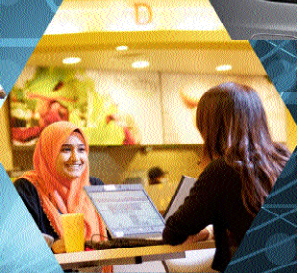
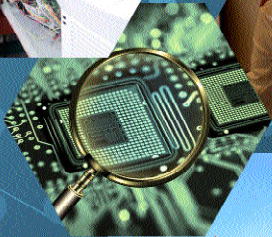


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Electronic & Electrical (E&E) Sector
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Who says meetings are boring?

Career prospects shine bright in Malaysia's E&E industry

The rise up the value chain for Malaysia's E&E industry has been nothing short of meteoric. Starting as a labour-intensive industry in the early 1970s, it has evolved into a major base for the global electronics industry and significant contributor to the country's exports and employment.

However, a key obstacle impeding the growth of the sector continues to be the alarming shortage of qualified and trained talent. Although the industry relies heavily on a steady flow of highly skilled manpower, Malaysia's current tally of approximately 80,000 engineers paints a grim picture when contrasted against the Government's target of 250,000 engineers by 2020.

Among the factors contributing to this grey image are the 'brain drain' problem

and the misconceptions such as the unavailability of career prospects and opportunities in the industry. The number of skilled Malaysians living abroad has tripled in the last two decades, with two out of every 10 Malaysians with tertiary education opting to leave for Singapore or countries under the Organisation for Economic Cooperation and Development (OECD).

Overcoming Public Misconceptions

"When you talk about the E&E industry in Malaysia, I think a lot of people still think of the old days, when jobs were mostly operator and technician based positions," said Catherine Fitzsimmons, the Director of Human Resources for the Asia Pacific offices of integrated circuit (IC) manufacturers Altera Corporation. "As far as the public is concerned, the E&E industry may not appear to be as creative as it today. I don't think people realise that there's a lot more advance R&D activities in the E&E sector which in turn can lead to exciting career opportunities."

Dr Mohd Nor Azmi Alias, the Chief of Staff of the Penang Design Centre of Motorola Solutions agreed. "Yes, Malaysia's E&E

sector had its start in manufacturing. But in the process of making a name for itself internationally, the sector learned very quickly to adapt to the ever-changing requirements of the market," he said. "So in terms of the knowledge, the manufacturing know-how, and the understanding of the E&E value chain and products, I think we do have those structures in place." He also emphasised that government bodies and industry players must work together to develop a comprehensive action plan that would not only dispel out-dated beliefs but also draw fresh talent into the industry.

Revitalising the Domestic Talent Pool

Another issue the Malaysian E&E sector has to contend with is the domestic human capital base, which currently does not adequately meet market demand.

"The difficulty is in finding enough talent capable of satisfying the demands in growth of the industry. Of course, there is some guilt over hiring from our 'neighbours', but we don't really have a choice. The domestic pool of experienced engineers just isn't big enough to accommodate industry demand," said Catherine.

Consequently, Malaysia's E&E sector takes talent development very seriously, making significant investments in its existing as well as prospective human capital pools. A good example of this is the FastTrack programme, a 12-month apprenticeship programme targeted at engineering graduates which was developed by Talent Corporation Malaysia Berhad's (TalentCorp) E&E Sectoral Working Group (Northern Region) in collaboration with leading E&E companies in Malaysia and the Penang Skills Development Centre (PSDC). The programme places an emphasis on nurturing local talent and aims to train quality research and development (R&D) engineers within a shorter timespan.

E&E as a Viable Career Path

In today's age of globalisation and innovation, room for career progression has become one of the most important attributes that graduates and professionals look for in a job. What many are unaware of is that with its fast-paced, technologically-driven environment and multiple links to reputable companies around the world, Malaysia's E&E sector is well-placed to offer jobseekers precisely that.

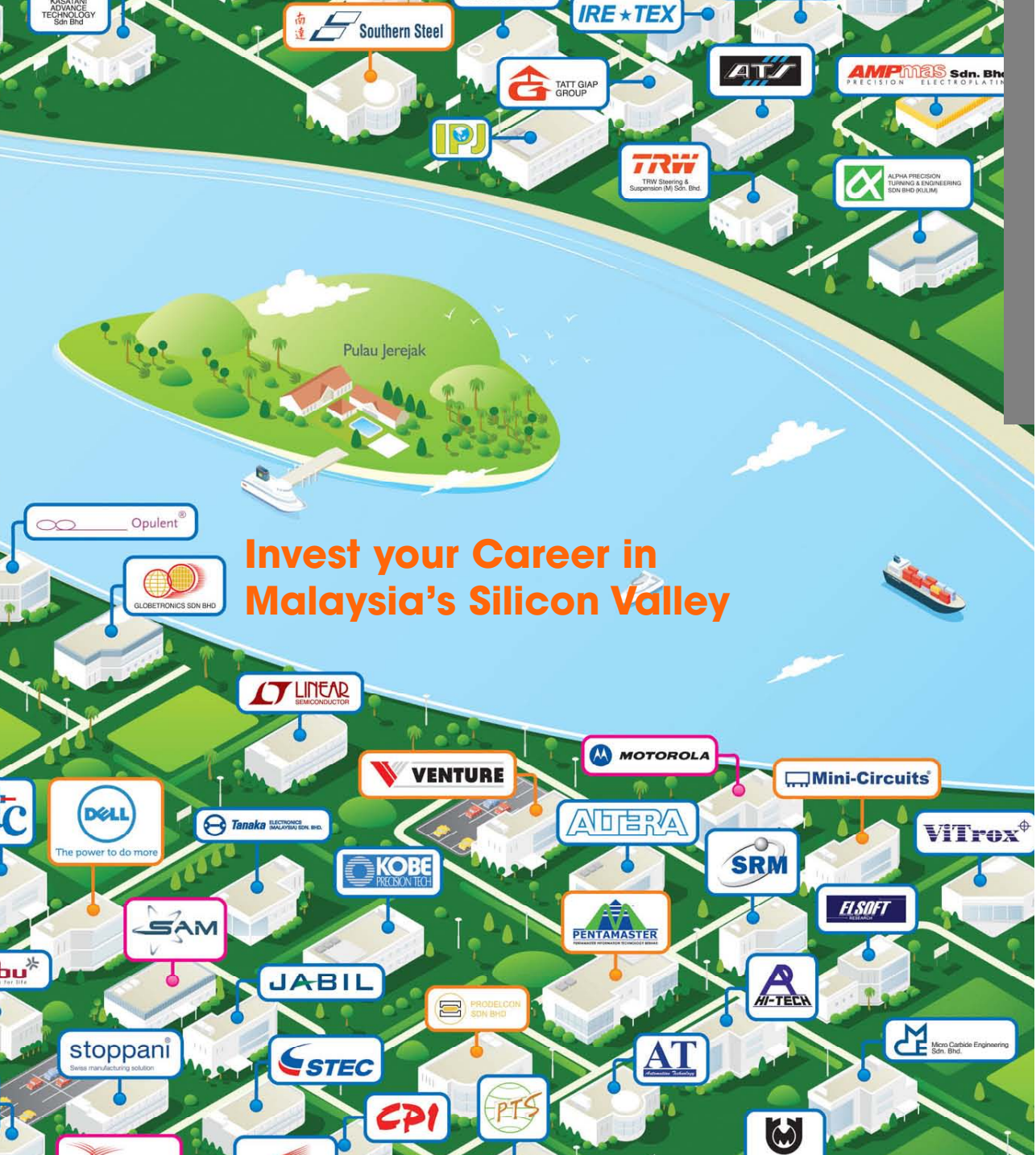
Munawir bin Ab Ghani, the Vice President of Human Resources for semiconductor and wafer manufacturer Silterra Malaysia couldn't agree more. "Silterra manufactures IC drivers for companies like Nokia, LG, and Optimus Technology. We also own about 25 percent market share of the world's IC driver industry, so there's a 25 percent chance that the Nokia phone you own was made with parts manufactured by us," he said. "These are the kind of incentives that graduates are drawn to, because they are constantly looking for opportunities to be part of projects that are truly cutting-edge."

