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Editorial

淺談人工智能

~ Prof H C So ~

自從AlphaGo於去年3月在圍棋博弈中大勝棋王李世乭後，全球引發新一波的人工智能 (artificial intelligence, 簡稱AI)。除了科技界大力投資AI外，其他行業也思量怎樣將AI應用到它們的領域中。最近，中國國務院總理李克強在2017《政府工作報告》也首次提到要加快培育壯大人工智能產業。可想而知，隨着AI的急速發展，我們與AI的關係也會越來越密切。正如2016世界經濟論壇 (WEF) 公佈的報告指出，未來AI (連同機器人、納米技術、生物科技等)的發展，將會造成「第四次工業革命」，如同先前的工業革命一樣：在為我們帶來更便利生活的同時，也顛覆了全球的經濟模式。

AI這名詞最早出現於1956年的Dartmouth Artificial Intelligence (AI) Conference。順帶一提，這會議是AI界一個傳奇，因當中四位知名學者John McCarthy, Marvin Minsky, Allen Newell和Herbert Alexander Simon，後來都獲頒Turing Award。簡單來說，AI的目的就是教電腦做人類會做的，甚至做得比我們好，例如更快而不像人類會犯錯。在AI研究範疇中，機器學習(machine learning) ── 發展如人類一樣可以透過學習去處理數據和推斷複雜關係的電腦程式 ── 可說是最為重要。正因為目標遠大，AI研究一直以來都是以「熱潮」與「寒冬期」輪流交替。第一次AI熱潮是在1950至1960年代，主要研究「推論」或「探索」：「推論」是把人類的思考過程以符號呈現出來執行，但就處理來說較接近「探索」。但由於只能解決特定的 toy problems，而不能對付現實的複雜問題，這次熱潮就急速冷卻，到了1970年代進入了第一次AI寒冬期。第二次熱潮是在1980年代，以把「知識」輸入電腦為主打，發展出很多專家系統(expert systems)的實用產品。但給予電腦的「知識」必須從專家，例如醫生、律師等獲得，這過程是相當花人力物力的。另一難題是要記述和管理龐大知識。大概在1995年，AI又再次到寒冬期。

到了現在，我們正經歷第三次AI熱潮。個人認為，催生這次熱潮的元素包括：(1)網路(network, 例如internet)的廣泛使用和範疇擴大，使我們可以輕易取得海量數據(data)；(2)雲計算(cloud computing)的普及，使龐大的運算可透過分佈式(distributed)或並行式(parallel)處理；(3)機器學習技術的突破，特別是深度學習(deep learning)，使AI性能大大提升，例如令準確度增加。

以屬於深度學習的卷積神經網絡(convolutional neural network，簡稱CNN)為例，它其實只是一個有很多隱藏層(hidden layers)的神經網絡(neural network)。神經網絡是一種模仿生物大腦的結構和功能的數學模型，最基本的有三層神經元(neurons)，依次為輸入層、隱藏層、輸出層，透過隱藏層互相連結，以權重(weights)作為神經元之間的連接強度。CNN主要特點為：學習是逐層進行，即是開始時只會調節第一層隱藏層的權重，跟着到第二層隱藏層，如此類推。事實上，早在1980年代，日本的福島邦彥(Kunihiko Fukushima)所研究的新認知機(neocognitron)與深度學習的想法極為接近。CNN可採用自動編碼器(autoencoder)技巧，例如會將正確答案放在第一層隱藏層的前、後層，去調節這層的權重。而這隱藏層的神經元數目比前一層少，以達至壓縮或抽取特徵(features)的效果。這做法和主成分分析(principal component analysis)的縮整概念相同，但前者和後者分別是非線性(nonlinear)及線性(linear)操作，意味着CNN或更能模做人類學習。以往的機器學習技術是需要人類設計特徵，而深度學習的突破就是能自行找出特徵。現時深度學習AI最成功的個案包括語音辨識(speech recognition)和圖像辨識(image recognition)。百度首席科學家 Andrew Ng 指出，用了深度學習，語音辨識的精確度從過往的89%大大提高到99%。在2012年的ImageNet Large Scale Visual Recognition Challenge (ILSVRC)中，第一次參賽的多倫多大學Geoffrey Hinton的團隊，首度用了深度學習，贏得壓倒性的勝利 ── 圖像辨識錯誤率由過往最低的26%大大降低至15%左右。到了2015

ILSVRC，深度學習技術更趨成熟，Microsoft以3.567%的錯誤率奪冠。致勝關鍵就是神經網絡的層數 ── 152層的深度，加上以百萬計的訓練圖像作學習，可想而知深度學習需要極多的數據和運算！

這裡想強調一下，深度學習只是機器學習技術的一種，屬於connectionist派系。根據Pedro Domingos歸類，另外四個派系是symbolist，evolutionary，Bayesian和analogizer。Domingos教授的願景是要設計一個大演算(master algorithm)，融合這五派系，以至一個算法可以應用在所有機器學習問題上。由此可知，在現今情況，不同的機器學習問題會有不同的最優解(optimal solutions)。

結束前，想指出有人會害怕這次AI革命，擔憂失業，甚至出現奇點(singularity)，即電腦有自主意識，導致電腦操控人類，像電影系列《The Terminator》或《Matrix》的橋段。與其抱着消極態度，我們更應積極面對、認識AI和思想怎樣善用AI。其實我覺得EE人學習AI是有絕對優勢，因它其中兩個核心是數學和編碼 ── 這兩方面EE課程都提供了充足的訓練和裝備。況且很多科技公司已經推出免費的AI軟件供我們使用、開發，例如Amazon的Amazon Machine Learning，Facebook的FBLearner Flow，Google的TensorFlow及Microsoft的Computational Network Toolkit (CNTK)。若你們今天開始投入這次AI熱潮，說不定將來會在AI或相關範疇如數據科學(data science)、雲計算、大數據(big data)、自然語言處理、量子電腦等，創出一番新天地呢！

另一個相似版本刊登於《信報》「教育講論」

References:

[1] 松尾豐，(江裕真譯)，了解人工智慧的第一本書：機器人和人工智慧能否取代人類？台北市：經濟新潮社，2016

[2] Pedro Domingos, The Master Algorithm : How the Quest for the Ultimate Learning Machine will Remake our World, NY: Basic Books, 2015

[3] Klaus Schwab, The Fourth Industrial Revolution, Geneva, Switzerland: World Economic Forum, 2016

[4] Kunihiko Fukushima, "Neocognitron: A self-organizing neural network model for a mechanism of pattern recognition unaffected by shift in position," Biological Cybernetics, vol. 36, no. 4, pp. 193-202, April 1980

[5] http://www.icassp2016.org/SP16_PlenaryDeng_Slides.pdf

Congratulations

Wonderful blessings are with Dr Steve Wong's and Dr Ray Cheung's families for their newborn babies!

- **Cristyn Wong**, baby of Dr Steve Wong, was born on 13 January 2017. The baby girl weighed 3.07 kg.

- **Rayden Cheung**, second baby of Dr Ray Cheung, was born on 2 May 2017. The baby boy weighed 3.18 kg.

It is good to see EE is energized by more and more "young members" of our future stars. May the treasurable gifts bring Ray's and Steve's families many more sweet memories and fun times ahead.

Here are their lovely faces!

Baby Cristyn

Baby Rayden

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Focus

Career Opportunities and Development in the Information and Communication Technology (ICT) Industry

~ Mr Andy Lam ~
Country Head, Worldline International (Hong Kong) Limited

Q: Technology is ever changing. Can you introduce to us the job opportunities in the IT industry nowadays?

A: Information and Communications Technology (ICT) represents one of the most exciting and fast changing areas of employment for new graduates. Careers in ICT now encompass a broad number of areas from business consulting, development and sales to technical roles.

The range of career pathways in ICT continues to expand as technology penetrates more and more aspects of our daily life. Common areas of work for ICT graduates include traditional careers such as software engineering and programming, systems analysis and administration, infrastructure and data center management, multimedia development, and ICT support; as well as emerging careers like big data analytics, cyber security and Internet of Things.

ICT professionals work in a variety of sectors including finance, retails, property and business services, as well as the primary ICT sectors.

Q: What are the career opportunities at Worldline International (Hong Kong) Limited?

A: Being the largest ICT service company in Europe and expanding in Asia, Worldline and our parent company Atos group provide all career pathways to ICT professionals and fresh graduates who want to join the ICT industry.

ICT skills transfer easily from one country to another, so experienced ICT professionals can expect to find career opportunities almost anywhere in the world. At Worldline and Atos group, we encourage international mobility which provides opportunities for our employees from different countries to explore the world.

Q: What are you looking for when recruiting new employees?

A:
- We look for people who believe in lifetime learning and continuous self-improvements.
- We look for people who recognize teamwork as the best way to achieve company and personal goals.
- We want bright talents with the qualifications and vision to carry our business forward.
- We need people who embrace work that can be tough and intellectually demanding. People who realize the rewards reflect fully the commitment we require.
- We seek exceptional young people of diverse backgrounds who want to make a difference and are drawn to our company culture.

Q: What would you advise our CityU students on improving oneself? Any particular areas?

A: I would suggest all of them to commit a few hours in a week to acquire new knowledge. Scarifying a few hours of the time on games and social media will make a big difference in their lives!

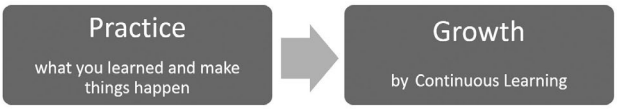
Remember: “Those people who develop the habit and ability to continuously acquire new and better forms of knowledge that they can apply to their work and to their lives will be the movers and shakers in our society for the future.”

This is especially true in the ICT industry as technologies are evolving every day.

Q: What training will your company provide to fresh graduates?

A: Training for new joiners varies depending on their roles and responsibilities. However, the following staff development model best illustrates how we develop our employees in the company.

Worldline's Staff Development Model:



Q: What are the personal development opportunities and career prospect in your company?

A: Every day at Worldline, millions of highly critical transactions run through our systems. Making this happen is not just about having a robust infrastructure in place. It's the quality of our people and what they have in common that enable us to achieve this performance.

At Worldline, we did a lot of work to identify and determine our company culture. To be successful, it is important that all our employees share a common set of values and expectations.

Shared values

The ten thousands men and women of Worldline are all different but share the same values. You can see it in the way we behave. We are curious and humble – we are learning every day; we keep things simple and everyone is engaged. In our fast-moving industry, we are adaptable and life-long learners. Everyone demonstrates the same dedication to quality and efficiency. We have an entrepreneurial spirit and sense of service. And above all, we never turn our back on a challenge. Putting together these values nurture a dynamic and innovative team where everyone can develop and grow.

Shared expectations

When you work at Worldline, you can expect three things:

Innovation: It is everywhere within Worldline. Behind all our services and solutions are creative people and a culture of innovation that spurs us on to greater creativity, promotes our entrepreneurship, and encourages the design and implementation of value-creating initiatives.

Growth: Our employees are our most important assets, which is why we pay special attention to everyone's development. It probably also explains why turnover at Worldline is low and that our teams are 'rock-solid'. Within the company, everyone has the opportunity to develop their skills because our success depends on not only the technologies we develop, but more importantly with the teams that develop them.

Recognition: We reward our teams by empowering them to make decisions and by giving them the freedom to pursue their objectives. We celebrate our successes and learn from our mistakes.

Q: Which talents will be in strong demand in the next few years?

A: Based on current trends and look ahead, we anticipate there will be increasing demands on some of the key emerging roles over the next few years. They are:

Cloud Integration Architect

As enterprises buy more cloud solutions, maintain on-premise solutions and embrace hybrid scenarios, the issue of cloud integration is going to come to the fore. A cloud integration architect will be involved in the purchase process, advising both IT and line business functions, and will manage the integration of new and existing solutions.

