

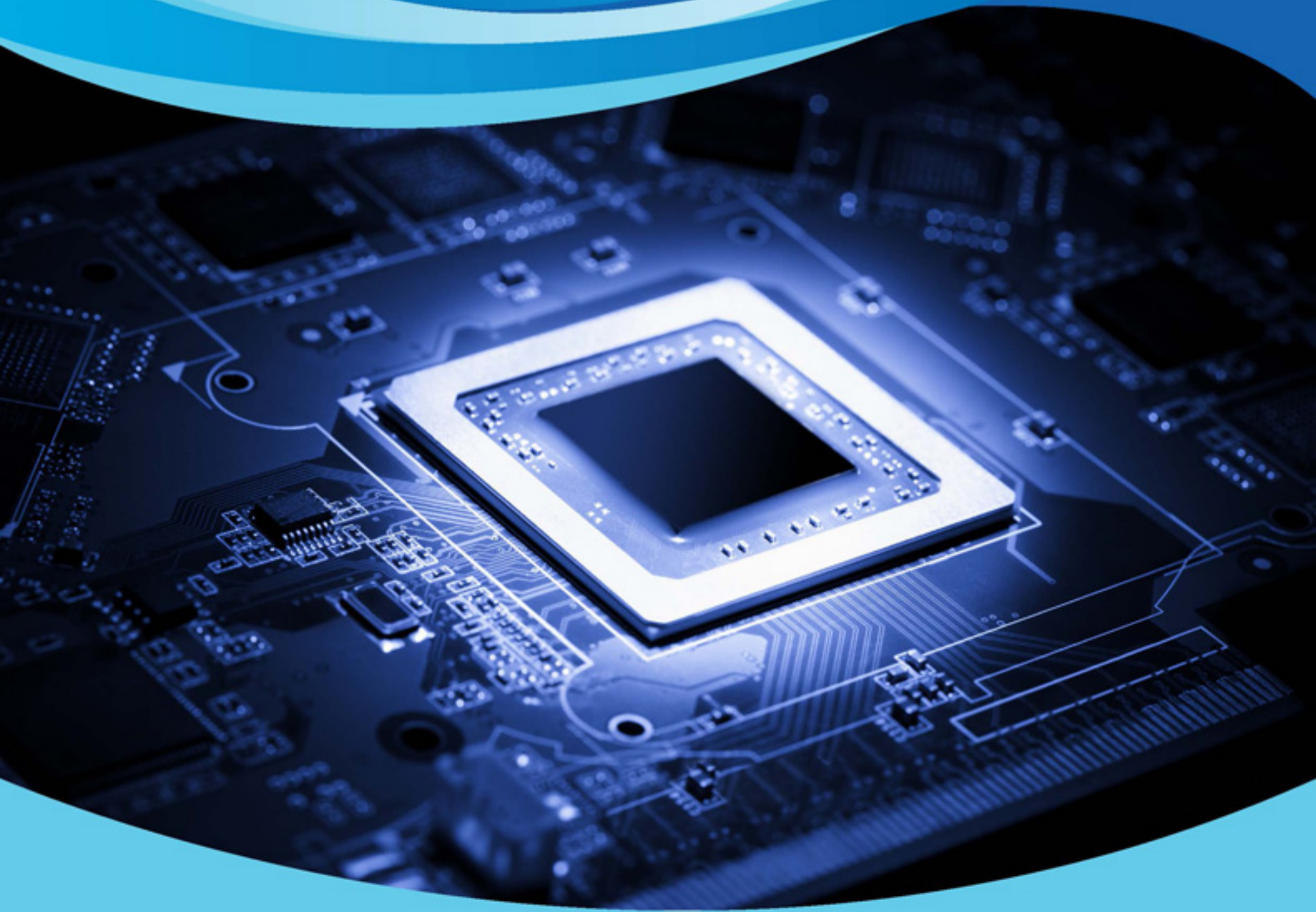
July - September 2012 Issue

digest **TUM**Asia

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A quarterly newsletter from the German Institute of Science and Technology-TUM Asia (TUM Asia)

