

digest

September - December 2017 Issue



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INDUSTRIE 4.0: SUMMER SCHOOL

First Industrie 4.0 Summer School held in Singapore in August 2017



NEW CHAPTER, NEW BEGINNINGS

Two Master of Science students on starting lessons at TUM Asia and life in Singapore



LIVING & MOBILITY IN SMART CITIES

First TUM Research Alumni Conference, held in cooperation with the Alexander von Humboldt Foundation

ON THE COVER

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director's message



As companies become more internationalized, the demand for talented and skilled individuals who are able to work in international markets has also been steadily rising. These talents are required to develop future technologies and address the challenges faced by society. The rapidly-changing society requires the education system to keep up with it and ensure that it stays relevant to industry demands. Here at TUM Asia, we constantly ensure that students are able to learn from professors who are experts in their specialized fields, while having opportunities to apply what they learnt through hands-on application.

Having a strong theoretical background is important, but being able to put it into practice and honing one's skills is another important experience. TUM Asia's Master of Science programmes prepare students for a globalized workforce through a compulsory internship and Master thesis, which they are able to complete anywhere in the world. This gives them the opportunity to work in a completely different environment of their choice and experience working with people of different cultures. We heard the experiences of seven Master of Science students, who come from different backgrounds and disciplines. They each chose to complete their internship in a country that is vastly different from where they are from. Each of them has a unique story to tell, which can be read from pages 4 - 9.

Industrie 4.0, also known as the fourth industrial revolution, has been a big topic in Singapore. To meet the needs of the Singapore economy, TUM Asia held the first Industrie 4.0 Summer School in Singapore. Participants were able to hear from experienced Industrie 4.0 experts and learn more about how their research can be applied to the Singapore landscape. We also were happy to host Professor W.A. Herrmann, President of Technical University of Munich, who paid a visit to the Summer School. You can read about it on pages 12 - 13.

This past quarter, we also welcomed the newest cohort of Bachelor and Master students to TUM Asia. They were able to bond with students in their cohort through meaningful team-building games. It was heartening to see students of different programmes and cultural backgrounds understanding and bonding with one another. Two of our students also shed insights on what they look forward to as they commence their studies with TUM Asia. Turn to pages 14 - 17 to find out more.

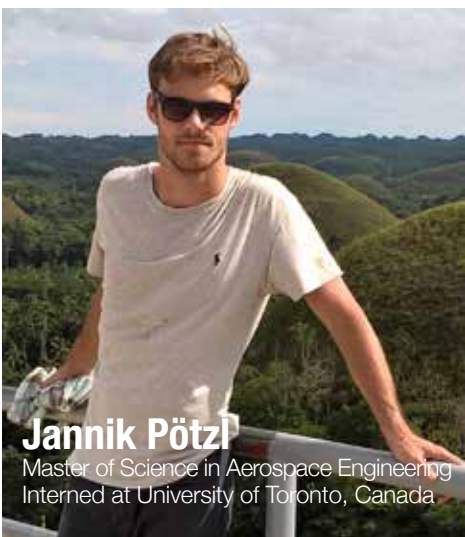
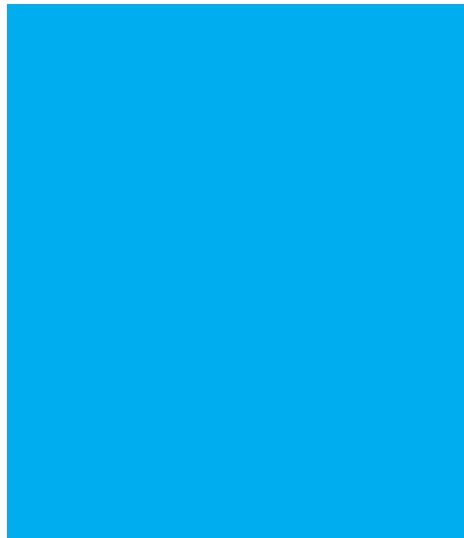
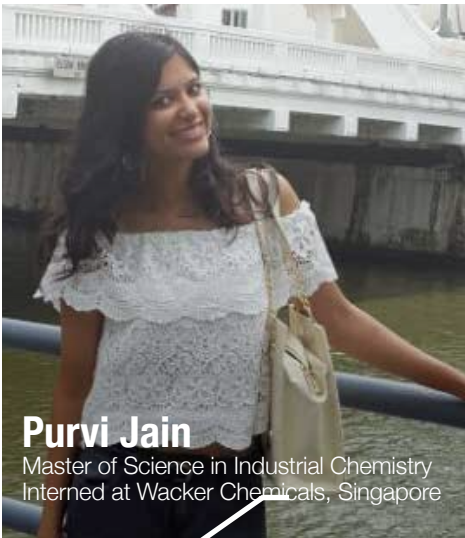
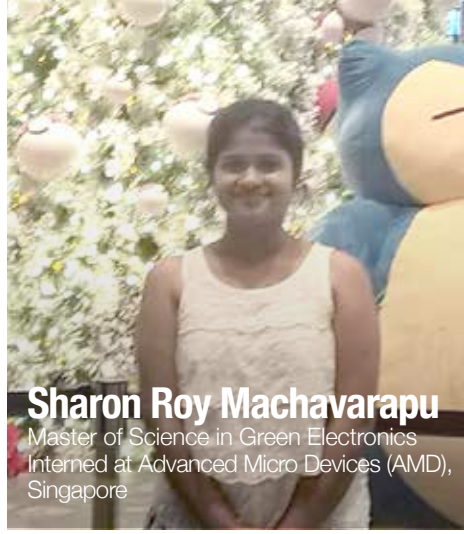
This issue is packed with exciting reads, showcasing how our students' experiences throughout their education journey have been able to prepare them to become the engineers of the future. We hope that you will have an insightful read.