Anything regarding integration between systems will be a hot job – cloud to cloud or cloud to on-premise. These systems need to communicate robustly, securely and in real time, so anyone with those integration skills – including Java, HTML, mobility and user interface – will be in demand.

Data and Analytics Officer / Information Insight Enabler

There has already been strong growth in the data space, and by the end of the decade, data and analytics is expected to be so highly valued by enterprises that it will be elevated to the C-Level. The DAO will drive and do operations around data capture and synthesis, working with IT and the business to compile, filter, analyze and protect data.

With more and more business users having access to sophisticated business intelligence and analytics tools, we may also see the rise of the Information Insight Enabler – effectively a coach to work with executives and employees within the business to help them understand data and how to manipulate them to gain the insights they are after. These candidates may have backgrounds in research, statistics and analytics, as well as technology understanding.

Collaboration and Social Media Analyst

For the social media folks, there will be opportunities to leverage these skills at the enterprise level. With a growing emphasis on collaboration, both internally and among networks of suppliers, customers and partners, a Collaboration and Social Media Analyst will understand the tools, technologies and human factors to drive greater collaboration and use the power of social connectedness to achieve business outcomes.

Social media will increase its presence in more traditional business functions, beyond just marketing, but as the resources required to manage vast amounts of data and high levels of engagement grow, so will the importance of Social Media Analyst.

User Experience Specialist

As consumers' expectations on technology increase in both their personal and professional lives, the role of User Experience Specialist will also increase in demand. They could, in fact, be an enterprise's first line of defense against "shadow IT", by ensuring that the tools employees required to use are engaging and effortless, lifting productivity in the process.

This role will involve more than just slapping a pretty interface on a solution – it's about the whole user experience, and this may require architecture and integration skills, design thinking or innovation capability, as well as expertise in mobile and web technologies and enterprise solutions.

Customer Experience Engineer

Arising from the new focus on customer engagement and achieving Omni channel customer experience, the Customer Experience Engineer will need to take a big picture view to orchestrate the various solutions, touchpoints and information pathways. They will also need to be an analytics expert, to be able to capture and interpret customer data, and translate them into process improvement and actionable insights for the business.

Q: Could you say a few words to encourage our EE students?

A: Finding a job in the ICT industry in Hong Kong as a fresh graduate is not that difficult as we see there are increasing demands in almost all sectors. Of course, there are companies who prefer experienced employees but there are companies who also seek out fresh graduates. Companies believe that by hiring fresh graduates they could train the graduates to become their "dream" employees.

Fresh graduates may have learned a lot of things about the industry at school but they are practically a blank sheet of paper waiting for different input from their employers. When they are trained properly, they become the best asset of a company. As a fresh graduate, you should look for companies who are looking for fresh graduates for this reason to have a better chance of success in your career.

Finally, I would like to share to all CityU students that "The importance of life is not where you are now but where you are heading to".

As a young person who will soon turn into a new chapter in your life, assess your strengths and your interests, set your goals and move step by step toward what you want to achieve.

Staff Achievements

Prof K M Luk Winning 2017 IEEE AP-S John Kraus Antenna Award

Prof K M Luk, Chair Professor of EE, has been selected to receive the 2017 IEEE AP-S John Kraus Antenna Award for his invention of "L-shaped Probe Fed Microstrip Antenna and the Magnetoelectric Dipole Antenna for Wireless Communications". This award has recognized Prof Luk's distinguished career in antenna theory and design technologies.

IEEE Antennas and Propagation Society (IEEE AP-S) is a leading Society in antenna field in the world. Established by John D. Kraus, an American physicist known for his contributions to electromagnetics, radio astronomy and antenna theory, this award aims to honor any individuals or teams that have made significant advances in antenna technology.

Winning First and Second Class Award in the Natural Science category at 2016 Higher Education Outstanding Scientific Research Output Awards (Science and Technology)

Prof K W Leung and **Prof Ron Chen** have won the First and Second Class Award in the Natural Science category at the 2016 Higher Education Outstanding Scientific Research Output Awards (Science and Technology) from the Ministry of Education of the People's Republic of China.

- **Prof K W Leung** – First Class Award for the project "Theory and Application of Dielectric Resonator Antenna", a collaborative research project with a scholar from South China University of Technology.

- **Prof Ron Chen** – Second Class Award for the project "Distributed Cooperative Control of Multi-agent Systems", a collaborative research project with three scholars from Southeast University, Nanjing, China.

The Higher Education Outstanding Scientific Research Output Awards (Science and Technology), which were set up by the Ministry of Education of the People's Republic of China, are presented annually to recognize outstanding achievements in fundamental and applied research of natural science conducted by scientists.

Prof Ron Chen Honored with the 2016 State Natural Science Award – Second-class Award

Prof Ron Chen has won the Second-class Award under the 2016 State Natural Science Award (SNSA) for the project titled "Complex Network Synchronization, Control and Identification Theories and Methodologies" (複雜動態網絡的同步、控制與識別理論與方法), which is a joint research with four scholars from Chinese Academy of Sciences, Southeast University in China and Wuhan University. One of the scholars, Prof YU Wenwu from Southeast University in China, is our PhD graduate in 2010 and was supervised by Prof Ron Chen during his studies with EE.

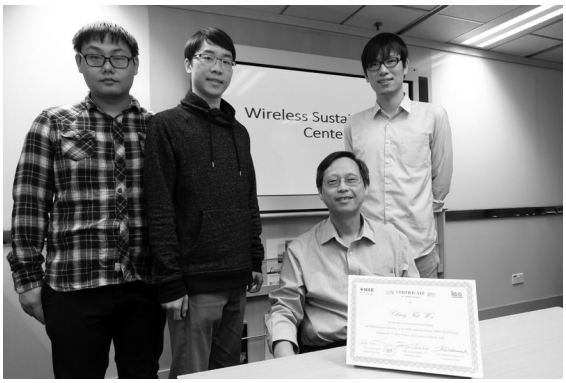
This is the third time that Prof Chen has won the SNSA – the most prestigious award in the field of natural science, bestowed by the State Council of the People's Republic of China in recognition of individuals and organizations that have made outstanding contributions to scientific and technological progress. Prof Chen received the same award in 2008 and 2012.

Winning CICC Scientific and Technological Award 2016 - 1st Class (Natural Science)

Prof Ron Chen who teamed up with scholars from Southeast University in China has won the Scientific and Technological Award 2016 - First Class (Natural Science) by Chinese Institute of Command and Control (CICC) [中國指揮與控制學會科學技術獎一等獎（自然科學類）]. The winning project is titled "Control and Optimization of Networked Multi-Agent Systems: Theory and Applications" (網絡耦合系統控制與優化理論及其應用). One of the scholars of Southeast University in China, **Prof YU Wenwu**, is our PhD graduate in 2010 and was supervised by Prof Ron Chen during his studies with EE.

Best Session Presentation at 42nd Annual Conference of IEEE Industrial Society 2016

Dr K F Tsang (Associate Professor), **Mr Zhu Hongxu** (Research Assistant), **Mr Wu Chung Kit** and **Mr Hung Faan Hei** (PhD students), have been awarded Best Session Presentation at 42nd Annual Conference of the IEEE Industrial Society (IEEE-IECON2016) for their co-authored paper "BER Performance Evaluation of Spatial Modulation via Numerical Simulations".



Staff Movement

Promotion

Congratulations to the following academic staff on their promotion!

Dr Rosa Chan and **Dr Bernard Chiu** — promoted to Associate Professor from 1 July 2017

Student Achievements

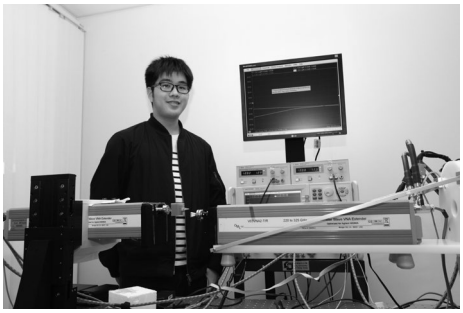
Winning Best Presentation Award in Inter-University Algo Trading Contest

Two EE Year-4 students, **Mr Chan Yin Hei** (INFE) and **Miss Xin Yan** (CE), who teamed up with students from College of Business, have won the Best Presentation Award in the Inter-University Algo Trading Contest 2016/17. The winning project, which is supervised by Dr Ray Cheung (Associate Professor of EE) and Dr Michael Wong (Associate Professor of EF), is called "Salomon UPT Strategy". Organized by CASH Algo Finance Group, the competition aims to encourage university students to form a team with different required skills, including Mathematics, Statistics, Programming, Data Analytics, Quantitative Finance, Modeling, Reporting/Presentation, etc., to create and test their own designed algo trading strategies.

Winning IEEE MTT-S Undergraduate/ Pre-graduate Scholarship for Spring 2017

Mr WONG Chun Kit, BEngECE final year student, has been awarded the IEEE MTT-S Undergraduate/Pre-graduate Scholarship for Spring 2017 by the IEEE Microwave Theory and Techniques Society (MTT-S), USA. This is the seventh time our students received this award. The winning research project proposal is called "A Terahertz Near-Field Measurement System" which is supervised by Prof C H Chan.

IEEE MTT-S will award up to ten undergraduate/pre-graduate scholarships each for the fall and spring semester. The purpose of these scholarships is to attract BS and MS students to the microwave and RF discipline, and to encourage them to pursue a job or a PhD degree in this field.



Winning Champion at Disney ImagiNations Hong Kong Design Competition 2016

Mr CHEUNG Yiu Chung (ECE, 2015 entering major), who teamed up with students of School of Creative Media, has won the Champion of Disney ImagiNations Hong Kong Design Competition 2016 with the proposal "Monster City University (Draboland)".

The competition aims to encourage students to use their technical, artistic and creative skills to propose concepts for a Disney attraction, resort hotel, restaurant or an entirely new entertainment experience or product. This is a great opportunity for participants to showcase their talent for integrating innovative and globally diverse ideas. This year, about 350 students in 78 teams were attracted to participate in the competition. Being the Champion, the CityU Team has been awarded $25,000 cash prize and an 8-week internship in the US Disneyland.

Merit Prize of HKEIA Innovation & Technology Project Competition Award 2016

Mr Lai Chun Tak, ECE graduate in 2016 and now PhD student of EE, has won the Merit Prize of HKEIA Innovation & Technology Project Competition Award 2016. His winning Final Year Project, supervised by Prof Henry Chung, is titled "Smart Charger".

Jointly organized by The Hong Kong Electronic Industries Association (HKEIA) and Hong Kong Electronic Industries Association Education Foundation (HKEIAEF), the Award is designed to recognize and reward students with outstanding final year projects which demonstrate excellence in technology and innovation.

Final Year Project Competition 2017

Please refer to p.12 for "Novelty and Originality of Student Project Work Manifested in Final Year Project Competition 2017" under "Activities" Section.

Electronic Product Design Competition 2017

EPD Competition is an annual activity for ECE students taking EE3004. The competition aims at promoting the interest of our students in learning electronics and developing students' generic skills through project learning. The project of this year is "**Passive Drive Automatic Line Tracking Robot Car**". Four groups of students have won the Gold Award, Creative Idea Award, Silver Award and Bronze Award, respectively.

