of the National Day Parade (NDP) pack in 2021.

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Carlo adds: “I can take an elective if I need help in a particular area. I needed help with marketing last semester so I took a marketing module, where I learnt from real industry professionals. If you ask me what the three big growth areas are, it’s blockchain, artificial intelligence and sustainability, and the Interdisciplinary Collaborative Core modules cover all three. It feels like students can choose areas to study in. I probably put more time into them than core modules.”

STAYING ON COURSE

Although much of the start-up action happens outside of classrooms, NTU classes are also an integral part of the process.

Says Shi Zhou: “My minor in entrepreneurship has helped changed the way I think in terms of starting a business. I learnt what to take note of, how to engage stakeholders and how to ensure you can sustain your company. It also helps that the profs all have businesses and were able to share that experience with us. There are also useful modules in my core curriculum like environmental sustainability and materials, where I learnt how to analyse materials for their environmental impact, which is what I am doing now in Flint.”

Carlo says: “I want to be as big as Apple and Google, for NTU and for Singapore. Then maybe I can be on the cover of HEY!”

Carlo’s prototyping for AquaLoop, an off-grid marinelife buoy that gathers and transmits relevant ocean data to the shore.
THE MOVES WE MAKE

There’s never a dull moment as an NTU student, as these photos show. Keep putting on your best show and tagging #NTUsg

You can master the art.

Never too skate to learn a new skill.

Hold the stage with confidence.

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Music therapy in med school.

Dazzling moves at the NTU Hall Olympiad Closing Ceremony.

NTU’s champion sharpshooters making waves again.

Spar-tacular showing by NTU’s taekwondo exponents.

Great shot at the Inter-Hall Games.

A dash of fun.

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Artificial skin that’s even more sensitive than human skin is here. NTU researchers recently unveiled a new type of man-made skin that not only senses objects well but can identify items it hasn’t touched yet. While human skin can tell the softness or hardness of an object and sense temperature and texture, this artificial skin made from conductive fabric goes beyond these sensory capabilities – it can identify what a material nearby is made of, whether it’s metal, plastic or something else.

Artificial skin will be useful for robots and next-generation prosthetics in allowing automatons and human users to feel and sense their environment. For example, such artificial skin on a robotic finger could help factory robots to decipher which objects to pick up without having to grasp them. It could also be used as a super-sensitive touchpad to control computer input or video games, or as a sensor to detect possible collisions with other objects.

Flexible and stretchable electronics are not new, the glue used to join them together often easily gets out of shape or broken. To tackle this, NTU scientists developed a flexible and stretchy ribbon-like connector called the BIND, which can be used to join flexible electronics in mere seconds, much like how Lego blocks are snapped together. Not only can the BIND connector be stretched almost three times its length without affecting its functioning, it is 60 times tougher than conventional connectors.

With the BIND interface, glue and wire ribbons could be things of the past. Device makers can simply ‘plug and play’ when assembling flexible electronics. This technology also opens a whole new world for hobbyists, who can now try their hand at making their own stretchy electronic devices such as monitoring bands for pets or smart bandages to monitor injury.

Robot masseuse EMMA is now being used in Traditional Chinese Medicine (TCM) clinics and hospitals to help relieve lower back discomfort in patients. Operated by a human therapist, it gives the perfect massage every time, with the help of artificial intelligence algorithms. Developed by NTU start-up AiTreat, the robot has an articulated arm with cameras and sensors and is smart enough to analyse and knead tense muscle knots to relieve tension.

Imagine a comfortable spa open 24 hours a day, seven days a week, that you can stroll into for a relaxing and affordable back massage any time you have a stiff back. Next-generation EMMAs can be remotely monitored and controlled, and enable wireless payment for their service. With safety features and the ability to deliver tailored treatments, they can alleviate the shortage of massage therapists faced by TCM clinics, hospitals and spas.
**FROM STREET ART TO HIGH-STREET COLLABORATIONS**

How did this young NTU alumnus go from painting murals for his final school project to drawing for the likes of Hugo Boss, Levi’s and Asics in just three years?

As a child, Toby Tan would walk past temples and be intrigued by the intricately carved stone lions that sit outside.

That is the kind of authentic reaction that the NTU alumnus hopes his work as an urban visual artist can elicit in people.

"Seeing their instinctive reaction to my art, whether it’s them taking an OOTD (outfit of the day) with my mural or sharing a pair of shoes I’ve designed (outfit of the day) with my mural or art, whether it’s them taking an OOTD with Toby’s design stenciled on it," says Toby, who has made a splash in Singapore’s art scene in the past three years as an emerging visual artist synonymous with street culture. He counts brands like Hugo Boss, Levi’s, Asics and G-Shock among his clients.

His latest work is a pair of stone lion sculptures that come with sneaker details – think shoelaces and shoe tongues – designed for the Asia debut of the American blockbuster sneaker brand Chivas Regal.

"I have been working on a very exciting piece that involves murals too. In fact, Toby first drew attention for his mammoth effort of repainting basketball courts with motifs that cast light on the history and culture of each neighbourhood.

It started out as a concept for his final-year project (FYP) at NTU, but the fine arts graduate wanted to push the envelope."

"I’ve always had this tendency to want to stagnate. I don’t like to stagnate. I went from drawing on notebooks to drawing on computers, which then led me to murals," says the 28-year-old of his foray into mural art.

He adds that Assoc Prof Jesvin Yeo, his FYP supervisor, encouraged him to take his FYP further. “She made a huge impact on me creatively. She was honest with her feedback in the best ways and taught me how to focus on my strengths and sometimes let go of my weaknesses,” he says.

**A doodling start**

Toby’s first few canvases as a child were his school worksheets and homework. He would doodle on them so much that teachers recognised his work not from his name, but from the drawings that covered the pages.

The doodling persisted as he continued his studies as a science student. It took a six-month stint as a part-time art teacher before he took the leap of faith and enrolled in ADM.

"Within the first few days of university, it became quite apparent that I had a lot to catch up on," says Toby, who did not know how to use the Adobe suite of designing tools. Having a later start than his peers pushed him to work harder to make up for lost time by taking up freelance projects to hone his skills.

That was how Toby landed his first mural gig in 2017. He had approached a now-defunct cafe at Beach Road with his idea for a mural, requesting for only the cost of the paint to be shared. The cafe gamely took up his offer.

Since then, Toby has gone on to enliven other spaces with his murals, from restaurants and offices to communal spaces and shophouses.

“The process of mural painting was mostly trial and error, with a bit of help from some friends in the industry who had mural painting experience,” he says.

His largest – and favourite – mural project to date stretches across the wall of a two-storey shophouse at Tanjong Pagar, which used to be a fishing village. The mural shows two swordfish swimming in a pool of abstract waves – a homage to a Singapore Malay tale of the battle between local villagers and swordfish.

"Just translating the design from digital to wall took three weeks. But the difficulty of the project made me push myself to make it work," he says. "Looking back, it is my favourite work."

For his FYP, which then led me to murals, Toby says his growth as a versatile collaborator has been gradual. Whether it’s a basketball court mural or shoe design, at the core of the creative process is a strong concept, he says.

That brands today are increasingly collaborating with local artists paints a picture of those for whom thinking of pursuing art as a career. Toby was recently selected to mentor young creatives as an "industry GD" through a programme run by Regal F.C., a club under renowned whisky brand Chivas Regal.

"I am still very much that kid who likes to draw, but now I get a chance to draw many things for many people, and to grow with other artists. That is something I am grateful for," he says.
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