Graduates who are keen to enter the industry can look forward to employment in a highly diverse group of sub-sectors such as consumer electronics, electrical products, and electrical components. However, the rapidly expanding and fluid environment of the E&E industry means that graduates can no longer rely solely on their qualifications to succeed in the E&E job market.

"Rather than merely accepting what is told to them because they are fresh out of school, graduates should be able to look at problems from different angles and be able to articulate their ideas and solutions to their work teams or manager," said Catherine. "They should also know that when it comes to problem solving, having an answer is sometimes not as important as being able to have multiple ways to address the problem."



The E&E Sector is one of 12 key growth areas defined in the National Key Economic Areas (NKEA) in increasing the Gross National Income (GNI) by 2020.



Invest your Career in Malaysia's Silicon Valley

2020 GNI Impact: US\$16.9B
Jobs: 157,000
Public Funding: US\$3.7B
Private Funding: US\$20.6B

Did you know?
 About 50%-75% of E&E sector employees are **Gen-Y!**



Major cluster areas have been identified as, but not limited to; **Semicon, Solar, LEDs and Industrial Electronics** to fuel the E&E sector growth through high value added R&D, logistic and operational headquarter activities to be distributed in 4 regions.

PARK



4 Major Clusters

Semicon: Build out value chain capabilities with fabs, design and advanced packaging

Solar: World's #2 producer by 2020 (from #3 in 2011)

LEDs: Light up the world with Solid State Lighting

Industrial Electronics: Build on test & measurement and wireless communication clusters; expand and strengthen other Industrial Electronics sub-segments

4 Key Regions

Build regional E&E clusters in **Northern Corridor, Klang Valley, Johor and Sarawak**, leveraging on each region's unique value propositions.



Name : Lam Gar Haw
Age : 32
Qualification : Electronics Engineering
Company : Agilent Technologies

Coming home to design ground-breaking medical instruments for cancer research

Programming and electronics were childhood passions for Lam Gar Haw. Today, these passions have turned into a life-changing career for Gar Haw.

Gar Haw graduated from University of Birmingham and immediately started his career as an IC Design Engineer in Imagination Technologies just outside London.

Despite a burgeoning career designing IC for smartphones and 3D TVs, Gar Haw missed his family and headed home to be near them.

Agilent Technologies Penang snapped up this talented engineer and the last 7 years have been an interesting rollercoaster ride for Gar Haw in balancing work priorities and family.

"I'm a R&D Program Manager in charge of leading a team of project managers who are individually tasked to complete cutting-edge instrument design projects," Gar Haw explained.

Most Awesome Project:

"Two years ago, I was asked by management to lead a very important

R&D life science project which aimed to design a polymerase chain reaction machine (PCR) to duplicate and multiply DNA," Gar Haw explained.

It was the very first life science R&D project in Agilent Penang's history and the very first PCR machine to be fully designed by Malaysians!

"We were honoured but worried as we had no prior experience," this very positive-thinking engineer recalled. "No one in the team knew about life science. All of us were from electronics and mechanical backgrounds. It was a very tough one year and we had to work with biologists from US."

The project was a success!

"Now, we will never doubt our knowledge and abilities! When the next 'first-time ever project' comes around, we'll put on our 'can do mentality' and tackle the project."

Why engineering turns me on?

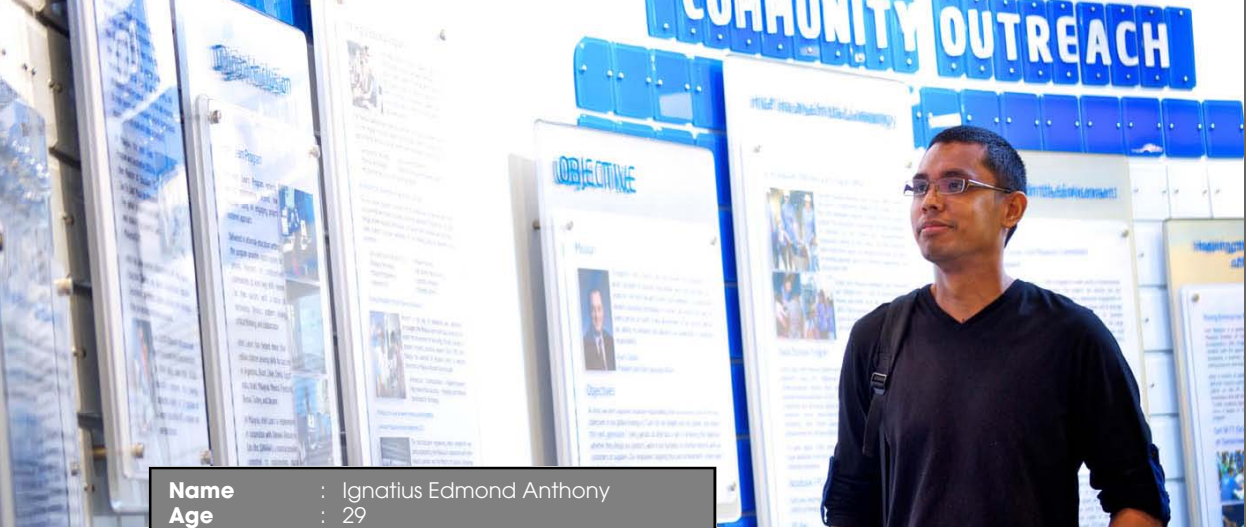
"I love designing products," Gar Haw enthused. "Nothing beats coming up with a brand new product incorporating our innovation and seeing how it impacts the society in a great way.