Yours Sincerely,

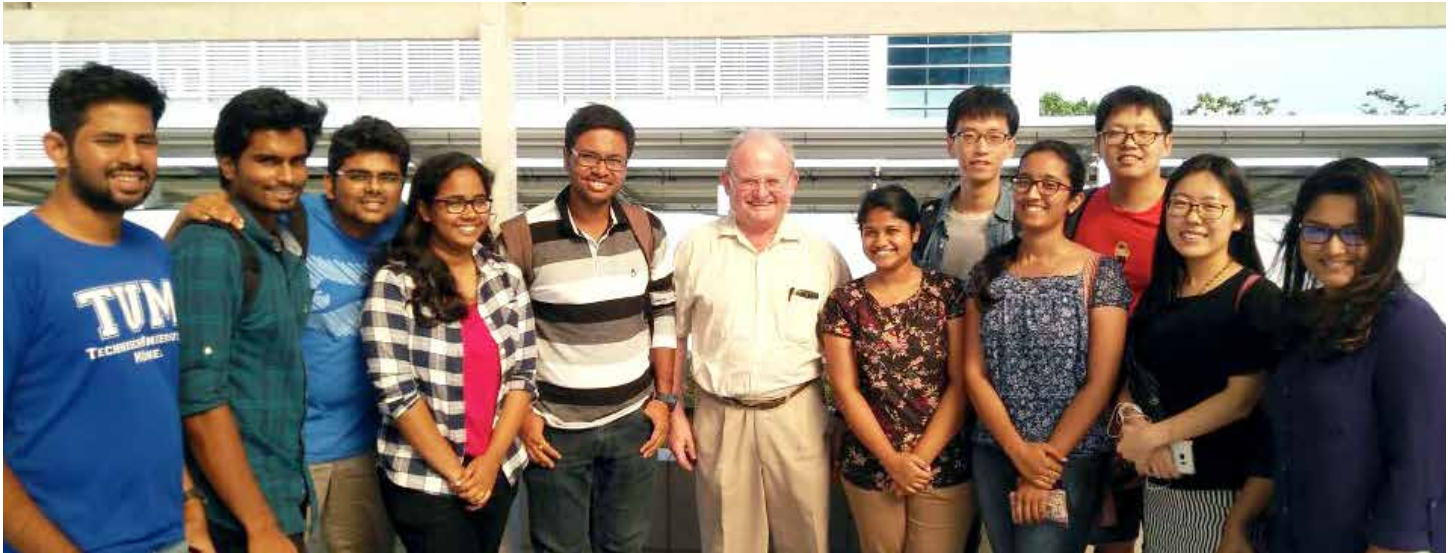
Dr. Markus Wächter
Managing Director, TUM Asia

FEATURE

From Theory to Application



Completing a compulsory internship and Master Thesis is one of the components of a TUM Asia Master of Science programme. Students are able to apply what they learnt into the industry, while making new connections in the workforce. We hear from a few of our Master of Science students to learn more about their unique experiences.



Hello, can you tell us more about yourselves?

Arunita: I am from India. I completed my Bachelor of Engineering from the University of Mumbai in Instrumentation and worked for three years as an Instrumentation Engineer in the Oil & Gas field.

Jannik: I am from Coburg, which is a small town in the north of Bavaria, Germany. I completed my Bachelor degree in Mechanical Engineering with a specialization in Aerospace Engineering at TU Braunschweig and I decided to continue with a Master degree.

Oscar: I am from La Paz, Bolivia. I studied Civil Engineering in Universidad Catolica san Pablo. I have always been interested in transportation systems.

Prasoon: I was born and raised in New Delhi, India. I have always been passionate about logistics and I take note of the variety of problems experienced by many supply chain companies. After completing my Bachelors, I worked as a civil engineer.

Purvi: I am from India and prior to doing my Masters at TUM Asia, I did my Bachelors in Petrochemical Engineering.

Sharon: I come from Hyderabad, India, which is rich in culture, values, heritage and traditions. I completed my Bachelors in Electronics and Communication Engineering from Jawaharlal Nehru Technological University.