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The second quarter of the year saw the recruitment activities in TUM Asia coming to a standstill. We wrap up on the admission of the 10th intake of our students and shift the focus to our student events. On 24th March, our undergraduate students from the Student Management Committee (SMC) organized a Paintball game together with the Singapore Institute of Technology. The game was extended to students from the other Overseas Universities. It was a feat for the SMC to organize an event of this scale which saw a total of 150 participants and I have to say I am really proud of our students. Following that, on 16th April, we jointly organized the World of Circuits event with the Economic Development Board Singapore. This event is a networking session that is meant to bridge our undergraduates from the Electrical Engineering and Information Technology programme and Master students from the Integrated Circuit Design programme, with companies from the Semiconductor Industry. The event was well received with participation from 14 companies and close to 100 attendees. You will read about the event in pages 5-6 of the digest, where we have the event coverage contributed by our designated student reporter, Richard Tan Eng Hoe from the BSc EEIT 2010 cohort.



Recently at a tea session with our Bachelor programme applicants, one of our teaching professor from the Master of Science programme in Integrated Circuit Design, Dr. Helmut Graeb gave a brief overview on the Electrical Engineering and Information Technology programme. In his presentation, he spoke about the heavy focus of mathematics in the curriculum and crafted a unique picture of the seemingly bland and difficult subject. There is a quote by Bertrand Russell (1872 – 1970, British logician and philosopher) which befits what Dr. Graeb was trying to say, "Mathematics, rightly viewed, possess not only truth, but supreme beauty, a beauty cold and austere, like that of sculpture."

Our lecturing professors here at TUM Asia not only have a wealth of knowledge to share but their passion inspires students to look at their fears and challenges in a simplistic, engaging manner. Be infected by Dr. Graeb's passion in IC Design on page 9-10 and learn about how his teaching experience is enriched by the questions students ask during his classes. Questions are important and this is something students should never stop doing even upon the completion of their study programme. Coming July we will have more than 80 students graduating from all of our 5 Master programmes here in TUM Asia and my hope for them is that they continue to challenge the norm and ask questions. The important thing is not to stop questioning and the end result of that will be impactful changes that embodies the entrepreneurial spirit of TUM.

Have a successful quarter ahead.

Dr. Markus Wächter
Managing Director, TUM Asia

The TUM Asia Student Management Committee (SMC) organized a memorable paintball event on 24 March 2012 that was open to all students in the various Overseas Universities (OUs) under the Singapore Institute of Technology (SIT).

The event took place at Bottle Tree Park (Khatib), Red Dynasty. All students were eligible to participate in this event with a \$10 subsidy kindly sponsored by SIT initially.

Due to an overwhelming response, TUM Asia's SMC put up suggestions for higher subsidy as an appreciation of the students support in this event and approached companies to sponsor items in the goodie bags. As a result, participants get to receive a goodie bag which includes a \$50 M1 voucher, \$6 Macdonald cash voucher, water and some writing materials. SIT sponsored the students with an event t-shirt and increased the subsidy for the paintball game to 50% instead.



“ *Just wanted to say I’ve always wanted to try out Paintball for the experience (I’m sure I’m not alone in this), and would like to express my utmost gratitude to TUM-SMC for making this a reality for all of us! :) Thank you!* ”



Dr Joham (TUM Professor):
“A thrilling event which can’t be found in Germany.”

Loh Jieshen

Just wanted to say I've always wanted to try out Paintball for the experience (I'm sure I'm not alone in this), and would like to express my utmost gratitude to TUM-SMC for making this a reality for all of us! :) Thank you!

Unlike · Comment · Follow Post · March 25 at 10:30am

👍 You, Huang Yilong and 3 others like this.

Write a comment...

Calvin Neo

this is what I'm talking about! :)

p.s. awesome event! Gratitude.

Like · Comment · Follow Post · March 24 at 11:06pm

👍 Serena Lim, Quek En and 5 others like this.

Write a comment...



Event Day

Participants began streaming in by 9:30am for the event registration. By 10:30am all 150 participants were well seated waiting for the representative of Red Dynasty to brief the crowd on the game and safety guidelines. The game commenced straight after the briefing at approximately 11:00am and the entire event ended at 3:00pm smoothly.

The committee members in the SMC have little experience in event planning and organization. The team had to get outside of their comfort zone to organize such an event. There were many challenges faced during the planning stages, such as negotiating for the game rates and approaching companies for sponsorships of the items in the goodie bags. On the event day itself, it was a tight balancing act between time and crowd management and ensuring the safe keeping of the participant's belongings was another issue. These were some of the problems that the team had to anticipate and manage.

