# **TIM** Asia







 It's Stammtisch

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## director's message



t has been a season of wonderful events at TUM Asia. Now into the sixth and fifteenth cohort of Bachelor and Master students respectively, we are excited to see their diversity and enthusiasm come into play during our annual orientation welcome. The games marked the start of their TUM identity, while encouraging problem solving, innovation and leadership. Read about the meaningful interactions that our students had on pages 4 to 5.

In our globalised world, it is easy to travel abroad to seek out new adventures. Many students choose to travel overseas to pursue a higher education for a new experience. For some, they might choose a country that they have never stepped foot in previously. Amita, Duc, Hao Min, Francesco, Ithikul, and Yuning hail from different educational and cultural backgrounds, however they now share a similar journey - they decided to pursue a German Degree in Singapore. Hear more about their thoughts and experiences in TUM Asia on pages 6 to 9 and pages 16 to 19.

TUM Asia had the pleasure to host Prof. W.A. Herrmann, President of TUM, during his recent visit to Singapore. A TUM Alumni Stammtisch was held in Paulaner Brahaus, allowing TUM and TUM Asia alumni to meet up while enjoying German food and beer in a casual setting. I was pleasantly reminded of the 2012 TUM Stammtisch in Singapore, which President Herrmann had the honour of joining. I was pleased to witness many alumni making new friendships while enjoying themselves. To read more about the stammtisch, turn to pages 20 - 21.

This issue is packed with exciting reads, highlighting our students' journey and showcasing how their education has been able to inspire their future. We hope to see you, our readers, become part of our story as well. With that, we hope that you will enjoy this insightful read.

Yours Sincerely,

/ Dr. Markus Wächter Managing Director, TUM Asia

# Welcome To The TUM Family



t the start of every academic year, TUM Asia's campus is full of life as the newest members of the Bachelor and Master programmes arrive to commence their studies. Our yearly orientation programme aims to address both the administrative and social needs of our new students, as well as allow them to have a smooth transition into university life.

On the 29th of July, thestudents came ready for the events of the day and donned on their new TUM shirts. Everyone was excited for this new chapter of their education journey. While the new students were being briefed by the various academic staff, TUM Asia's current Bachelor students were preparing for the orientation games to come after lunch.

The orientation games allowed the new students to get to know one another. Everyone was split into different groups and students from different courses had to cooperate with one another and work together for a common goal; to win the top prize. The games were challenging and on the whole, it was a positive starting point for students to make new friends.

The successful run of the games would not have been possible without the support of the current undergraduate students, who took time out of their busy schedules to plan the games. Having participated in the games that were

planned by their seniors, they contributed to make sure that this experience was equally as exciting for their juniors.

### Although the orientation took place for a few hours, the committees made many considerations to ensure that the games would be communicative, fun and yet challenging.

Elean Ng Bachelor of Science in Chemical Engineering











It was a challenging and fun experience where we were all responsible to make sure that the outcome of the games was successful. Although it was hard work, I felt that it was all worth it when I saw the fun that my juniors had.



Carolyn Quek Bachelor of Science in Chemical Engineering







## FEATURE: A REFRESHING EXPERIENCE AWAY FROM HOME Fascinating Singapore



"Why study away from home?" is a huge question on our student's minds when it comes to choosing a higher education institution. In this issue, DIGEST speaks to a few of our students to find out what influenced their decision to study in Singapore, and how the experience has been.

### Give our readers a short introduction about yourself.

Amita: I was born and raised in Mumbai, India.

**Duc:** I was born and raised in Hanoi, Vietnam and moved to live in the United States of America for 6 years. I majored in Chemistry during my undergraduate studies. People usually call me Duke. I love hiking, rock climbing, or just simply doing anything involving the outdoors.