Wai Kit: I grew up in Malaysia, however I have been studying in Singapore for some time. After studying at Nanyang Technological University (NTU), I obtained my Bachelors degree in Electrical and Electronic Engineering. I worked for some time and I decided that it was time to upgrade my skills with a Masters degree in a relevant field.

Home is a distance away from Singapore. Making the decision to study miles away from home, was it a difficult decision?

Arunita: I wanted to change fields from Process Automation to Integrated Circuit Design and studying at TUM Asia allowed me to do that. I am able to get the best of both worlds with perspectives from Asia and Europe.

Jannik: Firstly, I wanted to gain more knowledge in the field of Aerospace Engineering. Secondly, I wanted the opportunity to study far from home, not only as a tourist, but also be immersed in different cultures, religions, languages and lifestyles. Singapore has a great mixture of people from all over the world, and discover how much Asia has to offer. There are many countries nearby such as Indonesia, Malaysia, and Vietnam.

Oscar: I wanted to know more about how transport systems worked, designing transport infrastructure and the relationship that transportation has with improving the livability in cities. Coming from a city that has many transportation issues and challenges, I have always been eager to learn how I could solve these problems. I came across the TUM Asia programme and the combination of transportation and logistics and I immediately knew that this was the programme for me. On further reading, I realized that the programme was

“The most important part of finding an internship is to know where your true interests lies. Once you know that, everything will fall in place. Everybody will say stick to the basics, but be brave and confident to challenge the status quo.”

Prasoon Vats





conducted in TUM's campus in Singapore. Singapore is a vibrant young country that has overcome many problems in such a short period of time, such as to improve the livability through more accessible public transportation. These factors convinced me to come to Singapore.

Prasoon: While working on improving the current transport situation in India, I realized my true interest, was towards process optimization. I looked for a Master's programme which could provide me sufficient depth in both the technical and managerial aspects of the term 'logistics and optimization'. It was a win-win situation when I came across TUM Asia's programme.

Purvi: It all started in 2016 when I was planning to pursue my Masters abroad. I liked the intensive teaching approach at TUM Asia. Singapore also has many job opportunities concerning my field of interest.

Wai Kit: TUM Asia offers me an in-depth specialization in the field of IC Design with various subjects covering from digital to analog circuits. Besides that, the intensive full-time programme allows me to obtain a postgraduate degree in a shorter time.

What is one special memory from your studies at TUM Asia?

Arunita: On the last day of every course, especially the ones taught by our German professors would involve everyone going out for a 'Stammtisch', which meant going out for an informal gathering with food. This was when we realized that most of them enjoys Indian

cuisine, which was very exciting to us.

Jannik: The people around you makes the time worth remembering. TUM Asia brings together people from different countries with different mindsets. It is interesting to get to know each other throughout the programme as you do not only sit together in the classroom, but go out together and explore the city and the surrounding countries as well. I was able to learn so many things from my classmates.

Oscar: That is a difficult question to answer! I am blessed to have wonderful classmates and all of them were very eager to learn and help each other. This certainly helped me in adapting to a new environment. I now have many strong friendships after my time at TUM Asia.

Prasoon: I enjoyed visiting new places. In Singapore, I was able to take time to view the skyline from the infinity pool at Marina Bay Sands. In Munich, I experienced the famous Oktoberfest. These all form special memories of my time at TUM Asia.

Purvi: There are many great memories, but the most precious and delightful memory was meeting Professor Johann Plank from TUM. He impressed me with his approach towards the importance of "Building Chemistry". He cultivated my interest in construction chemicals and led me to pursue my internship in this field.

Sharon: I will always have fond memories of the professors that we had. We met many professors with



“I have been able to study and interact with classmates from different nationalities. For instance, working with classmates on an assignment during our analog IC design lab was one of the greatest experiences that I had. To finish the given project, we spent three months at the lab.

Tan Wai Kit



“Making a choice about the internship location was not difficult as I always had an inclination towards working in Europe. I applied for opportunities in Singapore and Germany via job portals and LinkedIn and ended up doing my internship and Master’s Thesis at Infineon, Germany.”

Arunita Mukhopadhyay

vast experience in their respective fields and they helped me to understand the subjects with ease.

Tell us more about your internship experience.

Arunita: Making a choice about the internship location was not difficult as I always had an inclination towards working in Europe. I applied for opportunities in Singapore and Germany via job portals and LinkedIn and ended up doing my internship and Master’s Thesis at Infineon Technologies, Germany.

Jannik: I wanted to spend some time in a different place as I am used to moving around as a child. I picked the University of Toronto (UofT), as visiting Canada has always been a dream of mine. Their ARL-MLS (Advanced Research Laboratory for Multifunctional Lightweight Structures) institute does a lot of research in the field of multidisciplinary design optimization and multi-scale modeling. Finding an internship was not very difficult as TUM is well connected to top-ranking universities all over the world. I checked with a professor at TUM and was able to contact the head of ARL-MLS at UofT through the TUM professor, and then started to apply through UofT’s graduate office.