With the successful conclusion of the event, the SMC would like to thank all the student helpers who dedicated their time to assist at the event particularly Joey Chan, Quek En, Dennis Ng, Tay Boon Kai and Law Wei Cai. The team had an exceptionally memorable experience to remember of their school days.

*Article contributed by Richard Tan Eng Hoe, BSc EEIT 2010 cohort.

TUM Asia's SMC Committee Members

TUM Asia students

Su WeiJie	President
Ng Yu Ning	Vice President
Adrian Wong Zhi Wei	Secretary
May Pauk	Financial Secretary
Huang Yilong	Communication Secretary
Tan Eng Hoe Richard	Welfare Head

World of Circuits – A networking event for the Semiconductor industry and TUM Asia BSc EEIT students, 16th April 2012.

Hosted by the German Institute of Science and Technology – TUM Asia (TUM Asia) and the Economic Development Board Singapore (EDB), the "World of Circuits" event was an exclusive networking session held on 16 April at TUM Asia's Pixel campus. Attendees of the event include students from TUM Asia that are undertaking the Master of Science programme in Integrated Circuit Design, the Bachelor of Science programme in Electrical Engineering and Information Technology as well as industry representatives from fourteen prestigious firms from the semiconductor industry. The companies that participated in the event include Broadcom Singapore, Infineon Technologies Asia Pacific, Lantiq Asia Pacific, Rohde and Schwarz Asia, STMicroelectronics Asia Pacific, Volterra Asia and Xilinx Asia Pacific to name a few.

The "World of Circuits" event was organized to heighten local firms' awareness regarding TUM Asia. It also served as a valuable opportunity for TUM Asia's students to understand more about the career prospects within the local engineering industry.

The event started off with an opening speech by Dr. Markus Waechter, Managing Director of TUM Asia, who shared with the audience the historical background of Technische Universität München. The crowd was subsequently addressed by Mr. Terence Gan, Head of Electronics, EDB. He provided an interesting twist to the presentation session by framing it with three questions that led to statistics that indicate continual strong growth and investment in the semiconductor industry. Mr. Chris Tan, Manager, Learning & Development, Human Resource in the Organization Development Group of Rohde and Schwarz Asia and Mr. David Ho, Director, Analog and Mixed Signal Engineering Broadcom Singapore later shared about the career prospects both in their respective companies and in general, the IC Design and engineering profession. Aside hearing from industry participants, the attendees had an opportunity to hear from TUM Asia alumni who graduated from the Master of Science in Integrated Circuit Design and are all currently now working with major firms within the industry.

The presentation session concluded with students moving on to the exhibition room to explore the circuit boards and displays provided by participating companies. Students crowded around the various booths and spent some time engaging with the company representatives. Many of them were keen to find out the qualities that companies look out for when recruiting potential engineers. Firms expressed that they prefer candidates who possess skills that are "off the books". This includes the presence of a positive self-learning attitude, willingness to acquire new knowledge and capabilities, self-motivated with good

leadership qualities and excellent team player. Above all, the ideal candidate should also be a confident individual with a strong passion in engineering.

***Quoting Mr. Valentino,
IC Design Manager of
STMicroelectronics Asia Pacific,
"Working long hours daily and
under tight schedule, without
passion, how's one able to
endure the stress?"***

So the next question is if companies have been able to recruit the kind of candidates they are talking about. Unfortunately it appears that they are facing a challenge in recruiting good engineers. Mr. Martin Tilch, Director, Product and Test Engineering, Lantiq Asia Pacific expressed his concern: "The industry is currently facing a shortage of ICD engineers." According to Mr. Tilch, many engineers are switching over to the field of business, a competitive playfield where they can make lucrative amounts of money from there.

In order to attract and retain engineering talents, some firms mentioned that they are providing scholarships to students who display great interests in engineering; an initiative that assist them in recruiting individuals with good merits early. Others highlighted that they include enrichment programs for their employees as part of their talent retention strategy. For instance, Broadcom Singapore provides technical and even non-technical (such as personal development) courses to allow employees to upgrade themselves and keep up with the needs of their roles and responsibilities in order to cope with the ever-changing engineering industry.



