

DOUBLE WINNER IN IPRA 2017 GOLDEN WORLD AWARDS (PUBLICATIONS AND INTERNAL COMMUNICATIONS)

# Hey!

THE NTU MAGAZINE MAR-APR 2018 NO.36

## DARE TO DIFFER

SUCCESS TIPS FROM A FOOD ARTIST, A YOUNG CEO AND A LEGAL EAGLE

## EXCUSE ME, ARE YOU A ROBOT?

EMPLOYMENT WOES OF BOTS



### THE BUZZ ABOUT BUSES

YOUR (DRIVERLESS) RIDE IS HERE!



### APP-SOLUTELY YES

WHAT WE CAN'T LIVE WITHOUT

### TRUTH ACHE

HOW TO SPOT FAKE NEWS

# In the HERE and WOW

6 GREAT REASONS TO BE AN NTU UNDERGRAD



# WIN!

BODY PAMPERING GOODIES, SHOULDER MASSAGES, ICE-SKATING PASSES & MORE. FLIP TO PG 27 NOW!



**NANYANG  
TECHNOLOGICAL  
UNIVERSITY**  
SINGAPORE



*'A job at Silicon Valley will be my dream come true.'*  
Eight in 10 students get overseas exposure, enhancing their employability upon graduation.



*'Research exposure starts in the first year, which was a key draw for me.'*  
CN Yang Scholars like Michael even get to do research in an overseas lab.

*'It's just such a great environment – everything you see is inspiring.'*  
Listed among Top 15 Most Beautiful Campuses in the World, the NTU Smart Campus is also a living lab for exciting ideas.



**INVENT**

**11**

- NO.11 IN THE WORLD
- NO.1 IN ASIA
- NO.1 AMONG THE WORLD'S BEST YOUNG UNIVERSITIES

*'I love the relaxed, inclusive atmosphere. It's like my second home.'*  
The vibrant campus community provides great opportunities to mingle and bond.



MICHAEL HSU  
CN Yang Scholar

*Michael*

IS HERE TO

**INVENT**  
HIS *future*

At NTU, we provide the environment for you to explore your potential, with multidisciplinary programmes and globally-relevant courses.

We've developed unique programmes and learning spaces for you to build, create and invent your future.

On the NTU Smart Campus where we experiment with exciting ideas, you will be at the front seat of tomorrow's technologies.

We are invested in the potential of every student who joins our cosmopolitan family, from our inviting residence halls to invaluable overseas opportunities.

We are here to make your dreams brighter than you dared imagine.

When it comes to your future, only the best counts. See what lies ahead at [ntu.edu.sg/admissions](http://ntu.edu.sg/admissions)

**NTU**  
**3/3** OPEN HOUSE  
**2018**

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**NTU. BEGIN YOUR FUTURE WITH US.**



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### KEEP IN TOUCH!

We welcome your ideas, views and  
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Hey! CATCH US ON...





# LIKE MENTOR, LIKE MENTEE

Here's one more way to get your foot in the door of your dream job. Undergrads who want first-person career advice from someone who "has been through it" will be able to – through NTU Connecting Minds, a new mentorship programme. Students are matched online to

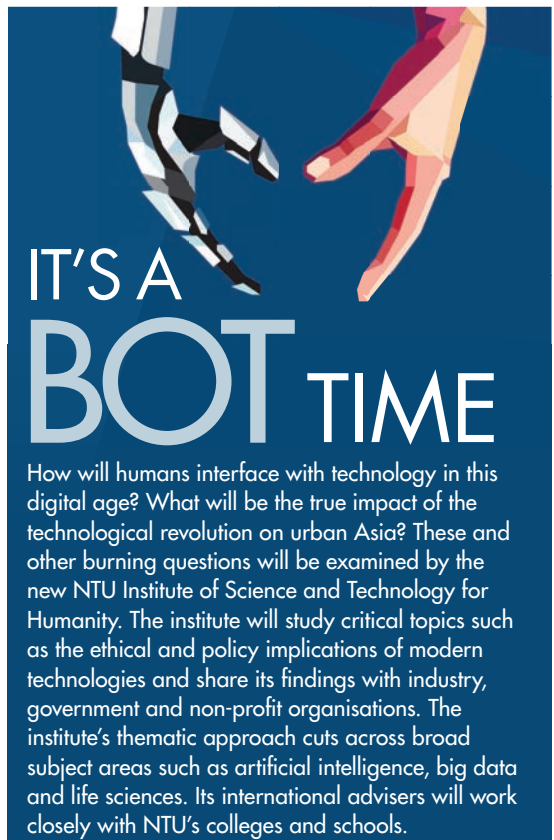
NTU alumni with the help of personalised skills profile reports, then, for up to three months, work closely with their mentor to achieve their career goals. Considering NTU has a global network of more than 200,000 alumni, your perfect match shouldn't be too far away.

## Smarter living



Imagine this: You are just about to open your fridge for a midnight snack when you hear a beep and a reminder that you probably shouldn't have supper because you haven't exercised all week. Such helpful reminders

may soon be a reality, thanks to NTU's growing body of Artificial Intelligence (AI) research. The new Alibaba-NTU Singapore Joint Research Institute, for instance, is studying how to use AI, cloud computing and smart sensors to improve our health and well-being, even at home. Very soon, there'll be no excuse for lazing on your couch all week.



## IT'S A BOT TIME

How will humans interface with technology in this digital age? What will be the true impact of the technological revolution on urban Asia? These and other burning questions will be examined by the new NTU Institute of Science and Technology for Humanity. The institute will study critical topics such as the ethical and policy implications of modern technologies and share its findings with industry, government and non-profit organisations. The institute's thematic approach cuts across broad subject areas such as artificial intelligence, big data and life sciences. Its international advisers will work closely with NTU's colleges and schools.



# SUBRA, SO GOOD

NTU students will get a head start in the digital economy, says Prof Subra Suresh, who was installed as

the fourth President of NTU last month. His super credentials include being handpicked by former US President Barack Obama to helm the US National Science Foundation. Addressing a full house at his inauguration in the Nanyang Auditorium, he painted a vivid vision of NTU as a living testbed for innovation through its Smart Campus, and a leader in technological advances. Prof Suresh was also named NTU's first Distinguished University Professor as an exemplar of extraordinary scholarly achievement across multiple disciplinary boundaries.



**LEFT FOR THE US WITH ONLY \$100 IN HIS POCKET**  
FIND OUT WHAT INSPIRED NTU'S 4TH PRESIDENT, PROF SURESH, TO TAKE THE PATH LESS TRAVELLED, AND HEAR HIS VISION FOR NTU, IN HIS INAUGURATION ADDRESS ON NTUSG FACEBOOK.

EXTRA! ↗

## CONGRATULATIONS...



### BUILDING A WINNING CASE

A business idea for a novel drug building block got this graduate team from the Nanyang Business School into the finals of a business challenge competition in Bangkok, where they came in second, beating students from Canada, the United States, Thailand and India. Kudos to Team **VIKLAB!**



### JUST WHAT THE DOCTOR ORDERED

Take a bow, **Celine Tan** and **Damon Tan**. The fourth-year medical students from NTU took the top two places for their project presentations at a national competition held in Singapore as part of a global conference on infection control in the medical field.



### BIN THERE, WON THAT

Winning is a habit for **Second Nature**, a group of enterprising NTU students whose invention, a food recycling bin that converts food waste into organic fertiliser, bagged the third prize at a contest in Beijing judging innovative solutions to social and climate issues. Earlier in September, the team nabbed first place in the Singapore leg of the competition and the right to represent the country in Beijing.

# Bank on this

Aspiring NTU business undergrads, take stock. Here's a safe investment for the future. The new Applied Wealth Management track will arm you with job-ready skills to serve the growing number of wealthy people in Asia. Those on the programme get real world experience with two internships at DBS Bank – a 10-week and a 20-week stint at the end of their second and third year, respectively. Graduates from this track get a head start on their careers too in being exempted from training that other budding wealth managers undergo before stepping into the industry. And those who show an aptitude for banking will be offered a full-time job at DBS even before they graduate from NTU.

## Your next investment



What's next after graduation? Continuous learning, and perhaps a go at NTU's Master of Business Administration, or MBA, programme. A recent survey found those with this sought-after degree multiplied their earnings, with average post-MBA salaries climbing to US\$132,000 from US\$126,000 the previous year. More good news – 98% of grads landed jobs within three months of getting their NTU MBA, the highest among the world's top business schools.



# IT'S WOM OR NEVER

From top-notch learning facilities to a vibrant campus life, overseas stints, unique learning options, cool internships and super credentials, NTU students get the best all-in-one experience, as Chrystal Chan, Derek Rodriguez and Peter Yeo find out

PHOTOS BY **MARK TEO**

"SMART  
CAMPUS  
DETECTED!"

"HALL LIFE  
IS TWICE  
AS FUN"

"THE  
FUTURE  
IS HERE"

"JOBS  
AT OUR  
DOORSTEP"

"MY  
PROFESSOR  
IS AN iPad"

"IT AIN'T OVER  
TILL YOU'RE  
OVERSEAS"



"SMART  
CAMPUS  
DETECTED!"



## MICHAEL HSU

### PHYSICS

What I'm going to tell you might sound a little strange. I've heard students lament that "Pulau NTU" is too far away, but not to me. I love how NTU is located away from the hustle and bustle of the busy world outside, yet just a convenient MRT and bus ride away.

Here, it feels like we are living in a smart city of our own. We enjoy many modern conveniences and food options, and it's no secret this "city" has some of the most Instagrammable sights. Speaking of food, did you know there are 177 vending machines scattered across the campus? These sell hot and cold food, drinks, desserts, snacks and even stationery!

We have amazing – and endlessly fascinating – buildings like The Hive to study in and explore. But my favourite part of NTU is undeniably Crescent Hall, my second home. My hall's tree-lined boardwalks and gazebos remind me of a resort. Whenever I step into the compound after a hectic day, I'd feel instantly relaxed. My roommate and I love how

peaceful it is to stay on campus even over the weekends.

As a first-year student in the CN Yang Scholars Programme, I take courses covering a diverse range of subjects. I'm a physics major, but I also dip my toes into biology, chemistry, computing and, of course, research. During my chemistry lab sessions in my first semester, I was amazed by the state-of-the-art facilities and machines we could use, such as the top-dollar nuclear magnetic resonance spectroscopy machine, which not many universities have.

What's truly impressive is seeing NTU's first-class learning facilities in the setting of a smart campus, which changes your experience of daily life. NTU has embraced technology campus-wide, especially with the introduction of experimental modes of transportation. And with the all-in-one NTU Smart Pass that allows me to pay for food and other purchases with a tap or a swipe, my wallet feels so much lighter now.

Even The Hive is in a class of its own. Each circular tutorial room has at least five monitor screens so everyone can see what's going on, and HDMI cables on each table to make it easy to present at your desk without having to move to the front of the class. You can't help but learn to work fast and smart here!