Oscar: I decided to complete my internship and do my MasterThesis at TUMCREATE, which is a research collaboration between TUM and NTU that aims to develop solutions to improve public transportation in Singapore. I first heard about TUMCREATE through interacting with the people there during our Masters course. They shared about projects that were in line with my interests. They helped me to approach my professor to see how I could apply for an internship. Through these contacts, I was able to secure an interview and they offered me a research topic for my Master Thesis.

Prasoon: I found my interests inclined towards production planning and control in a supply chain setting. I was selected as a corporate supply chain innovations intern and master thesis student at Infineon Technologies AG in Munich, Germany.

Purvi: After interacting with Professor Plank, I was quite sure that I wanted to do an internship on a topic related to building chemistry. He offered me a position under him, but I told him about my interest which was better suited for a company environment rather than an academic environment. After completing our module for building chemistry, we were taken for a site visit to Wacker Chemicals in Singapore. Professor Plank recommended me to the HR manager and I was

able to secure an internship position.

Sharon: I did my internship with AMD (Advanced Micro Devices), Singapore. I wanted to gain industry experience in Singapore, while learning from a reputable organization where I can hone my technical skills. AMD was the right place for me.

Wai Kit: When selecting where to intern at, I was able to choose the topics that I was passionate in at Intel Microelectronics (M) Sdn Bhd, Malaysia. One of them caught my attention as it was related to analog circuit design. Following that, I applied for the internship position through their website and was successful.

Any advice for your juniors when searching for an internship?

Oscar: If possible, you should apply for the internship as soon as the first semester is over. It is not always a fast process and it may take longer than you think. I had to be patient as it can take time for companies to respond.

Prasoon: The most important part of finding an internship is to know where your true interests lies. Once you know that, everything will fall in place. Everybody will say stick to the basics, but be brave and confident to challenge the status quo. My advice is to find the right sources, but approach each of them differently.

Can you tell us more about your day-to-day responsibilities at your internship?

Jannik: My task was to design an ultra-high aspect ratio wing that would be used on reconnaissance drones operating at high altitudes. First, I researched current drones which were either in development or already in operation. The data of these vehicles gave me a good starting point. After that, a first draft was modeled in XFLR5 to perform a macro-sizing of fuselage, wing, empennage structure and

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Jannik Pötzl



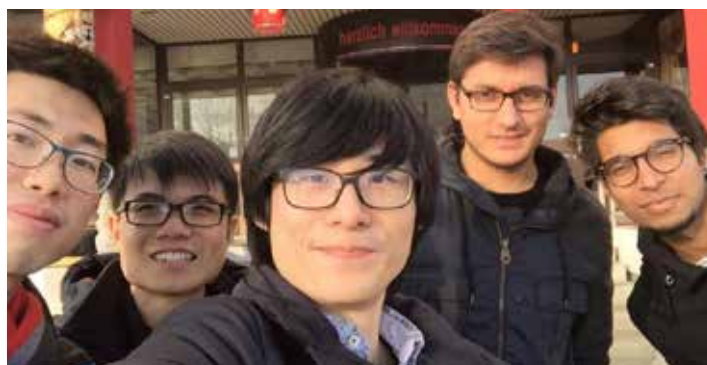


the distribution of masses. This step is supposed to ensure trimmability and flyability of the proposed design. Lastly, CATIA V5 was employed to translate the macro parameters of step 2 into a feasible CAD design.

Oscar: I am a research assistant and I work on a very specific part of a much larger project called Road Rapid Transport. The objective of the research is to develop a lifting and leveling device for a thin precast pavement slab called PUTW. I had to do a review of the different technologies for lifting and leveling inserts, design a model using CAD programs and running a finite element analysis simulation of the device using Ansys. Lastly, I will have to test the physical device itself to verify the simulation data and release the device for production after all it meets all the requirements.

Prasoon: I was placed in the corporate supply chain innovations team. My task was to use simulations as a tool to empower the company with the lean production strategies and apply the same. The project that I worked on aimed to design, use, and test the innovative ideas and algorithms to improve the production scheduling of lots by leveraging the help of modelling and simulations. Other basic day to day activities involved team and solo presentations both at strategic and technical levels, as well as participations in supply chain colloquiums and networking events.

Purvi: My daily responsibilities start with reporting to my mentor. I am currently assigned to a project that tests the water uptake of Skimcoat. I make formulations for all samples and mix water to form wet mortar which is later on applied to the limestone blocks and ALC Discs. These specimens are tested for their water uptake capabilities after 7 days and 28 days and curing.



Wai Kit: I mostly work on circuit design ranging from analog to mixed signal. During this duration of the internship, I will report to the technical manager on the topic that I am working on, from pre-layout to post-layout implementation. Studying research papers are also part of my job role so that we are well-equipped to understand the latest technological advancements.

What is something that you think that your internship has given you?

Arunita: I believe we learn better through hands-on work rather than just reading about it. At the end of the day, we have to be familiar with how the industry works and that experience can be gained by actually working in one. The internship and thesis allows us to apply what we learnt and prepare us for working in the industry. This is a very important experience for all of us.