Their names are as follows:

Gold Award

CHEUNG Yiu Chung, FEI Ho, LAM Chun Chung, LEE Wing Kin

Silver Award

LO Karen, WONG Kwok Sing, YIP Kai Fai

Creative Idea Award

CHAN Chun Ho, LAU Sze Chung, LAW Ching Lim, MAN Ka Shing

Bronze Award

CHEUNG Kin Ho, TAM Ho Leung, YEUNG Cheuk Kwan

Certificate of Merit

DENG Mingyang, SHARINUOTAI Bote, XIA Yiwen, XIE Zhiyao

Design Project 2017 Award Recipients

In lieu with the Discovery Enriched Curriculum (DEC), EE3274 Design Project is developed for BEng Computer Engineering students. The course aims at cultivating the creativity and innovation ability of students. It teaches students how to create and evaluate ideas, and the process of prototype and product development. Students are required to design a prototype/product based on an original idea that comes up by themselves through discussions and market research.

This year, the following awards are given to outstanding projects:

Innovation Award
Project title: 90M
CHAN Sheung Long, CHAN Yin Tsang,
POON Wing Shing Vincent, YIM Hei Yi Hilsen

Design & Implementation Award
Project title: MVP-A – Personal Alarm
LAM Ming Leong, LO Wai Hin, WAN Tsz Kin, YAN Tsz Kit

Project title: SOFU Mouse PAD
CHAN Peter, LING Ming Tat, LUK Wai, TANG Ka Chung

Champion, Presentation Award
Project title: 90M
CHAN Sheung Long, CHAN Yin Tsang,
POON Wing Shing Vincent, YIM Hei Yi Hilsen

1st Runner Up, Presentation Award
Project title: Car Park System
CREMONITA Dazi, LAM Wing Yi, YU Ka Yee

2nd Runner Up, Presentation Award
Project title: SOFU Mouse PAD
CHAN Peter, LING Ming Tat, LUK Wai, TANG Ka Chung

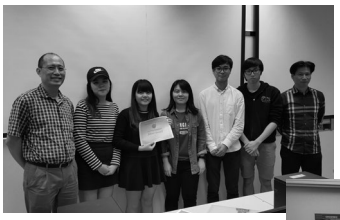
Information Product Design Competition 2017

Information Product Design Competition is integrated in the course of EE3316 Information Product Design. This year, three groups of students have won the Gold Award, Silver Award and Innovative Idea Award and Bronze Award respectively.

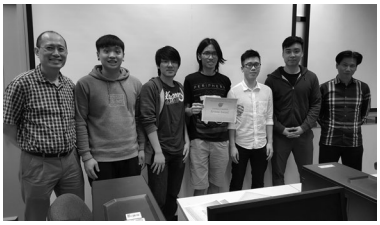
Their names are as follows:

Gold Award
Project title: The P Pad
CHEUNG Chun Wai, CHING Lok Hang, LAM Chun Hung,
MO Ho Yin, TSUI Ka Long

Silver Award and Innovative Idea Award
Project title: AR Music
LAM Hiu Ching, LEE Wan Ming, NG Kin Yuen, TSE Hiu Lam,
TSOI Siu Tung, WAN Siu Fung



Bronze Award
Project title: Launchpad Portable
CHAN Wing Ho, CHO Kwun Kau, LAU Man Kwong,
MAK Ying Kit, SO Wa Wai



Renowned IT and Electronics Companies Giving Career Talk to EE Graduates-to-be

With tremendous support from industry, on 8 March 2017, delegates from renowned IT and Electronics companies were invited to give career talk on-campus to our Year-3 and final year students. Thanks to the following participating companies which presented to our students a clear picture of different career opportunities, prospects and development in their companies and in the industry. Break-out sessions were also arranged to let students know more in-depth about the companies and the respective jobs, as well as to facilitate the on-site applications.

- Atos Information Technology (HK) Limited
- GP Electronics (HK) Limited
- Innotec Engineering Limited
- KLA-Tencor (China)
- PCCW Solutions

It is so glad to see our EE graduates come back to share with us their career hunting and development experiences in a professional and confident manner.

Miss Janice Lai, Graduate Trainee
Atos Information Technology (HK) Ltd.
(2016 BEngCE graduate)

Miss Jojo Kwok, Engineer
Travel and Transportation, PCCW Solutions
(2012 BEngECE graduate)

Novelty and Originality of Student Project Work Manifested in Final Year Project Competition 2017

The Final Year Project Competition 2017 was successfully held on 20 April 2017. A total of 23 projects entered semi-final of the competition which was a poster session. All semi-finalists were that enthusiastic and professional in introducing their innovative and novel ideas in their project works. Six of them were immediately selected after the semi-final to compete in the final round held on the same day.

The judging team involving three external guests namely, Dr Brian Li, Managing Director of GP Industries Limited; Mr Emil Chan, Chief Executive Officer, Starthub Holding Limited; and Dr Alfred Ng, Executive Director & Chief Technology Officer, Suga International Holdings Limited; and our EE faculty were that impressed by the novelty and innovation in the student works and so as the excellent preparation of finalists for their project presentation and Q & A.

Winners of the FYP Competition 2017:

Champion

Student Name: LIU Aruhan

Programme-Major: BENG4-ECE

Supervisor: Prof XUE, Quan

Project Title: Design a High-selectivity Microstrip Line Bandpass Filter working at 2.5 GHz

1st runner-up

Student Name: WONG Chun Kit

Programme-Major: BENG2-ECE

Supervisor: Prof CHAN, C H

Project Title: A Terahertz (THz) Near-Field Scanning System

2nd runner-up

Student Name: YUNG Ka Yi

Programme-Major:BENG4-INFE

Supervisor: Prof LEUNG, Andrew

Project Title: Node Selection Algorithm for Fault-tolerant Extreme Learning Machines

3rd runner-up

Student Name: WONG Samson Yiu Ting

Programme-Major: BENG4-INFE

Supervisor: Dr CHEUNG, Ray

Project Title: iOS Application to recognize CityU timetable content

4th runner-up

Student Name: KU Chia Chen

Programme-Major: BENG4-CE

Supervisor: Prof PUN Edwin

Project Title: Study of Luminescence Properties in Rare Earth Doped Glasses

5th runner-up

Student Name: HE Mengran

Programme-Major: BENG4-CE

Supervisor: Prof ZUKERMAN, Moshe

Project Title: Performance Evaluation of Optical Burst Switching (OBS) Network

Congratulations go to the winning students and their supervisors, and special thanks to the FYP organizing team Dr W S Chan (FYP Director), Dr Andy Chan, and Dr S H Leung; all judges, the GO team, and student participants for the excellent efforts in making such a meaningful competition.

Interflow Tour to Taipei

EE Student Ambassadors 2016 had been to Taipei for an academic and cultural exchange on 2–7 January 2017. They visited National Taiwan University of Science and Technology and National Tsing Hua University for an exchange session with the engineering students and faculties there. Through introductions by local students and teachers, laboratory visits and campus tours, EE students were exposed to the history and culture of the universities, as well as the teaching and learning style in Taipei.

Apart from visiting universities, our students also visited Hsinchu Science and Industrial Park and Taipower Exhibit Center in Northern Taiwan to learn more about the technological development in Taipei. Out of academic side, they had been to some famous landmarks in Taipei such as Chiang Kai-shek Memorial Hall, National Palace Museum and Tamsui Fisherman's Wharf to taste the history and culture of Taipei.

Hsinchu Science and Industrial Park

Taipower Exhibit Center in Northern Taiwan

Visit at National Taiwan University of Science and Technology and National Tsing Hua University

Annual Dinner 2017

~ Teresa Chow ~

EE的年度盛事春茗晚宴，於2017年3月4日假又一村花園俱樂部圓滿舉行。一如往年，同事們及其家人，以至校友，都非常踴躍參與，當晚一共延開二十二席，場面好不熱鬧。

今年的節目非常豐富及緊湊，由晚宴開始至結束都馬不停蹄為大家帶來不同的表演與遊戲。打響頭炮的是EE殿堂級人馬，Prof C H Chan。他為大家獻唱一曲「每當變幻時」，同事們亦化身成粉絲，舉起紙牌及手搖螢光棒，為Prof Chan打氣，場面既溫馨也熱鬧。

EE歌唱人才輩出已非新鮮，而一年一度的春茗晚宴又怎能缺少兩位歌王，Prof K M Luk及Prof Quan Xue呢？不過，今年我們邀請了科學及工程學院的秘書長，Ms Janice Chu，夥拍兩位歌王，為大家送上三支經典曲目，分別是「紫釵恨」、「倆忘煙水裡」及「鐵血丹心」。在此，再次感謝Janice不單止為大家唱歌助慶，還贊助幸運大抽獎的禮物，並送上益智的玩具給同事們的子女。

除了教授們的演出，是日還邀請了Dr Lin Dai的PhD學生，張鉞，為我們表演。張同學精通多國樂器，為了有個完美的演出，張同學在春節時專程回了家鄉一趟，取其二胡，讓大家當晚能欣賞到二胡的傳統曲目「賽馬」，以及著名台灣歌手周杰倫的名曲「青花瓷」。張同學閉目忘我演出的情境，現在還歷歷在目。

Prof Quan Xue唱歌了得就眾所周知，原來他的跳舞細胞也不錯。在跳舞的遊戲環節中，大會播放了幾套跳舞短片，參賽者只有一次看片的機會，之後便要立刻隨音樂模仿舞蹈，並由現場以一枱一票選出得勝者。經過三個激烈的回合，Prof Xue最後以大比數勝出，並Solo跳出韓國女團Wonder Girls的名曲「Nobody」，以答謝大家的擁護與支持。

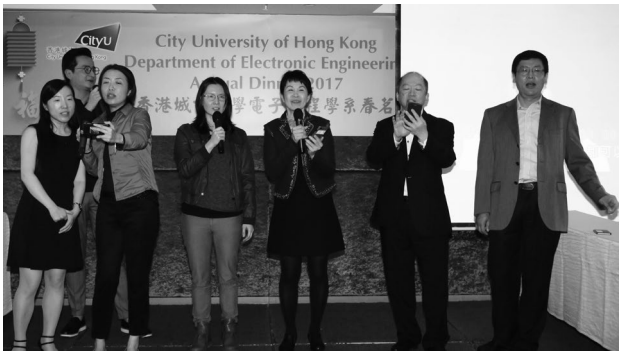
是次晚宴得以圓滿結束，實有賴台前幕後各同事的鼎力支持及相助。在此謹代表EE感謝積極投入參與在當晚各個環節中的每位。盼望著來年大家繼續踴躍參與！

感謝Prof C H Chan為大家獻唱「每當變幻時」！

張鉞同學以二胡演奏「賽馬」及「青花瓷」

Technical Staff及GO Staff來個破天荒大合唱

Dr Eric Wong在Talk Show環節中化身李小龍



在校長的鼓動下，Prof Stella Pang（EE Head）率領一眾E All Stars成員臨時獻唱「海闊天空」。

薛泉教授以高票獲勝，恭喜恭喜！

感謝Janice落力的歌唱演出！

網上紅爆“Water Bottle Challenge”， 你玩過未?

誰的舞藝你們比較欣賞?

校友的參與及支持，為晚宴錦上添花！

EE Staff Retreat 2017

EE Staff Retreat 2017 was held on 6 January 2017. The main theme was on formulating the department strategic plan and discussing the corresponding action plan. The one-day retreat was so fruitful and effective. Apart from mass meeting, five topics were thought out for more focused discussions. Topics are namely –

Education

1. Establishing a robust UG curriculum to support professional career development
2. Recruitment on PhD/ MSc students and PG curriculum revamp

Research Focuses and Faculty Recruitment

3. How to grow innovation ecosystems: University-Industry Technology Transfer
4. Platform for promoting and incubating technology transfer

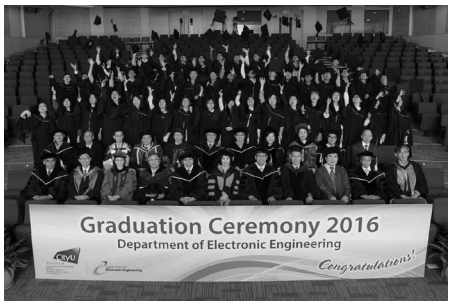
Knowledge Transfer and Industrial Collaboration

5. Research focuses and faculty recruitment

EE Graduation Ceremony 2016

We were proud to have nurtured over 300 talented and passionate graduates to compete at the technological frontier and celebrate their achievement at the EE Graduation Ceremony held on 29 November 2016. Over 700 graduates, their parents and EE academics attended the ceremony to share the joyful and exciting moment together.