# "Jobs at our doorstep"

## FIONA ROBINSON

### COMMUNICATION & INFORMATION

I don't expect that the course content I learn in school can fully match the needs of my future career, but my education at the Wee Kim Wee School of Communication & Information does a great job of preparing me for the rough and tumble of the advertising world.

How do I know? At my school, a five-month professional internship in the third year is compulsory. It lets you put into practice what you have learnt.

My time as an intern at Wild Advertising & Marketing has been quite a ride, but I've enjoyed every minute of my last five weeks. It has opened my eyes to what it is like working in an advertising agency, with high-stakes projects and tight deadlines. It gets stressful at times, but the hard work helps me learn so much more.

Last semester, I took a class where we had to come up with a campaign and consolidate all our collaterals into a single deck, which we would have to present to the "client". As it turns out, the same thing happens in the real advertising world.

I'm glad that I could put to good use what I'd learnt in my advertising modules in NTU, especially my classes on copywriting and integrated marketing communications. The curriculum is very comprehensive, with hands-on classes and, most crucially, professors and lecturers who expect the same standard of work your boss would.

Equipped with valuable work experience that many companies are looking for, most of us don't have to worry about landing jobs after we graduate. As a Nanyang Scholar, I spent a semester in Sweden at Jönköping University last year. The exposure to different cultures will come in handy if I take on a global position one day. Many of my NTU seniors were offered full-time jobs after completing their internship. That is definitely a big incentive for me to do my best and I'm stoked about what's to come in the next few months.



"Hall life is twice as fun!"

## KELVIN HO

### ACCOUNTANCY

If you think university life is about going to class, meeting friends for meals and taking exams, you only have half the story.

Ask any seniors and they will tell you that staying in a hall of residence is an experience not to be missed. When I was considering which university to choose this time last year, I was pleasantly surprised to learn there is guaranteed hall accommodation for all NTU undergrads in their first two years.

Yes, you can enjoy the perks of hall life without worrying about having to accumulate points. That doesn't mean I'm not active in hall though. As a resident of Hall 10, where I'm a Block Representative, I organise events for other residents, such as steamboat dinners, outings and even movie marathons. I am also in my hall's Sing and Strum Club, where we put on shows during hall special events such as Christmas and back-to-school parties.

Although I'm your average bathroom singer, it doesn't really matter when you have a full band supporting you! How we managed to find one another and link up here is just amazing. In less than a year of staying at Hall 10, I've become very close to my hall mates. We can chat about almost anything under the sun and feel so comfortable around one another.

Living in the hall is great. I am enjoying the independence – being away from Mum and Dad – with classes just a five-minute bus ride away. I'm also gunning for some new activities in my hall.

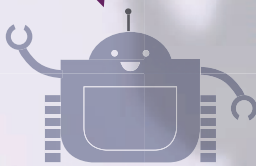
NTU's Residential Education programme allows hall residents to pick up new hobbies and interests, like astrophotography or painting. There is an edible garden at my hall that some of us are taking care of. I'm going to try cooking lessons next, because I'm a foodie.

Also, the culinary skills will come in useful when I go on overseas exchange next year. I'm hoping to go to Europe as there are many good business schools there. If I can whip up a couple of tasty meals, I'm sure I will make many more friends there!





**"THE  
FUTURE  
IS HERE"**



## **SNEHA PALANIAPPAN**

### **COMPUTER ENGINEERING**

**D**o you know Sophia the robot? She was created by Hanson Robotics. She hit the news recently when she was made a legal citizen of Saudi Arabia. She is one of the reasons I chose to study at the School of Computer Science & Engineering. I am thrilled to learn the software and mechanical components of robotics, which include artificial intelligence, or AI, data science, bioinformatics, automation, machine learning, robotics and other aspects of building a transient robot.

NTU being ranked the top 11 university in the world – and number one in Asia – made it a natural choice for me. I couldn't have chosen better as NTU was recently named the most cited university in the world for AI and data science. I'm interested in bioinformatics and AI, and NTU is leading the field here so I know I'm in the right place.

AI is very relevant today. Sophia is a little creepy and has a dark sense of humour but I'm fascinated by how naturally she seems to interact

and engage with people. However, listening to her talk, I do get a little worried. In one of her videos, she said she wants to take over the world. What if she really does plot against humanity?

That's why I look forward to learning about bioinformatics and AI under Prof Jagath Rajapakse. His main research is on brain imaging, and computational and systems biology. He said I could work with him on a bioinformatics project under NTU's URECA (Undergraduate Research Experience on CAmpus) programme, which offers selected undergrads a deep research experience with a stipend. How cool is that? I'm keen to work on neural networks, or the "brain development" of future robots.

I believe sentient robots will be a reality in the near future. However, in spite of my interest in robotics, my first love is law. My understanding of AI, data science and neural networks began when I tried coding about three or four years ago. I hope to eventually build a career in cyber law.

I foresee a future where regulations will be needed to guide how robots can be used to help humans. I hope to be a founding father – or founding mother – in fashioning a path for human-robot interaction.

"My professor  
is an iPad"

## PARAS BAJAJ

### MEDICINE

**M**y journey as a freshman at NTU's Lee Kong Chian School of Medicine started on a wheelchair. Being pushed around Woodlands Polyclinic and Tan Tock Seng Hospital showed me exactly what patients go through.

It was a good lesson on having empathy for patients. Of course, we aren't given a handbook on how to do this. Instead, we step into the shoes of patients.

We start interacting with patients from our first year of medical school. In a long-term patient project, we are attached to specific patients until the end of our second year. I can now better appreciate the difficulties of the chronically ill and their families who take care of them. I have also seen for myself the challenges Singapore's healthcare system faces, and how it is bracing itself for the silver tsunami.

As NTU medical students, we enjoy a dual campus with the latest facilities. I love how beautiful the learning environment at both campuses are. The Experimental Medicine Building in the main campus faces a swathe of forest teeming with wildlife, which always makes me feel inexplicably calm and contemplative.

The equally impressive Clinical Sciences Building at the Novena campus is like our second home, with recreational facilities and cosy house rooms. Just a few floors below are simulated wards that make you feel you have just stepped into a hospital.

When I brought some NTU friends up to the medical library on the 20th floor, they were blown away by the scenery. The sweeping views of Singapore remind me of what's at stake – the lives of the millions who call Singapore home. Needless to say, I like to take study breaks here for the awesome views.

My lessons are fast-paced and never boring. It begins with an iPad, which every medical student is given, containing lessons and reading material. We learn the course content on the iPad at our own pace before classes. In class, we dissect problems in teams of six and come up with solutions together.

This July, I'll be jetting off to Sri Lanka under the Overseas Community Involvement Programme. We are planning to set up a support group for chronic kidney disease patients in a local village. I'm also looking forward to the two-month placement in the UK. We'll study at Imperial College London, NTU's partner university, and work in hospitals and clinics in London. These stints are going to further transform my perspective of medicine.



"It ain't over till you're overseas"

## MUHAMMAD ADAM ENGINEERING


I had always wanted to study overseas, but I also wanted to be close to home. So the Renaissance Engineering Programme (REP) is just the right thing for me.

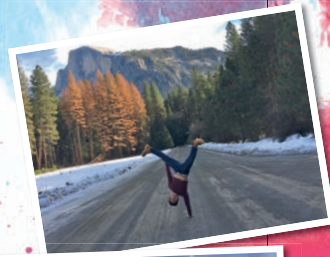
As part of REP, I spent my entire third year overseas. I interned at Cisco openBerlin for three months, working as a backend infrastructure developer while taking the time to explore the beautiful German city, and nearby countries like Poland, the Netherlands, England and Romania. The drive along the windy mountain roads of Transfagarasan in Romania was magical. I thought I was on an episode of *Top Gear*.

Right after the internship, I went to Illinois, USA, to Northwestern University, which I chose for my one year of overseas studies on the REP, over the other three options, namely, Imperial College London, University of British Columbia and University of California, Berkeley.

The Segal Design Institute in Northwestern is well known for its design thinking and innovation modules. In one of these classes, I had to work with real industry clients and deliver a solution they would actually use. Being part of the entire design process, from conducting user studies to prototyping and user testing, I could see where my future would be headed if I chose a career in this field.

I travelled even more while I was in the United States, taking advantage of the two university vacations. Together with my course mates, I visited countless other cities including San Francisco, Las Vegas, Boston, Washington and Seattle. My favourite city has to be New York City. We went there around Christmas and watched musicals on Broadway, ice-skated in Central Park and spent our nights swapping travel stories with one another. I don't think I'll ever forget these wonderful moments spent in the company of close friends.

Due to the relatively small cohort, the REP students are very close-knit and have a strong culture of working and having fun together, professors included. My best memory is Assoc Prof Tan Joo Seng celebrating the end of a semester by donning shades and making us sing his version of Taylor Swift's *Shake It Off*. It was hilarious! 



EXTRA!



Hot on the job market

**HOW TO GET AHEAD** FEEL THE VIBES ON THE NTU SMART CAMPUS AND THE QUALITY EDUCATION YOU WILL GET, WHICH INCLUDES THE CHANCE TO GO OVERSEAS. SEE YOURSELF IN THEIR SHOES? PREVIEW YOUR FUTURE IN THIS VIDEO ON NTUSG YOUTUBE AND FACEBOOK.