**Francesco:** I am from Turin, Italy. I studied Electronics Engineering during my Bachelor studies at Politecnico di Torino. I lived in China for two years; I spent the second year of my Bachelor programme attending Tongji University of Shanghai. Immediately afterwards, I did an internship at a Shanghai-based company and eventually received a double degree (Chinese and Italian) in Electronic Engineering as well as two Mandarin Chinese certificates.

**Ithikul:** I am from Thailand and I previously completed my undergraduate studies in Mechanical Engineering

from Thammasat University, Thailand. I like traveling to broaden my worldview.

**Yuning:** I am from China and I am really glad to be in Singapore. I am eager to upgrade myself expand my views of world issues during my time in Singapore.

## Was coming to study at TUM Asia also your first time in Singapore?

**Duc:** This is actually my second time in Singapore. I visited Singapore for a short vacation with my family back in 2008.

**Ithikul:** This is the second time that I have been to Singapore. My first time in Singapore was about 2 years ago and I visited for 3 days during the New Year's day period. It was a pity it was so short then and I am glad to be back.

**Yuning:** This is my first time being in Singapore. However, I have planned for many years to visit Singapore. It is really wonderful to finally be here.





### What attracted you to Singapore?

**Amita:** I strongly wished to pursue my higher studies with a German university as it would be a stepping stone towards my dream to live in Germany. While looking for various postgraduate programmes, I came across the Green Electronics programme by TUM Asia in Singapore. Although there is another programme that I could qualify for, I chose Green Electronics over Integrated Circuit Design as I found that its modules were unique. That was the motivating factor for me to study in Singapore.

**Duc:** The aspects of TUM Asia's programmes were wonderful to me as you could live and study in a multinational environment. More importantly, the modules being offered would help me to strengthen my knowledge and further my career path.

**Francesco:** Singapore is a melting pot of different cultures, religions and ways of thinking. It is the cultural, social, technological and economical bridge that connects Europe and Asia. I was fascinated by those aspects and it led me to further my education in Singapore.

**Ithikul:** Singapore has impressed me since the first time that I visited. I am interested in the development of technology as well as the diversity of cultures in Singapore. Being in a multiracial country, it has challenged my views of learning about different cultures.

**Yuning:** Singapore is a young but fast-growing country and the country's supportive policies have attracted many people with the ambition to study or conduct business. The universities in Singapore caught my attention as it is a well-built education system and provides an international study environment.





### How was it like adjusting to life in a new country?

**Amita:** It was a great learning experience as it was challenging at first to live in a different country, but I was fortunate to have friends at NTU and also outside the university. Those who had been to Singapore before told me that it was forever summer! It was indeed true as the weather can be warm and humid, which is to be expected of the tropical and sunny Singapore.

**Duc:** I have noticed that Singapore in general loves food. I am happy to be part of that through my recent participation in a durian tasting event organised by the TUM Asia staff. It was my first time trying this type of fruit and it was a pleasant and memorable experience. Other than that, one fun experience that I had was to the "Escape Room" game experience at Bugis with my classmates. We had a lot of fun cooperating with each other in this game.

**Francesco:** After living most of my life in Italy and after having a taste of China, I believe that Singapore



sits right in between Europe and Asia as far as habits are concerned. In Singapore, the far-off habits of China and Asia in general are somehow mitigated and they feel therefore much more familiar to me. The biggest difference is the way that people in Singapore approach work and how work itself becomes the pivot of people's lives as well as of society, which is the engine that gives momentum to Singapore growth. For me, it was relatively easy to adapt to living in Singapore, because the excitement for a new adventure always overcomes the odds.

**Ithikul:** It has been great so far being able to experience the different cultures in Singapore. One aspect that I found challenging was the way that Singaporeans spoke. At first, it was quite hard for me to understand what they were saying as I was confused if they were using Chinese or English. Then I realized it was Singlish, the colloquial language of Singaporeans, and that is something that I hope to understand in time to come.

**Yuning:** I feel that the life in Singapore is very convenient. The public transportation system is very efficient and user friendly and I am able to easily find a shopping mall or convenience store like 7 Eleven. Of course, one can never become bored with the variety of food available. Another enjoyable experience I have is in terms of entertainment; I can watch Suicide Squad and play Pokemon Go here in Singapore!