Apart from individual presentation on our graduates, a prize presentation was held to recognize graduates of First Class Honors, those ranked first in respective graduating classes, and Final Year Project Competition winners. The slideshow prepared by the graduates evoked many sweet and sour memories of their EE life. Three graduates, covering undergraduates and postgraduates, were excited to share lively on stage their learning experiences in the past few years. The big day ended joyfully by graduation photo taking with so many cheery and shining faces captured.



求學、治學與教學

陳關榮

關於「求學、治學與教學」，其內容之豐富足以開一門課，或者出一本書。這裡僅編寫一小品文，選擇以不十分連貫的形式講些小故事。寫下的多是片言隻語，意在漫談議論，藉以分享一些個人的經驗和體會，謹提供參考性閱讀。

這篇小品文的主題可以濃縮成一個字 —「學」。從學生到學者，無非是通過學習積累學識進而去做學問。做學生時，固然要學而不厭；當學者後，仍當筆耕不輟，還應誨人不倦。人生有限，學海無涯，因此要活到老、學到老、做到老。

下面就「求學」、「治學」和「教學」三個方面來分別談論，主要援引中國古代學人例子，間中提及少許個人經歷，並穿插幾個外國人物故事，借此說明古今中外，「學」的道理都是相通的。

求學

求學路漫漫，探索無盡頭

求學之路漫漫，正如屈原（前340－前278年）在《離騷》中所說：「路漫漫其修遠兮，吾將上下而求索。」行文平白，其意自明。這句話勉勵了許多後人，在求學的路上不可遇難卻步、半途而廢。對於每個學子學人，這句話都可以是立志勵志之座右銘。

天道酬勤

學習，首先當然要用功。「天道酬勤，功不唐捐」，意指上天是獎勵勤奮的，一個人作出的努力不會白費。

當然，中國學生一般都很用功。中國歷史上出身貧苦生活艱難但通過自己用功讀書而最後有所成就的例子很多。

孔子（前551—前479年）三歲喪父，跟母親過清貧生活，但自幼勤讀。他十七歲時母親去世，沒錢繼續讀書，便去看菜園放牛羊，但始終不忘學習，而且虛心向他人求教，三十歲時還去學琴問禮，後來成為至聖先師。《論語》記述，孔子說自己「發憤忘食，樂以忘憂，不知老之將至云爾。」

兩千年來中國父母用以教育和激勵小孩用功讀書的故事，最多引用的是「懸樑刺股」、「囊螢映雪」和「鑿壁偷光」。「懸樑刺股」涉及兩個人物、兩個故事。「懸樑」說的是東漢時期的孫敬（生卒年份不詳）。《漢書》中記述：「孫敬好學，晨夕不休。及至眠睡疲寢，以繩系頭，懸屋樑。後為當世大儒。」而「刺股」則是說戰國時期的蘇秦（生年不詳—前284年）。據《戰國策・秦策一》說，蘇秦「讀書欲睡，引錐自刺其股。」《史記・蘇秦傳》有描述，蘇秦刺股苦讀，成為一個著名的縱橫家，也就是飽讀詩書、滿腹經綸的職業說客。說客們常常以講述歷史故事的形式為諸侯提供指導，在辯論中發揮辯詞技巧去駁倒對方。蘇秦曾以精彩辭令勸說六國國君聯合，後世傳為美談。

「囊螢映雪」也有兩個人物、兩個故事。「囊螢」，據《晉書・車胤傳》說是東晉時期的車胤（約333—401年），小時家貧，連燈油都買不起，晚上常常抓一些螢火蟲裝在小布袋裡，借光讀書，後來成為輔國大將軍。「映雪」，據《初學記・宋齊語》說是東晉時期的孫康（生卒年份不詳），他家貧無燈，借雪光讀書，後來成為大學者，任職御史大夫。

「鑿壁偷光」講的是西漢匡衡（生卒年份不詳）。據《西京雜記》記載，其「父世農夫，至衡好學，家貧，庸作以供資用」；「匡衡勤學而無燭，鄰舍有燭而不逮，衡乃穿壁引其光，以書映光而讀之」。他後來成為經學家，官至丞相。

當然，不是說當了大官才算有出息。這些故事的正確理解是用功讀書然後學有所成，進而學有所為。

知青求學

像當年千千萬萬知識青年一樣，我於1968—1975年上山下鄉到了海南島五指山區墾荒務農，種植橡膠。當年工作極其勞累、生活極其艱苦，並且每年只能回家看望父母一次。每次回城省親，便帶回一捆雜書，先後有高等數學、線性代數、微分方程、概率統計等教科書和習題集，也有唐詩三百首、中國文學史等經典。白天勞累，晚上草棚裡點上煤油燈，每天做一道數學題、讀一首唐詩，度過了完全看不到未來前景、求學渺無希望的七年時間。1975年知青回城，到鐵路當了三年搬運工，直到文革完全結束。高考恢復後，先考進了

華南理工大學「77級」，隨即又考入了中山大學數學系研究生班。1981年作為文革後第一屆碩士畢業，之後到美國攻讀博士學位，那是後話。

記得1969年冬寫下《七律》一首，記錄了當年的自學生活：

夜讀

草屋冬寒催早晚，北風搖曳一枝燈。
二人夜讀無倦意，萬籟昏沉有書聲。
博覽詩文多哲理，詳研學術每論爭。
偶得創作心怡靜，住筆時常已三更。

唐宋文人

「唐宋八大家」廣為人知，為唐代的韓愈、柳宗元和宋代的歐陽修、王安石、曾鞏及三蘇（蘇洵和他的兩個兒子蘇軾、蘇轍）。

韓愈（768—824年）被認為是中國文學史上最傑出的大文豪。他兼秉詩文、傳揚孔孟、宣導古文，被尊為「百代文宗」，居「唐宋八大家」之首。韓愈幼年命苦，三歲時父母去世後由兄長撫養，不幸兄長亦早卒，繼由家嫂照顧。韓愈少時苦讀，十三歲已能寫一手好文章。成名後的韓愈在《進學解》中指出：「業精於勤，荒於嬉；行成於思，毀於隨。」

歐陽修（1007—1072年）自幼家境艱難，母親用荻草在沙地上教他寫字，後來有了成語「畫荻教子」。歐陽修是個大文學家，他畢生的勤奮備受後人稱讚。一說他的學問出自「三上」— 馬上、廁上、枕上。二說他功成名就而告老還鄉後還常常夜讀不已、筆耕不輟。妻子笑他是不是還怕老師責罵？回應說是怕將來被年輕人責罵。歐陽修培養了許多好學生，其中佼佼者有曾鞏、蘇軾、蘇轍，均在唐宋八大家之列。

中唐時期有著名詩人白居易（772—846年）。據說他是神童，六歲便會寫詩。但是他一生非常勤奮，曾說自己：「晝課賦，夜課書，間又課詩，不遑寢息矣，以至於口舌生瘡，手肘成胝。」

外國學者

外國文學家科學家中勤奮好學、在極其艱難條件下寫下傳世名著做出重大科研成果的例子不少。

古希臘的失明遊吟詩人荷馬（Homer，約前9—8世紀）曾寫下長篇敘事史詩《伊利亞特》和《奧德賽》，他的傑作《荷馬史詩》在很長時間裡影響了西方的宗教、文化和倫理觀。

阿根廷盲人文學家博爾赫斯（Jorge Luis Borges，1899—1986）是位博學多才的詩人、小說家、散文家、翻譯家，被譽為作家中的考古學家。他晚年雙目失明仍筆耕不輟，創作繁多。

歐拉（Leonhard Euler，1707—1783年）28歲起右眼失明。當他59歲接受俄羅斯女皇邀請到聖彼得堡加盟俄羅斯科學院工作時，左眼因長期單獨使用也變為極度弱視。讀者不妨閉上雙眼十分鐘，體會一下雙目失明狀態下你能做多少事情？但歐拉十分樂觀，他在一封信中寫道：「one more distraction removed」（身體失去了又一個使人分散注意力的器官）。歐拉畢生完成的866篇論文及書籍中，超過一半是在生命最後的17年即雙目失明後完成和發表的，其恒心和毅力之堅韌不拔可想而知。

求學態度

在國外中小學生中流傳過一個小小文字遊戲：如果把26個英文字母按順序排列起來，然後依次給它們賦予百分數，即A = 1%，B = 2%，C = 3%，. . . , X = 24%，Y = 25%，Z = 26%，那麼你會發現，ATTITUDE 也就是「態度」湊足百分之一百，比其它諸如「運氣」LUCK和「苦幹」HARDWORK都來得重要：

LUCK = 12+21+3+11 = 47%
LOVE = 12+15+22+5 = 54%
MONEY = 13+15+14+5+25 = 72%
KNOWLEDGE = 11+14+15+23+12+5+4+7+5 = 96%
LEADERSHIP = 12+5+1+4+5+18+19+8+9+16 = 97 %
HARDWORK = 8+1+18+4+23+15+18+11 = 98 %
ATTITUDE = 1+20+20+9+20+21+4+5 = 100 %

這當然是巧合，但不無道理。

中國古代有許多告誡學生端正學習態度的事例。

成語「程門立雪」中的「程」指北宋程頤（1033—1107年），他和哥哥程顥（1032—1085年）與南宋朱熹（1130—1200年）都是著名理學家、教育家，他們創立了「程朱理學」。

大學問家楊時（1053—1135年）四十多歲時與好友游酢（1045—1115年）有一次登程門求教，恰巧程頤在屋內睡覺。於是兩人靜立門口，等候老師醒來。其時大雪，但兩人始終站立雪中守候。程頤醒來，發現門外站立著兩個前來求學的「雪人」，十分感動。

魏晉時期的詩人陶淵明（約365—427年）以「不為五斗米折腰」拒絕趨炎附勢的高尚品格而廣為人知。他是文學史上第一個寫下大量飲酒詩的隱逸詩人，以醉人的語態來書寫憤世嫉俗的檄文。他留下《飲酒》二十首，其五如下：

結廬在人境，而無車馬喧。
問君何能爾？心遠地自偏。
采菊東籬下，悠然見南山。
山氣日夕佳，飛鳥相與還。
此中有真意，欲辨已忘言。

其中「心遠地自偏」一句，值得身陷於人心浮躁物、慾橫流的現世人間而打算靜心讀書的學子們銘記。

考試與求學

中國學生對考試最熟識不過。但考試成績其實只是塊敲門磚，幫助你升學、出國、找工作。入門後，便無須過分追求各種應試分數，而要把主要精力花在求學上面。不妨捫心自問，考試滿分這件事本身，對科學發展和社會進步有實質性的貢獻嗎？

真正有學問有成就的人大多都不太注重讀書時期的考試成績。丁肇中在國內多次演講中都提到，他所認識的諾貝爾物理獎得主，大多數在讀書考試時都是拿C的。Stephen Smale是為數不多的斐爾茲和沃爾夫數學大獎得主，但他經常說自己在大學的成績不是B就是C。混沌數學理論創立者之一James Yorke也說他在大學只是個C學生。如眾周知，Bill Gates和Mark Zuckerberg本科沒念完就乾脆離開了哈佛。當然，很多成功人士都是全A學生，如著名數學家陶哲軒，他還是史上最年輕的奧數金牌得主，但他們都不會把考試作為讀書的動力和目標。