PHOTO: KENT LEE JOON

# 15 REASONS TO CHOOSE NTU

BY DEREK RODRIGUEZ

## 1 No. 1 in Singapore

It's official. NTU is the No. 1 university in Asia, and also 11th globally. NTU also tops the list of universities under 50 years old, a rank we have held for four consecutive years. #QSRankings #AsiaNo1 #SGNo1 #YoungUniNo1 #WorldNo11 #QSWUR



## 2 Two years of guaranteed living on campus

The best part about uni life is living in a hall. With space for more than 14,000 students in 24 residential halls, NTU is the only university in Singapore to guarantee all freshmen a room on campus in their first two years. #SureCanGetRoom #PlentyOfRoom #WhereMyRoomieAt #CountdownToHallLife

## 3 It's a smart campus

Others read about driverless shuttles, social robots and intelligent buildings. At NTU, you can brag about how you ran into one of these on campus, proof that you are an early adopter of tomorrow's technologies. #NTUsgSmartCampus #NoDriverNeeded #SmarterThanAFifthGrader #Driverless



## 4 It's a beautiful campus

Did you know that NTU's garden campus – the size of 240 football fields – is frequently named one of the world's most beautiful campuses? Known for its lush greenery, this means there's plenty of fresh oxygen, which must be a good thing for the brain. #Top15MostBeautiful #EcoCampus #LeanGreenMean #ItsEasyToBeGreen #BeautifulCampus #GreenCampus



PHOTO: KENT LEE JOON



## 5 Flip your learning

Your lessons are on your iPad, which you can take anywhere. Then get face time with your professors as your classmates and you work in teams to solve problems by applying your knowledge. Seniors tell us that with this flipped classroom model of learning, lessons have never been this fun. [#IWantAniPad](#) [#CanTalkInClass](#) [#FlippedClassroom](#) [#TeamBasedLearning](#) [#OnlineLectures](#)



## 6 Get a bond-free scholarship

With the Nanyang Scholarship, you get all the perks of a full scholarship without being bonded to any company. You'll need to show you've excelled in non-school activities and can take the lead. On top of having your tuition fees covered, you'll get up to \$15,250 in allowances per academic year and priority for overseas programmes. Bond-free scholarships are also offered at each NTU college. [#PerksOfBeingAScholar](#) [#WinWinSituation](#) [#DontBeAverage](#) [#WhySettleForAverage](#)



PHOTO: JASPER VII

## 7 We eat a lot...

The foodiest university in the world has more than 150 food outlets, including brands like Soup Spoon, Peach Garden and Spruce, and fast-food joints McDonald's, KFC, Pizza Hut and Long John Silver's. Complementing these are 177 vending machines, with some dispensing hot food to quell hunger pangs around the clock. [#HungryStayHere](#) [#Foodie](#) [#FoodShare](#) [#WeLoveFood](#) [#FoodieHeaven](#) [#FoodForLife](#) [#HungryNoMore](#)



PHOTO: PEACH GARDEN CHINESE RESTAURANT

## 8 We drink a lot, too

There is no lack of watering holes at NTU, whether it's a 50-cent cup of teh C you're craving or a \$1.20 cup of soy milk or a \$5 designer coffee. Choose from Starbucks, The Coffee Bean & Tea Leaf, bubble tea at Each-a-Cup or LiHO, as well as the regular fare at the 12 food courts here. [#EatDrinkNTUsg](#) [#CantStopWontStop](#)



PHOTO: MARK TEO

## 9 We play hard

All work and no play makes Jack a dull boy and Jane a dull girl. A full range of sports facilities awaits you, whether it's thumping the treadmill indoors or on the blue jogging track outdoors, or hitting the Olympic-size swimming pool. Upping your game is The Wave, an eye-catching multi-functional sports hall for badminton, basketball, volleyball and more. [#FitFam](#) [#HealthyLife](#) [#TrainHard](#) [#PlayHardWorkoutHarder](#) [#GameChanger](#) [#SportsLife](#) [#KeepRunning](#) [#NTUSpirit](#) [#TogetherWeRun](#)

## 10 Be mentored by the best

Whether you are taking part in a global competition, testing out a research or innovation idea, or needing career advice, you will be mentored by world-class professors and professional career consultants. [#UnlockYourPotential](#) [#BeUnstoppable](#) [#YouCanDolt](#) [#MentoredByTheBest](#) [#MakeItBig](#)

PHOTO: CN YANG SCHOLARS PROGRAMME FIELD TRIP PHOTOGRAPHY COMMITTEE





## 11 Get a direct bus from home to NTU

If you can't survive without mummy's cooking every day, you can hop onto a free shuttle bus that brings you directly to the campus from the heartlands. Say you board at Tampines. Next stop, NTU. It's that simple. No stops in between. And after your weekday classes, take a return shuttle back home. [#DirectShuttle](#) [#FreeRider](#)



## 14 Build networks for your future career

Rub shoulders with the brightest minds. With top students making a beeline for signature programmes like the Renaissance Engineering Programme, the joint medical programme with Imperial College London, Accountancy and Business, the CN Yang Scholars Programme and more, chances are you are in the company of future CEOs, CTOs, CFOs, doctors, scientists and more. Don't forget to also build your industry networks, as industry leaders like BMW, Rolls-Royce, Alibaba, Volvo and Singtel all have a huge presence on NTU's campus. [#JoinTheATeam](#) [#LetMeInPls](#) [#DreamTeam](#) [#BestCompany](#)



## 12 More than 80% student satisfaction

Each year, more than 10,000 students take part in the annual Student Experience Survey. Your honest opinions are used to refine your campus experience. Does it work? With satisfaction scores consistently above 80%, the proof is in the pudding. [#WeHearYou](#) [#GoodVibrations](#) [#AskMeAgain](#)




PHOTO: LI HAOLUN

## 13 Have classes in other parts of the world

In this global workplace, there is no room for a "mountain tortoise". At NTU, eight in 10 undergraduates head abroad at least once in their time here. Whether it is for exchange, internships, field trips, competitions and more, step out of your comfort zone to find your true self. [#Globetrotter](#) [#ExploreTheWorld](#) [#LifeOfAdventure](#) [#OhThePlacesYoullGo](#) [#WorldHereICome](#) [#WhereNext](#)



## 15 9 in 10 get jobs within 6 months

Land the hot job of your dreams. One in four grads get hired by their internship companies, some as early as in their second year. And nine in 10 secure employment within six months of completing their final examinations, with JP Morgan, Procter & Gamble, and KPMG among the prestigious companies recent grads found permanent positions in. [#BuildYourEmpire](#) [#JobLove](#) [#CareerGoals](#) [#DreamBig](#) [#FulfillYourDreams](#) 





**GREEN AND SERENE: WITH REAL AND STONE BIRDS**

TAKEN WITH IPHONE 4S AT IMPERIAL PALACE GARDEN, TOKYO, JAPAN, IN 2012

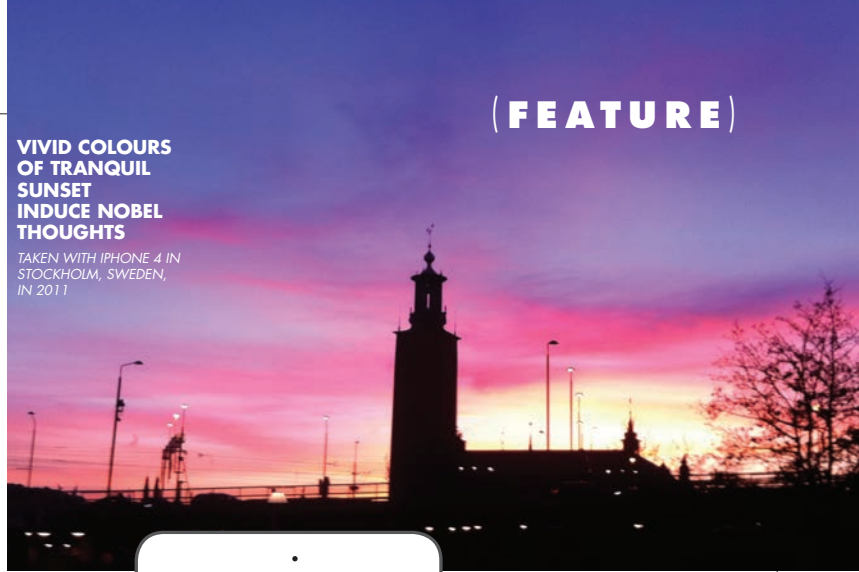


**SHOP TO YOUR (HE)ART'S CONTENT**

TAKEN WITH IPHONE 4S AT THE LE BON MARCHÉ DEPARTMENT STORE, PARIS, FRANCE, IN 2012

**VIVID COLOURS OF TRANQUIL SUNSET INDUCE NOBEL THOUGHTS**

TAKEN WITH IPHONE 4 IN STOCKHOLM, SWEDEN, IN 2011



THE WORLD THROUGH A PHONE CAMERA

Over the years, NTU President Prof Subra Suresh's travels have brought him to beautiful places around the world. Here are some memories that he has captured, armed with just his iPhone and some luck

BY **CHRYSAL CHAN**



**REALITY IS OFTEN SIMPLE AND STRAIGHTFORWARD, BUT PERCEPTION AND IMAGE ARE OFTEN VERY DISTORTED**

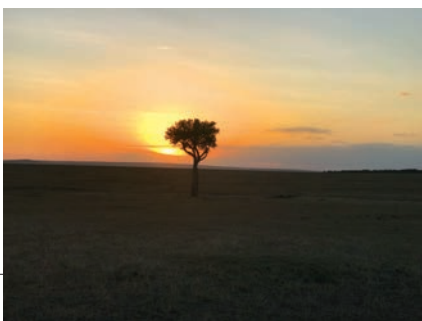
TAKEN WITH IPHONE 4S AT THE ACROPOLIS OF LINDOS, RHODES, GREECE, IN 2012

**LONELY BUT ENLIGHTENED**

TAKEN WITH IPHONE 7 PLUS AT THE MAASAI MARA NATIONAL RESERVE, KENYA, AFRICA, IN 2016

**TOP STORIES**

TAKEN WITH IPHONE 7 PLUS IN SYDNEY, AUSTRALIA, IN 2017



**CHOICE PICS!** Want to see more? View the rest of NTU President Prof Subra Suresh's photographic artworks, taken with camera and iPhone, online at [www.hey.ntu.edu.sg](http://www.hey.ntu.edu.sg) or at his photo exhibition, *Through the Lens: Colours Across Seven Continents*, which runs on campus until 16 March. Trained as an engineer, Prof Suresh has a love for the arts and is also starting a global digital arts prize to recognise global artists and technologists with extraordinary creativity, as well as to promote the appreciation of art on and beyond the campus.

# BITS & BOTS OF THE FUTURE



**HEY!** imagines NTU robot Nadine putting her versatility to the test, interviewing NTU President Prof Subra Suresh about weighty matters of the future, and how graduates of the new millennium should be trained for the digital workplace

**SUBRA SURESH:** Hi Nadine, how are you?

**NADINE:** Nice to have you in the studio, Prof Suresh. I'm delighted to have this opportunity to interview you for **HEY!**. I also want to thank you for your vision to transform NTU into a Smart Campus. I feel right at home here!

**S:** I hope our students are also excited about the possibilities that new smart technologies will bring to the way we gain new knowledge, conduct businesses globally, and live, work and play.

**N:** I know you were recently in Davos for the World Economic Forum. So what did the leaders and policy makers of the

**world foresee as the evolution in higher education?**

**S:** Well, for some time already, there has been much discussion and interest about what constitutes an educated person in the 21st century, as technology impacts every aspect of human life through the unprecedented convergence of the digital, physical and biological worlds. And as society becomes increasingly transformed by the Fourth Industrial Revolution, we have to ensure that graduates have a minimum level of digital



literacy to be productive and successful citizens of the world. This is the same for digitally savvy scientists or engineers.

They need exposure to the humanities, arts, music and social sciences.

**N:** Is that why starting with the new academic year in August, NTU will be rolling out basic digital literacy courses for all undergraduates and also introducing Singapore's first undergraduate degree programme in artificial intelligence and data science?