Other questions on top of the students' mind include how to score in interviews. Mr. Chris Tan, Rohde and Schwarz Asia advised that: "Paper qualification shows the foundation acquired. During a call up for an interview, you are already hired. It is important then how you perform during the interview. Eventually the effort, attitude, competency and integrity of the person are qualities we look out for."

Overall, these firms agree that they still prefer to scout for talents within the Asia Pacific region. They find that an engineer here not only possess a good set of academic results but also possesses good personality, learning capabilities and passion.

As the designated student report for this event, I will like to ask all students who chose Engineering as their study major. Do you have the passion to take you through all the way?



Student reporter: Mr. Richard Tan, BSc EEIT 2010 cohort, student photographer: Mr. Law Weicai, BSc EEIT 2010 cohort.

Following the World of Circuits event, TUM Asia speaks with Mr Kenji Teo, HR Manager with Xilinx Inc., the world's leading provider of All Programmable technologies and devices to find out their views on the staffing trends in the Semiconductor industry.

Can you briefly tell us about your company and the partnership you have with TUM Asia (if any)?

Xilinx Inc. is an American technology company, primarily a supplier of programmable logic devices. It is known for inventing the field programmable gate array (FPGA) and as the first semiconductor company with a fabless manufacturing model. Founded in Silicon Valley in 1984, the company is headquartered in San Jose, California, with additional offices in Dublin, Ireland; Singapore; Hyderabad, India; and Tokyo Japan.

Xilinx current doesn't have any collaboration with TUM Asia but we look forward to partnering them in developing internship programmes for their Master students in the coming days ahead.

What are some of the expectations you have of graduates when it comes to hiring them for placement of positions in your company?

Aside the knowledge required to handle the scope of work, candidates must be able to work well in a team and contribute to projects. They should take the opportunity to learn as much as they can.

Could you share your view on current situation/need of skilled employees for Singapore's Semiconductor industry, and how study programmes at TUM Asia will fit into it from an employer's perspective?

The Semiconductor industry here in Singapore is currently facing a shortage of local engineering talents. Internship and new graduate hiring will help to build the pipeline and the curriculum structure under the Master programmes at TUM Asia will help to bridge companies to a pool of well-trained engineers.

Could you share a little about your company's future planning/directions, especially in terms of manpower/skilled employees planning?

Xilinx Singapore is looking to a modest expansion over the next 5 years by an estimated 10% - 15% of staff strength.





Xilinx, Inc. (NASDAQ: XLNX) is the world's leading provider of All Programmable technologies and devices, beyond hardware to software, digital to analog, and single to multiple die in 3D ICs. These industry leading devices are coupled with a next-generation design environment and IP to serve a broad range of customer needs, from programmable logic to programmable systems integration. Today, Xilinx is the company of choice for the design of tens of thousands of products that improve the quality of our everyday lives. Xilinx All Programmable devices are used by more than 20,000 customers to:

- Deliver innovative new products to market in a matter of weeks
- Drastically reduce research and development costs
- Change or upgrade end product features and functions "on the fly" to meet new market demands and adapt to changing industry standards

Xilinx chips are designed into automotive infotainment and driver safety, ultrasound imaging, robotically-assisted surgical systems, IT gear for wireless computing and mobile applications, consumer 3-D TVs, mobile communications used on the networked battlefield – and even sophisticated space vehicles exploring the outer reaches of the universe. For more information, visit www.xilinx.com.

In this issue of the newsletter, we speak with Dr. Helmut Graeb who has been with the Institute of Electronic Design Automation, TUM, since 1987. He has published more than 100 papers, six of which were nominated for best papers at DAC, ICCAD, DATE conferences. His research interests are in design automation for analog and mixed-signal circuits, with particular emphasis on Pareto optimization of analog circuits considering parameter tolerances, analog design for yield and reliability, hierarchical sizing of analog circuits, analog/mixed signal test design, semi-discrete optimization of analog circuits, and structural analysis of analog and digital circuits.

With a wealth of experience in the field of IC Design, read on to find out how his interest and passion for this subject came about and his thoughts about the students he has taught here in TUM Asia in the past 5 years.

Could you share with us your teaching experience here with TUM Asia? What are your opinions of the students you have previously taught?