"A great example is the PCR machine. This machine is used for cancer and DNA research and many more applications that can advance the science of human life. I'm so proud we played such an important role in improving the health of mankind.

"I believe I am on the right path and I will never tire of doing more of this stuff!"

Why build an engineering career in Malaysia?

"We are never able to hire enough good engineers to do product development," this father of two young kids shared. "I believe there's great potential working in Asia because foreign companies are rushing here to invest for growth. Asia is now the new growth engine for the world economy."



Name : Ignatius Edmond Anthony
Age : 29
Qualification : Computer and Microelectronics Systems Engineering
Company : Intel Corporation

At the cutting edge of silicon innovation

KL-bred Ignatius Edmond Anthony is a Senior Design Engineer at Intel Penang Design Centre and has been there for almost 7 years. Admittedly it is a pressure cooker but Ignatius revels in being the best, as only the best survives! "I am responsible for the RTL development and synthesis block design for Intel's next generation microprocessor," Ignatius shared. "The product is highly technical as I do coding of new features for circuit level implementation based on high-level architectural specifications. "I also own the circuit design of multiple synthesis blocks in the chip, ensuring the circuits meet very stringent performance and power goals within equally stringent and tight project schedules."

Most Awesome Project:

"The most awesome project I have worked is always the latest project," Ignatius exclaimed. "At Intel, we are constantly on the cutting edge of silicon innovation be it in process technology or architectural advances. Each new project I've worked on has always been more interesting than the previous one." With each completed project, Ignatius is handed more responsibilities which gives him confidence and pride in the work he has done. He added the satisfaction comes from solving complex challenges and problems.

"I get a kick out of seeing the microprocessor products I've worked on being sold to millions, knowing that parts of the logic and circuits that make it work were designed by me," this young engineer added. "The challenge is to keep up the knowledge and skills or be obsolete!"

Why engineering turns me on?

Ignatius explained many do not see an E&E engineer has the sexiest job but he certainly thinks it is sexy "to be able to fit several billion transistors that all work on a chip the size of a fingernail."

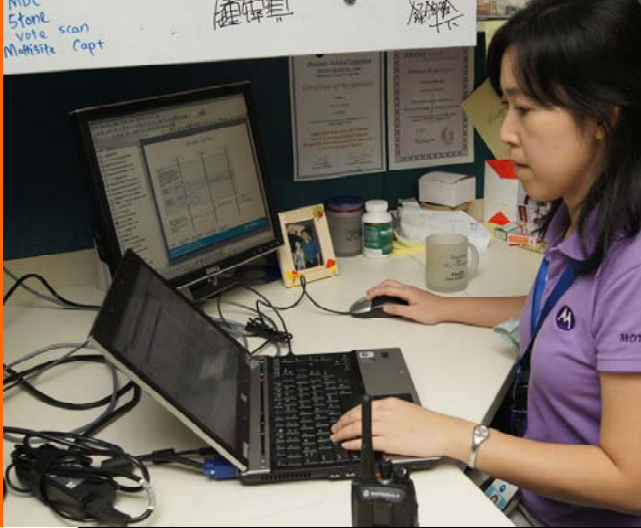
"C'mon - smaller is cooler, right?" Ignatius challenged. "The E&E sector is fast moving and ever changing," said Ignatius. "New technologies and innovations are being discovered around the clock."

"Change is the only constant in this industry. I have learned to always be flexible, open to new ideas, and never get too comfortable. Always push the limits. Question status quo. Just because what you think is impossible today, will be accomplished by someone tomorrow (or worse, already done yesterday)!"

Why build an engineering career in Malaysia?

His advice to all E&E techies who want to work in Malaysia is "to explore different fields to find their niche, continue to strengthen their skills, fundamental theories and engage with engineers already in the industry."

"These kids must arm themselves with industry-relevant knowledge and that will put them in front of the pack," Ignatius concluded.



Name	: Angela Chung
Age	: 34
Qualification	: Electrical and Electronics Engineering
Company	: Motorola Solutions

Thriving in a supportive environment designing newer and lighter two way radios

Penangite Angela Chung has been with Motorola for almost 10 years. It has been a decade of many personal and team triumphs, with some trials, supported by a company that encourages diversity; builds spirit of teamwork and community; and provides an open setting for collaboration with world-class engineers on ground-breaking communication projects.

Most Awesome Project:

"The most awesome project I've worked on is Cap+ (Capacity Plus) feature in 2-way radios which is the first single site trunking system based on international standards to be introduced to the world by Motorola," Angela recalled. "It is a low cost trunking solution which does not require any costly site controllers and has directly impacted 2-way radios business for Motorola."

Why engineering turns me on?

"There are lots of opportunities for me to learn new technologies and expand my knowledge in telecommunication," Angela revealed. "I get to put in practice

my problem solving skills and am always challenged to think for innovative ideas to introduce new features for the two-way radio."

Engineering certainly rocks for Angela as she has filed 8 patents plus 1 disclosure in the process of filing.

Why build an engineering career in Malaysia?

Motorola Solutions' R&D Centre in Penang, which celebrates its 35 years of excellence in R&D in Malaysia in 2011, is one of Motorola Solutions' six primary R&D centres in the world. Motorola Penang is the first two-way radio design centre in Malaysia that provides end-to-end solutions for two-way radios communication in the world.

This means Angela gets to work with the best engineers from within Motorola Penang as well as those from USA and Chengdu, China.

"I definitely feel that I belong here," Angela said, adding the Motorolans chill out by taking part in their own Olympiad, going out for dinners or just hanging out in the game room.

Besides feeling right at home while in the office, Angela shared that Motorola provides many avenues for engineers to grow their careers. Professionally, there is the annual Technical Symposium where engineers present and share their innovative ideas, acknowledge achievements and celebrate successes.

Success, however, does not make the team rest on their laurels," Angela added. "Innovation is a continuous journey so we are always improving efficiency, productivity and quality. An example would be through automation which frees up our engineers' time and allows them to focus on more value-added work for the next big thing."

"For me, working in such high tech design centre and being able to create a new system that benefits the users give me the biggest job satisfaction," Angela said, "and that is the main reason I stay in Malaysia to build my engineering career."