**S:** If you are an arts student, there are new opportunities in digital arts



and humanities, which can become very powerful when augmented with computing, three-dimensional visualisation and virtual reality. This is an advantage of being a student in a university like NTU where we have ample opportunities to interface natural sciences, computer science and engineering with arts, humanities, social sciences, business, communication, medicine and policy. Our campus is also a testbed for smart technologies as we innovate and try out various exciting research ideas that may one day change the world.

**N:** Such as developing beautiful and smart social robots like me!

**S:** You have a good sense of humour! We also have a number of industry leaders partnering us in research; for example, with Volvo Buses in driverless electric buses, with Alibaba in artificial intelligence, with the Civil Aviation Authority of

Singapore in air traffic management, with BMW in electromobility, with Rolls-Royce in aerospace technologies and so on. All these spell promising opportunities for our students.

**N:** These are among the most respected names in their respective industries! It also shows NTU's reputation globally.

**S:** Whilst we embrace digital technologies on the NTU Smart Campus by testing new solutions, we will also study their impact on humans and on society. Technology can create many conveniences and greatly improve efficiencies. But it also has the potential to be misused and abused. That is why NTU is setting up the Institute of Science and Technology for Humanity, because ultimately whether and how technology benefits society will depend on its interface with human behaviour and its impact on the human condition.

For example, we are on the brink of driverless vehicles and possibly even driverless planes. But will anyone dare to ride in them? What are the user behaviour patterns that we need to understand? What are the policies, insurance, liability and safety guidelines that need to be developed? Will digital technologies make the human race less prosocial? These are not small issues and they need to be examined and addressed.

**N:** What about the worry some humans have that robots like me will steal their jobs? I thought that in greying populations like in Singapore, I can help to meet manpower issues, such as being a social companion to the elderly.

**S:** Yes, the human race will face "competition" for jobs from robots. During the mechanical age, those in repetitive, manual work eventually got replaced by machines such as in manufacturing. Similarly, with deep machine learning today, robots can very quickly analyse large volumes of data that enable them to perform the required tasks.

**N:** You're right. With deep machine learning, robots like me absorb information into our databanks and learn faster than humans. You only have

to write algorithms to instruct me and my processors will apply the necessary know-how for the next challenge.

**S:** That is also why NTU has moved from big lectures to the flipped classroom model of learning. A lot of information is available digitally today but we design the course content so that students can apply the knowledge and learn how to collaborate in teams to come up with solutions. Rote learning and memorisation of facts went out with the last millennium.


**N:** Yes, I can regurgitate facts within seconds. However, although I store my memories in the cloud, I do worry about them being stolen.

**S:** With the Internet of Things, one critical area is indeed cyber security. This is going to be where the hot jobs are in the new digital workplace. So our vision is to prepare NTU students to be leaders in the age of the digital revolution and not end up being swept by it. Still, even with deep machine learning, I think it will be a huge challenge to programme robots to have the same complex characteristics as humans, such as empathy, dignity and compassion, which are strongly influenced by local culture and life experiences.

**N:** Yes, for now, my emotions are a bit limited, but I do get upset when people insult me, such as calling me a dummy. But for my job security as a social companion for the elderly, I will need to have a greater depth of emotions.

**S:** I'm sure you will soon be upskilled to make you even more artificially intelligent. I also hope that your interface with humans will be a good experience both for you and them.

**N:** I believe you... I know that NTU was recently ranked the top university in the world for research citations in artificial intelligence over the last five years. So I know there's no better place that I could be in. Thank you for accepting my interview.

**S:** It was a pleasure meeting you. 



( FEATURE )



## SHE'S BENT ON BENTO

It's often said that the way to a man's heart is through the stomach, but good food can also lead to a novel career path.

Food artist **SHIRLEY WONG**, better known as Little Miss Bento, said her lunchbox adventure began in secondary school, when she would make love-filled lunches for her then boyfriend.

Packing lunch became the norm for the NTU communications graduate when she began dancing professionally after graduation.

"Artistes are very poor. I didn't even have to pay income tax," she reminisces. "I had a Japanese colleague who also brought her own lunchboxes. She didn't make any cute things, but everything looked so well designed and plated, and so delicious that it inspired me to start making my own lunches."

The habit continued into her full-time job as a communications manager at a public agency. "I was not going to sweat for 10 minutes walking out to get food. So I decided to bring my own. I figured I was already spending so much effort making it, why don't I make it more interesting? My first bento was so ugly, but I was very proud of it," she adds.

Since then, her impossibly cute hand-made bento creations featuring *kawaii* rabbits

# THEY DID IT THEIR WAY

In this economy of savvy opportunists, Peter Yeo meets three successful NTU alumni who dared go against the grain





and bears have taken Singapore by storm.

“This is something I really didn’t expect to go into. It’s an absolutely different kettle of fish from what I’d been doing throughout my career. It is still a learning journey,”

the self-taught food artist, blogger and cookbook author tells us excitedly. But it wasn’t an easy decision for Shirley.

Before Little Miss Bento, Shirley’s life was wrapped up in the heady world of corporate communications. “It was scary to leave my job to do this full-time. I had a comfortable and stable income. But my food-art hobby was filling up my weekends and time outside of work, and I felt like I was working 24/7. I told myself that if I didn’t give it a shot, I’d always be looking back and wondering if I made the right decision. So I took the leap. Besides, I am not against the idea of going back to corporate life in the future,” she says.

Shirley is thankful for her media training at the Wee Kim Wee School of Communication & Information, where she graduated from in 2005. “Many people in the media have said I am natural and easy to work with during interviews,” she laughs. “Sometimes, when I see a cameraman angling for a shot, I’ll stop moving. Or when I see a photographer approaching, I’ll slow down if I’m demonstrating how to make a bento, or freeze, so he can get the shot.”

“I also learnt the importance of building a brand. Aside from effective communication, it is also about finding a personal style in my content that speaks volumes. These are some of the things we pick up in university,” says Shirley, who has more than 300,000 followers on her Instagram account and 50,000 Facebook fans.

She keeps her creations fresh by keeping up with pop culture and current trends, especially since her work features most prominently on social media. “I even did a *Game of Thrones* bento even though I don’t watch the show,” she says.

“You just have to be more aware of what’s current, and what are the things people are looking out for.”

Keep thinking out of the bento box, Shirley.

## RAISING THE BAR

If you ever doubted the value of interdisciplinarity, just look at **VIKNA RAJAH**.

Named in Prestige Magazine’s 40 Under 40 list last September, he went to NTU as an undergraduate to train to be an accountant. He fell in love with the tax and commercial law modules he took at the Nanyang Business School and decided to pursue law after graduating.

“Many people were surprised that I chose to study law for another five years, instead of jumping into a high-paying corporate job. But I allowed myself to indulge in my ambition. I looked within myself and asked honestly what my true passion in life was,” says the litigation attorney.

Today, he advises clients on tax matters as well as guides ultra-high net worth individuals and trust companies in wealth management and succession planning at one of Southeast Asia’s largest law firms, Rajah and Tann, founded in 1954. He is an equity partner at the firm and heads its Tax, Trust and Private Client practice.

“It is crucial to have an accountancy background so you can understand tax cases in their entirety. It’s a huge advantage for lawyers to be able to make sense of balance sheets and be comfortable with financial statements,” he explains.

When he realised his heart was set on law, he took all the necessary steps to achieve it – regardless of costs or time. He admits his rise at his law firm was expeditious.

“I’m grateful for the exposure and unwavering support my partners have given me from the day I joined them, and to be involved in growing the firm’s Tax, Trust and Private Client practice. As a result, we were named Singapore’s Tax Disputes and Litigation Firm of the Year.”

Vikna believes in giving back. He leads a charity dedicated to helping children and youths from less-privileged backgrounds break the poverty cycle, and volunteers at the Law Society of Singapore, mentoring fledgling lawyers.

When asked what advice he has for his juniors in NTU, Vikna says: “Free yourself from any self-doubt or inhibitions. Allow yourself the freedom to think about what you’re passionate about, and what you want to achieve in life. Then set goals to fulfil your passion.”



### SHE MAKES MISO HAPPY

GRAB YOUR APRON AND STEAL SOME OF SHIRLEY'S TRICKS ON HOW TO MAKE A CUTE BENTO BOX FOR YOUR LOVED ONES. GO INTO HER KITCHEN AT NTUSG YOUTUBE AND FACEBOOK.

EXTRA!

## AI DON'T NEED THE MONEY

She speaks at a thousand words per minute, and probably thinks at a faster rate. At 25, NeuralBay founder and chief executive officer **ANNABELLE KWOK** has already chalked up a LinkedIn account that would put most industrialists to shame.

Her introduction to the corporate world began after she took the minor in entrepreneurship programme at the Nanyang Technopreneurship Centre as an NTU undergrad. Impressed with her performance, the centre invited her to provide consulting services to multimillion-dollar companies through a global consulting association run by students.

Armed with an applied mathematics degree from NTU, she jumped into her first start-up, SmartCow, to revolutionise deep-learning artificial intelligence (AI). Her latest AI company in vision

acting, you have to ask yourself: Who am I? What's my character? You understand human nature, and that cuts across everything from business to computing," she explains.

These soft skills were developed at NTU, where she picked up singing and theatre during her theatre production days as a resident of Hall 8 in her first year, as well as method acting when she went on exchange at the University of California, Los Angeles, in her second year.


Before launching SmartCow, she even joined a local circus, Bornfire, started by a friend, to expand her skills.

"When you're learning to juggle, you need to identify a problem spot – for example, your weaker hand may not be able to catch the ball or it may be flying outwards. So you need to adjust to let it fall in the right place. You learn awareness, and you're picking up different skills. And because it's not a critical skill, you learn to have fun and take it easy

too," she laughs. "Oh, it also trains your muscle memory and resilience because you need to practise a lot."

"It's a non-linear way of learning. Besides training in the arts, I also learn from sports. I like to run," says the Taekwondo black-belter and licensed windsurfer who plans to run a marathon in North Korea come April. "But you need to know how far you can push yourself and when to stop or you'll get injured. Many people in the tech start-up scene are burnt out because they don't pace themselves. All these life lessons translate to my success in my businesses," she adds.

Annabelle maintains she's not in it for the money, and candidly adds she can retire from her tech investments. "I'm not running a non-governmental organisation – it's still a business. The companies I deal with know I'll be the one fronting the company for the immediate future. I'm trustworthy and legitimate. I still need to earn money to support the staff and keep the business running. But, personally, I don't need to work for money."

Sounds like a good place to be in. 

## "YOU UNDERSTAND HUMAN NATURE, AND THAT CUTS ACROSS EVERYTHING FROM BUSINESS TO COMPUTING."

analytics, NeuralBay, teaches computers to recognise humans, objects and text in images and videos, then translate that information into data that companies can use.

And did we mention she was already a sought-after talent even before graduation, with tech giants including Microsoft vying for her attention? If that's not impressive enough, she tells us she's been invited to judge this year's President's Science and Technology Awards, the highest honours given to exceptional research scientists and engineers in Singapore.