Let me answer in a more general sense. The specific feature of teaching at TUM Asia is the block character of a course; what is usually taught in something like 3 months now has to be done in 2 weeks. This changes the character of teaching and learning. If a student is lost at some point during the 2 weeks it is much harder for him or her to catch up again. So I try to encourage people to ask questions immediately. And this is the wonderful thing about TUM Asia students, they do participate extremely actively! The course in this way becomes a very intensive, interactive process. I have never taught the course here twice the same way, because the questions of the students require me to re-organize the teaching materials instantaneously during the course, such that it fits better to the respective group. This makes teaching at TUM-Asia a very exciting process. TUM-Asia students are carefully selected, so looking at the interactive learning process and the exam results, every group appears to me as a bunch of promising engineers!

What was it about Integrated Circuit Design that captured your interest, and made it your main area of research?

Try to imagine what it involves to design a chip with hundreds of millions of transistors! Various functionality and incredible complexity require interdisciplinary knowledge from physics, electrical/electronic engineering, computer engineering, mathematics, to the various areas where chips are applied, like life science, aerospace and many more. Designing a chip is like designing a new small little world. What can be more exciting? Only few people can understand everything of a chip, but there is something of interest in every chip for anyone! And designing chips gives you knowledge that is useful in many other areas. You can even become a patent attorney or help banks to decide where the money should go.

Could you briefly share with us your most recent research project in Integrated Circuit Design, and were there any trends in the industry that made you decide on the research topic?

Talking about industry trends, I believe it is a privilege in university research to think and act on long-term considerations. However, it is a difficult job to do since trends are ever-changing. More than 20 years ago, my research group was doing research in analog circuit sizing and design for yield. Since 10 years back, a couple of the group members have started a company, MunEDA, in that area. I think there is hardly any other analog EDA startup like MunEDA that has always earned the money it spent, and not burnt any venture capital. An important aspect of this success is long-term thinking. My research group is currently following two paths; one is capturing basic design knowledge in constraints that are specific for the different analog design tasks where the aim is to construct a sustainable bridge between analog design and analog EDA. The other path is about finding solutions for other – sometimes old, but yet unsolved – tasks like analog placement, Pareto optimization, sizing for aging.

What do you think are the qualities/skills required of someone who plans to enter into the Semiconductor industry?

Oh, that is clear. All topics covered by a TUM or TUM Asia degree. Seriously, broad skills in electrical engineering, computer engineering and mathematics are very helpful. And one should have an enthusiasm and passion for semiconductors. It does not make sense in my eyes to run after a degree only because it leads to working in a growing industry but my personal preferences are different. One can only be excellent in areas that are of genuine personal interest. And you can see from a CV if someone is a genuine design engineer.



What exactly made you want to pick up lecturing as your career? What do you like most about your job? And what do you like least?

A career is a bit like hunting, you need a map or plan for your professional life and at the same time keep your eyes open for the opportunities that lie on your way. If there are a couple of opportunities knocking at the door, you grab the one that comes first. And looking at my father, who is an engineer, and at my grandfather, who was a teacher, I am sometimes asking myself, if all those so-called plans or free decisions aren't just destiny.

What I like most about teaching at a university is that you deal with young, bright, motivated people. This is wonderful and inspiring! What I like least, and this probably holds for any job today, is administrative overhead, which is ever increasing.

What are some of the leisure activities you do during your free time? Do you have any side hobbies?

Free time, what free time? I was an intensive photographer when I was young, later I was an active sailor and skipper, and, more recently, I became a Feldenkrais teacher. I like swimming, walking in the mountains, smoking a Cuban cigar, and what I like particularly is to spend time with my family and friends.

Do you have any advice to give to the current/future batch of MSc. ICD/ BSc. EEIT students?

Be yourself. Work hard. Be happy.



Name: Praveen Kumar Dhayalamurthy
Country of Origin: India
Course of study in TUM Asia: Master of Science
in Integrated Circuit Design (2010 Intake)



Name: Chin Yi Ren, Douglas
Country of Origin: Malaysia
Course of study in TUM Asia: Master of Science
in Integrated Circuit Design (2009 Intake)

What made you decide to join TUM Asia's Master Programme in IC Design?

Praveen: I was attracted to the course structure and believed that the eight month internship program with a company will help me to pick up practical skills that are relevant to the industry.

Douglas: I came across this programme via TUM's website after graduating from Germany, and I thought this would be the perfect programme that brought a German degree near to my home country. As for why IC Design, I was exposed and fascinated with how a tiny IC device can deliver so much in technological advancement, which sparks my interest to be part of the IC development industry.