Singapore is a melting pot of different cultures, religions and ways of thinking. It is the cultural, social, technological and economical bridge that connects Europe and Asia. I was fascinated by those aspects and it led me to further my education in Singapore.

Francesco Asola Master of Science in Integrated Circuit Design



## What are some of your favourite places that you would recommend to visit in Singapore?

**Amita:** My favourite spot in Singapore is undoubtedly Clarke Quay. I would describe it as a shopping and food village along the Singapore River. I love to sit quietly listening to the sounds in the background and enjoy the atmosphere, or read a book while drinking Starbucks Coffee.

**Francesco:** I always like to change places every time I hang out with friends, but if I have to pick, it would be the tiny alleys of Tiong Bahru. A few other places that I enjoyed were the sunsets at Marina Bay, the ever changing Gillman Barracks, the tiny colourful houses along Joo Chiat road and the secret balcony at the 44th floor of the Sails skyscraper with a stunning view over Marina Bay. Of course, a huge smile is needed to convince the concierge to let you up.

## What is one thing that you look forward to when you complete your education?

**Amita:** Currently, I am pursuing my internship and Master thesis at the Institute for Measurement Systems and Sensor Technology (MST) at the TUM main campus in Germany. Through this process, I see myself continuing with a research oriented career in optics or biomedical engineering.

**Duc:** I aim to learn a lot from the professors and the classmates during my studies. With this knowledge, it will prepare me for completing my thesis. Eventually I hope to work in a company in Germany or Singapore.

**Francesco:** I am currently carrying out my internship in Singapore at Intel in the Connected Home Division, former Lantiq, and so far it has been a very stimulating experience. With the knowledge that I gained through this programme, I look forward to applying it to the challenges that I will face in my future career.

**Ithikul:** I am keen to gain the knowledge required to be a specialist in the Aerospace field. Although I look forward for the opportunity to work as a professional, I also hope to improve my personal skills and make new friends from different cultures.

I feel that the life in Singapore is very convenient. The public transportation system is very efficient and user friendly and I am able to easily find a shopping mall or convenience store like 7 Eleven.

Hu Yuning Master of Science in Green Electronics



### ANYONE CAN BE ANYTHING: Class of 2016



ee Pei Qun, the Valedictorian for the Master of Science cohort, offered a piece of advice to her fellow graduates at the 13th TUM Asia Graduation Ceremony: "In Zootopia, anyone can be anything.' Our world is our Zootopia. Let us all leave this ceremony tonight ready to show the world that we, as TUM Asia graduates, will stop at nothing to achieve greatness".

July marks the month of Graduation in TUM Asia; a time of celebration where every graduate is able to reflect on the academic journey that they have so successfully completed. On the 22nd of July, TUM Asia graduated its largest cohort of students at the Graduation Ceremony held in the Singapore Institute of Technology campus at Dover. Approximately 500 guests turned up to witness this milestone, including TUM Asia's educational and industry partners.

For some, graduation reminded them of their journey of discovering who they were. For one student, her most memorable experiences during her Bachelor degree was the time spent in Munich to complete her

It was scary to be in a new country at first, but after a few weeks in Munich, I embraced my surroundings and immersed myself into the culture. I was also impressed to have found a supportive Thesis supervisor and my time at Germany was a valuable experience.

Sayaka Tatekura

Graduate, Bachelor of Science in Chemical Engineering

Bachelor Thesis. "It was scary to be in a new country at first, but after a few weeks in Munich, I embraced my surroundings and immersed myself into the culture. I was also impressed to have found a supportive Thesis Supervisor and my time at Germany was a valuable experience", said Sayaka Tatekura, graduating with a Bachelor of Science in Chemical Engineering.