Name	: Ahmad Faiz Roslan
Age	: 29
Qualification	: Mechatronics Engineering
Company	: OSRAM Opto Semiconductors Sdn Bhd

Faiz keen to put Malaysia on map of knowledge-based economies

The lure to stay on and work alongside highly-skilled engineers in Germany where he graduated must have been strong, yet, Kelantan-born Faiz returned to Malaysia to do his bit for the nation!

Most Awesome Project:

"My awesome project is the current one I'm working on which is to establish the process for an upcoming product," Faiz, a process engineer said.

"As the product features new design and materials, it is a challenge for me to optimize the process for the best results. It is also the first of its kind which means the production line must be set up from scratch."

Faiz admits it is hard work but "if I achieve the objective, it will give me personal satisfaction as well as benefit my professional growth in my specialized area of work."

Why engineering turns me on?

Faiz was inspired by his father, a civil and structure engineer who was involved in building some of Malaysia's iconic landmarks such as the Petronas Twin Towers. "His expertise, coupled with my own curiosity to know how things work, influenced my decision to further my studies in engineering field," Faiz recalled.

The path to qualify as an engineer was no easy ride for Faiz. He spent a year at the German Malaysian Institute to do Industrial Training before proceeding to an 8-month course in Dortmund, Germany. After a strenuous 6 years at Aachen University of Applied Science, Faiz completed his degree in Mechatronics Engineering.

"I started as an intern in OSRAM before I became a full-fledged employee," Faiz recalled, saying he has long set his sights on Penang where there are many German companies. "I knew I could kick-start my career here having studied and lived in Germany for 6 years."

Why build an engineering career in Malaysia?

"There's no place like home," replied Faiz. Adding that he still keeps in touch with his German counterparts through e-mail, correspondence and visits between offices.

"My job is a part of a collective effort to ensure OSRAM OS maintains its capability to produce high quality and reliable LEDs as lighting devices. This is in line with our government's effort to phase out the use of incandescent lights or "round bulbs" to achieve the target of 40% less carbon emission by 2020."

Faiz believes "with sound technical fundamentals, analytical mind-set, lots of patience and commitment plus good grasp of English, we can definitely be the best engineers in world."

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Name : Selvi Aldragen
Age : 35
Qualification : Electrical and
Electronics Engineering
Company : Altera Corporation

Plotting a work life beyond chips and circuits

The E&E industry may be perceived as dry as it deals with circuit, chips and chaps but for Selvi Aldragen, it has its humanistic qualities. It is in E&E she is able to have the financial independence and flexibility to spend quality time with her two children and tend to a long-term project – her vegetable patch!

“I’m working as a Staff Engineer with Altera Corp now,” Selvi, who has only been with Altera slightly over a year, shared. “My job scope involves solving customer’s hardware-related issues, and testing and verifying Altera products based on design specifications.

“I enjoy innovation efforts in my team and participate in host of technical-related training and coaching activities. This year, I’m chairing Altera’s Technical Symposium.”

Most Awesome Project:

“My most awesome project is one that gives me a reason to show off to my kids,” joked Selvi, “but seriously, I enjoyed working as IC Design Engineer for a large MNC in my early days as an engineer 11 years ago. It was very satisfying to see the chips being implemented in a consumer product and widely adopted by consumers.”

Why engineering turns me on?

“E&E sector is great for female engineers like me,” Selvi shared, “as I pick up many soft skills during my time with a few large MNC companies in Penang. This has allowed me to learn and adapt to global work cultures in every aspects of my life, be it planning, thinking process, or even being goal-driven in knowledge or skills.

Selvi relishes the opportunity to work with global customers and worldwide colleagues which she added “has definitely broadened my horizon tremendously.”

“I also appreciate the travel opportunities provided to me in my course of work to meet and work directly with my counterparts,” she said. “I hope to fast forward in the direction of innovation and would love to write more patents and attend and publish more papers in external conferences.”

Why build an engineering career in Malaysia?

“I think the opportunity to work with MNC’s is the best part of being an E&E professional in Malaysia,” Selvi said.

She added there are many great companies within the industry, thus, relatively easy to work for a good company that offers good benefit packages and encourages lateral working experience, which is definitely a big plus!



Name : Toh Pei See
Age : 25
Qualification : Engineering majoring in
Telecommunications
Company : Motorola Solutions

It's all about helping people to be their best in the moments that matter

Toh Pei See is young, smart and ambitious. An alumna of the Motorola Solutions scholarship programme, she is poised for a bright career in Motorola Solutions. It shows in the work she is doing at Motorola now, after all, she is doing R&D on Bluetooth related systems.

Most Awesome Project:

"It has to be the first project I worked on in Motorola," said this Penangite who joined Motorola upon her graduation. "I was part of the team working on a Bluetooth gateway. It was the first time our team did work on bluetooth technology so it was challenging.

"This project was challenging because of the critical timeline and involved a lot of new technical knowledge. During development, we faced performance issues such as the Bluetooth pairing time. Pairing time means time taken by Bluetooth devices to connect with one another. We had issues when connectivity took up to 30 seconds during our testing."

Due to the short timeline of 3 to 4 months delivery and urgency to gain new knowledge to resolve the performance issues, Pei See said her team of six senior and junior engineers doubled their efforts. Finally the issues were resolved. The product was delivered ahead of schedule. And the project was a success!

Why engineering turns me on?

"I find telecommunications stuff new and interesting, and nowadays, there is so much new technology being developed," this young engineer who loves physics and mathematics said.

"I get to work on R&D stuff in embedded systems like Bluetooth accessories and this is helping me grow as a Software Engineer. I feel I'm on my path to pursue my career as a professional.

This talented engineer who is editor-in-chief of Motorola's internal eBulletin shared she wants to master the knowledge of embedded system within 2 years.

Why build an engineering career in Malaysia?

"There's Motorola Solutions where I've got my scholarships and it's challenging to be here doing stuff on embedded systems," said this loyal Penangite. "There are also lots of opportunities to work and pursue careers with various MNCs in Penang. It is exciting."

"I like working with people and getting to be the editor-in-chief of eBulletin helps me meet people from across the organisation," cheerful Pei See said, "The eBulletin was launched last year and is published quarterly to share with Motorolans technical achievements, introduce new hires and showcase team building efforts."



Name : Chan Pei Lynn
Age : 29
Qualification : Computer Engineering
Company : Intel Corporation

Living her life on the fast lane...

Connecting and enriching lives through microprocessor design

Chan Pei Lynn who hails from Segamat wants to change the world with her products. She became an engineer and in time, an architect defining new CPU features!

"I am a Component Design Engineer at Intel Penang Design Centre where I am now working on the development and circuit design of Intel's microprocessor (CPU)," this ambitious engineer shared.