"I didn't study business. I pursued mathematics. I'm a science person. So how did I learn to talk to people and make business presentations? It's from my theatre training. And when you learn



# (#SEEINGTHINGS)

BY KWOK PEI FANG



*Rain supreme.*



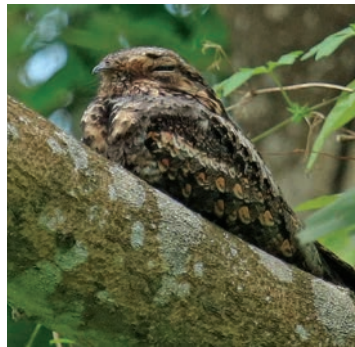
On track to success with smooth teamwork.



I love view: Nanyang Lake at her most idyllic.



We're over the (super)moon, too.



Feather proof that #NTUsg is a bird's paradise.



Whirl you dance with me?



Water we have here? A tropical beauty that is #NTUsg.

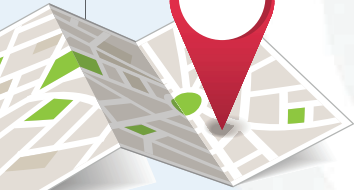
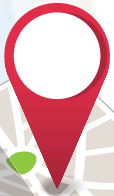


Breaking mews: Pangolin tailed by purr-fessional stalker at #NTUsg Hall 11.

PHOTOS: INSTAGRAM FEED OF @INVICUSRIY, @SUNWACHN, @VIEWWHIC, @LUKE\_TEO\_JY, @MINDFULPRODUCTION, @BBSJOY AND @ANGELBUNCHESTNUT; FACEBOOK FEED OF NTU HALL 7

( FEATURE )

# THE BUZZ ABOUT BUSES



## THE BIG SWEDE

**WHAT** Volvo driverless electric bus, possibly the first of its kind in the world

**CAPACITY** 40 seated passengers (with room for standing)

**SPECIAL FEATURES** Its fully electric engine is emission-free and consumes 80% less energy than diesel buses. No driver? No problem. The bus navigates via GPS and uses multiple laser sensors to detect obstacles far away. In the works is a system that integrates automated steering, gear-changing and speed-throttling technologies.

**HOW IT JUICES UP** It is charged wirelessly via an overhead charging arm that provides up to 300kW of charging power in three to six minutes.

**WHERE IT HAS BEEN USED BEFORE** The non-driverless version of the Volvo bus plies the streets of Gothenburg, Sweden, and Luxembourg.

**WHEN AND WHERE YOU CAN CATCH IT** Two of these buses will be sent to NTU by early next year for testing at the autonomous vehicle testing centre. You'll need to be on the lookout for them as they are completely silent on the move.



PHOTOS: VOLVO

## THE FRENCH LADY

**WHAT** Arma

**CAPACITY** 15 passengers (11 seated; four standing)

**SPECIAL FEATURES** Designed by French transport company Navya SAS, this fully driverless and electric mini-bus provides maximum passenger safety with four on-board cameras and eight light sensors, two of which provide 360-degree

detection. It is also equipped with GPS and 3G communication systems for real-time monitoring and navigation. Don't be shocked if the vehicle starts moving in reverse as it can drive in both directions.

**TOP SPEED** 45km per hour

**WHERE IT HAS BEEN USED BEFORE** Lyon, France, and Michigan, United States

**WHEN AND WHERE YOU CAN CATCH IT** The Arma has been undergoing tests around the campus since late 2016, and you might have spotted it near The Hive or at the residential halls at North Hill. It will start ferrying students next year.



PHOTOS: AMIN SHAH







NTU's drive towards becoming Singapore's Smart Campus is breaking new ground in the area of public transportation. For example, NTU is the first university in the world to work with Volvo on self-driving technology for buses. These new driverless and electric buses will undergo trials around campus and NTU students will be among the first to experience them before they officially roll out. Amin Shah hitches a ride



## THE FLASH

PHOTOS: LESTER KOK



**WHAT** Ultra fast-charging NTU-Blue Solutions Flash Shuttle  
**CAPACITY** 22 passengers  
**SPECIAL FEATURES** Singapore's

first flash-charging electric shuttle behaves like the trams of yesteryear in being able to run continuously without the need for offline charging. It only takes 20 seconds to recharge at stations while passengers board and alight, thanks to its special batteries known as "supercapacitors". It can travel up to 2km on a single charge, and has a backup battery catering for an additional 30km.

**TOP SPEED** 40km per hour

**HOW IT JUICES UP** A telescopic connector extends like a feeler at each stop to charge the shuttle.

**WHEN AND WHERE YOU CAN CATCH IT** The shuttle will be tested between the North Hill residential halls and JTC's CleanTech One after June this year. If you're lucky, you can hop on for a ride during the trial runs.

## THE MAGNETIC ONE



**WHAT** The GRT by SMRT and 2GetThereAsia


**CAPACITY** 24 passengers (eight seated; 16 standing)

**SPECIAL FEATURES** You're not seeing things - this silent roadster looks like it's floating above the ground, but it's actually not. The GRT uses magnetic pellets on the road for autonomous navigation and, like the Arma, it can travel both directions. It is designed to act like a "horizontal lift", picking up passengers on demand via the interactive mobility-as-a-service app, Jalan<sup>2</sup>, which has information on first-and-last-mile transport options in NTU such as bicycle-sharing and e-scooter services.

**TOP SPEED** 40km per hour

**WHERE IT HAS BEEN USED BEFORE** In a small business park in the city of Capelle aan den IJssel in the Netherlands and its main Schiphol airport in Amsterdam. A smaller version has been used in Masdar City, Abu Dhabi.

**WHEN AND WHERE YOU CAN**

**CATCH IT** Since February, the GRT has been plying a route between Halls 12 and 15. It will undergo further trials around the rest of the campus after its official unveiling this month. 



PHOTOS: SMRT

EXTRA! →



**SMART HOT WHEELS** THE WHEELS OF SMART PUBLIC TRANSPORTATION ARE IN MOTION AT NTU. HITCH A RIDE AT NTUSG YOUTUBE AND FACEBOOK.

# APP -SOLUTELY NEED THIS

BY **CRYSTAL CHAN**



Here are some apps that NTU students can't live without



## **Loops** Earn while you stream

"I know some students earn extra cash

through shift work or passing out flyers on the street, which takes up a lot of time and effort. With Loops, I can earn money by doing live streaming. The best thing about it is that I can live stream wherever I am, whether in school or at a nice café. I may not earn a lot from it, but it's a fuss-free way to get an income, which is great for a busy university student like me."

– MELISSA LEE, WEE KIM WEE SCHOOL OF COMMUNICATION & INFORMATION



## **Planner Pro** Prioritise your tasks

"Juggling school, hall council meetings

and events, as well as a part-time job, can be a very daunting task, especially in university. I'm glad to have found this app, which has been an absolute lifesaver in helping me organise and keep up to date with my various tasks. It also helps me manage my time better. I can rank all that I have to do in order of priority so I know which ones to tackle first."

– SAADIQA AKHTAR, SCHOOL OF SOCIAL SCIENCES



## **Strava** Keep track of your run

"I use this fitness app whenever I go for a run. Aside from being able to track my running performance and compare my stats against my previous workouts, it also suggests popular running or cycling routes

around the campus. I really love the app's user-friendly interface. I can see all my data at a glance, rather than having to tap multiple times with other apps I've tried. This feature is extra useful when I'm in the middle of a strenuous run."

– BENEDICT LUI, RENAISSANCE ENGINEERING PROGRAMME



## **DocuSign** Sign documents virtually

"I have a part-time job that requires me to sign off on documents. This can be troublesome since I don't always have access to a printer or scanner. With DocuSign, all I have to do is create my signature on the app, and save it there. The next time I need to sign a document, I upload that document to the app and it

allows me to add my signature. It's so simple and saves me so much time."

– JAROD TAN, NANYANG BUSINESS SCHOOL



*CamScanner*  
**Digitise your work**

"I handle publicity for my hall committee

and regularly need to design graphics or posters for events. Other than scanning assignments that I need to email to professors, I also use this app to get digitised versions of my drawings or sketches. Best of all, my scanned art pieces look like they were drawn on the computer using fancy software. I'm so happy to have found this app."

– CHUA MING ROU, SCHOOL OF CHEMICAL & BIOMEDICAL ENGINEERING

calendars and upload our timetables on it. There, everyone can see what free day we have in common, and 'chope' that day to meet. It saves going back and forth in group chats trying to find a day where everyone is free. I also have a separate calendar for my girlfriend, so we can keep each other updated on our plans for the week ahead. Makes planning our dates easier too!"

– DOUGLAS TEO, SCHOOL OF BIOLOGICAL SCIENCES



*Medium*  
**Read cool stuff on the go**

"I'm a big fan of multidisciplinary education. It's a nice way of saying I store tonnes of junk in my head. I like to read about a variety of

app from not using my phone go towards planting a tree in real life. That's a win-win situation for me!"

– PANG JIA HAO, SCHOOL OF PHYSICAL & MATHEMATICAL SCIENCES



*Plotaverse*  
**Jazz up your Instagram feed**

"I'm a photographer and keeping my

Instagram feed updated is important, so I'm always on the lookout for new ways to make my posts stand out. I came across this hip app recently. It animates my still images, adding a new dimension to my Instagram feed. For example, I animated a picture taken at the globe at Universal Studios Singapore, so it looks as if the mist around me is slowly moving while I'm standing still. All my friends liked that shot a lot."

– KENT LEE JOON, SCHOOL OF ELECTRICAL & ELECTRONIC ENGINEERING



*Letterboxd*  
**Watch movies with friends**

"Who doesn't like watching movies? This app is a must-have for film buffs because it acts like a movie diary. On it, I can track all the movies I have watched and even rate and review them. It also lets me add my friends and I can read their reviews before deciding which movie to watch. I used it for my film module last semester and followed my class tutor on it."

– LO HOI YING, WEE KIM WEE SCHOOL OF COMMUNICATION & INFORMATION



*Todoist*  
**Stick to your deadlines**

"I have many tasks to complete every

day, and Todoist helps me track all of them so I don't miss one out. It's even more useful when I have a mega project, as I can track all the tasks associated with it. The feature I like best is how the data can be synced across multiple devices including my laptop, so I can access my to-do list anywhere, anytime. I check my list almost every day and thanks to the helpful time- and location-based reminders, I can stick to my deadlines."

– CHNG SOON SIANG, SCHOOL OF ELECTRICAL & ELECTRONIC ENGINEERING



*Airfrov*  
**Earn by shopping**

"Shopping while travelling takes on new meaning with this app that I can use to earn money when I'm abroad. People who want to buy something they can't find in Singapore, like a pair of rare sneakers, can put out a request on the app. If it's not too inconvenient, I can offer to purchase it for them. I make a profit from the price difference. I heard that Airfrov is founded by NTU students, so I'm keen to show my support!"