# And you, as a TUM graduate, can innovate and be an entrepreneur too.

Dr. Markus Wächter Managing Director of TUM Asia

For other graduates, it was also a reminder of the journey after university. "Science and Engineering are the basis of innovation. TUM Asia's programmes attracts and educates bright minds from Germany, Singapore and all over the world. Now that you have graduated, motivated individuals like you will go on to inspire and set out to build things more tangible to advance our society's productivity", said His Excellency Dr. Michael Witter, Ambassador of the Federal Republic of Germany to Singapore and the Guest-of-Honour for the evening.

TUM has constantly been on the forefront of technology and emphasizing on entrepreneurship. "And you, as a TUM graduate, can innovate and be an entrepreneur too", said Dr. Markus Wächter, Managing Director of TUM Asia. With the knowledge that you have learnt, TUM Asia wishes all graduates the best in their future careers, be it in the industry or academia. May you continue to succeed as you seek out new and challenging opportunities!





In Zootopia, anyone can be anything.' Our world is our Zootopia. Let us all leave this ceremony tonight ready to show the world that we, as TUM Asia graduates, will stop at nothing to achieve greatness.

Tee Pei Qun Graduate, Master of Science in Industrial Chemistry

Science and Engineering are the basis of innovation. TUM Asia's programmes attracts and educates bright minds from Germany, Singapore and all over the world. Now that you have graduated, motivated individuals like you will go on to inspire and set out to build things more tangible to advance our society's productivity.

His Excellency Dr. Michael Witter, Ambassador of the Federal Republic of Germany to Singapore



### THE FUTURE OF GREEN ELECTRONICS



### Prof. Dr. rer. nat. Alessio Gagliardi, Assistant Professor of Simulation of Nanosystems for Energy Conversion, speaks to the DIGEST team on his research work, as well as his maiden experience teaching in Singapore with the Green Electronics programme.

The joint NTU-TUM Master of Science in Green Electronics has its roots in the Microelectronics programme, and the recent revision in curriculum and name was to allow the course to meet the latest needs of the industry.

Prof. Gagliardi, your research focuses on nanostructured devices for energy harvesting, which is commonly applied to batteries in cars and solar panels for buildings. Are there new areas that nanostructured devices can be applied to in the future?

**Prof. Gagliardi:** Indeed, the idea of nanostructuring energy harvesting devices is not only related to improve the efficiency of current technologies, but also to provide energy sources for small devices, such as sensors, in a cheap and pervasive way. In this sense, nanostructured thermoelectric devices as well as thin film solar cells could be used to power nano circuits in extended sensing networks. This clearly enlarges the field where such technologies can be applied.

## Can you share with us the implications of a project that you have worked on.

**Prof. Gagliardi:** Previously, I was part of a European project for the development of flexible memories using organic semiconductors (HYMEC). It was very appealing to me as the project involved many ways to create a switching device. Part of the project was also devoted to trying to make such memories optically addressable and it was technologically very challenging. Overall, it was a very interesting project linking many different topics, from engineering to chemistry to some fundamental condensed matter physics.

## What is your main research interest and how have you seen it progress over time in the industry?

**Prof. Gagliardi:** My main research interest is in nanostructured devices and organic semiconductor materials. We live in an extremely exciting period for such fields as they are flourishing and the devices based on this materials and their nano-structuring are starting to pass from lab prototypes to real products for the market. Look at the example of the exploit of organic LEDs for displays. In this sense we can say that the field is starting to be mature from an engineering point of view. I expect that many more applications will be available to the market soon. Although many researchers are working on this area, the field is growing so fast that there is still a need for skilled talent in both academics as well as in the industry.

## What made you decide to become a professor at TUM?

**Prof. Gagliardi:** There was an open position as tenure track assistant professor back in 2013. The topic was really close to my expertise, which is the simulation of nanostructured devices for energy harvesting. TUM is a well-known and respected institution, thus I thought that it was a very good opportunity for me and I applied for it.

