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Newsletter of Engineering Science Programme

ENGINEERING ACCREDITATION BOARD EVALUATION TEAM VISITS ESP

The Engineering Accreditation Board (EAB) Evaluation Team comprising Prof Tony Wilson (team leader) from Department of Engineering Science, Oxford University; Mr Lim Peng Hong (Managing Director of PH Consulting Pte Ltd); Dr Zhang Jing Bing (Research Director of IDC Asia Pacific) and Mr Christopher Eng (Executive Engineer of Building and Construction Authority) made a campus visit to accredit the Engineering Science programme. They were accompanied by Prof Satoshi Matsumoto (Shibaura Institute of Technology) and Mrs Tina Hall-Turner (Technical Director of Project Management, Beca Ltd, New Zealand) who were the ABET Observers and Continuous Monitoring Review Team Members.

The accreditation matters very much to students because an accredited degree:

- Verifies that students' educational experience meets the global standard for technical education in the engineering science profession.
- Enhances students' employment opportunities and multinational corporations require graduation from an accredited programme.
- Supports students' entry to a technical profession through licensure, registration, and certification; all of which often require graduation from an accredited programme as a minimum qualification.
- Paves the way for students to work globally, because accreditation is recognized worldwide through international
 agreements, and many other countries' national accrediting systems are based on the Washington Accord model.

The accreditation team had meetings with the Dean Prof K.C. Chua and Vice Dean A/Prof Lanry Yung of the Faculty of Engineering, the Head of Physics Department Prof C.H. Sow, the ESP Director Prof C.M. Wang, ESP Associates and Adjunct Professors, ESP Industry Advisory Committee, several ESP Alumni, Students and ESP non-academic staff members. These meetings enable the accreditation team to get a good understanding of the ESP mission, vision, and curriculum, achievement of the programme objectives and learning outcomes, the quality of staff and students, the institution support and financial resources. The team also toured the ESP labs to observe students at work in the lab, the lab facilities and the lab technologist support for the students.

At the end of the hectic 2-day campus visit, the EAB evaluation team informed Prof Wang and his accreditation committee that they were impressed by the high quality of the Engineering Science Programme, staff and students and are recommending the continuation of the full accreditation status for another 5 years.



 $\textit{EAB evaluation team being briefed by A/Prof Anjam Khursheed on \textit{ESP students' projects in the Innovator's Laborator's Comparison of the Comparison of t$

A/Prof Chua wins IChemE Award 2016

ESP Associate, A/Prof Chua (ME Dept), was conferred the IChemE Award 2016 under the category Research Project of the Year Award (Singapore) for his project 'Membrane dehumidifiers to reduce energy consumption'.

He has developed an innovate membrane module that effortlessly sieves out water molecules in air conditioning systems. This patented membrane technology comprised of a substrate-supported layer of specially selected hydrophilic polymeric chemicals that can selectively sieve out water vapour molecules at high flux without the need of thermal regeneration process of conventional desiccant and hence it is highly energy efficient. It is the first ever membrane based dehumidifier designed for the tropics. The deployment of the membrane dehumidifier minimizes energy consumption, electrical demand, and carbon emission while being cost effective and environmentally responsible. Its unique design enables a PLUG-and-PLAY module to be realized which can be 'plugged' to any existing or new air ducts system to realize immediate air-con energy and carbon emission reductions by at least 35%.



ESP Manager receives NUS Quality Service Award 2016

Ms Violet Tay was awarded the NUS Quality Service Award 2016 (Service Advocate) in Aug 2016.

NUS QS Award is an annual university nomination that affirms in selected individuals their superb service attitude and commitment to exceed the expectations of their customers. Attaining the award signals an unqualified dedication to service excellence. Evident also from the various complimentary letters that she has received from local students, professors, exchange students and professors from overseas, it goes to reaffirm her dedication to providing excellent service and enthusiasm to go the extra mile for the tasks entrusted to her.

My VIP Experience

by Anisha Elizabeth Mathew

The vacation internship programme (VIP) offers students an opportunity to translate their engineering knowledge to a practical engineering context. The 12 week VIP immerses students into a setting where they experience dealing with real world problems and challenges.

As engineering science students, having had the exposures to a myriad of engineering modules spanned across different faculties, there was a relative ease with which we could assimilate into working environment.