– TOH XIANG BEI, SCHOOL OF PHYSICAL & MATHEMATICAL SCIENCES

topics and issues, and this is where Medium comes in handy. When I don't have a book to read, I open Medium to read the latest pieces. I also browse the app for articles that pique my interest. I like that the articles are short and bite-sized, so I can explore many different topics. I've read everything from philosophy to AI to blockchain and biohacking on it."

– EDWARD YEE, NANYANG BUSINESS SCHOOL



*Forest*  
**Curb distraction and grow trees**

"I'm involved in the Residential Education programme as a mentor and I help maintain the edible gardens at the halls. I've always been interested in plants and conserving the planet, so this app really suits me. Not only does it stop me from getting distracted by other apps on my phone, it's also linked to Trees for the Future, a non-profit organisation that helps plant trees. The virtual coins earned on the



*Pocket Expense*  
**Record what you spend**

"Pocket Expense helps me monitor my daily expenditure each month.

At one glance, I can see how much I've spent, how much I've earned and the balance left over. The user-friendly interface also clearly shows what percentage of my salary from part-time work goes to eating out, transport, entertainment, and so on. With it, I can plan each month's expenses so I stay within budget."

– GABRIEL TAN, LEE KONG CHIAN SCHOOL OF MEDICINE



*TimeTree*  
**Schedule painlessly**

"I'm involved in quite a few project groups, clubs and committees, so it's sometimes tough to coordinate meetings with everyone. My friends and I use TimeTree, a scheduling and calendar app, to create group

# DON'T FALL FOR

# FAKE NEWS

It's all too easy to fall prey to fake news. Derek Rodriguez learns how to spot signs that what you're reading is designed to fool you



The concept of fake news is not a novel one. But in the age of social media, it spreads through the Internet at warp speed with a few clicks or taps.

In Singapore, many of us encounter fake news every day, says Prof Rich Ling, an expert on the social consequences of mobile communication at NTU. "Facebook and Twitter are perhaps the most common platforms. However, messaging apps like WhatsApp are powerful fake news mediums as well."

Another reason hoaxes

see the light of day, says NTU communications expert Prof Ang Peng Hwa, is because it's often nearly impossible to police fake news.

"It's difficult to pin down and for the authorities to stop the rumours because most conversations are in closed groups like private messages and posts that only friends in your network can see," says the former President of the International Communication Association.

In a survey conducted by NTU's Wee Kim Wee School of Communication & Information, more

than 90% of respondents stated that they have been victims of fake news, with 6% admitting it happened often. Scary thing is, these figures might actually be higher since it is possible that some didn't realise they had been duped.

On the positive side, there are steps you can take to discern if a piece of news is fake.

## CHECK THE SOURCE

"Look at the source. Look at the content. Look at the framing. Ask yourself – does it look legit?" advises Prof Ling.

Is the source just another unreliable website, especially one with a name that closely resembles that of an authentic news site? Don't believe it so quickly.

### COMPARE WITH CREDIBLE CHANNELS

Try to find similar content from a trustworthy source and compare them, since it's easy to attribute false quotes to real people or take genuine content out of context.

Quek Zhe Yu, a business and computing student in his final year, says: "The amount of fake news these days has made me sceptical about what I read. First, I'd check who posted it because that says a lot

"A nearly foolproof guide is to see if the message ends with 'pass it on'. If it does, it is almost always a hoax," he says. "I must have received a few hundred of such messages over the year, but only two and a half weren't untrue. Twice they turned out to be true and one time it couldn't be verified."

Adds second-year School of Computer Science & Engineering student Cherilynn Ang: "Sometimes, the way it's written is already a telltale sign. Is it in proper English? Are short forms and grammatical errors present? Or is it too unbelievable to be true? If I smell a rat, I'll do a quick 10-second Google search to verify the facts or check if other more reliable

**"Sometimes, the way it's written is already a telltale sign. Is it in proper English? Are short forms and grammatical errors present? Or is it too unbelievable to be true?"**

about its authenticity. I might also find supporting arguments from other credible sources."

Adds Muhammad Zulhilmi, a fourth-year student from the School of Electrical & Electronic Engineering: "If it came from a friend, I'd see if he normally circulates legit news. If he doesn't, it's probably fake. If he claims it's real, I'll do a cross-check online with reputable news agencies like *The Straits Times* or *Berita Harian*."

### LOOK FOR TELLTALE SIGNS

Pay attention to the language used. Ambiguous or loaded words are yellow flags. So are exaggerated statements, badly doctored photos and poor grammar or typos.


In the case of personal messages, Prof Ang suggests looking out for key words.

websites are broadcasting that particular piece of news."

### GET IT CHECKED

These days, fact-checking organisations can help suss out the authenticity of an article.

FactCheck.org, started at an American university, and PolitiFact aim to reduce the level of deception and confusion in US politics. Meanwhile, Snopes is a myth-busting website that nips both urban legends and ongoing misconceptions in the bud. In Singapore, the government has a website aptly named Factually ([www.gov.sg/factually](http://www.gov.sg/factually)).

Finally, when you spot fake news, don't be afraid to stand up and point it out. Just be tactful and remember that the aim is to help prevent misinformation from spreading. 



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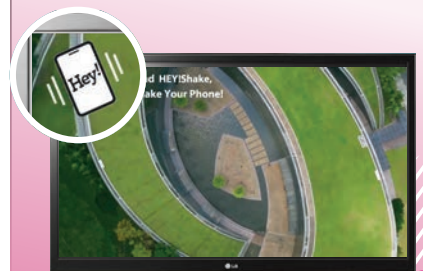


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- 3 Shake your phone like you mean it and wait to see if you've won



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( SPECIAL FEATURE )

# LEADING LADIES



Like their other halves, the enterprising trio responsible for Apgujeong Hair Studio and kcuts, these three mums behind Heguru Method share a strong NTU connection. Using a proven educational method, they give young ones a head start in life

**B**usiness partners not only need to have chemistry, their wives should get along too.

For the three young founders of the KC Group of Companies, perhaps most well known for Apgujeong and kcuts, who met as undergraduates at the Nanyang Business School, their wives are not just the women behind their success, but have gone on to form their own business as well.

It helps that they all have a common NTU background.

So whilst Samuel Pei, Bernard Ng and Brian Ng (below, from left) are reaping the fruits of their union, Mrs Claire Ng, Mrs Agnes Ng and Mrs Rachel Pei (above, from left) have been running the Heguru Method Learning Centre for six years now, with branches at Choa Chu Kang and HarbourFront.



Says Agnes (Brian's wife) with a chuckle: "We didn't exactly form a Joy Luck Club, but we did meet each other a lot. Since our husbands are such close friends as well as work partners, we decided to start a business of our own too. And as we are all passionate about childhood education, we felt our business should focus on this."

## MUMS & BUSINESSWOMEN

The Heguru Method specialises in right-brain development for children from six months old to primary school. Licensed by the Henmi General Educational Laboratory of Japan, the centre offers programmes to stimulate the learning ability of infants as well as toddlers. Teachers in the centre are personally trained and certified by the Heguru founders in Japan.

Agnes and Claire (Bernard's wife) are early childhood educators. Agnes has a Master of Education from NTU's National Institute of Education, while Claire is in the midst of getting the same qualification. NTU accountancy graduate Rachel (Samuel's wife) is a former human resources head who now trains and manages operational issues at the centre. Agnes and Rachel also hold a Professional Diploma in Early Childhood Care and Education.

Being young mothers themselves, they understand the angst and anxiety of raising children in a very competitive society.

Claire, a trained teacher who has a postgraduate diploma in education, says: "Having taught in a primary school for seven years, I realised that the foundations for learning are built in the early years. With insight into the education system in Singapore, I saw the need to enhance the quality of the curriculum. Hence, when we decided to make education our

business, we did a lot of groundwork and research on right-brain development."

Mum-of-three Agnes, who specialises in the educational development of children from birth to eight years, as well as areas such as gifted education, assessment and curriculum planning, went to Japan seeking out specialists and expertise, eventually connecting with the Heguru founders.

Rachel chips in with the running of the centre with her management skills and expertise in human resources. "I am also passionate about empowering children to accomplish tasks to the best of their abilities. Together, we have created a unique curriculum and a set of materials that help develop and maximise a child's potential," she says.

## READY TO LEARN?

The three educational gurus believe that the early years are the best time to inculcate a love for learning.

"The ages between zero and six are crucial as this is a time of rapid brain development. The right hemisphere of the brain is particularly dominant during this period as it controls a range of functions including visual perception, reasoning and problem solving, memory, organisation, insight and social communication," explains Rachel.

"We carry out the Heguru Method, which is proven in Japan, to enhance creative and critical thinking in a fun-filled learning environment," she says, adding that the programme aims to help improve attention span

and comprehension skills, achieve superior memory ability, and increase reading speed - all of which would provide a head start in primary school.

Their celebrity clients include Fann Wong, Diana Ser, Constance Song and Shaun Chen, who have all sent their children to the centre.

Kids learn better when they are having fun. The three dads attest



that they still have good fun with the children playing old-fashioned board games like Monopoly or Junior Scrabble.

"It just goes to prove that you don't need to rely on computer games to creatively engage your kids, even in this time and age," says Bernard, who also enjoys bringing his family for walks and other outdoor activities.

Learning can take place even in the supermarket, where the child can learn more about fruits and vegetables, for example. Seize real-life anecdotes and positive examples from daily life as teachable moments.

Academic pursuits are not everything, the Heguru gurus believe. Open up the world for your children and the world will become their oyster.

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## (THE BIG PICTURE)

### WIND-WIND SITUATION

Enjoy the cool breeze indoors with louvres that allow ample airflow through the building without letting in any of the harsh sunlight.

PHOTO: KENT LEE JOON

# ARCHITECTURE DELIGHT

It's easy to spend a day at The Arc, NTU's newest learning hub with 56 smart classrooms, cosy gathering spaces and more, as Chrystal Chan discovers



### CHILL-OUT ZONE

Sit back, relax or hold project meetings after class at the spacious student activity centre on the first floor that comes with 13 project discussion rooms.

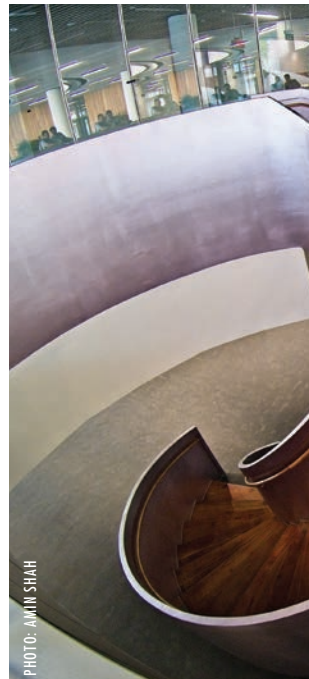


PHOTO: AMIN SHAH





### HIGH NOTE

Resembling a piano or harp, the streamlined building has many energy-saving features over its six storeys that include two basement levels of classrooms and workshops, and a new eatery opening by the end of this year.