其實類似的例子不勝枚舉。朱自清1916年參加北京大學招生考試，數學0分；羅家倫1917年參加北京大學招生考試，數學0分；錢鍾書1929年參加清華大學招生考試，數學0分（另一說是15分）；吳晗1931年參加北京大學招生考試，數學0分；臧克家1931年參加青島大學招生考試，數學0分；張允和1934年參加北京大學招生考試，數學0分。如果說文學大師數學不好情有可原，那麼大數學家Charles Hermite（1822—1901年）年輕時五次高考失敗並且全因數學不及格，更是匪夷所思了。

前面提到，唐代的韓愈被認為是中國文學史上最傑出的文豪、百代文宗。韓愈少時苦讀，十三歲能寫一手好文章。但韓愈並不是應試能手，他三次應考進士、三次應考博學宏詞，全部落敗。他第四次投考進士時，碰上與上次同一道考題和同一個主考官，於是他便自認晦氣，繳交了同一份答卷，快快離場。誰知結果出來，他卻是名列榜首！韓愈的故事成為科舉歷史上一大佳話，當然也是笑話。

治學

目標和境界

治學首先要有個適當的目標。孔子曰：「取乎其上，得乎其中；取乎其中，得乎其下；取乎其下，則無所得矣。」因此，目標不要定得太低，當然也不能太高而不可實現，否則很可能會半途放棄。

治學是一個過程。孔子有他的治學「三境界」描述，就是《論語》開篇那三句話：第一境界，「學而時習之，不亦說乎。」這個「說」就是現在的「悅」，指的是求學的過程中反復練習，心情會很喜悅。第二境界，「有朋自遠方來，不亦樂乎。」指朋友從遠方來討論問題，有切磋之快樂。第三境界，「人不知而不慍，不亦君子乎。」規勸學子應該「敏而好學，不恥下問」。

清末秀才王國維（1877—1927年）早年追求新學，受資產階級改良主義思想影響，把西方哲學、美學思想與中國古典哲學、美學相融合，形成獨特美學思想體系，繼而攻詞曲戲劇，後又治史學、古文字學、考古學，可以說是一位通才，被譽為國學大師。

王國維在《人間詞話》中有如下注釋：「古今之成大事業、大學問者，必經過三種之境界：‘昨夜西風凋碧樹。獨上高樓，望盡天涯路’。此第一境也。‘衣帶漸寬終不悔，為伊消得人憔悴’。此第二境也。‘眾裡尋他千百度，驀然回首，那人卻在，燈火闌珊處’。此第三境也。」他自己的原注說：「第一境即所謂世無明主，棲棲皇皇者。第二境是知

其不可而為之。第三境非歸與歸與之歎與。」其背景是：第一句詩取自北宋晏殊的《蝶戀花》，第二句取自北宋柳永的《蝶戀花》，第三句取自南宋辛棄疾的《青玉案》，此外孔子在陳國時曾感歎曰：「歸與！ 歸與！」

其實外國科學家也有類似的治學三境界。德國物理和生理學家亥姆霍茲（Hermann von Helmholtz，1821-1894）建立了描述電磁波的亥姆霍茲方程，引進了統計物理學中最常用的亥姆霍茲自由能以及一個重要的熱力學亥姆霍茲函數。大家可能記得，中學物理課程裡介紹過他的「亥姆霍茲線圈」。他曾指出，人的創造性思維通常經歷三個階段：第一階段為「飽滿」（saturation），也就是盡可能地積累；第二階段為「醞釀」（incubation），就是開始思考問題；第三階段為「頓悟」（illumination），即恍然大悟。這位亥姆霍茲，當年慧眼識人才，把失業的中學教師Wilhelm Wien接收到了自己門下的實驗室工作，讓他有機會發現了熱輻射的一條基本位移定律而獲得1911年諾貝爾物理獎。

質疑與創新

在中國經常會聽到學生們在議論誰誰解難題的手法真高明！在美國也經常會聽到學生們在議論某某「He has a lot of good ideas!」要知道, 難題是教師出的, 早有答案, 做得出來不枉是一次好的鍛煉。然而，「good idea」是自己想出來的, 前人沒有想過, 實現了的話有可能是一項發明創造。正如愛因斯坦說的：「想像力比知識更重要。因為知識是有限的，而想像力是無限的, 它包含了一切，推動著進步，是人類進化的源泉。」

記得在國內讀碩士課程時，一位教授曾說：「你能讀通讀透這本好書的話，會其樂無窮。」在美國讀博士課程時, 一位教授卻說：「這本書不必讀到底。如果在閱讀中能受到啟發而解決一個書中沒有談及的問題，你就找到了這本書的價值。」這兩句話都沒有錯，第一句適合於所有的學生，而第二句則是對研究人員說的。區別在於：第一句話強調求學與繼承，第二句話側重治學和創新。

中國傳統的教學方式是偏重於背誦、記憶、理解和繼承。孔子曾說：「述而不作，信而好古」（見《論語・述而》），即只轉述古聖先賢的道理而不自行創作，深信聖賢能使人愛好古時之道。戰國時期的儒家代表人物公孟子（生卒年份不詳）也老調重彈：「君子不創作，只轉述而已」（見《耕柱》）。換言之，古人把「治學」基本上理解為把「學」到的東西「治」理一遍，然後轉述給後人，即所謂「教」。在中國歷史上為前人的著作做詮釋的書籍不少，最著名的有《十三經注疏》，是一套儒家經書注解，包括《周易注疏》、《尚書注疏》、《毛詩注疏》、《周禮注疏》、《儀禮注疏》、《禮記注疏》、《春秋左傳注疏》、《春秋公羊傳注疏》、《春秋穀梁傳注疏》、《孝經注疏》、《論語注疏》、《爾雅注疏》、《孟子注疏》共十三本。為各種歷史書籍、詩詞歌賦及文學作品作注的人都很有學問，後人也都以能讀通讀透一本好書如《詩經》、《史記》、《紅樓夢》之類為驕傲。可是，把前人著作讀通讀透之後有甚麼用處, 似乎就不重要了。這裡最為欠缺的，便是「創新」。如果每一代人都只繼承而不創新，社會怎麼進步呢？

其實，孟子（約前 372 — 前 289年）也主張質疑性閱讀。他說：「盡信書則不如無書。」王國維也有詩句云：「人生過處唯存悔，知識增時只益疑。」民國著名學者、前北京大學校長胡適（1891—1962年）留有題詞： 「大膽質疑，小心求證。」

創新需要質疑，而質疑需要研究。胡適說過，「我要根據我個人的經驗，贈與三個防身的藥方給青年們。第一個方子是：‘總得時時尋一個兩個值得研究的問題。’第二個方子是：‘總得多發展一點業餘的興趣。’第三個方子是：‘總得有一點信心’。」

說到「信心」，使人想起數學大師希爾伯特（David Hilbert，1862—1943年）在哥廷根大學退休感言的結語:「我們必須知道，我們必將知道。」這兩句話刻在他墓碑下方，表達的就是信心：求學的信心和治學的信心。對比本文開篇時回顧屈原的詩句「路漫漫其修遠兮，吾將上下而求索」，令人感覺到屈原只表達了求學的執著而沒有流露出多少治學的信心。

方式及態度

關於治學，前人給我們樹立了許多榜樣，也留下了許多有益的經驗和告誡。這裡僅示兩個成語例子。

洛陽紙貴

西晉文學家左思（約250—305年），貌醜口吃，不善交際，但畢生勤奮成為著名文學家，後在洛陽西晉朝廷任職秘書

郎。據《晉書・左思傳》記載，他寫關於魏蜀吳的《三都賦》花了整整十年時間。他在家中的門旁窗臺庭院廁所到處放有紙筆墨，隨時把好的想法寫下來。《三都賦》一面世，便令「豪貴之家，競相傳寫，洛陽為之紙貴。」

草亭路問

清代文學家蒲松齡（1640—1715年）為了寫《聊齋志異》，在家門外路邊搭建了一間茅草涼亭，讓過路人歇腳。路人在亭裡喝茶休息是免費的，只要給他講個故事就行。就這樣，他收集了許多民間故事，然後經過整理和創作，寫成了文學史上一部名著，全書共491個短篇。順便提及，蒲松齡一生考過四次舉人，全部落敗。

潛心滌慮

韓愈在《答李翊書》中寫道：「將蘄至於古之立言者，則無望其速成，無誘于勢利，養其根而俟其實，加其膏而希其光。根之茂者其實遂，膏之沃者其光曄。」大意是：如果你期望達到古代立言人的境界，那就不要企圖快速達到成功，不要被勢利誘惑。要像精心培育樹木的根那樣等待它結出果實來，要像給油燈加油那樣等待它放出光芒來。樹根強壯了，果實就能預期成熟；燈油充足了，火焰就會明亮燦耀。

面壁九年

這是關於菩提達摩（Bodhidharma，生年不詳—約536年）的故事。他生於南天竺（印度），原名菩提多羅，後改名達摩多羅，是印度禪宗第二十七代祖師般若多尊者的大弟子，印度禪宗第二十八代祖師，為中國禪宗始祖。

菩提達摩在南朝時期（520—526年間）從印度經水路到達廣州。梁武帝蕭衍（464—549年）聞其盛名，特派使臣到廣州迎接他上岸。廣州至今尚保留其上岸的「西來初地」並立有「西來古岸」石碑，還有千年古剎「華林寺」（原名「西來庵」），為達摩所建。

梁武帝沉迷佛教，人稱「菩薩皇帝」，他曾三次舍位出家，均被無奈的朝臣用重金向寺院贖回。後來梁武帝詔迎達摩到了金陵（南京）。 但終因兩人觀念不合，達摩便悄然北上，「一葦渡江」，最後到達少林寺。宋朝釋普濟《五燈會元》說，達摩在少林寺面壁靜修九年，寫下禪宗要義《楞迦經》四卷。他被後人敬為佛教禪宗始祖，身後有二祖慧可、三祖僧璨、四祖道信、五祖弘忍、六祖慧能。其後佛教流派甚多，不再有「七祖」之傳承。

這「面壁九年」的故事，勸戒後人做大事要靜得下心緒、耐得住寂寞，不要老去夢想「一夜成名」。

珍惜時間

時間就是生命，必須珍惜並善於利用。

清代思想家魏源（1794—1857年）說過：「志士惜年，賢人惜日，聖人惜時。」

隋唐書法家顏真卿（709—785年）是歷史上少有的廉官之一。據說他當大官期間曾因回鄉省親無錢而向朋友借取路費。他畢生秉性正直，最終以死明志。顏真卿留下了《勸學》詩一首：

三更燈火五更雞，正是男兒讀書時。
黑髮不知勤學早，白首方悔讀書遲。

愛因斯坦（1879—1955年）有一條公式：「成功 ＝ 艱苦勞動＋正確方法＋少說空話」，其意自明。據說愛因斯坦曾經計算過，人的一生除去吃飯睡覺，實際工作時間平均大約有13年，而業餘時間倒有17年。所以他說：「人的成就和差異決定於其業餘時間。」此話十分精闢。前面提到我於1968—1975年上山下鄉墾荒務農七年，然後回城當搬運工三年，之後文革結束便直接考取碩士研究生然後出國，從此走上科研道路。我與其他知青朋友的區別確實就在於如何渡過業餘時間：當年大家都去打牌下棋以消磨無望的青春歲月，而我則由於興趣驅使一直堅持自學。期間不可能夢想，十年後居然會有絕地逢生的機遇。