Jannik: As we are engineers, we were able to make use of our fundamental skills, such as in CAD, CFD, FEA and programming. It complements our knowledge in the classroom and I enjoy this.

Oscar: The internship has been the best part by far. It provides students with the opportunity to connect with the industry and get a taste of how the market works. It also creates a good transition between student life and working life.

Prasoon: I had the chance to gain international exposure in Munich, Germany. By getting to know the cultural, technical and managerial aspects of a German company, I am certain that I am ready for any challenge in the future.

“After interacting with Professor Plank, I was quite sure that I want to do an internship on a topic related to building chemistry. After completing our module for building chemistry, we were taken for a site visit to Wacker Chemicals in Singapore. Professor Plank recommended me to the HR manager and I was able to secure an internship position.”

Purvi Jain



Now that you have come to the end of your Masters, what's next for you?

Arunita: I plan to work in the industry and gain some experience. However, life can take a different turn and I might actually end up doing a PhD some time in the distant future.

Jannik: This Master's programme has provided me with the technical knowledge to solve engineering problems in a structured way and find the best possible solution. I have built up a great network while living abroad and a strong foundation in the field of Aerospace Engineering. Now it is time for me to use it and give back this knowledge to the society. I want to gain some working experience and eventually do a PhD as well.

Oscar: We must ensure that our transportation projects are more effective, environmentally friendly and more inclusive. My goal is to get involved in projects where I can make a positive contribution in designing and planning sustainable and inclusive transportation systems and I would specifically like to work in projects that have an integral impact on the

communities around it. The concepts that I learned during my Masters will certainly help me accomplish this goal.

Prasoon: My interest lies in the broader area of process optimization through lean supply chain strategy and techniques and effectively communicating the advantages to the company. I want to lead by bringing sustainable and positive changes, as well as provide a platform for young brains to foster their supply chain knowledge and ideas.

Sharon: I aim to become a successful Electronics Engineer and contribute to the global electronics industry with an emphasis on human and environmentally-friendly electronics. Since I am pursuing my internship in testing, I would like to excel in the same field and continue my learning through research and development in flexible electronics.

“We must ensure that our transportation projects are more effective, environmentally friendly and more inclusive. My goal is to get involved in projects where I can make a positive contribution in designing and planning sustainable and inclusive transportation systems and I would specifically like to work in projects that have an integral impact on the communities around it. The concepts that I learned during my Masters will certainly help me accomplish this goal.”

Amestegui Aguilar, Oscar Augusto Cesar



Photos: Arunita Mukhopadhyay, Jannik Pötzl, Amestegui Aguilar, Oscar Augusto Cesar, Prasoon Vats, Purvi Jain, Sharon Roy Machavarapu, Tan Wai Kit, TUM Asia

Achieving Dreams



Photos: Israel Tan Photography

For every student, the defining moment that cumulates their hard work is the successful completion of their programme of study. Every year in July, TUM Asia students celebrate this important milestone with their family and friends at their Graduation Ceremony.

TUM has constantly encouraged its students to continuously learn and innovate. "Having a degree is never the end of a true education. In order to stay competitive and keep up with the world as it continually evolves, as engineers, you will need to continue to develop your skills and eventually become the engineers that innovate the future," said Dr. Markus Waechter, who shared some encouraging words of advice to the graduating students.

Moving on to the next phase of life, each graduate will be doing something different from the rest. Some will move on to the industry, while some will be doing research. Teo Yong Kia, Valedictorian of the Bachelor of Science in Electrical Engineering & Information Technology, shared that a TUM education prepared them well for their future challenges. "Change will be the only constant. Be able to adapt, adopt and acclimatize to changes. We will be able to integrate what we've learned to put it together to make sense out of every discipline," said Yong Kia.

As this chapter of their life comes to a close, the graduands were also thankful for the support that they received from their classmates, family, friends,

and professors. Chen Yu Lin, Valedictorian of the Master of Science programme in Industrial Chemistry, shared some of the impactful memories that he had, along with words of encouragement to the graduating class. "When we part today, we may never know when we will meet again, but wherever we go, the memories we shared will always have a special place in my heart. I believe that the experiences that each of us had are priceless and will remain with us as we each embark on a new path and phase of our life. Let us all leave this ceremony tonight ready to show the world that we, as TUM Asia graduates, will stop at nothing to achieve our dreams."

"I believe that the experiences that each of us had are priceless and will remain with us as we each embark on a new path and phase of our life. Let us all leave this ceremony tonight ready to show the world that we, as TUM Asia graduates, will stop at nothing to achieve our dreams."

Chen Yu Lin
Valedictorian, Master of Science in Industrial Chemistry



INDUSTRIE 4.0: SUMMER SCHOOL



Photos: Guo Pei, TUM Asia

Industry 4.0 (Industry 4.0), a term which was coined in Germany, has been widely discussed as the 4th Industrial Revolution for the manufacturing industry worldwide. Researchers and experts have predicted that for the next decade, Industrie 4.0 could boost productivity in the manufacturing sector. As Singapore continues to push forward to keep up with the trends in the industry, Singapore is also tackling challenges with increasing labour costs, stagnant productivity and a slow global economy. The opportunities from Industrie 4.0 would bring about changes to the industry in Singapore and lead to a revitalization of the manufacturing industry.