Anisha in red top enjoying a night out with her colleagues

My internship experience at Axis Engineering, a company which specializes in the development of process analyzer system, proved to be particularly insightful. The internship programme was characterized by job scopes in two aspects - the initial part was dedicated to learning the theoretical aspects and research methodology of flow switches, temperature switches tube-in-tube heat exchangers and the Peltier cooler. During the latter half of the programme, calculations pertaining to helical heat exchangers and solar cell had to be carried out. During the entire period, opportunities were afforded for participation in research, for learning the technical aspects of Peltier coolers and for carrying out Peltier cooler performance curve analysis. During the final week of the programme, I was encouraged to participate in some 'non-technical' facets of the work environment and this gave an insight into the essential auxiliary work-skills that are vital in the day-to-day working environment.

From a personal experience, the entire VIP turned out to be a truly enriching and inspiring experience. It broadened my horizons and gave me a glimpse of research based jobs, which is an important insight for an aspiring engineering scientist. Moreover, interacting with people from different technical and social backgrounds further honed my soft skills. I am also very grateful to my mentor, Prof Wang for being approachable, encouraging and inspiring throughout the duration of my internship.

NUS Engineering Lecture on Very Large Floating Structures

On 7 October, Prof Wang Chien Ming delivered the 9th Faculty of Engineering Lecture on Very Large Floating Structures for creation of space on the sea. The NUS Engineering Lecture Series is a premier platform of the Faculty of Engineering, NUS, to celebrate its peaks of excellence and thought leadership and showcase to the academic community and our industry partners, important contributions made by its staff to sea change developments in engineering. The lectures are given by Professors in the Faculty who have made distinguished research contributions. Past speakers include Prof Shih Choon Fong (who spoke on the Pacific Century Beckons), Prof Hang Chang Chieh (who spoke on Singapore's research and innovation journey), Prof Andrew Nee (who spoke on the next reality and the Nth sense), Prof Lim Chwee Teck (who spoke on healthcare engineering) and Prof Neal Chung (who spoke on sustainable clean water and clean energy).



Prof Wang began his lecture by pointing out two factors that will trigger urban planners to turn to VLFS technology for creating land from the sea, rivers and lakes. The first factor is the densification of cities (normally situated beside water bodies) as people migrate to the cities from the rural areas in search of a better life. By 2030, it is estimated that the urban population will reach 5 billion people. With the crowding of our cities, there will be a land crunch and sky-rocketing land price. The second factor is the emission of carbon dioxide leading to global warming. Global warming expands our ocean, raises the sea level and creates flash floods as a result of stronger storms. Our coastal cities and islands may be threatened with partial or complete submergence. In view of these two factors, Prof Wang proposes the use of VLFS as an economical and sustainable solution for creating new land from the sea to ease congestion in coastal cities and islands without the fear of rising water level due to global warming. Moreover, VLFS has advantages over the traditional land reclamation in the following respects: economical in deep water and soft seabed, has little effect on the sea current and water quality, uses a much shorter construction time, may take any plan shape and cutouts, are expandable and removable, are base isolated to earthquakes, exploits the buoyancy force in supporting load, possesses mobility, easy access to water, interior space may be utilized and their presence at coastline serve as breakwaters.

Prof Wang explained the two types of VLFS (i.e. the semisubmersible type and the pontoon type) and the VLFS system that comprises the floating structure, mooring system, access gangways/floating roads or berthing facilities and breakwaters. Next, he shared the myriad applications of VLFS such as floating airfields, floating naval bases, floating bridges/roads, floating fuel storage facilities, floating solar farms, floating houses/buildings, and floating cities. He also shared the research studies in mitigating hydroelastic responses of VLFS under the action of waves, advanced materials for floating structures and innovative connector systems for joining floating units. He ended his lecture with his vision for floating cities and floating countries that may be suitability situated in the sea area bounded by $+5^{\circ}$ and -5° latitudes because there is little wind and waves in this region.

Prof Wang was also quoted in *The Straits Times (President Tony Tan hails strong ties with Norway (Page A18)), Channel 8 News (11 Oct) and Channel NewsAsia Online (11 Oct)* while speaking on VLFS during the ten collaborative agreements signing between Singapore and Norway at the Research Council of Norway on October 11, 2016.



Prof Wang giving his VLFS lecture at the Engineering Auditorium, NUS

NOC, Silicon Valley – A Life Changing Experience by Goh See Ting

Entrepreneurship — A bombastic word that many people often tend to have misconceptions and delusions about it. This reminds me of one of the classes that I have taken in Stanford University, MS&E 178 — The Spirit of Entrepreneurship. "Entrepreneurship is not about getting rich, but lottery is! And, what are you guys waiting for?" This amuses me but what the lecturer said is actually true! Being an amateur in this area, I have decided to embark on a year long NOC journey in the Silicon Valley — the very epitome of extraordinary innovation and entrepreneurship — searching for answers behind those passions, cultures and people in the World's renown start-up scene.