鍥而不捨

古人論述和描述求學和治學時需要有「鍥而不捨」精神的詩句很多。

韓愈《秋懷詩十一首》有句云「事業無窮年」，說的是做學問做事業都是沒有止境的，因而不能停頓，更不能放棄。歐陽修也說：「詩窮而後工」。白居易《解詩》曰：

新詩日日成，不是愛聲名。

舊句時時改，無妨說性情。

其中的「說」即是今天的「悅」。宋代詩人陸游（1125—1210年）亦云：「功夫在詩外。」他還有詩句「古人學問無遺力，少壯功夫老始成」。唐代詩人賈島（779—843年），有「僧[推敲]月下門」的故事，留下了今天的「推敲」用語。賈島的《題詩後》描寫了自己寫作的艱辛：

兩句三年得，一吟雙淚流。
知音如不賞，歸臥故山秋。

詩聖杜甫（712—770年）則留下更多的勵志詩句，如「為人性癖耽佳句，語不驚人死不休」和「新詩改罷自長吟，頗學陰何苦用心」，其中提到的陰鏗和何遜是南朝的兩位著名詩人。

現在的年輕人會記得喬布斯（Steve Jobs, 1955—2011年）的名言：「專注和簡單一直是我的秘訣之一。」

矢志不移

西漢司馬遷（約前145—前90年）寫的《史記》，原名《太史公書》，是中國第一部傳紀通史，共計一百三十篇、五十多萬字，記述了從黃帝時期到漢武帝元狩元年期間長達三千多年的歷史。它既是嚴格的史籍，又是極好的文學作品。

漢武帝在天漢二年派李陵出兵甘肅酒泉抗擊匈奴，但李陵彈盡糧絕後降敵。武帝為之震怒，群臣亦皆聲討，唯司馬遷為李陵求情，說他是為將士著想。武帝遷怒，賜司馬遷以宮刑。何等慘烈殘酷、奇恥大辱！如同文王身陷囚室寫成《周易》、仲尼困厄編纂《春秋》、屈原被逐乃賦《離騷》、左丘失明仍作《國語》、孫子臏足尚修《兵法》、韓非囚秦留下《說難》和《孤憤》，司馬遷以刑余之身忍辱負重，矢志不移秉承父願，成就了一件天賦使命 — 寫成了《史記》。寫成這部偉大的文學史書，可謂「字字看來皆是血，十年辛苦不尋常」。

1973年7月15日，時為知青的我曾寫下《七律》一首，大體上都是回顧這些逆境出雄才的故事：

謵懷
曾嘲李白難行路，如今啟步到吾曹。
拒用韓非留孤憤，稽疏屈子賦離騷。
乞歸崔述空才智，哭返阮籍沒蓬篙。
驥子龍文天下是，難得管樂遇桓昭。

其中人物注記如下：

崔述（1739—1816年）的學術思想在日本產生過重大影響。胡適稱他為「二千年來的一個了不得的疑古大家」。

阮籍（210—263年），三國時期魏國詩人，「竹林七賢」之一。他年幼喪父，家貧勤學，少年即通曉詩書。成語「阮囊羞澀」是指阮籍貧窮，口袋裡通常只有一兩文錢。「時無英雄，使豎子成名」出自阮籍之口。

管仲（前725—前645年）家貧，自幼刻苦自學，通詩書，懂禮儀，知識豐富，武藝高強。齊國桓公重用管仲，拜封為相，主持政事。管仲得以施展才華，並實行改革，指引齊國很快地強盛起來。

樂毅（生卒年不詳）出生於富有武學淵源的貴族家庭。他品行端正，聰穎好學，嫻熟兵法，畢生戎馬征戰。後知遇一代明主燕國昭王，擔任要職，主持軍事，成為傑出軍事統帥和政治家。

我上面這首舊詩最後一句：「驥子龍文天下是，難得管樂遇桓昭。」其中「驥子」為千里馬，「龍文」也是駿馬，合起來比喻年少英才。韓愈有《馬說》：「世有伯樂，然後有千里馬。千里馬常有，而伯樂不常有。」《三國志・諸葛亮傳》記載：「亮躬耕隴畝，好為梁父吟，身長八尺，每自比於管仲、樂毅，時人莫之許也。」

廣泛閱讀、集思廣益

思考性閱讀

閱讀多了，許多知識學問藏在腦海裡，做研究的時候往往會不經意地冒出新思想來。正如杜甫詩說：「讀書破萬卷, 下筆如有神。」

《論語》記載孔子說過：「學而不思則罔，思而不學則殆。」唐代文豪蘇軾（1037—1101年）有詩句云：「舊書不厭百回讀，熟讀深思子自知。」說明廣泛閱讀和深度思考都是很重要的，而思考比閱讀更為重要。

孟子也說過：「心之官則思，思則得之，不思則不得也。」

日本電影配樂大師久石讓（1950年—）曾為動畫導演宮崎駿（1941年—）寫過很多電影配樂，大眾熟識的有《龍貓》、《天空之城》、《風之谷》、《崖上的波兒》。久石讓說他自己「創作靈感的95%來自於思考性的閱讀」，而不是說是來自藝術欣賞、聽音樂會或者觀看芭蕾舞演出，或許令人詫異但卻發人深省。

培養多方面興趣

大數學家高斯（Carl Friedrich Gauss，1777—1855年）畢生喜歡文學，遍讀歌德作品。他精通英語、法語、丹麥文，還略懂義大利文、西班牙文和瑞典文，而私人日記則是用拉丁文來寫。高斯50歲時，又開始學習俄語，希望閱讀詩人普希金（1799—1837年）的原著。

培養廣泛興趣，除了多閱讀，還應多聽學術報告、多參與各種討論，以期集思廣益。

在高校組織和參與學術討論班是師生共同治學的一個重要途徑。高斯—希爾伯特討論班延續好幾十年，訓練出了「哥廷根數學學派」。柯爾莫哥洛夫（1903—1987年）討論班延續好幾代人，訓練出了「莫斯科數學學派」。還有一個很好的例子是法拉第（1791—1867年）。他得益於在倫敦聆聽了化學家戴維的大眾科普講座，獲得機會進入實驗室工作進而逐漸成長為一位大科學家的經歷，自己成名後也在倫敦組織「星期五晚討論會」，歷時37年（1825—1862年），以及為少年兒童舉辦的「聖誕節講座」，歷時34年（1826—1860年）。

靈活變通

做學問常常需要靈活變通才會新意層出。

唐代有個書生叫祖詠（約699—746年），他去長安（西安）應考，當年的文題是「終南望余雪」，要求寫一首六韻十二句的五言律詩。祖詠站在城樓上遠望終南山，深思良久之後寫下了四句：

終南陰嶺秀，積雪浮雲端。
林表明霽色，城中增暮寒。

然後他就擱筆了，說「意盡」。 考官很不高興，給了他不及格。但事實上後人多認為這首詩完整優雅、餘味雋永。該詩因而流傳至今。 我當然也很認同，1974年1月1日在茅棚裡寫下七律一首：

寫作

書貴風雅忌浮詞，出言有典免招疑。
勿將短句強為賦，寧把長文寫作詩。
如礙抒情當破格，若妨立意不循規。
終南祖詠望余雪，世俗當時未得知。

清朝的鄭板橋（1693—1765年）是「揚州八怪」之一，曾留下名句「難得糊塗」。他在《題書齋聯》指出：「刪繁就簡三秋樹，領異標新二月花。 」

誠實嚴謹

治學必須誠實。前人一再告誡：「要求真學問，莫做假文章。」中國小學的語文教育從「組詞、造句、學範文」開始，其中「學範文」就是模仿別人的好文章來練習寫作。老師通常並不要求學生在習作上面注明原文作者和出處。久而久之，學生們就會把模仿出來的文章當成自己的原創。這種習慣讓今天一些青年學子把模仿或改寫別人的學術論文作為自己的創作拿去發表，直到被指責為「抄襲」還不明白做錯了什麼。

治學必須嚴謹。北宋史學家司馬光（1019—1086年）編撰的《資治通鑒》是歷史上最大的一部古代編年史，涵蓋了從戰國到五代之間一千多年的歷史。司馬光擬寫了六百多卷草稿，認真取捨後只保留了八十卷，堆滿了兩間屋子的廢稿堅決不用。北宋後期出版的《邵氏聞見錄》收集了許多名人故事，其中稱讚司馬光說：「君實腳踏地人也。」於是有了成語「腳踏實地」。

治學必須認真。杜甫詩云：「文章千古事，得失寸心知。」就是說，文章一發表就等於進了檔案、成了歷史，是千古之事。作者在文章出手之前一定要反復推敲、嚴格檢查，決不可掉以輕心。詩人白居易寫詩就有一個很好的習慣，經常先把詩稿念給老年人聽，覺得對方能聽明白了才公佈於眾。因而他的很多好詩句都十分平白易懂，如「野火燒不盡，春風吹又生。」宋代文學家歐陽修也有一個好習慣，他甚至會把寫好的文稿掛在城牆上讓過路人提意見。有一次，一個樵夫提了個好建議，歐陽修不但欣然接納，還請寫得一手好字的

蘇軾抄了一份改好的文章送給樵夫留念。前面也提到，孔子說過「人不知而不慍，不亦君子乎」，均為謙虛、嚴謹和認真的治學態度。

教學

韓愈《師說》為「教學」給出過一個定義：「師者，傳道授業解惑也。」

我個人認為：「教授 = 教 + 授 = 漁 + 魚」。就是說，學生來讀書學習，老師先授之以「魚」，同時就要慢慢地教會他們「漁」。等到他們自己會捕魚，就可以畢業了，教授的工作也就告一段落了。

北宋名臣范仲淹（989—1052年）曾有一首描寫魚和漁的詩《江上漁者》：

江上往來人，但愛鱸魚美。
君看一葉舟，出沒風波里。

這個范仲淹也是為數不多的清官之一。他的《岳陽樓記》中有百代相傳的名句「先天下之憂而憂，後天下之樂而樂。」他出身貧苦，二歲時父親去世，母親改嫁。但他自幼苦讀，由寒儒成為進士，官至秘閣校理即皇帝的文学助理。後來因秉公辦事而遭讒言去職。歐陽修替他上書求情卻遭連累，被貶滁州。歐陽修灑脫超逸，經常到滁州城外琅琊山亭子去和民眾喝酒取樂，自稱「醉翁」。期間他常常請大家為他的文稿提意見，留下了名作《醉翁亭記》，其中有句云「醉翁之意不在酒，在乎山水之間」。後人稱該亭子為「醉翁亭」。

談到教學，《學記》是繞不過去的。它是由戰國末期孟子的學生樂正克（前300—前200年之間）撰寫，為中國也是世界最早的一本論述教育和教學問題的專著。《學記》說，孔子認為教學的目的是培養「士」，因而他的原則是從多方面去培養。孔子說：「行於詩，立於禮，成於樂。」可見他把「詩、禮、樂」作為三門主要課程，其中「詩」是《詩經》，以提高學生的文學素養；「禮」是《禮經》，教學生如何做人並學會各種社會禮儀；「樂」是《樂經》，旨在陶冶人的情操追求真善美。《學記》進一步把廣泛的教學內容概括為「六藝」：即「禮、樂、射、御、書、數」這六門課程。《學記》中有一些教學指導，如「善教者使人繼其志」和「玉不琢，不成器；人不學，不知道。是故古之王者，建國君民，教學為先。」