"I code the new features from Microarchitecture Specification and work on the ASIC design flow specialising on circuit design, layout synthesis, place and-route, floor planning, power reduction, physical and electrical verification, and Static Timing Analysis."

Most Awesome Project:
"This has to be the project I'm working on now," Pei Lynn exclaimed. "As feature sizes become smaller and circuits operate at higher speeds, we need to design innovative architectures to deliver new levels of performance and energy efficiency."

"I always feel motivated to learn more, contribute more, to challenge the boundaries and put my mark on the world!"

Why engineering turns me on?
"I love seeing the product I worked on sold by the millions and to get rave reviews," Pei Lynn said, "while at the same time, I'm already developing the next gen product to be released 2-4 years down the road."

"I love getting my hands onto new technology years before the general public and using my skills to change the way people think about computing technology," Pei Lynn added.

Why build an engineering career in Malaysia?
"The E&E industry in Malaysia is where I get to work with some of the smartest people in the business," Pei Lynn, who aims to have a few patents to her name, shared.

"Success in the E&E industry is purely merit driven. Diversity in every aspect is supported and promoted everywhere to encourage ideas and innovation. Age, gender, racial demographic, political beliefs; nothing matters in this industry. If I have a good idea and can prove it, I will make a difference and be rewarded accordingly."

Pei Lynn advises those interested in E&E to hang out with the best in the industry and try to beat them at their game! "Always stay challenged and motivated to push the boundaries," she concluded.



Name : Celine Teh Hui Chung
Age : 31
Qualification : Chemical Engineering
Company : SilTerra Malaysia

Manufacturing IC drivers for smartphones at Malaysia's home-grown wafer foundry

Celine Teh knows about winning. She is a member of the team that won the 'Customer Innovation' competition at Silterra. For her it is not just about winning; it is also about gaining knowledge and being a leader.

Penangite Celine joined Silterra 6 years ago. Today, she is an Outsource Process Integration Senior Engineer driving the process improvement for higher robustness and to make the wafers 100% failure proof.

"Though the E&E sector is male-dominated, working in Silterra has helped me to hone my communication skills, enhance my technical knowledge and sharpen my ability to deal with customers

and co-workers from different countries," Celine offered, adding the E&E industry transformed Kulim and put Malaysia on the map of E&E work.

The Most Awesome Project:

"The most awesome project was one that contributed to average yield improvement 8-10%," Celine recalled excitedly. You can imagine the impact on the bottom line of the company from such yield improvements.

Why engineering turns me on?

Problem solving turns Celine on!

"I love to apply my knowledge to solve problems," said Celine. "When I go through the process of analysing a problem and working through different solutions to resolve the issue, I find the process satisfying and rewarding."

Celine finds it satisfying to be working for a Malaysian company that has manufactured the display driver integrated chips for latest generation Nokia and LG smart phones. Another high comes from working out at the gym at least once a week to stay fit.

Why build an engineering career in Malaysia?

Celine has gained much from the E&E sector. Not only is she being recognised for her work and contribution, she is being groomed to be a leader. In engineering, her gender has not hindered her career growth.

"At Silterra, I am given projects to lead and opportunities to hone my leadership skills," Celine shared.

She added the E&E industry in Malaysia is growing so rapidly with many foreign companies setting up shops here, thus, will always need capable engineers to run the show. Celine said "the country's aspiration to become a high-income nation by 2020" offers tremendous career growth for her.



Name : Nazrulnizam Zainal Abidin
Age : 43
Qualification : Electronic and Communication Engineering
Company : Agilent Technologies

Nizam wants to make it happen for Malaysia as high-tech nation

Now in his 11th year as a R&D engineer at Agilent, Narulnizam Zainal Abidin believes the nation is poised to transform itself from merely a “manufacturing centre” into a high-level research and design hub.

Most Awesome Project:

“I was involved in a life-extension project of the world’s most precise digital multimeter, the 8? digit multimeter,” Nizam shared, adding that the multimeter is an important device used in electronics to measure voltage and frequency accurately. “This model has been around for about 30 years so adopting a new component to the product was a real challenge.”

Nizam added it was made more challenging because he and his team had to update the multimeter while “maintaining precision and accuracy of 120millions count of resolution and average 2ppm of error.”

He gained technical knowledge working with experienced R&D counterparts at the design centre in Colorado, USA. At the same time, he learned to be a leader and coach a team of engineers in Penang.

Why engineering turns me on?

“Electronics is a really big world!” said Nizam.

At Agilent, he deals with complicated product specifications and requirements involving large-scale products. This presents unique problems each time a project is started.

“The most challenging part is to tackle each problem to find the most suitable solution,” Nizam shared. “Having to deal with so many situations has taught me to work systematically, think thoroughly and not jump to conclusions without understanding all inputs.”

The real satisfaction for Nizam happens when he is able “to transfer the theory to the drawing board and watch the ‘real’ thing work.

Why build an engineering career in Malaysia?

This California State University, Fullerton, USA alum said Malaysia is where his heart and roots lie. He is a doting father to three beautiful children – a 14-year-old girl, 12-year boy and the youngest daughter at 2?, the apple of his eye – and they complete his life.

“My family is the centre of my world,” Nizam said, beaming with pride. “The three kids rock my world. It always pains me when I leave for trips to the US but I always make it up when I get back, just being with them at home.”

Yet, time is ripe for the re-engineering of the engineering industry in Malaysia!

“I see a lot of effort from companies and the Government to transform Malaysia to be more R&D-centric,” Nizam shared excitedly, “and with collected effort from existing and new engineers, we can achieve it.

“I want to be part of that team which makes it happen!”



Name : Aris Azmil Alias
Age : 36
Qualification : Electronics and Electrical Engineering
Company : Altera Corporation

Talent "pool" @ Altera

Developing solutions in Programmable Logic Semi-conductors for new generation gadgets

The "E" in engineering stands for many things for Aris Azmil Alias. "E" represents "enthusiastic engineers;" "being engaged;" "evolving engineering environment" or achieving "excellence."

This explains the longevity of Aris' 12-year tenure with Altera where he leads a team pioneering work in complex programmable logic devices (CPLD) as well as complete solutions for Altera's customers.

Most Awesome Project:

Aris explained most end users are not familiar with their products like CPLD, unlike Intel processors which everyone knows. CPLD are general purpose circuits used in mobile devices, servers, military products, cars or just any electrical products which require programmable semi-conductors.

"My most awesome project is a new solution that we have introduced to provide our customers with the advantage in their own competitiveness," Aris said. "It gives me great satisfaction the innovation we provide has transpired in value and drives me towards more innovative ideas."

Why engineering turns me on?

At Altera, he and his team are constantly picking up cutting-edge knowledge to create new products. And in creating new FPGA and CPLD products, anything goes!