I interned at C3nano, Inc. as a R&D Engineer in the Product Development team. As a spinout from Stanford University, C3nano is a nanotechnology start-up that develops solution-based, transparent conductive inks and films as direct replacements for Indium-Tin-Oxide (ITO). Being in a research-intensive environment, I learnt to be organised and disciplined towards executing various experiments, from blade coating inks and photolithographic patterning to growing and purifying Silver Nanowires. I also constantly kept myself curious about everything around me and stay observant. Being an ESP student, I decided to come out with something interesting − to design and innovate a transparent antenna, using C3nano's ActivegridTM product, that is able to connect to the WIFI, with almost zero equipment that characterises antenna. My side project had won the first prize (USD\$500) in the company's Engineering Competition. I have also "created a 3D animation using Autodesk Maya" to describe C3nano's patented technology, NanoglueTM as a visual material for investors and non-technical audience to assist my CTO, Dr Ajay Virkar, for his future presentations and pitches. Recently, he had presented it in the IDtechEX Printed Electronic Show 2016.

Being on the Computational Engineering Science Specialisation track, I have taken two disciplined-based Masters classes in Stanford University - MS&E 223 Simulation and MS&E 211 Linear and Non-Linear Optimisation. It was tough and challenging to keep up with the lectures while having to work during weekdays. I have also joined various hackathons around Silicon Valley, learning multiple frameworks from my roommates, such as MeteorJS, Laravel and IonicJS. In the hackathon - Hack UCSC 2016, we came in 4^{th} place under the Tech Cares category with our social enterprise solution, HuatLah.

"Work hard play harder." Other than work, studies and competitions, I have been to multiple short trips within the United States (Seattle, New York, Washington etc.) I have walked through the indescribable coffee aroma from the cafes in Seattle and tasted Café Latte in the first Starbuck shop; travelled to Niagara Falls and had stood at the top of the Empire State Building in New York; taken selfies with Abraham Lincoln statue at the monument and explored the Air-Space museum in Washington. I have also been to various national parks, such as Yosemite, Zion and Grand Canyon. Apart from travelling, I went to various networking events, such as SG day 2016 at Silicon Valley, and attended many friends' gatherings. One of my favourite outing was an invitation to attend my American friend's Thanksgiving gathering. Our friendship had forged over weekly badminton session every Friday night.

All-in-all, I am very grateful for this yearlong opportunity to explore Silicon Valley as well as foster new friendships here. I would like to thank Prof Wang wholeheartedly, as well as the ESP staff and associates who have been helping me greatly in getting into the competitive NOC program.

And, the answers behind all those successful entrepreneurs in the Valley, to be honest, I am still uncertain about it unless I exercise what I have learnt here and be part of the start-up ecosystem. Till then, I believe that I will have a better answer to it. Peter Thiel once said, "Competition is for losers — if you want to create and capture lasting value,



look to build a monopoly". Often being exposed to solving multidisciplinary engineering problems, we (ESP students) might chance upon creating solutions that are unique, original and novel, and this is the beauty I see in the Engineering Science Programme.

> A photo of NCSV29 Batch with Dr Lily Chan and Ms Diana Tan

I am almost Finnish-ed by my Design Project

by Roger Erh

In January 2016, I had the opportunity to go to the University of Oulu in Finland for my design project model under the Student Exchange Programme. The design project which started in late March 2016 was to create a bioreactor design and convert flue gas to ethanol. Three mandatory technical meetings were planned which were spread over 2 months with a final business meeting at the end to sell the idea to "investors" with the professor in charge of the team and the professor in charge of the module in attendance. I was initially unable to attend the introductory meeting, but I finally managed to reach just in time to be grouped with 3 other Finnish students.