After two years on the programme, what are your thoughts about it? Can you briefly share your experiences?

Praveen: The course schedule is tightly packed, but I still enjoyed my study because of the innovative modules. The interaction with TUM – German Professor had given me the exposure for worldwide knowledge.

Douglas: One word - tough! Not only the content but the schedule as well. Every subject was a killer subject. I had to camp in the library even till late night to prepare myself for the examinations. Again, the principle of "no pain no gain" applies. The knowledge and confidence being a graduate from this programme is undeniably priceless.

Where are you currently working at, and how has the Master Programme in IC Design benefited you in your current job scope?

Praveen: I am working at STMicroelectronics. I did my internship with the organization and they offered me a permanent placement there upon graduation. The knowledge I gained in my course had laid a strong foundation in my job scope. It helps to understand, what is IC Design? What is needed in this competitive environment? How to work in a smarter way?

Douglas: I am working as an Analog IC Design Engineer in STMicroelectronics Asia Pacific Pte Ltd. This programme is designed to equip us with solid theoretical knowledge as well as practical experience to be a successful IC Design Engineer in this competitive semiconductor industry. Personally, I felt the most significant benefit I gained from this programme is the industrial attachment and thesis. It is because of the experience I gain from the thesis work, I am able to immediately be a contributor upon joining the company.

What are some of the advice you can offer to the potential students?

Praveen: Opportunities are there, utilize it and shine.

Douglas: Time management. That is the keyword I would like to deliver to them. They need to make sure they give sufficient time and effort to excel in their studies, as well as a balance to enjoy life being a student! Overstressing yourselves will only produce a negative effect. Work efficiently, not exhaustively. That's what a quality of an engineer should possess.

What are your plans for the years to come?

Praveen: To learn as much as possible and to grow at my current work place.

Douglas: I have a dream, which is to become an Intellectual Property(IP) Engineer. With more and more innovations evolving, I believe protecting IPs will eventually become every company's top priority, and that's where an IP Engineer comes in. My plan is to master the technical aspect of my job, and perhaps further my studies in Technical Intellectual Property.

Integrate your future. Induct your knowledge. Initiate your profession.

Integrated Circuits are the very heart of today's innovative economies. Partner us to create an impact in the fast-moving Semiconductor industry today.

Launch a career in IC Design with the Master of Science in Integrated Circuit Design that is awarded by two of the world's most reputed universities: Technische Universität München (TUM) and Nanyang Technological University (NTU). The programme looks into the fundamental concepts of IC Design and signal processing and equips students with non-technical topics such as product marketing and patent law. Graduates can look forward to acquiring skills that enable them to develop cutting-edge integrated circuits.

Your Lecturers

Study with renown Deans and Professors of TUM and NTU. In contrast to the practice of tele-teaching, TUM Asia engages all international lecturers on an exclusive basis for the lecture period in Asia, assuring you of direct contact with your instructors throughout the duration of your programme.

Your Education

At TUM Asia, you will be part of a unique joint degree programme that runs over 18 months of scientific training, practical research and cultural enrichment. Benefit from an enriched curriculum including marketing, business administration, leadership training and legal aspects, to overcome cultural differences in business. On completion of the programme, you will be awarded a Master of Science degree jointly conferred by TUM and NTU.

Your Career

Graduates will start their industrial career as design engineers, developing new leading-edge integrated circuits. As their career progresses, some will stay in design, growing to be technical experts and/or engineering managers. Others will branch out into neighboring functions, such as concept engineering, product definition, marketing and sales, eventually rising into corporate top management. Graduates may also engage with related research institutions and pursue further studies - the joint NTU/TUM master degree opens the door for a Ph.D. Both NTU and TUM educate Ph.D. candidates in performing leading, world-class research in a variety of fields related to integrated circuits.



Research projects of the Technical University of Munich at the trade show Automatica (Munich, 22.-25.05.2012)

It is no longer possible to imagine industrial fabrication without machines and robots. In future they will offer more and more support for people in their everyday life. A requirement is that automated helpers act with “brains” and learn how to adapt flexibly their activities to their environment. At the Technical University of Munich, scientists from different departments are conducting research on robotics and automation – current projects are presented at Automatica.