TUM Asia has played a supporting role in meeting the industry needs of Singapore through a holistic education. As Industrie 4.0 will continue to be a

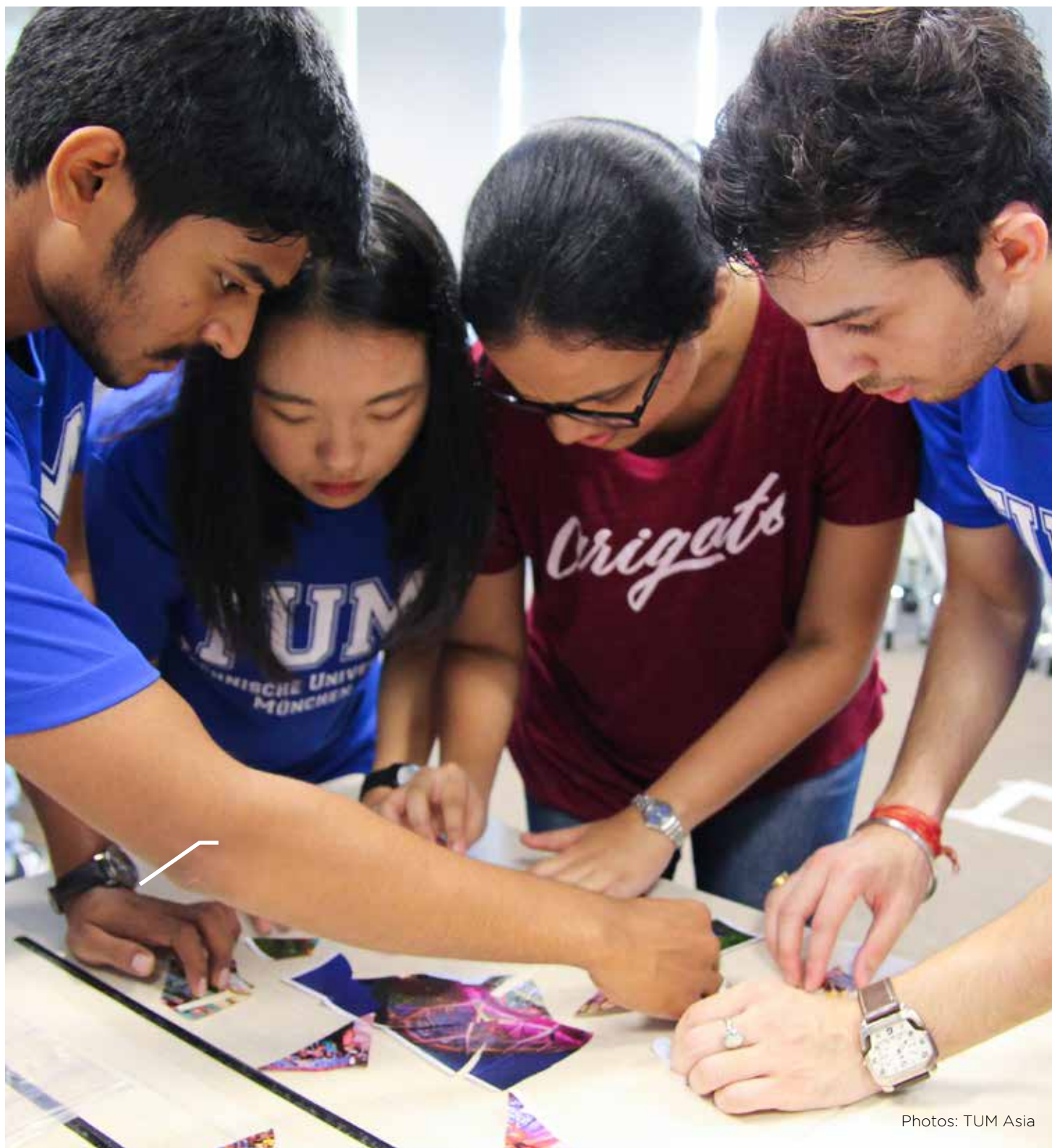
hot topic in Singapore, TUM Asia has continued to support the presence of Industrie 4.0 through platforms that encourage the exchange of views, experiences, and knowledge in Industrie 4.0.

This led to the inception of the first Industrie 4.0 Summer School in Singapore. The 5 day programme comprised of a series of lectures, case studies and discussions conducted and facilitated by leading faculties in the Industrie 4.0 domain from the Technical University of Munich (TUM) and the Otto von Guericke University Magdeburg.

Over 30 participants attended the Summer School and they were able to gain an in-depth understanding of the various technical aspects and social-technical impact of Industrie 4.0.