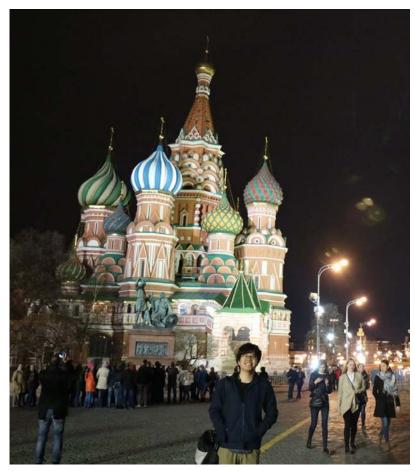
We set up a group chat and we decided to tell each other our free dates for the mandatory meetings. It was a terrible time as most of us were very busy and one of the Finnish student would leave for work in May so that means our original timetable of 2 months reduced to 1 month and we will need to do most of our work on our own. It was then that I began to fear whether we will able to do it sufficiently well to get even a decent grade. Despite the odds, we pushed on, and I decided to take charge of the design of the bioreactor while the others did the processes that were required before and after the bioreactor. Our first technical meeting went well with both the professors throwing in ideas to assist us. But it was after our second technical meeting that we faced a difficulty and that is something I will probably remember for life!

"I heard you cannot make the next meeting, if so, then you are out of the project" said one of the supervisors when they heard me telling the team the date fixed for the next meeting was inconvenient to me. I was aghast as I already had great difficulty even communicating with the team in their language and now I had to forfeit everything! The finality and firm resolve in his voice left me devastated. But the meeting had to be adjourned because I had better knowledge of the bioreactor than my team mates. Desperate but not without hope, I knocked on the team supervisor's door with a suggestion and said to him 'since I cannot attend the 3rd technical meeting, we could possibly use SKYPE' which after some deliberations was accepted. Now I had to seek out a location with a good wifi! My entire module now hung on the hotel I stayed would have a good working wifi, if not I will have to drop it:(

I had also learnt my lesson never to combine holiday with work. This was the reason I was not able to attend the 3rd meeting with my teammates as I was in Russia as part of my holiday which I had signed up for its interesting experience, *being a tourist by day and doing work by night*. Thankfully most shops in Russia close by 6-7pm and I could work till 1am. I prayed hard as I prepared to SKYPE. Lo and behold, IT WORKED! And the whole meeting was a great success. The data became much more realistic after the 3rd meeting and our business "investors" were pleased with the results.

Looking back, I am still thankful that I was able to do well despite the difficulties in communication, inconvenient meetings and the short time span of the project. If there is one thing I am glad about my exchange, I am glad I could *finnish* my design project; *Hurray!!!*

My advice to my juniors, do not be disheartened at difficulties, just move on with confidence in seeking novel solutions and you will be surprised how you will be able to conquer it.



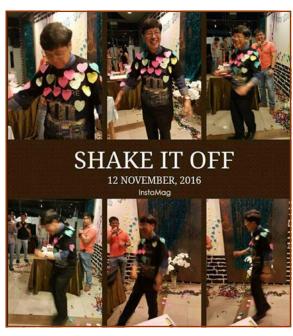
Roger posing in front of a beautifully illuminated Kremlin building in Russia

"Prof Wang, We Will Miss You"

by Ryan Yang, 7th ESP Batch.

ESP associates, office staff (new and old) and alumni members from all batches gathered together to surprise Mrs and Prof Wang to an arousing dinner reception on 12th November 2016 at 5 Little Monkey's Café in Singapore. It was indeed a great picture of astonishment to see Prof Wang and his wife as they were received with garlands from the elevator, to a welcome by the noisy cheering of alumni and staff mbers waving their placards with the words "**Prof Wang, We Will Miss You**".

When the Master of Ceremonies, Benjamin of 4th batch handed the microphone to Prof Wang for an impromptu address, he looked very emotional and expressed pleasant surprise that ESPians had managed to keep such a big affair from him under lid! He said, he did not have enough words to express his happiness for the overpowering love! As Mrs and Prof Wang cut the 'we miss you' cake, everyone with filled glasses gave a triple roar toast to Prof Wang for his good health, happiness with family members, also comprising of 3 lovely grandchildren and his new portfolio in Australia.



The surprise farewell dinner kicked into momentum as he got mobbed by his ever-loving students and staff who had come back to bid him goodbye from NUS & Singapore. Edna from the first batch came with her little one as well. The happy catchup sessions between students, associates and staff with good music and delicious food flowed between photographing sessions. A/Prof Joshi, Prof Choo and Ms Anna shared a few interesting insights on working closely with Prof Wang. They said, he could change his thinking cap like a magician and be approached at any given time without getting him agitated; he always had time and a listening ear irrespective of who came to meet him even at his busiest! Prof Choo brought greetings from Choo Min, also from the first batch (who is now in her advanced pregnancy) and remarked in astonishment that he had not never seen his good friend getting angry at any time of his long association with him. The alumni also put in their tributes on to a guest book which was presented to him at the function along with gifts from different batches of alumni and the farewell card signed by ESP staff members.