"The pro is no one can tell me how it is best done, but the con is I can get stressed out and that keeps me awake at night to figure out how to start a new project," said this father of three young kids who loves working in Altera because the company is constantly moving forward. "I just find it so satisfying and I get to work with a bunch of talented and diverse group of people from around the globe."

Why build an engineering career in Malaysia?

Family definitely keeps Aris rooted in Malaysia, yet, in the big scheme of all things electronics, Aris said Malaysia is firmly placed for the breaking of innovation wave.

"In Malaysia, almost 90% of Altera's engineers are doing research and it is certainly exciting to be part of this innovation wave," Aris said. "In Altera, we are doing stuff developing multi-million transistors. Being part of this innovative culture is just fulfilling."

Altera Penang is the centre of action for electrical and electronic engineering innovations as the campus which spans 240,000 sq. ft is equipped with state-of-the-art R&D facilities. It is the largest offshore R&D Technical Centre and Asia Pacific Manufacturing office outside of United States.



Name	: Tan Zi Hao
Age	: 32
Qualification	: Electrical and Electronics Engineering
Company	: Avago Technologies

Making the world smaller through newer optical navigation products

Tan Zi Hao, who hails from the backwater of Kelantan, has opted for life in the forefront of optical technology research in Avago Technologies.

"I'm an Integrated Circuitry (IC) designer with Avago Navigation Interface Division," Zi Hao shared. "I work with a team that develops optical navigation sensor which is used in most of the optical mouse found in market today."

Zi Hao's contribution will advance the technology used in optical mouse as it is the sensor that captures the image, enact the image processing and tells the user where to move the mouse.

Avago, which engages in R&D, manufacture, and marketing of mixed-signal and optoelectronic components and subsystems for communication and consumer applications, is the ideal place for Zi Hao to design more advanced products for use in the optical mouse.

Most Awesome Project:

"My most exciting project involves designing of an optical finger navigation sensor," this young engineer said. "It is

used in some hand phones, such as Blackberry, as tracking device.

"As long as people are using a smart phone, an Avago part is there. What we do is help people to communicate, make the world smaller and bring the distance shorter."

Why engineering turns me on?

"Seeing the products I have worked on turned into revenues for our customers and are being used by customers is really rewarding," said Zi Hao, an avid badminton fan.

He added the challenge is ensure the products he works on are always ahead of our competitors in terms of power efficiency, cost and value, and that keeps him excited.

Why build an engineering career in Malaysia?

"The E&E field in Malaysia is open and nurturing," Zi Hao said, adding that when his team does well, everyone shares the triumph and financial reward! "The opportunity to work with people around the world exposes me to different cultures and being able to learn from experts helps to broaden my knowledge.

Zi Hao, who wants to continue doing cutting-edge design, envisions working in gesture recognition R&D in the future and as The Terminator said, "Hasta la vista, baby!"



Name : Akmarul Ariffin bin Salleh
Age : 34
Qualification : Electrical Engineering
Company : Agilent Technologies

Working on international projects right here in Malaysia

In Agilent Technologies R&D world of handheld instruments, Akmarul Ariffin bin Salleh is a star engineer!

Hand-picked to work on US-based projects since 2005, Akmarul is one of the key R&D engineers who designed and developed the Network Analyzer circuitries and for the entire high performance frequency synthesizer sections with frequency operation up to 26.5GHz.

It is no surprise a few of his gurus tried to lure Akmarul to trail blaze R&D engineering work in the United States. A true patriot, Akmarul believes "he can be one of the best R&D engineers in Malaysia" and be respected here for the work he has pioneered so far.

Most Awesome Project:
"My most awesome project-codenamed N9923 - is the world's best dynamic range handheld," Akmarul said. "I was the project leader and architect of the block diagram and developed the RF board too, which is the heart of the instrument."

Akmarul's star shone brightest on the N9923 project! He has filed several IPs and was placed top 12th worldwide for his pioneering work in Agilent Innovate 2010, his company's annual worldwide competition.

Agilent, the pioneer in scientific tools, has been making precision measurement tools since the 1930s. Agilent's many measurement tools are used to test food safety, examine crime scene evidence, study diseases or develop new drugs.

Why engineering turns me on?
"In the last 5 years, my work has been in R&D," this Johorean shared. "R&D work is hot as it has instilled in me the belief and confidence in my ability to do highly technical stuff. The confidence I have is 'I could do this' or 'nothing is impossible' and so on."

Why build an engineering career in Malaysia?
Being a leader in handheld Agilent products in Malaysia is a cool thing because, as Akmarul puts it, "People look up to you as you have a lot of credentials for the things you've accomplished."



FASTRACK: An Overview

FasTrack is a structured apprenticeship programme – funded and run by the Government and industry – to accelerate the development of the R&D talent pool for the E&E sector by equipping graduates with domain knowledge and industry relevant expertise.

Phase 1 was launched in June 2011 with five host companies – Agilent, Altera, Intel, Motorola and SiTerra and has been successfully trained more than 100 apprentices. The training and hands-on, on-the-job experience are rigorous and the results is a new pool of talent who are adept and industry-ready. Such competency building programmes are required for Malaysia to achieve aspiration of a high income nation by year 2020.

Phase 2 will train 120 apprentices with seven host companies – Agilent, Altera, Clarion, Intel, Infineon, Motorola and SiTerra. The programme will start in June 2012.

Learn more about what the FasTrack apprentices did during their on-the-job trainings with host companies on pages 20 to 24.

FasTrack is run by Penang Skills Development Centre (PSDC). To know more about the FasTrack and apply log on to www.psdc.org.my



Name	: Ng Jia Tian
Age	: 24
Qualification	: Electronics Engineering majoring in Nanotechnology
Company	: Altera Corporation

Jia Tian looks to build career as test engineer

FasTrack Project:

Pontian-born Ng Jia Tian loves doing tests. Not just any tests though because for every successful test he does at Altera Corporation, it means faster progress on the project.

"I have been working on the StratixV, which is Altera's High-end FPGA test development programme, since joining the company on FasTrack," Jia Tian said.

"I run different types of test like Test Development, Test Flow and Programme Development and do script writing to ensure we get the process right or summarised results that we need."

Benefits joining FasTrack:

Jia Tian who graduated from Multimedia University, Cyberjaya, is excited about the FasTrack programme as it has

prepared him for the actual working environment.

"The formal classroom and lab trainings have increased my productivity," Jia Tian shared. "With better technical knowledge and communication skills, I am able to perform better in my work and present more confidently. This certainly enhances my performance and adds to my leadership skills."

Always eager to learn, Jia Tian revealed he always does his best to complete his daily assignment as fast as possible, "without neglecting the quality of the work."