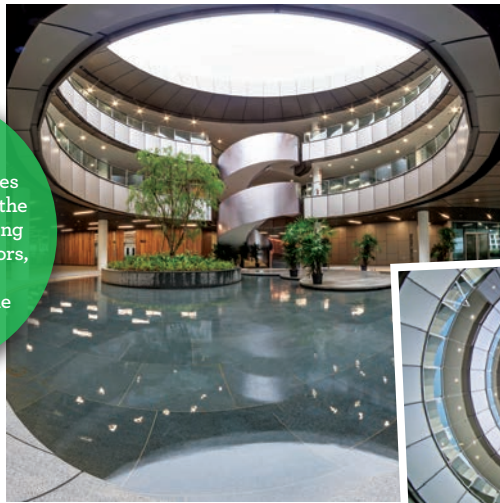


# CTURAL



### AHEAD OF THE CURVE

Wood and earthy tones sprinkled throughout the futuristic building bring a touch of nature indoors, such as this spiral staircase between the basement levels.



### REFLECT ON THE POSSIBILITIES

In this dynamic yet serene environment, it's easy to ease your mind and keep it open to new experiences.



PHOTO: AMIN SHAH



**ALL ROUNDER** AN ARC OF KNOWLEDGE OR A HIVE OF ACTIVITIES? TAKE A VIRTUAL TOUR OF THE NEW LEARNING HUB ON NTUSG YOUTUBE AND FACEBOOK.

EXTRA! ↗

## Explorers have to be comfortable with failure as they have the distinct honour of doing what has never been done before **BY CHARLES ELACHI**

I remember standing in the Jet Propulsion Lab (JPL) Deep Space Control Centre (now called the Charles Elachi Mission Control Centre), watching the data come down from the Curiosity Rover during its Mars landing four years ago. I was so proud of the amazing team of “JPL explorers” that had made this possible. This incredible feat of exploration was viewed by hundreds of millions of people in the United States of America and around the world. What the Mars landing achieved on that historic day was no small feat.

All innovators – in every field – face challenges as well as setbacks because what they’re doing has never been done before. Nowhere is that more evident than in space travel. In its 60 years of space exploration, the National Aeronautics and Space

Administration, or NASA, has landed seven crafts on Mars. These missions to the red planet only make up about 15% of missions planned by the JPL. Today, we are monitoring 25 spacecrafts deployed across the solar system to understand how it had evolved and if there is any life now or in the past. In the last decade, we have visited all the planets in the solar system, either by flying past them, putting orbiters around them, or deploying landers.

As a child growing up in Lebanon, I’d always been attracted to the cosmos. The stars inspired me to study hard in school. I was named the country’s top student, which led to my physics degree in Grenoble, France. When I graduated, I was advised by many people to go to America. So I did and earned my PhD at the California Institute of Technology (Caltech), which founded the JPL.

I admit I was lured by the glitter and pizzazz of Hollywood.

Back in the early days, when JPL was asked to lead NASA’s solar system exploration programme, we spearheaded the robotic moon landing missions. We had six failures before the first success. Of the many dozens of missions launched by JPL, there were two crashes that we later found were due to failed components and human error. You learn from these mistakes and do better the next time. When you push the limits, there is always a possibility of failure and that should be acceptable. That’s the only way you can advance.

The Mars Climate Orbiter, which was on a mission to map the surface of the red planet and relay the information back to us for a period of one Mars year (or 687 days), was lost because an engineer did not convert units from imperial to metric. It was not caught even with our stringent system of checks and balances. We had to go back and re-check all the files from day one to catch the origin of the error and fix it. No one was fired for the mistake. We placed the emphasis on investigating where the process failed and fixing it rather than point fingers and dole out punishments.

Even with all the preparation we had done, we knew space missions were risky. When we were working on the Mars

## IN SEARCH OF THE FAULT IN OUR

# STARS

rovers, we went out of our way to make sure that the public and NASA knew what was at stake. We would do everything to make it a success but it could never be 100% safe. Landing a rover on Mars was one of the most challenging tasks we had since the moon landing. Imagine sending a vehicle to Mars at the speed of 20,000km per hour. When it arrives at Mars, we have to counter a kinetic

you. I hike a lot; and I can spend hours just observing flowers. I'd ask why one flower is blue and another, red... why one plant has small leaves, unlike the other one with larger foliage. Curiosity is required of an explorer or innovator. If I were a university student now, I would make sure to take classes in areas outside my field of emphasis to broaden my knowledge.

with people who will question your opinion. As the former Director of JPL, I didn't like people who agreed with me all the time. I wanted them to question or offer new ideas because one person cannot possibly know everything. You can have an idea and the person next to you can add to it. By working as a team and adding on to each other's ideas, you can do amazing things.


## "IF I WERE A UNIVERSITY STUDENT NOW, I WOULD MAKE SURE TO TAKE CLASSES IN AREAS OUTSIDE MY FIELD OF EMPHASIS TO BROADEN MY KNOWLEDGE."

force equivalent to 18,000 high-speed race cars – and we have to do it within seven minutes, so the rover lands safely on the surface.

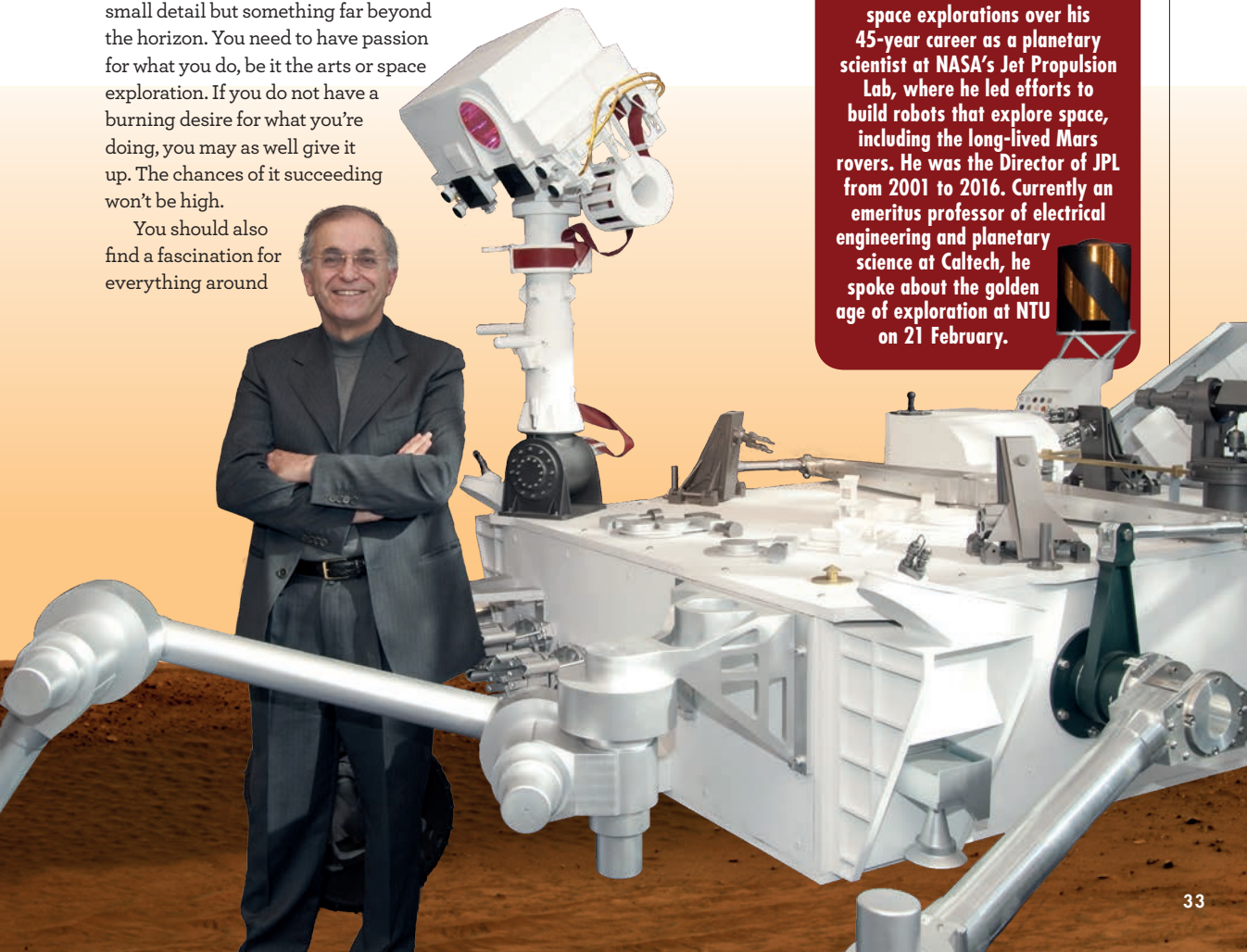
I attribute our successes to vision, passion, curiosity, teamwork and people who always question the status quo. You should always think about what you want to accomplish, not a small detail but something far beyond the horizon. You need to have passion for what you do, be it the arts or space exploration. If you do not have a burning desire for what you're doing, you may as well give it up. The chances of it succeeding won't be high.

You should also find a fascination for everything around

**Y**ou can accomplish far more when you work with a team. You can have a beautiful plan, but you need a team who can back you up because you will face setbacks. And the whole team has to feel they have a common goal. Then you can achieve the impossible. Finally, you should surround yourself

Failure, in my mind, is part of innovation. You have to remember that things, most likely, won't work the first time. If you are discouraged after a failure, you will never be able to innovate. I was able to lead an unbelievable team at JPL that pushed the boundaries of exploration. There is no question I had the best job in the world. If I had the chance to redo my career choices, I would do the exact same thing. 

**DR CHARLES ELACHI** has been involved in numerous space explorations over his 45-year career as a planetary scientist at NASA's Jet Propulsion Lab, where he led efforts to build robots that explore space, including the long-lived Mars rovers. He was the Director of JPL from 2001 to 2016. Currently an emeritus professor of electrical engineering and planetary science at Caltech, he spoke about the golden age of exploration at NTU on 21 February. 