All eyes got pinned on Prof Wang when he was asked by the emcee to shake off all the heart-shaped post-it notes stuck on him with farewells & goodbyes to Taylor Swift's song "Shake it Off". As Prof Wang danced hard to disentangle the sticky posts from his body, everyone clapped to the rhythm and amidst laughter and agreed; Prof has good moves too!

The lovely evening ended with Prof Wang thanking everyone who had made the gathering memorable with a special complement to the organisers; Matthew, Wee Hoe, Kwok Hoe, Benjamin, Eric, Howard and Angela for their brainchild farewell dinner plan! On behalf of ESPians, I take this opportunity to thank and wish the very best to our beloved teacher boss, Prof Wang into his continued journey.



ESP Graduates Pay Tribute to Prof Wang on his Departure for New Frontiers..

One memory I have of Prof Wang was during a trip to Malaysia for the Build and Break Competition in 2010. He wanted us to have a good time and so being a great foodie, he introduced us to some of his favourite food in KL. We all had a great time. Prof Wang has an extremely inquisitive mind, and his passion for all things food, engineering and engineering science @ NUS was just infectious. His deep genuine care for people also left a deep impression on me. I wanted to personally thank him for taking really good care of us! ... Zhihan Lee

Prof Wang was there teaching me the first lecture in NUS; he was there to help me with my PhD application when I graduated. It has been a really fruitful journey for me in NUS and he was there all along the way, to witness us grow from high school students to ambitious young working forces. 4 years is a short session time span but long enough to leave life-time marks. Thank you so much Prof Wang for giving me knowledge and shaping me into a better man! ... Chen Lianwei

一日为师 终身为父 I truly thank Prof Wang for his belief in me, investing time and effort onto me making my university life in ESP an extraordinary journey. Engineering Science won't be the same without him. All the best for his future endeavor. ... Edna Seah

Hi Prof Wang, thank you for always looking out for us and encouraging us to seize opportunities that come our way. My ESP experience has been transformational and memorable. On a lighter note, the Class of 2016 will always remember your 3h Mechanics lectures and the promise of a Hawaii trip =) All the best to your new life in Queensland! ... **Chia Hong**

I first met Prof Wang in a Higher Education Fair back in 2007. He said to me, "I have something good for you." And because of that, I am a proud member of the ESP family today. Thanks Prof! ... **Jen Sern**

One memory of Prof Wang was when Matthew and I participated in the NTU bridge design competition. Prof Wang was very enthusiastic and encouraging. He advised us on lightweight yet strong structures, and although we did not win that competition, we learnt a lot and were glad to have joined. We really appreciate his support in and out of the classroom. ... Ryan Yang

One of the greatest things that Prof Wang ever taught me was that one should never be afraid of chasing your dreams. My dream of studying nuclear engineering was far out in most people's minds but Prof Wang always encouraged me to seek out opportunities in the field and always pushed me to go out of my comfort zone. His constant lookout for nuclear programs and forwarding them to me, along with his support in helping me obtain financial aid as I went to MIT for a summer internship allowed me to explore my passion. I will forever be grateful for the support he has given me over my 4 years! I wish him all the best in Australia! ... Matthew Chew

Prof Wang is a mentor who significantly influenced my life, both academically and personally. Many conversations with him still rings in my ear. I remember he tells me to be careful about the important things such as who to marry and where to live and that the world is so big, there is no need to compete over small things. I also receive his help over many things, like correcting my CV. As Zhihan says, he has been taking really good care of us. I am deeply appreciative to be his student all my life! ... Cong Wang

I know Prof Wang is extremely brilliant at his fields of research (are we expecting a giant floating seafood restaurant?:)) and teaching. Through observations, I also know that Prof Wang really cares about us and wants to inspire us as young adults beyond the academics. Those little (sometimes long, tehe) conversations; those speeches at annual festive gatherings, graduation events... Thank you, Prof Wang. I sincerely wish him the best in Australia. God bless! ... Hui Qi

Prof Wang has always been very eager to guide his students with his unassuming and enthusiastic persona. He is always eager to share his perspective on life with interesting anecdotes. I will miss his stories! ... **Wenyou Tan**