"I really enjoy my work here and have good relationships with my colleagues like going out with them for lunch," Jia Tian added, an indication he has put into practice the soft skills gained from FasTrack programme.

Why choose E&E sector to build your career:

"The E&E sector offers great opportunity for young professionals like myself," Jia Tian enthused. "Altera is an amazing company to start off my career as I am assigned to different tasks which enable me to gain knowledge on what the overall project is about and how the department operates."

He feels supported as "each and every colleague is willing to teach and guide, and always open to share their knowledge and experience."

"I can see myself as a successful test engineer and am always up for new challenges," Jia Tian revealed. "I find engineering exciting and have become very motivated. The work environment in Malaysia is conducive for me to gain the skills, knowledge and experience to help me achieve my career goals."

"I definitely want to use this opportunity to learn as much and contribute to building this country to become a high-tech nation."



Name	: Wong Soon Keat
Age	: 23
Qualification	: Electronics Engineering majoring in Telecommunication
Company	: Motorola Solutions Technology

Fast pace at Motorola perfect for Soon Keat to develop career

FasTrack Project:

The pace seems insane but Wong Soon Keat loves the action handling two projects as part of his FasTrack training. "I manage the testing of Automated Sanity Test and development of software in a new mobile radio," Soon Keat shared. "The Sanity Test is done to test a new software and such tests are run on a weekly basis.

"The Sanity Test tests basic radio functionality and if new software is added, to check if the transmission and receiving functions work normally. This project is exciting as I got the opportunity to create a programme to automate the Sanity Tests."

This young engineer proudly announced that as a result of his project the effort to run tests is reduced from 2 hours down to 30 minutes.

"As for developing new software, it could be anything such as a new mobile radio that is used in police cars," this Penangite described. "Sometime, features are upgraded in the hardware and the software has to work with new hardware. This fine-tuning can take up to 6 months."

Benefits joining FasTrack:

Soon Keat felt FasTrack has helped him hone his soft skills which makes him a valuable member of a team.

"I have better understanding of the big picture and can manage projects or tasks more efficiently," he said.

Why choose E&E sector to build your career:

"I just love the people in my department at Motorola," Soon Keat said. "They are friendly and helpful! It is important to get to know one's colleagues because as a trainee, one never knows when help is needed. Mine are really helpful and I'm lucky!"

"I love engineering," this sporty guy who unwinds playing badminton, working out in the gym and jogging, exclaimed. "I believe I will lead R&D projects in 5 years time and with the experiences and knowledge I have gained, I will contribute to the growth of the company I am with and the E&E industry in Malaysia."

Soon Keat feels working at Motorola is the perfect launching pad for his engineering career.

"My training in Motorola is challenging yet complete," Soon Keat recalled. "I understand the processes involved in starting and managing a task or project, and learned from my colleagues' technical knowledge or experiences.

"In 2 to 3 years, I hope to become an architect of a software and lead the planning of an overall project," Soon Keat concluded.



Name : Yeoh Lay Kim
Age : 24
Qualification : Business Information Systems
Company : Agilent Technologies

Agilent is Lay Kim's cool choice to develop her career

FasTrack Project:

"I am working on software testing where I test compliance of applications," Yeoh Lay Kim said. "What I do is to ensure the quality of application that is developed by the developer and if I find any bug, I will submit a report to keep track of the process."

"Once the developer solves the issue, I will re-test until the bug is resolved. Then the testing for that particular bug is closed. I'm also involved in generating the installation of software applications."

Catching technical bugs is hard work; fortunately for Lay Kim, Agilent has a sport complex which provides sporting activities such as badminton, squash, gym, yoga, football and weight training for her to chill, hang out or de-stress.

"Every Monday I play badminton with my colleagues after work," Lay Kim shared. "And on Wednesdays, we have our movie day because we can get cheaper tickets. Life is wonderful at Agilent which makes working here a lot more fun."

Benefits joining FasTrack:

"The FasTrack programme, organised by PSDC, has given me lots of training," this Penangite said. "The trainings are useful in helping me adapt to my working environment more easily."

Lay Kim said "it is fun and exciting to work with my colleagues and the best part is I get to mix around with all the FasTrack apprentices. They all are caring and willing to share their knowledge."

Why choose E&E sector to build your career:

"I have been interested in programming and computer language since after Form 5," Lay Kim recalled. "I find it challenging and fun to learn more about software development. I am very fresh in the industry and have a lot to catch up and learn but I am happy that I'm gaining new knowledge every day."

A loyal Penang girl, Lay Kim said Penang is a great place to build her E&E career because there are a lot of resources here, supported by local and foreign MNCs and SMEs based here. By 2020, she believes she will be leading projects on software development and still learning the latest tech knowledge.

"I want to be a software development expert," Lay Kim revealed, adding that when she improves herself technical and management skills, her salary will grow accordingly too. "Of course, I hope to own a house and car by then but most importantly, have become a valuable asset in my department or company."



Name	: How Chun Tiong
Age	: 25
Qualification	: Mechanical Engineering Majoring in Materials
Company	: Silterra Malaysia

Improving efficiencies of wafer manufacturing through mastery of optical process checking

FasTrack Project:

In a company where raw material for wafer production means investments of millions of ringgit, precision in testing is vital. Chun Tiong sees his roles to generate new test structure for Optical Proximity Checking (OPC) testing within Silterra really crucial, not only to reduce costs but to improve efficiency too.

Silterra Malaysia is Malaysia’s very own semiconductor wafer foundry which includes complete, competitive contract manufacturing for fabless customers’ designs. Silterra’s foundry shipped half a

billion wafers across the globe in 2011, so Chun Tiong’s work to improve efficiency means savings of millions of ringgit.

“The new test structure I create for OPC test structures can improve proximity checking on design rule on the actual printed wafer data and simulation data,” Chun Tiong offered. In the past, the existing OPC tests only ran 20 times but with the new structures that Chun Tiong has created, more than 30 tests are created. This means more thorough testing and less wastage.

Benefits joining FasTrack:

“The FasTrack programme provided some basic training but what is really of value is learning about real work environment,” Chun Tiong explained. “ From this experience, I was able to adapt to the actual working situation quite easily.”

Why choose E&E sector to build your career?

In the last 40 years, Malaysia has developed an industrial base across the entire semi-conductor value chain spanning both local companies and multinationals. Silterra supplies raw wafer to Fabless design IC houses, and was ranked among the top 20 in global foundry Gartner rankings 2010. “Its satisfying to be part of processes control at a world class wafer foundry,” said Chun Tiong.

“At Silterra I really enjoy solving technical problems and issues of designs and structures,” Chun Tiong said. He also praised the work process at Silterra where everyone “works in a team and the flow is more fluid.”