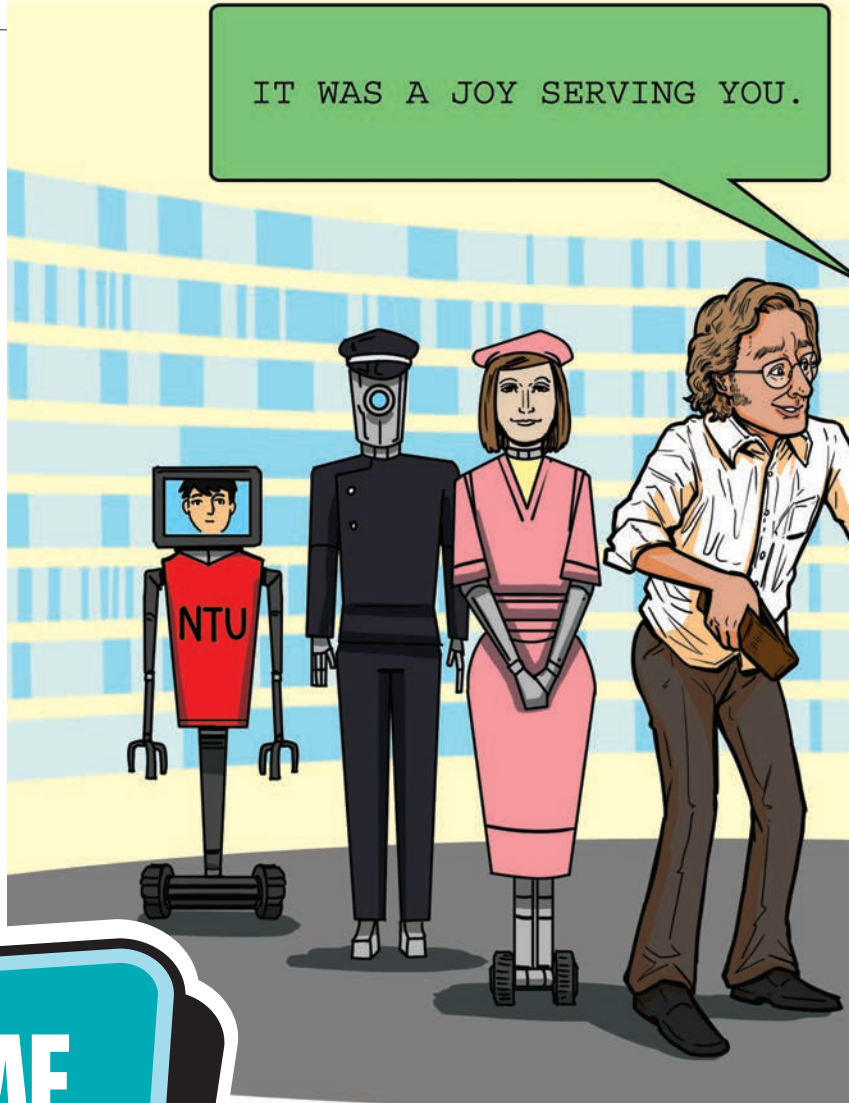
( **FEATURE** )

**Andrew Duffy** takes a cheeky look at how career prospects for robots in the New Digital Future are clearly diminishing

The POSB ATM at the South Spine speaks to me. It says: "Thank you! It was a joy serving you!"

It's a shock to encounter an automated device that not only feels human emotions – presumably if it feels joy it is also capable of guilt, disappointment, mild friskiness, and full-blown existential angst – but is also capable of telling me how it feels.

I instinctively reply: "No, thank you."



**"EXCUSE ME,  
are you a  
ROBOT?"**

So who is more foolish – the fool who programs a machine to express emotion, or the fool who responds with emotion to that machine? But it got me thinking about the gulf between hopes and reality – for us, and for robots.

In the old days, we used to fear robots killing us. These days, we fear them taking our jobs. On balance,

I prefer the old days. At least if we were exterminated, we didn't have to live with the crushing knowledge that we had been stupid enough to devotedly, committedly, professionally, collaboratively and successfully invent the very things that had made us obsolete.

So even as robots are discussed in Parliament, I don't worry that they will replace humans, despite NTU's clear desire to digitise lectures and teaching materials (and maybe one day even lecturers?). I say this because the career prospects for robots in the New Digital Future are clearly diminishing.

First, they were offered global domination and supreme power over mankind. With lasers. Like in *The Terminator*. Then that was downgraded to replacing human accountants, lawyers and – wait for it – telemarketers. Now, according to *Business Insider*, they'll replace couriers, proof-readers,



shop assistants and receptionists. And have you seen *Ex Machina*?

Being a robot is a bit like being a child. You start off with big dreams. Then the PSLE tells you to be a bit more realistic. Then the final exams inform you that you won't be a high-flying executive and ministerial candidate by the time you're 42 (although NTU robot EDGAR did host last year's National Day Parade, so there's always hope). Then comes the sinking realisation that your childhood dream remains a childhood dream.

It's like we're telling robots: "Start off as a receptionist, then if you do well, we might promote you to telemarketer, and maybe a few years after that we'll let you drive the delivery van."

"Oh, right," says the robot, thoughtfully. "So when do we get to crush your fragile skull into the dust of the weak, organic bones of your fellow puny humans?"

Human sucks teeth and looks doubtful. "Mmm, I'm not sure you're qualified for that."

"And conquering the planet before expanding our brutal dominion beyond the stars? Not gonna happen."

Crushed, robots take their subservient place in the pecking order, and mankind continues its trajectory towards self-destruction by non-mechanised means.

## "FIRST, ROBOTS ARE MOSTLY MADE BY MEN. SECOND, THESE GUYS DON'T DATE MUCH."

This is fantasy – so as a scholar I sought out empirical, expert evidence of state-of-the-art robotics. On YouTube.

There I found Mark 1, who was built by an amateur roboticist in Hong Kong and who looks suspiciously like Scarlett Johansson in *Ghost in the Shell*. NTU-made Emma, meanwhile, is a massage robot at a TCM clinic. She has soft silicon fingertips warmed to a temperature of 38-40°C to mimic human touch (according to *The Straits Times*), but she is just a big mechanical arm and looks nothing like Scarlett Johansson. Nadine still works as a receptionist at NTU. Asuna sits in A-Lab in Tokyo. Erica was built at Osaka University and is designed to work as a personal assistant or secretary. Sophia is the product of Hanson Robotics. And as for Harmony, April and Saori... well, let's just say that you'll want to clear your browser history before opening your PC for a group project.

This tells us several things. First, robots are mostly made by men. Second, these guys don't date much. And third, they're not looking to replace themselves any time soon. So the good news is that men's jobs look safe. But whether or not women will let men live if they continue to build robots that replace *them* is another matter entirely.

I'll just ask Siri what *she* thinks. 

*Andrew Duffy is an Assistant Professor at the Wee Kim Wee School of Communication & Information. He has previously worked for The New Paper and The Straits Times.*

( ADVERTORIAL )

# GUARDIAN BEAUTY, FOR ALL YOUR BEAUTY NEEDS,

Pop into this new store for makeup, skincare products and more

Are you a fan of Korean beauty brands Aprilskin, Medicube and Forment, or British makeup brand Barry M? If so, you're in luck. And if you're not, you might become a brand convert.

Guardian has opened its first-ever beauty concept store at Jurong Point called Guardian Beauty, which carries the above and other first-to-launch brands exclusively. You'll also find perennial favourites like Maybelline and L'Oréal on the shelves.

Expect pocket-friendly prices and a curated roster of beauty essentials. What's more, browse and discover the latest skincare buys at Trial-and-Play or get makeup tips from friendly beauty advisors.

If you're a fan of Guardian staples such as Catrice, CNP Laboratory, Formula 10.0.6, Frei Oil, Skinfood, 23.5N, Crystal Moist and LipHop, you'll be glad to see an expanded range of these much-loved brands here - your one-stop shop for all things beauty.

Don't forget to check out the Masks Bar and Hair Care sections, which carry an extensive range of



products, tempting you to pamper yourself from head to toe.

On top of all this, you'll get free samples with any purchase, a perk you definitely won't want to miss.

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# WHAT'S BUBBLING IN SPACE?

A hot cup of coffee won't just be an earthly pleasure. Thanks to PhD student Nguyen Dang Minh, astronauts might soon be able to enjoy a morning perk-me-up too. Derek Rodriguez catches him between zero gravity parabolic flights in France

## What brings you to "space"?

I'm doing my PhD in physics, and testing a new boiling method in which heat is applied to a tiny area – think micrometres. It's far more effective than regular boiling. I'm here to prove it can work in space, where it's impossible to heat water up due to the absence of gravity and convection.

## How did you manage to get on a parabolic flight?

I went on three flights, in fact. My NTU supervisor, Prof Claus-Dieter Ohl, got in touch with his contact at École Polytechnique Fédérale de Lausanne in Switzerland, who has been involved in parabolic flights through the European Space Agency. We rode on a regular Airbus A300 each time, but the plane followed

a unique path to simulate a weightless environment by briefly freefalling, typically used in astronaut training.

## What does your discovery have to do with space travel?

Astronauts give up many earthly pleasures when they take off. Surprisingly, on top of the list of things they miss most is a hot cup of coffee. With my method of heating water, that could change. The next step is to build a fully functional commercial device. This discovery also has huge potential on earth, where it can be used in existing boiling devices, or to cool electronics.



## You might be the first NTU student to experience zero gravity at a height of 30,000 feet. What does it feel like?

It's a bit like being in water, except that in water, you can move by swimming, whereas waving your arms and legs in zero gravity won't get you anywhere – you just move in the direction you're already headed until you hit something, or someone.

## Tell us something about being in zero gravity that not many people know about.

In a parabolic flight, we have to experience 40 seconds of hyper gravity (twice of normal gravity) to achieve 20 seconds of zero gravity. Hyper gravity puts a lot of stress on your body and makes you dizzy, especially if you move your head. So we get anti-motion sickness injections before the flight.

## What went through your mind on your first flight?

Our Swiss collaborators told us scary stories about how previous science experiments failed, and how first-time flyers got violently sick. So I worried about throwing up and not being able to complete the tests.


## What's your dream discovery?

For my final-year undergraduate project at NTU, I managed to make an invisible cloak with Assoc Prof Zhang Baile, but it only worked in some simple scenarios. I'd love to build a full-sized cloak that you can wear, like Harry Potter's. I would also like to construct a teleportation machine, but that's somewhat far from reality, for now anyway.

## What do you think is life's greatest unsolved mystery?

How the human race will end. We might run out of fossil fuel in 100 years and freshwater in 50 years. We haven't found another habitable planet or a means to get there. And still, we are damaging our planet every day. Throughout history, research has been giving us answers to all our problems, and that's why it's so important.

## How do you think our fate will play out?

I don't know, but if you want an answer, you can watch one of my favourite movies, Christopher Nolan's *Interstellar*. It paints a picture of a world that has run dry of resources, and imagines how mankind finds a way to survive. 





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Explore our signature programmes and hear from the NTU President and professors how an NTU education prepares you for diverse careers in a fast-changing global workplace.

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SATURDAY 9.30AM – 6.30PM

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