Hall B1, Booth 321: Excellence CoTeSys (Cognition for Technical Systems)

At the booth of the Excellence Cluster CoTeSys, James the robot prepares popcorn without human assistance. During his training in the lab, James has learnt to move around in the kitchen and how to use cooking appliances. Like all machines that CoTeSys works on, James has cognitive abilities: that means, instead of programming each step of the task individually, the robot was only given a rough storyline and operates through his observations in order to accomplish successfully his mission - to make popcorn from corn.

How about simply sending a robot to bring medicine from the pharmacy? The international research project IURO (Interactive Urban Robot) is working on a scenario like that. Researchers are developing the humanoid robot IURO, that seeks its own way through the streets of a city. In his environment, he should interact with people in order to acquire the knowledge he needs to complete his tasks. If the robot does not know how to carry on, his abilities to hear, speak and see will help him to ask for the way. He can also detect emotions and mimic human facial expressions – he is able to say thank you and give a friendly smile for the information provided. At the booth of CoTeSys IURO presents his capability and his communication skills.

Hall B1, Booth 321: Institute for Machine Tools and Industrial Management (IWB)

At the same booth IWB from Technical University of Munich presents the latest solution in the area of manufacturing technology, automation and robotics. These research results include the production of energy storage cells and simulation solutions that can decrease energy and resource consumption in production processes. At Automatica, the IWB also introduces a packaging robot named CustomPacker. Trade show participants can see here the smoothest possible interaction between man and machine: When lifting and packing heavy equipment, for example large flat screens, robots will use their engine power while the man handles the lighter content such as cushioning material that is to be plugged into the box. This allows two “packers” to be working simultaneously. Since the robot has learned to adapt to their human colleagues, they no longer have to assist from a safety distance - the packing process becomes faster and more efficient.

Hall B3, stand 528/530: EU project ECHORD (European Clearinghouse for Open Robotics Development)

Scientists and industry partners work together on new projects regarding the appliances of robots in a cooperation called ECHORD. At Automatica new developments are presented: the “JILAS Project” focuses on the issues of security and precision in human-machine-communication. A highlight of the booth is the installation of an airplane side wall, where the JILAS robots work hand in hand with humans. ECHORD also shows a test robot that checks washing machines extensively, before the devices go into volume production. This requires “InterAid” not only to turn on the washing machine and to choose the correct programme, but also his sensors - cameras and microphones - must be in the right places in order to measure noise and vibration. Also on display at the booth is the more than five meters high modular robot platform “MONROE”, which specializes in large power application – visitors at the fair can be persuaded themselves at the booth.

*Initiative for more efficient vehicles:
BMW endows chair in "Systemic Vehicle Efficiency"*



Dr.-Ing. K. Draeger (BMW), Prof. WA Herrmann (TUM), Dr A. Dirndorfer (BMW) - Photo: U. Benz / TUM

The BMW Group and the Technical University of Munich (TUM) have agreed to establish an endowed chair for systemic vehicle efficiency. Through this foundation the car manufacturer wants to strengthen research and teaching in this interdisciplinary theme in the automotive industry. Dr. Klaus Draeger, board member of BMW AG for development, and TUM President Wolfgang A. Herrmann, signed the contract with a term of 5 years and a total of 5.1 million euros in March 2012.

In times of growing urbanization and scarcity of resources, sustainable mobility solutions and the efficiency of technical systems become significantly more important. This global development should be included in the automotive sector in the university education already. Consequently, the BMW Group donates a Chair of "systemic vehicle efficiency" to the TU Munich.

"As the most sustainable car manufacturer in the world, we stand for a new understanding of premium mobility, which is defined by a consistent focus on efficiency," says Dr. Klaus Draeger, Member of the Management Board of BMW AG for Development. "This requirement applies to our entire process chain and needs the expertise of engineers who were already exposed to efficiency during their training."

The decision of the BMW Group to set up the endowed chair at the Technical University of Munich is based on decades of proven and successful cooperation. "TUM is an internationally recognized research university that has trained many of our engineers and scientists," said Dr. Klaus Draeger. "TUM has an excellent reputation in future fields such as automotive computer science, lightweight construction, and electro mobility."

"The automotive research has become a challenging systems science, various disciplines are interdigitating into one another," emphasises TUM President Professor Wolfgang A. Herrmann. "Therefore, our Munich School of Engineering (MSE) is offering the ideal format for training and research in which technical related competencies come across each other."

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