在國外也有許多知名的教育家，這裡介紹三位。

昆提利安（Marcus Fabius Quintilian，35—100年）是古希臘和羅馬時期教育思想和教育經驗的集大成者，是一位研討教學法的先驅學者。他在91—94年間寫成的12卷巨著《雄辯術原理》（Institutio oratoria），是整個古羅馬時代留下唯一的系統論述教育的著作，其中制定了一個百科全書式的課程計劃。昆提利安認為，雄辯家應該是一名具有廣博知識的人，他不僅要善於辭令，精通文學，還要滿腹經綸，學富五車，能隨時引經據典，讓聽者無懈可擊。他的課程體系十分龐大；例如在文法學校就要開設文法、修辭、音樂、幾何、天文、希臘文、拉丁語、哲學（物理學、倫理學和辯證法）等多門課程。昆提利安在《雄辯術原理》中說：「常常有這樣的情形，最有學問的人的教學往往比別人的教學更加易懂，更加明白。明白是雄辯術的最大特徵。」這和中華道家哲學名言「大道至簡」是一致的，指大道理應該並且可以簡單到甚至一句話就能講明白。昆提利安強調：「人人均可接受教育」和「教育可以使每個兒童成為優秀的雄辯家。」這和孔子「有教無類」的觀念異曲同工。

捷克教育家誇美紐斯（Johann Amos Comenius，1592—1670年）是教學藝術歷史上的一位重要人物，第一個提出「普及義務教育」主張。他在1632年出版的《大教學論》中指出：「我們這本《大教學論》的主要目的在於：尋求並找出一種教學的方法，使教員因此可以少教，但是學生可以多學；使學校因此可以少些喧囂、厭惡和無益的勞苦，多具閒暇、快樂和堅實的進步。」

古希臘哲學家蘇格拉底（前469—前399年）與孔子（前551—前479年）是同時代人，他們不約而同地說了很多相似的話。蘇格拉底說：「教育不是灌輸，而是點燃火種。」孔子曰：「不憤不啟, 不悱不發。舉一隅不以三隅反，則不復也。」意思是：學生還沒有到達努力思索而不得要領的程度，尚不必去開導他；學生還沒有到達心裡明白卻不能完善表達出來的程度，尚不必去啟發他。如果學生不能舉一反三，那就不必再反復地給他舉例了。孔子是把話反過來說的，即如果學生沒有火種讓老師去點燃，那就算了，不必灌輸，「因材施教」吧。但是孔子對教師也有警訓，說教學不能只是簡單地憑記憶去傳遞知識：「記問之學，不足以為人師。」

收筆留言

蘇格拉底說過：「我比別人多知道的那一點，就是我知道自己是無知的。」孔子也說過：「吾有知乎哉？無知也。」

我集腋成裘寫成了這篇小品，似乎講了許多道理，其實我自己也是很無知的。回顧個人經歷，不外印證了蘇格拉底的一句話：「認識自己，方能認識人生」。

本文僅提供參考，希望沒有誤導讀者。

宦海浮沉蘇東坡

陳關榮

蘇東坡的名字家喻戶曉，他是北宋最著名的詩人、文學家和政治家。

蘇東坡（1037年—1101年）姓蘇名軾，與父親蘇洵及弟弟蘇轍一起被譽為“文豪三蘇”。三蘇與唐代韓愈、柳宗元和宋代王安石、曾鞏、歐陽修一道被尊稱為“唐宋八大家”。蘇軾的散文與歐陽修齊名，並稱“歐蘇”；詩與黃庭堅並稱“蘇黃”、與陸游並稱“蘇陸”；詞與辛棄疾並稱“蘇辛”；其畫開創了湖州畫派，同時是個書法家；他修禪，並注解儒家經典；他曾官至禮部尚書，監管過杭州和嶺南水利工程項目；他還是一位美酒鑒賞師和美食家。

宋仁宗嘉祐元年（1056年），蘇軾、蘇轍兩兄弟跟隨父親蘇洵前往京城參加科舉考試，深得考官歐陽修賞識，兩人同時榜甲進士。之後，“三蘇”父子逐漸名揚天下。

蘇軾少年得志，但其仕途“三起三落”，雖曾飛黃騰達，但亦飽嘗苦楚。

從20歲開始，蘇軾任職大理評事、簽書鳳翔府判官。宋神宗時，32歲的他任尚書祠部員外郎，並先後擔任過密州、徐州、湖州的知州。當官為政，蘇軾是個保守派，主張通過道德教育來治理社會。但他常常喜歡用詩詞譏諷朝政。宋神宗末期，36歲的蘇軾因反對宰相王安石變法，被貶謫杭州，出任通判。當時蘇轍十分擔心，怕哥哥到杭州後繼續寫詩作賦得罪朝廷，再起禍端，在臨別時苦言相勸：

北客若來休問答，西湖雖好莫吟詩。

通判在州府門下掌管農田、水利、糧運以及訴訟，並有監察州府長官責任。蘇軾在任杭州通判期間，盡職盡責。他在杭州修建了一項水利工程，疏浚西湖，並用挖出的泥土修築了一道堤壩，即是後來的“蘇堤”。他常常夜以繼日工作，審理貪官囚犯，有一年除夕之夜都不能回家。為此，他在《都廳題壁》二首詩帖的前詩中感歎道：

除日當早歸，官事乃見留。
執筆對之泣，哀此繫中囚。
小人營餱糧，墮網不知羞。

我亦戀薄祿，因循失歸休。
不須論賢愚，均是為食謀。
誰能暫縱遣，閔默愧前修。

宋神宗元豐二年（1079年），蘇軾因“烏台詩案”被關押在御史台一百多天。御史台庭院內有幾棵大柏樹，烏鴉築巢在上，故得俗名烏台。當時蘇軾被指責以詩詞譏諷朝政而押監受審，期間他差點被砍頭結案。後來因為北宋太祖趙匡胤曾定下有“刑不上大夫”之規矩，他逃過一劫，改判流放黃州。他抒懷寫道：

《出獄次前韻二首》

百日歸期恰及春，殘生樂事最關身。
出門便旋風吹面，走馬聯翩鵲啅人。
卻對酒杯渾是夢，試拈詩筆已如神。
此災何必深追咎，竊祿從來豈有因。

平生文字為吾累，此去聲名不厭低。
寒上縱歸他日馬，城中不鬥少年雞。
休官彭澤貧無酒，隱几維摩病有妻。
堪笑睢陽老從事，為余投檄向江西。

流放生活催生了蘇軾鼎盛的詩詞創作。他在名為“東坡”的地方耕種生活，自號“東坡居士”。在那裏所作詩文中，有《東坡八首》，第五首寫道：

良農惜地力，幸此十年荒。
桑柘未及成，一麥庶可望。
投種未逾月，覆塊已蒼蒼。
農夫告我言，勿使苗葉昌。
君欲富餅餌，要須縱牛羊。
再拜謝苦言，得飽不敢忘。

蘇東坡多次到黃州城外的赤壁山遊覽，寫下了《水調歌頭·明月幾時有》和《念奴嬌· 赤壁懷古》以及《赤壁賦》、《後赤壁賦》等名作，均膾炙人口、傳揚後世。

元豐八年（1085年），宋神宗崩駕，保守派重掌政權，蘇東坡官復原職。那時年僅10歲的哲宗繼位，英宗皇太后隨即攝政，盡廢王安石變法，並冊封司馬光為宰相，提攜蘇東坡青雲直上：他先任登州太守，到任才五天就被召回京城，職升翰林學士知制誥。短短一年半時間，蘇東坡躍升了十二級官階，由戴罪之身的“從八品”晉升到冠冕堂皇的“正三品”。

司馬光上任後，數月之間盡廢新法，罷黜新黨。蘇東坡卻書生意氣，反認為新法也有可取之處，令司馬光極為不滿，最後鬱鬱不得志的蘇東坡主動請辭。元祐四年（1089年），他第二次來到杭州，出任杭州太守。

宋哲宗紹聖元年（1094年），改革派復起，蘇東坡再次被貶，謫至廣東惠州。他生性樂觀，賦詩《惠州一絕》：

日啖荔枝三百顆，不辭長作嶺南人。

他當然忿忿不服，又寫了首詩譏諷朝廷，結果在紹聖四年（1097年）被從嚴發配，流放至海南島儋州。在去海南途中，蘇東坡寫了一首詩給蘇轍，最後兩句說：

他年誰作輿地志，海南萬里真吾鄉。

蘇東坡在給朋友王敏仲的信中還說：“某垂老投荒，無復生之望，貽與長子邁決，已處置後事矣。今到海南首當作棺，次當作墓。乃留手疏與諸子，死則葬海外。”可見耳順之年的蘇東坡自覺生還無期，已做最後打算。據他本人在《與程秀才書》中回憶，當時的生活頗為淒涼：“食無肉、病無藥、居無室、出無友、冬無炭、夏無寒泉。”

元符三年（1101年），朝政再度易手，蘇東坡遇赦北還。他在離開海南島時留下了告別詩《六月二十日渡海》，句云：

參橫斗轉欲三更，苦雨終風也解晴。
雲散月明誰點綴？天容海色本澄清。
空余魯叟乘桴意，粗識軒轅奏樂聲。
九死南荒吾不恨，茲遊奇絕冠平生。

這次回京途中，蘇東坡在常州病逝，享年64歲。

Exchange Study Programme

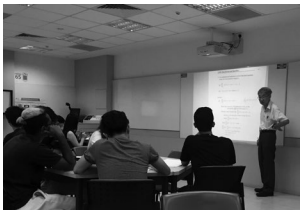
Exchange in Nanyang Technological University, Singapore

KWOK Kwan Ki
BENG4-ECE, Yr 3

Study

The exchange journey to Nanyang Technological University, Singapore is definitely fruitful and unforgettable. Being ranked 6th in the QS World University Rankings 2017 by subject in Electrical and Electronic Engineering, NTU is one of the best universities among the world. The Campus of NTU is big and there are a huge number of academic buildings and leisure facilities.

As an ECE student, I have chosen to study Electrical and Electronic Engineering courses in NTU. The courses in NTU are similar to CityU but more technically in-depth. The professors are nice and provided me with very detailed lecture notes. Their lessons are interesting. The lesson time ranges from 8:30 am to 9:00 pm. If you are off lesson, libraries are good choices with good learning atmosphere that you can find a place to study.



Leisure Time

During my free time, I would normally go to Jurong Point Shopping Mall to do shopping and have meals with my friends. The food in this mall fit students and taste nice. They even have an area themed on the "Old Hong Kong". It is very convenient to travel from the school to the mall. You may even go to the cinema in the mall if you want. There are shuttle bus services provided by the school and you can even travel by 179 or 199 bus if you are in hurry. What's more, next to the mall are MRT stations and this can easily allow you to travel all around the lion city.

There are many attractions in Singapore such as The Universal Studio, Santosa, Garden by the Bay, Chinatown and Botanic Garden, etc.. From day to night, you can enjoy whatever activities you want. I even watched two concerts performed by violinist Ray Chen and KPOP group Apink. I do recommend everyone to enjoy and walk around the whole city.

Hall Life and School life

NTU currently has 21 Halls of Residence, with an average of 600 residents per hall. Each hall has different blocks, which divided residents into different communities. They have interhall competitions and many gatherings at night. I was a Hall 8 resident and the hall has many facilities as well, such as Gym, canteen nearby, study room and game room. It is completely another experience comparing to CityU.

NTU has countless restaurants and canteens. You may even find many fast-food restaurants in North Spine and some of them even operate until 12 am mid-night. I often ate in the food courts as they are cheap and yummy.

Visit to other countries

I went to Kuala Lumpur, Penang and Melaka in Malaysia during the exchange. They are very close to Singapore. I did try to take the bus to Kuala Lumpur. Although the ticket fare is cheaper than the air tickets, I would strongly recommend you to travel by plane. It will be much more comfortable and will not cost you too much if you choose some economy airlines.

Exchange in KTH Royal Institute of Technology

XIE Mingying
BENG4-ECE, Yr 3

Remote and mysterious, Scandinavia is just an attractive term for me before applying for the exchange programme. Never could I ever imagine I would harvest such a great and unforgettable experience in Sweden as an exchange student.