## We know you are in Singapore to teach Polymer Electronics. Can you tell us more?

Prof. Gagliardi: Polymer electronics is about doing electronics using semiconducting polymers, also known as semiconducting plastic. These new materials merge the nice mechanical properties of plastic such as flexibility and elasticity and make it easy to process them with the electronic properties of a semiconductor. This opens interesting perspectives about flexible devices and circuits that can be literally printed with more or less the same technology it is used to print on T-shirts or text on paper. There are clearly many possible applications of such cheap, flexible electronics. Moreover, this technology can be easily integrated with previous inorganic materials. Another interesting aspect of this electronics is that being based on polymers, there are literally millions of possible candidates to be used. The electrical and optical characteristics of devices of such materials are related to both the chemical structure of the molecule as well as to the morphology of the film; linked to the way the material is deposited over the substrate. This means that there is a huge number of ways to modify or tune the optoelectronic characteristics using both chemistry, as well as deposition techniques. This flexibility is a very important aspect of this technology.

# What do you hope your current and potential students will gain out of the Polymer Electronics module you are teaching?

Prof. Gagliardi: First of all, I hope that they will understand the potentiality of this technology. It happens often that polymer electronics is presented as a competitor of current electronics based mainly on silicon and other inorganic semiconductors. That is not correct in my view as they are just complementary technologies that can be easily integrated. Secondly, I hope that they will understand more about quantum mechanics. This is a crucial aspect of nanotechnology and organic semiconductors belong to this area of research. The fact that quantum mechanics plays a very important role in organic semiconductors (at the end many properties of the material are tuned by selecting the chemical structure of the molecules which form the active organic film) pushes the student to investigate more about this branch of physics which is now becoming a cornerstone of future technology. Thirdly, that I would be able to show new ways in which we can combine top-down to bottom-up fabrication approaches to improve device performances. For

example the use of mixing dyes into the organic film in OLEDs in order to improve their quantum efficiency, or the use of single layer of self-assembled molecules to get better metal/organic semiconductor interfaces. Fourthly, it is to portray to them a multidisciplinary field where knowledge in physics, chemistry and engineering are required.

# Since Green Electronics is a recently revised programme, what are the prospects for students who are keen to study in this field?

**Prof. Gagliardi:** There are many companies that will be interested in hiring people with a background in green electronics. Just staying in organic semiconductors, there are several big companies, such as Samsung or LG, that are investing in TFTs and OLEDs for optoelectronic applications. Smaller companies such as Heliatek are trying to move other organic devices, such as organic solar cells, from lab prototypes into the market. These are only a small handful of examples from the organic semiconductor industry. There are definitely many opportunities in the industry as well as in academia.

## In your eyes, what is the future of Green Electronics for the world?

**Prof. Gagliardi:** With the increase in our population and the growth of our economy, we must be more careful about how our industrial activities and resource consumption impact the environment. The era of a completely free industrialization is over and we must also realise how technology can affect the environment. Electronics is one of our most developed and pervasive technology. In this perspective green electronics is showing new ways to do electronic devices being more attentive to the consequences for the environment. It is clearly something that is going to stay in our future, we cannot avoid this.

## How do you see yourself working here in Singapore after a successful teaching course?

**Prof. Gagliardi:** Singapore represents a very successful mix of outstanding base research and industrial development. After my first experience here in Singapore, I am interested to explore collaborations with companies as well as academic groups in Singapore, such as Polymeur Sun or the NTU Nanocluster. I definitely intend to come back for future collaborations.



Photos: Prof. Gagliardi with his teaching assistants and students from the Master of Science in Green Electronics.