Welcome To The TUM Asia Family



Photos: TUM Asia

Every August, the TUM Asia campus is always bustling with excitement as the newest members of TUM Asia from the Bachelor and Master programmes. However, at TUM Asia, an education is not always about studying, but also about learning to work with different types of people. Besides listening to the respective faculty members and staff who will be taking care of them throughout their programme, the students were able to participate in orientation games, which was

organized by TUM Asia's current Bachelor students. Each game was thoughtfully planned, with the goal of fostering friendships between the new students.

After being grouped together, they each had to learn to work together to solve the objectives at the various stations. Some games involved completing certain challenges, others involved competing with team members from another team. Overall, it was a fun experience and a good chance for the students to enjoy themselves before commencing their classes.



New Chapter, New Beginnings

Yi-Hsuan Chen

Master of Science in Industrial Chemistry



Photo: TUM Asia

As the newest members of TUM Asia commence their classes, the DIGEST Team took the opportunity to speak to two Master of Science students to find out more on how they have been adjusting to their studies and living in Singapore.

Hello Felix and Yi-Hsuan, do tell our readers more about yourselves!

Felix: I am from Indonesia. Before coming to Singapore to study in the Master of Science in Aerospace Engineering, I had previously completed my Bachelor studies in Aeronautics at Bandung Institute of Technology (Indonesian: Institut Teknologi Bandung (ITB)) in Bandung, Indonesia.

Yi-Hsuan: I am from Taiwan. I have been in Singapore for a month and I am currently studying in the Master of Science in Industrial Chemistry programme at TUM Asia.

Have you been to Singapore prior to studying at TUM Asia?

Felix: Yes, I have been to Singapore several times in the past since Indonesia and Singapore are neighboring countries. There are also plenty of direct flights from Indonesia to Singapore.

Yi-Hsuan: No, this is my first time in Singapore. It has been a really exciting opportunity to be able to study here.

What made you consider studying in TUM Asia in Singapore?

Felix: There are many reasons, but first of all Singapore is relatively close to Indonesia which allows me to travel there with ease. The second reason is because my course is a joint degree between Nanyang Technological University (NTU) and Technical University of Munich (TUM) and both universities are the top universities in their respective countries.

Yi-Hsuan: TUM is the best university in Germany and TUM Asia also has an excellent reputation. Besides our core modules, we will also be able to learn from interdisciplinary courses. I think the compulsory internship will also be able to provide me with some industrial experience so that I can have a better understanding of a globalized chemical industry and



Photos: Felix Sunjaya Purnomo, Yi-Hsuan Chen

being prepared for my future career. Moreover, I also wanted to step out of my comfort zone to look around the world beyond Taiwan.

How have you been able to adjust to living in a different country?

Felix: I love the variety of food that Singapore offers. There is plenty of food that I can try, from local dishes such as fried carrot cake, kaya toast, to many other kinds of Asian and Western dishes. Everything goes well with great food!

Yi-Hsuan: I have already adjusted to living in Singapore. I think it was quite easy for me because the food and climate is really similar to my hometown.

You were able to participate in the orientation games upon commencing your studies. What was one memorable aspect of the games?

Felix: It was very exciting as I could interact with many students from different courses and different countries. The activity helped us learn more about Singapore. I felt that the activities were informative as most of the students come from abroad and it would be useful since we will all be living in Singapore for the

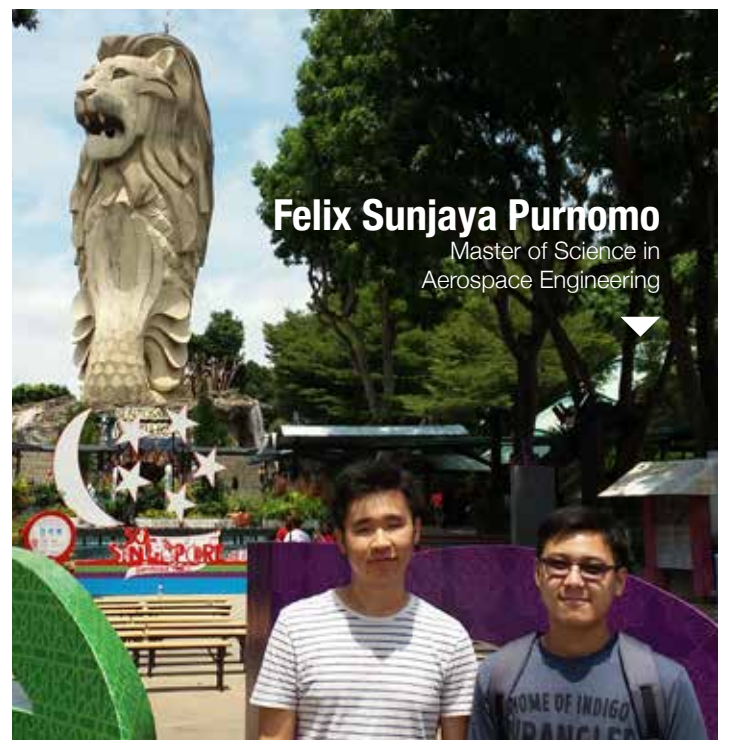
next one to two years.