Prof Wang is definitely one of the best professors I've met and I am very grateful to have such a great teacher in my life. His teaching (both in academic and life lessons) and encouragement have helped me a lot, especially in emboldening me to pursue what I thought will be greater than what I am capable of. Thank you, Prof Wang! ... **Jet Chun**

As an ESP alumnus, I always feel home and welcomed whenever I set foot in the ESP office by Prof Wang. I have benefited much from his teaching and guidance in the past 10 years and I wish to express my gratitude. Wishing him all the best in Brisbane! ... **Howard**

ESP wouldn't be what it is today without you! Thank you for all these years of hard work, support and care for us and it is amazing to watch ESP bloom and develop all these years!!! ... **Cynthia Chua**

Thank you for your guidance and your positive influence on me all these years!!! ... Wee Hoe

We shall miss the lovely days and years being together! ... Zhang Haoran

Thank you for your teaching! We shall always remember what you said: 'Be Happy and Be Smart' ... Kia Tar

I will always remember you telling us the story of the "Brazilian Pine Nut Tree in the Amazon Rain Forest". It is truly a story that touched and inspired us. Thank you! ... **Zeming Lim**

Prof Wang is relocating to Brisbane to be near his children and grandchildren who are all in Australia. On 3rd January 2017, he will join the School of Civil Engineering, University of Queensland as the Transport and Main Roads Chair Professor. ESP family wishes him all the best in his new endeavours in Australia.

Plans and Career Paths of 7th Batch of ESP Graduates S/N **ESP Graduates** What are the 2016 graduates doing now? 1 Jin Yuejiao Reading PhD in Biomechanics of Ocular Pulse @ NGS 2 Lim Swee Kiat To read Masters in Computer Science with specialization in Artificial Intelligence **Higher Studies** 3 Reading Masters in Computing (Machine Learning) @ Imperial College London Ling Evan 4 **Matthew Chew** Reading Masters in Chemical Engineering @ NUS Reading PhD in Materials @ University of Oxford from October 2017. 5 Soh Jia Hao Eugene (Until then working with A*Star as a Specialist) 6 Tan Hiok Yang Reading Masters in Electrical Engineering @ NUS 7 Xu Shengfu Reading Masters in Mechanical Engineering @ NTU, Singapore 8 Yang Ren Wei Ryan To read Masters in Physics @ University of British Columbia 9 Balamuniappan Pranesh Research Engineer / Part Time PhD in Electrical Engineering @ NUS 10 Chan Wei Teng Engineer @ SBS, Singapore 11 Eleanor Wong Chen Hui Direct-Entry Inspector @ Singapore Police Force 12 Gwee Chia Hong Assistant Director (Energy Division) @ Ministry of Trade and Industry, Singapore James Hii Photography @ Singapore 13 James Hii Ding Yong 14 Khew Si Ying Research Engineer @ Department of Electrical & Computer Engineering, NUS Lau Wei Cheng Engineer @ Defense Science and Technology Agency, Singapore 15 16 Law Keng Hong Data Analyst @ APL Logistics, Singapore 17 Leslie Lim Tze Yang Senior Immigration Officer @ Immigration & Checkpoints Authority 18 Lim Meng Wei Aloysius Process Engineer @ AFPD Pte Ltd, Singapore **Employment** Lim Say Kiat Ronald 19 Research Engineer @ Department of Mechanical Engineering, NUS Liow Wei Li 20 Engineer @ Defense Science and Technology Agency, Singapore 21 Liu Chong Research Engineer @ Department of Mechanical Engineering, NUS 2 22 Loh Ying Hao Graduate Engineer @ Keppel Infrastructure, Singapore 23 Phang Qiuyuan Eugene Assisting family business in Malaysia 24 Seah Wee Lun Alan Transport Planner @ Land Transport Authority, Singapore 25 Siti Aishah Bte Azmansah Research Engineer @ Mechanical Engineering Department, NUS 26 Tan Jun Wen Financial Services Consultant @ Manulife, Singapore Application R&D Engineer (Laser) @ DISCO Hi-Tech, Singapore 27 Tan Zai Yeong 28 Varun Soni Solution Sales Specialist @ IBM Business Development Executive @ Keppel District Heating and Cooling 29 Woon Hui Qi Systems Pte Ltd, Singapore 30 Yeo Chao Hong Graduate Engineer @ ABB, Singapore 31 Tan Si Min Jane Insurance Agent @ Credentials, Singapore 32 **Tan Ying Xing** BIM Coordinator @ CPG M & E, Singapore

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