## Strong Cooperation, Global Engineers



uring his recent visit to Singapore, Α. Wolfgang Professor Herrmann, President of the TUM, had nothing but kind words of appreciation to the various organisations that played an important Asia's success. "Without your role TUM in constant support towards TUM Asia. the campus of Technische Universität Singapore München will not have been a success over the fourteen years", said Professor Herrmann. last Germany has been the largest European trade partner of Singapore, having enjoyed over fifty years of bilateral relations. The strong cooperation from both nations and the industries has been vital for this successful partnership. The German Embassy has also provided a strong support for TUM Asia in Singapore and hosted a dinner event on the 21st of June at the German Ambassador's Residence. Having been some time since Professor Herrmann paid a visit to Singapore, this was a special event for him to witness the collaborations between the guests of the established institutions, regardless of whether they hail from education or industry.

Without the constant support of the German Embassy towards TUM Asia, the Singapore campus of Technische Universität München will not have been a success over the last fourteen years.

Professor W.A. Herrmann President of TUM In his short mention, Professor Herrmann shared about how TUM's success is also extended to Singapore. Besides offering many TUM programmes here in Asia, TUM Asia has also continued to enjoy strong support from its academic and industry partners. Prior to the dinner event, TUM signed a Memorandum of Understanding (MOU) with Singapore Institute of Technology (SIT), for TUM and SIT to work together in the area of Telematics and Entrepreneurship. TUM Asia's industry partners have always been supporting TUM Asia by investing in its students.

Professor Herrmann also awarded the joint Pan Asia Logistics – TUM Asia Education Grant to an outstanding student. The education grant recipient, Zhang Ruixuan, currently reads the TUM Bachelor of Science in Electrical Engineering and Information Technology programme. On the importance of this grant, Mr Gerald Tan, CEO of Pan Asia Logistics International Pte Ltd, commented "We believe that the Education Grant is an investment that supports deserving young Asian talents to broaden their skillsets so that they can contribute to society".

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Mr Gerald Tan CEO, Pan Asia Logistics International Pte Ltd











## Making A Difference In Transportation



Having completed her undergraduate studies in Mechanical Engineering at the University of Strathclyde in Scotland, Tan Hao Min's keen interest to study abroad, as well as her passion in Transportation, led her to pursue the Master of Science in Transport & Logistics at TUM Asia. DIGEST speaks to Hao Min to find out more about her interest in Transportation.

#### Why were you drawn to the field of Transportation?

**Hao Min:** Having grown up in Malaysia, I felt privileged to be able to get an education and I always thought that this knowledge should be used to improve the quality of life of people, no matter the scale of my contribution. Transportation plays a direct role in people's everyday lives. One of my main motivations for specialising in transportation comes from firsthand witness of individuals being unable to travel far without proper facilities, especially with the elderly and disabled. I believe that safe, accessible and reliable transportation is a basic necessity for any country. I am hoping to be able to help with public transportation back in Malaysia so that people like my grandmother can move about and do the things she like without having to rely or wait on us, just because we are able to drive. Thus, when I came across TUM Asia, I thought that it was a great opportunity to study a programme related to my interests.

## How has it been like living in Singapore, in comparison to Malaysia?

**Hao Min:** On the outset, Singapore is really similar to Malaysia. The people, food and culture are easy to adapt to as I have experienced them growing up. However, both countries have their own unique qualities. Singapore is

one of the few countries in Asia with a mix between the Eastern and Western Worlds. Both worlds have different cultures and norms and it has been a constant learning process for both to learn to gain a deeper understanding of each other. Being so close in geographical proximity, I was always curious about Singapore due to the similarities in culture and races. I have witnessed that when I was settling down in Singapore, especially through my course mates. We come from various parts of the world and it was really enjoyable to have their company this past year.

#### What are some of the memories you have made?

**Hao Min:** I was able to get to know my course mates better and make new experiences through the different festivals and eating food with them. It was interesting to watch the different reactions by doing something new together. Another memory would be spending time at one of my favourite spots, which is the area around Marina Bay Sands, such as the Esplanade or Bayfront. I enjoyed it the most at night and the best part was that I did not have to worry about safety. I would often walk around either alone or with friends and just soaking in the fantastic architecture surrounding the place.