“My mentor at Silterra said it might take up to 8 years to become competent in OPC testing but I’m going to beat that timeline,” Chun Tiong informed.



Name : Nasibah Dzulkifly
Age : 25
Qualification : Mechatronics Engineering
Company : Motorola Solutions

Bringing safety to the fore front by ensuring radio performance in fragile environments

FasTrack Project:

At Motorola Solutions, Nasibah Dzulkifly was put in the Research and Development department to work on testing the optimization of two way radios based on customers' requirements.

The testing Nasibah does is for the optimization of communication devices like walkie talkies used in very fragile environments, sometimes explosive in nature like in an oil refinery.

"We know radio frequency interference and electrostatic discharge in the oil, gas and mining environment can create safety hazard to the workers," Nasibah explained, "and at Motorola Solutions, our solutions protect both the users and devices from such hazard so they can focus on doing their jobs without worrying of their own safety."

Benefits joining FasTrack:

For Nasibah, the FasTrack training was a reality check!

"FasTrack helped me to experience life as is and think like an engineer in a safe environment," Nasibah recalled. "The

training gives me a better understanding of the engineering industry so I can better perform when I joined Motorola Solutions."

Being in one of two Motorola's manufacturing centres globally that produces two-way radio products means Nasibah gets to be in the heart of the technology hub and learn about the latest in the world of communications expertise.

Why choose E&E sector to build your career?

KL-born and bred Nasibah loves her apprenticeship at Motorola, the market leader in transportation and public safety solutions in Asia Pacific, as her experience has been warm and she always felt welcomed there.

"I am amazed at how much trust my seniors have in me to do the tasks even though I lack the experience," Nasibah said. "Some of the jobs they have given me to do are complex but they are around to help and offer suggestions."

Nasibah found the working environment in Motorola nurturing and especially for someone as green as her, the senior staff are always ready to guide and mentor her.

"Every day I am dealing with new knowledge and opportunities to create new technologies," this techie said. "I love everything and anything electrical and electronics! My mentor who is an expert in one type of sub-system, specifically transmission, totally inspire s me. He has only been in Motorola for 3 years but does cool work."

Who are companies hiring?

Career Opportunities	Field of Study										Starting salaries
	EE	ME	IE	CS	Comp.E	Ch.E	Chem	Bio.Sci	Mat.Sci	Phy	
Applications Engineer	•		•	•	•	•	•	•	•		1. RM2400-RM3800
Customer Support Engineer	•	•							•		2. RM2400-RM3800
HW Design Engineer	•	•		•	•	•		•		•	3. RM2400-RM3800
Mfg Development Engineer	•	•	•		•	•	•	•	•	•	4. RM2400-RM3800
Materials / Metrology Engineer	•	•							•		5. RM2400-RM3800
Mechanical Design Engineer		•								•	6. RM2400-RM3800
Process / Mechanical Engineer		•				•			•		7. RM2400-RM3800
Product / Test Engineer	•			•	•	•	•	•			8. RM2400-RM3800
Reliability Engineer	•	•									9. RM2400-RM3800
Qualification & Test Engineer	•	•				•	•	•	•	•	10. RM2400-RM3800
RF Design Engineer	•									•	11. RM2400-RM3800
Scientist / Technologist / Expert	•	•			•	•	•	•	•	•	12. RM2400-RM3800
SW Design Engineer	•			•	•						13. RM2400-RM3800
IC Design Engineer	•									•	14. RM2400-RM3800
Wafer Fab Process Engineer		•				•	•		•		15. RM2400-RM3800

LEGEND	
EE	- Electronic and Electrical Engineering
ME	- Mechanical Engineering
IE	- Industrial Engineering
CS	- Computer Science
Comp.E	- Computer Engineering
Ch.E	- Chemical Engineering
Chem	- Chemistry
Bio.Sci	- Biological Sciences
Mat.Sci	- Materials Science
Phy	- Physics

Opportunities in the E&E sector

Preparation for a career as an engineer in the E&E sector may begin as early as your undergraduate years in university. There are many programs and events to participate in that will enable you to pursue a career path in this field upon graduation.

Internships: During semester breaks, take the opportunity to work at engineering firms as an intern to gain vital practical experience to supplement the theories learned in university classes. Internship programmes such as the High-end Industries Graduate Internship Programme (HEIGIP) aim to develop educational and professional competencies via on-the-job training, while also nurturing specific capabilities for the industry.

Competitions: A platform to promote interest in engineering design and enhance problem-solving and team-working skills of students is competitions. For example, the Innovate Malaysia Design Competition (<http://innovate.dreamcatcher.asia/index.html>) targets final-year E&E Engineering and Computer Science undergraduates with a passion for turning innovative ideas into reality.

Upskilling: Fresh graduates in Engineering can undergo training programs that prepare them with competencies to benefit the industry. Upskilling programs, like FasTrack (find out more under Programs@PSDC at <http://psdc.org.my>), implement a mix of classroom training and project work to accelerate the development of the R&D talent pool for the Malaysian E&E sector.

The above programs are examples of how public-private partnerships are committed to closing the skills gap by assisting companies to train their personnel. The industry is keen on developing young talent, since they are a key enabler for the Malaysian E&E sector to move up the value chain and achieve becoming a high-income nation by 2020.

Embark on an E&E career at

- Advanced Micro Devices : <http://www.amd.com/us/aboutamd/careers>
- Agilent : <http://www.agilent.com/go/jobs>
- Altera : <http://tbe.taleo.net/NA3/ats/careers>
- Avago : <http://www.avagotech.com/pages/corporate/careers>
- B Braun : <http://www.bbraun.com.my/cps/rde/xchg/cw-bbraun-en-my>
- Clarion : <http://www.clarion.com/my/en/top.html>
- First Solar : <http://www.firstsolar.com/corporate/careers>
- Flextronics : <http://www.flextronics.com/careers>
- Fuji Electric : http://www.fujielectric.com.my/career_fair/career_fair.php
- Infineon : <http://www.infineon.com/cms/en/corporate/career>
- Intel : <http://www.intel.com/jobs/malaysia>
- Jabil Circuit : <http://origin-www.jabil.com/careers>
- Motorola : <http://careers.motorolasolutions.com>
- National Instruments : <http://ni.com/penang/careers>
- Osram : http://www.osram.com/osram_com/career
- Renesas Semi Conductor : <http://www.rsm.renesas.com/>
- Silterra : <http://www.silterra.com/career.html>
- Western Digital : <http://wdc.com/en/company/employment/malaysia>

Find out more at Penang Skills Development Center (PSDC) : <http://psdc.org.my> and
Selangor Human Resource Development Centre (SHRDC) : <http://shrdc.org.my>