Yi-Hsuan: I would say the “Dota” station in the orientation games. It really impressed me because I have played MOBA (Multiplayer Online Battle Arena) games, such as Dota, online but never in real life. It required teamwork so that we could know one another well and run across the different rooms. We all had a great time!

Now that your classes have commenced, what are some things that you are looking forward to experiencing in the programme?

Felix: I would love to experience an internship in Singapore. I think it will be a great experience for me to develop a better cultural understanding. Singapore is a globalized hub and I am excited for what it has to offer me for my future career.

Yi-Hsuan: I am looking forward to the internship portion and taking some of the modules that are intriguing to me, such as petrochemistry and industrial business. I would also like to increase my cultural awareness through getting to know other classmates from other countries.



Felix Sunjaya Purnomo
Master of Science in
Aerospace Engineering

The Chatter



Photo: Elon Musk with the WARR Hyperloop Team

WARR Team Repeats Its Victory At The Second Hyperloop Pod Competition TU Munich Students Win With The Fastest Hyperloop Pod

Speeding along at 324 kilometers per hour, the second pod made by the WARR Hyperloop team shot through the tube test facility at the Los Angeles corporate premises of SpaceX. This meant the students from the Technical University of Munich (TUM) were able to repeat their victory from the first competition. Elon Musk followed the test run after which he congratulated the Munich students in person.

SpaceX founder Elon Musk launched the “Hyperloop Pod Competition” in 2015. The Hyperloop is a concept for a high-speed train which is to travel through a tube containing a partial vacuum at close to the speed of sound. Student teams from around the world have been called on to submit their concepts for what is referred to as the pod, the cabin capsule in which the passengers will be transported through the tube.

Two main prizes were awarded in the first competition, which was held in January 2017: A main prize for the fastest pod, which the WARR Hyperloop team from TU Munich won, and a main prize for the best overall concept, which went to the Delft University of Technology. The second competition was however solely devoted to the highest speed.

More than 20 teams came to Los Angeles for the competition, where they tested the pods in the tube test facility which had been constructed on the SpaceX premises especially for the competition. Only three teams were able to pass the rigorous technical pretests in order to qualify for the final. In addition to the WARR Hyperloop team, the other two qualifiers were Paradigm Hyperloop, a team from Northeastern University and the Memorial University of Newfoundland, and the Swissloop team from the Swiss technical university ETH Zurich.

The Swissloop pod reached a speed of 40 kilometers per hour in the vacuum tube, with the Paradigm Hyperloop pod making 101 kilometers per hour. The WARR Hyperloop team was the last to go. Its Pod was one of the smallest in the competition, weighing only 80 kg and driven by a 50 kW electric motor. The concept paid off: In the tube the pod was able to accelerate to 324 kilometers per hour, making it by far the fastest in the competition.

Source: <https://www.tum.de/en/about-tum/news/press-releases/detail/article/34162/>



Living & Mobility in Smart Cities - First TUM Alumni Research Conference

The 1st TUM Research Alumni Conference on Living and Mobility in Smart Cities was held in Singapore from 28 to 29 August 2017. Hosted at TUM CREATE, the conference aimed to create a common platform for interdisciplinary exchange between scientists researching on various aspects of technology to improve our daily lives. TUM President, Professor W.A. Herrmann, graced the occasion to formally welcome the various TUM alumni to TUM's first research conference abroad, in cooperation with the Alexander von Humboldt Foundation and the German Academic Exchange Service (DAAD).



Industrie 4.0 - A Social, Political, & Technological Revolution

What role can Germany play in setting the standards and how can Industrie 4.0 benefit people in the world of work? How can Singapore embrace Information Technology in our daily lives and in the workplace? Such topics were discussed at our Speaker Series, held together with DAAD Singapore. Titled "Industrie 4.0 - A Social, Political, & Technological Revolution", the Speaker Series aimed to shed light on how various stakeholders can better prepare themselves to cope with the impending disruption and understand how current labour policies are framed in Singapore to help the local workforce deal with the transition. We were happy to have Dr. Uli Meyer from the Munich Center for Technology in Society at TU München and Mr. Glibert Tan from Employment & Employability Institute, e2i to share their insights with the participants. It was a great session!

WE GAVE THE WORLD REFRIGERATION TECHNOLOGY

Photo: The Linde Group: The testing station for refrigeration machines built in Munich in 1888, where the first trials in air liquefaction took place. In the foreground are two small air liquefiers.

With 150 years of academic excellence in engineering, the Technical University of Munich (TUM) is no stranger to engineering breakthroughs. In 1868, a young man named Carl von Linde was appointed as a professor at the TUM. Von Linde was drawn to the refrigeration research field and often included theories of refrigeration machines in his syllabus. He went on to invent refrigeration technology, resulting in the production of the modern refrigerator and other spin-offs such as air-conditioning machines.

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*As ranked in the 2015 QS Rankings and the 2011, 2012, 2013 and 2016 Shanghai Rankings (ARWU)

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