## We would love to hear your thoughts about Singaporean stereotypes!

**Hao Min:** I grew up hearing that "Singaporeans are kiasu (scared to lose)" and have even heard it from Singaporeans themselves. Well, I have had the privilege to meet Singaporeans who are anything but that. Another instance that I can recall was from being part of a society which had a student chapter in NUS called Engineering Good. Their main aim was to empower people with disabilities through inexpensive technical solutions. The people that I have met there have truly amazed me with their passion and commitment to help the society. Being a student in Singapore can be tough with the constant deadlines and examinations and pressure to do well.



I was always curious about Singapore due to the similarities in culture and races.





However, these students invest a lot of time to help and that is why "kiasu" is definitely not a word I would use to describe them.

## You are in your final semester, working on your internship and thesis. How has it been?

Hao Min: I'm currently interning at a transport consultation company called Thi Consultants (鼎漢國 際工程顧問) in Taipei, Taiwan. I also plan to complete my thesis at the same company. I am still deciding on my topic and I was keen to analyse Kuala Lumpur's network using the software by PTV Vision, Visum and Vissim, and having a forecast of the improvements with the additional MRT rail lines that are currently being transported. However, due to the lack of open source data and information that I could use, it might take too long and I am considering other topics related to Taiwan's network. It would be very interesting to understand Taiwan's network and get a much better idea of how advanced Taiwan is in the field of transportation. I hope to develop ideas and research on them, and at the same gain new knowledge that could help me in the future.

## What an unique opportunity! How did you come to know about this?

**Hao Min:** I heard about this opportunity from a PhD student in TUM CREATE, Xiao Dong. He taught in one of our classes.Since I could converse in Mandarin and he knew a person in Taiwan who worked in a transportation planning company, he helped to set the whole thing up. I sent my CV and conducted the



One of my main motivations for specialising in transportation comes from first-hand witness of individuals being unable to travel far without proper facilities, especially with the elderly and disabled.





interview through Skype and managed to secure it! I am very grateful to Xiao Dong as I would not have had this chance if he did not make the recommendation.

## Share with us one special experience at Thi Consultants.

**Hao Min:** At work, even though stress levels could be so high at times, it never affected my colleagues' attitude towards their work. The team is fantastic, forever supportive and helpful in every way they could. Since this was my first time working in an office environment, it was truly encouraging to see their positive attitudes. Every day, I go to work and leave in a good mood.

### How has it been like to adjust to living in Taiwan?

Hao Min: It was both challenging and exciting as it was pretty foreign for me to live in a country that mainly converses in mandarin. My mandarin was getting poorer and poorer because I rarely conversed with it. Before I left for Taiwan, I started re-learning some mandarin that I had forgotten and was afraid that I would not be able to converse with the locals. However, everyone has been so kind and courteous. My colleagues, flatmates and people that have become my friends were so patient and polite whenever I could not understand what they were talking about. There are people who have gone out of the way to show me the different facades of Taiwan, which is mostly related to food. There is always something different to try and I still have so much to learn from the people living in Taiwan. It is amazing how far kindness extends here and I would definitely recommend people to visit Taiwan at least once in their lifetime.

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# TUM Alumni Stammtisch



ith an increasing number of TUM students and alumni scattered around the globe, it can be challenging to find a common place and time to organise a TUM alumni event.

However, Singapore is small enough to allow for such a meeting. On the 22nd of June, TUM Asia hosted a Stammtisch (German for gathering) in Paulaner Brauhaus Singapore. This allowed TUM alumni and

Ihad a wonderfultime at the Stammtisch and I am happy to see that there are so many alumni in Singapore. It started from a few students many years ago and I am really amazed by tonight's turnout.

Professor W.A. Herrmann President of TUM students to come together and enjoy food and drinks, together with Professor W.A. Herrmann, President of TUM, who was the Guest Of Honor for the event.

It was a great time for many of the participants as some of them did not know one another prior to the event. Many new friendships were made and we hope that everyone had a wonderful time. Prost and see you next time!

I enjoyed meeting new people that shared the TUM identity. I am currently doing my PhD in Computer Science at Nanyang Technological University and it was nice to talk about studying and living in Germany compared to Singapore.

Martin Strobel TUM Alumni









## The Chatter

### The Euro's Footballs: Marketing and High-Tech

A key element of the quadrennial UEFA European Championship, or EURO, is the ball, which has been designed by Adidas since 1972. It's always a major marketing success: in 2012 more than 7 million were sold. The ball, however, is not just a marketing product but also a high-tech object. While the 1972 version was made of leather, the modern ones contain various sophisticated materials.

### **Better than leather**

The EURO 1988 in Germany was the first without a leather ball. Since then, footballs have been made of polyurethane – a type of plastic created in 1937 by German chemist Otto Bayer. With this material, modern balls are lighter and absorb less water when it rains because the patterns on the surface are bonded, not sewn. Also, the balls do not dent when hit by players. Polyurethane is commonly used in car seats, mattresses and shoes.



Article and infographics courtesy of LargeNetwork for Technologist magazine. To read more about how athletes make use of the latest inventions, visit http://www.technologist.eu/the-sports-revolution/



### DAAD Scholarship Award Ceremony

TUM Asia students from both the Bachelor and Master programmes who excelled in their studies were awarded a scholarship from the German Academic Exchange Service (DAAD), which provides financial support to subsidize the cost of studies for students. All TUM Asia students are eligible to apply for the scholarship, which is available on a semesterial basis. Congratulations to all students who were awarded a scholarship. May this encourage each and everyone to continue striving for success!



### Speaker Series: Industry 4.0

In the near future, the products that we use on a daily basis may very well be manufactured and packaged on a single production line by smarter autonomous robots. Industry 4.0, also known as the Fourth Industrial Revolution, was a term invented in Germany for the next industrial revolution experts believe the world will experience. The impact of Industry 4.0 has tremendous implications, and how can Singapore stand to benefit from this revolution? In May, TUM Asia partnered the German Academic Exchange Service (DAAD) with the aim of providing a platform to address how Singapore can benefit from Industry 4.0 amidst the transitioning of her manufacturing sector. The session titled "The Future of The Manufacturing Industry: Progressing Towards Industry 4.0," allowed renowned members of the academic and industry fields to come together and discuss topics such as additive manufacturing and the Industrial Internet of Things, as well as the implications and techniques involved.. Topics such as additive manufacturing and the Industrial Internet of Things were discussed.



Engineers apply the principles of mathematics and science to develop sustainable solutions for challenges in the industry. Their work contributes to the scientific discoveries and commercial applications that meets societal and consumer needs. Find out how you can make a difference as an Engineer with a degree from Germany's #1 University".

- Bachelor of Science\*\* (Chemical Engineering) by Technische Universität München
- Bachelor of Science\*\* (Electrical Engineering & Information Technology) by Technische Universität München
- Master of Science (Aerospace Engineering) by Technische Universität München and Nanyang Technological University
- Master of Science (Green Electronics) by Technische Universität München and Nanyang Technological University
- Master of Science (Industrial Chemistry) by Technische Universität München and National University of Singapore
- Master of Science (Integrated Circuit Design) by Technische Universität München and Nanyang Technological University
- Master of Science (Transport & Logistics) by Technische Universität München

### Admissions for Master Degrees open on 15 October. Visit www.tum-asia.edu.sg to find out more.



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\*As ranked in the 2015 QS Rankings and the 2011, 2012, 2013 and 2016 Shanghai Rankings (ARWU) \*\*In partnership with Singapore Institute of Technology (SIT). TUM Asia is a 100% subsidiary of the Technische Universität München / www.tum.de, TUM Asia is recognized as an Institute of Higher Learning (IHL) in Singapore. CPE Registration No. 200105229R / Reg. Period: 13/06/2011 - 12/06/2017