Initially, I had no idea about what Sweden should be like, but only the basic understanding of the climate and geography of this fascinating country. Nonetheless, after five months, from late summer to early winter, I realized that going to the Stockholm, Sweden was far more than offering me an opportunity to know Swedish cultures.

My exchange destination is KTH Royal Institute of Technology in Stockholm. It is one of Europe's leading technical and engineering universities. Located at downtown of Stockholm, it also provides much convenience for the living and various kinds of entertainment.

Because of language issues, I could only take master's courses taught in English. What's lucky for me was that all instructors I met offered kind help through the whole semester. Most courses had very strict student number limitation to ensure the teaching quality so that the teacher could pay enough attention to everyone enrolled. Moreover, various frontier technologies were arranged in a combination of course materials, which really impressed me of how this university values the application of knowledge.

Alla helgons dag, Julafton, Juldagen, Trettondedag jul… bunches of holidays were celebrated by local people during the second half of the year. During the vacation, I caught chances to travel through Iceland, Norway, Finland and Denmark. The spectacular and wild scenery I saw in these Nordic countries would absolutely become the valuable memory of my life.

Lastly, since I lived in the dorm, I met a group of nice people from Stockholm University and KTH. They were always glad to introduce some native news and customs to me when I had confusions. After several talks, I was more familiar with their religions and got more daily tips.

The semester exchange works so significantly for me to gain the ability on how to overcome the fear when stepping out of your comfort zone and become an international talented youth through the exchange program.

Exchange in KTH Royal Institute of Technology, Sweden

CHAN Tsz Hon
BENG4-INFE, Yr 4

Place and University for Exchange

Hej! If you have been to IKEA in Hong Kong, you must have seen this word before. It is a Swedish meaning "Hi". Sweden has lots of international companies, not only IKEA but also H&M, Volvo, SAAB, etc.. IT companies such as Ericsson, and Spotify are also from Sweden. KTH is the top university in Sweden. It attracts students from Scandinavia, other parts of Europe and all over the world. It is a good experience for me to study in Stockholm.

Unforgettable Experience

I treasured every single moment there. The greatest experience was having sauna under amazing aurora. I joined a student tour to Swedish Lapland. I did not know that Abisko is one of the famous places for watching aurora until I visited there. We could not wait any longer to jump into a lake after sauna. The pink aurora filled the sky giving a rare scene. Although I did not take any pictures, the beautiful scene still lingers always in my mind.

My Studies

Courses for exchange students are taught in English of master level. They are therefore much difficult than in Hong Kong. Some classmates were part time students. They got full-time jobs mostly in IT field. Some students were offered internships in Facebook, Google, Ericsson or Spotify. Many classmates had lots of hands-on and real work experience. They shared with me their thoughts and prospects of IT and technology development of Sweden. It was really a great experience to me.

People might always think that exchange students visit a place for leisure while study experience is not their focus. It is a false perception totally! I took four courses there. Taking the course "Operating System" as an example, I noticed that almost all students were using Linux/Unix based operating system. When the teacher asked whether anyone did not have Linux/Unix installed, I was the only one raising my hand. The scene was quite embarrassing. The "Operating System" course is very practical. The assignment provided option to either use a programming language Rust to create a small OS or create a process ring with C and Erlang. Erlang is a programming language developed by Ericsson and is good for distributing. Whatsapp builds its service on Erlang too. This course had expanded my knowledge on operating system. It was noted that local students would always buy reference books for self-study. Lecture notes from classes presented only core concepts and questions. The professor prepared several self-study exercises for us. In another course about computer security, each laboratory took up 6 hours. Without receiving much tutoring advice, we had to search for solutions and we found ourselves always lagging behind the locals. Student learning there puts much focuses on practicing and observation which is quite different from Hong Kong.

Student Orientation and Student Activities

The Student Union of KTH organized different kinds of activities for new international students and exchange students. We had to apply them before departure. Rowing is a must-do thing in Sweden during summer. A member from the Student Union rowed with me. It was really fun!

School life

In KTH, a bar can be found in every department. Students can enjoy alcohol after classes. Coffee and alcohol are essential drinks for Swedish. My Swedish groupmate always required a "Fika" when doing project. "Fika" is a coffee break served with bread or cakes. The most popular bun is cinnamon roll. "Fika" always gave our team time to chat and relax, which is good to build the team and gather ideas. I got used to have a "Fika" when sucked in an assignment.

Friendship

KTH is an international university. There is a mix of students from different nations. It was a big surprise that my first groupmate was Hong Konger who migrated to Sweden. She speaks native Swedish, and is proficient in Cantonese. I was excited to speak Cantonese to a local Swede. We had lunch together after classes and she advised me where to travel and explore.

I met also some Asian exchange students. They came from Japan, Singapore and Korea. We held dinner gathering twice a month. Hong Kong students made BBQ pork, Japanese made sushi and Singapore cooked Bak Kut Teh (肉骨茶). Every gathering was filled with chats and laughter. Some of them have decided to visit Hong Kong in late 2017. We feel good that our friendship stays

outside Sweden.

My Sharing

Exchange study is not the only way to explore the world. Travelling is also an option. However, I would say that experience given by student exchange is something more than travelling. You can taste and experience different cultures when you are still a student. Travelling for a certain would not be that flexible in your work life. University would provide unique experience and more excitements to you. Take this opportunity to explore the world. Don't get yourself regret on losing the chance!

Student Exchange Reflection in Linkoping University, Stockholm

CHEUNG Chi Kwan

BENG4-ECE, Yr 4

Time really flies! I had finished my student exchange program in Sweden last Semester A, 2016/2017. I studied in Linkoping University which is located below Stockholm by taking 2 hours train. It was a completely different world. Study experience was so different from Hong Kong. The environment is so nice and fresh. The road is not crowded. Students like studying with reference books. Most foods are fresh and you do not need to worry about food safety. Every day, I cooked my own meal (this is rather common as it is cheaper than eating outside) and then rode my bike to school. Life in Sweden was really cheerful and free although I needed to look after my daily living in Sweden.

I studied power electronics courses with master degree students there. Also, Swedish people enjoy so much the "Fika" in the afternoon. They stop all their work for a coffee break together. We love this relaxing social activity.

During my exchange study, I had visited a number of European countries, such as Poland, Norway, Denmark, Iceland, Britain, Italy and Austria. I went hiking on the glacier in Norway. I saw the Northern Light in Iceland. I met different people. The lots of fun and unforgettable moments are so invaluable to me. One reminder is that you should stay alert to prevent property loss from cunning thieves, especially in a place like Italy.

Exchange study is really an unforgettable journey in my life and I highly recommend my friends and EE students to join the student exchange program. I guarantee it will be a choice that you will never feel regret at.

Exchange in KTH Royal Institute of Technology, Sweden

LUK Isabel Pui Yin
BENG4-INFE, Yr 4

I am very honored to have a chance of being an exchange student at KTH Royal Institute of Technology (KTH) in Sweden in Semester A, 2016/17. I learnt much more than expected in my exchange.

Orientation

After I arrived in Stockholm, the capital of Sweden for my exchange on 21 August 2016, I took part in an extensive introduction programme provided by the hosting institution and the Student Union. I enjoyed it very much that the programme includes a traditional KTH welcome reception in the Stockholm City Hall, which is the site of the annual Nobel Prize celebrations; as well as social activities such as Kayak, and excursion to archipelago far from the town centre.

My Classes

The arrangements for semesters are slightly different from CityU. Each semester is divided into two study periods. Each period lasts for 7 weeks, just like Summer Semester at CityU, therefore each course has very vast workload and contents: one of the course I had taken needs students to have 16 lectures and 4 six-hour laboratory in 7 weeks. Furthermore, all the courses I attended are master level because most of the bachelor courses are taught in Swedish. The knowledge I learnt from the classes is more advanced than those at CityU.

Out of classroom

I went travelling around Europe during these five months. The most unforgettable trip was the hike to Trolltunga. Trolltunga means "Troll's Tongue". It is a cliff rock jutting out about 700 meters above Lake Ringedalsvatnet in Norway. It was a 22 km round trip by walking through slippery slopes and rocks, stepping in mud puddles, and it took me a total of 11 hours. Although the route was challenging and exhausting, it is definitely worthwhile for me to have experienced it! Apart from travelling, I also joined two hackathon in Sweden and in Finland. The one in Finland is Europe's largest hackathon. It is a place where I can meet the coolest developers and designers, letting go of my inhibitions and prompting me to create cool inspiring school projects related to Information Technology.

People I met

Although I chose a single room in student residence hall, I still had a chance to get to know my corridor-mates from around the world such as Africa, India, Germany, Mainland China, Italy and Slovenia as well as Sweden. We always had international food party like making pizza. Sometimes Slovenian girl made desserts for us. This was a fun experience to make friends in the kitchen.

In addition, I met people from Asia like Taiwan, Japan and Singapore as well as Hong Kong in school or during travelling, we talked about what we had experienced in European countries, exchanged our minds with each other. The funniest thing we did together was doing the Mannequin Challenge that people froze in motion while someone took a video of it.

In my last day in Sweden, I was so touched by my friends' big hugs and they saw me off at the airport. At that moment, I started to miss my five-month exchange life.

Promotion

It was not just the semester I have exchanged that made me more mature, the different cultures, experiences, beliefs, love and others have added much value in my life. For those who are planning to do exchange soon: You will not regret doing this because the exchange life will be with you forever!

Programming Clinic Scheme

Sharing on Programming Clinic as Tutor

WONG Chun Wai
BENG3-INFE, Yr 2

I am glad to be a tutor of Programming Clinic for recent two semesters. Being a tutor can definitely help students to solve their programming difficulties, and also enlightening my further understanding towards programming.

Programming Clinic runs from week 2 for every semester. At first, I wondered if any students would approach me in such an early time. There were and they told me that they were very worried of getting fail in programming course because some were retaking the course and some have no programming background. I encouraged them that they could pass the course if they kept this positive learning attitude. Finally, all my tutee got pass and they were satisfied with the result.

In my opinion, Programming Clinic is a wonderful scheme for students studying programming. Students can seek for assistance outside the lecture. This provides students with more opportunity to comprehend conceptual understanding via discussion with tutor. It is worth to mention that I also benefited from it because I reviewed almost all the teaching materials once again and this could consolidate my knowledge which I learnt before.

I strongly recommend students to have an appointment with Programming Clinic tutor if you have any questions in related courses. I am quite sure that you can get something that you want from the discussion with tutor.

Eyes' Opening through Interflow Tour to Taipei

LAI Wing Yan, William
BENG4-INFE, Year 3

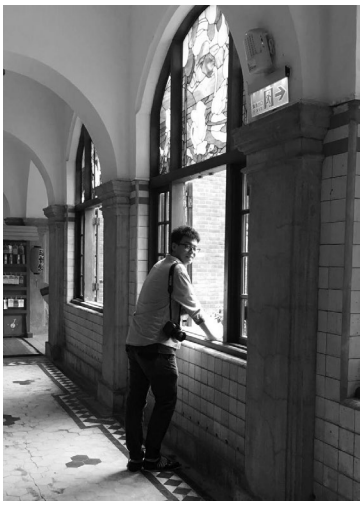
During 2 - 7 January 2017, ten EE Student Ambassadors had been to Taipei for an academic and cultural exchange program. We spent six days there to visit two well-known universities in electronic engineering field and many academic-related or sight-seeing spots.

I discovered the similarities and differences in electronic engineering between Hong Kong and Taiwan. For instance, on the second day, we visited the Taipower Exhibit Center in Northern Taiwan. The centre presented the details of how the electricity transfers across different parts of Taiwan and the difficulties arising from the geographic constraint. I observed that the way of transferring power is similar to that in Hong Kong. The most eye-catching exhibition in the museum is the detailed explanation of nuclear energy. The nuclear power plant in Hong Kong cannot be visited easily. It gave us an opportunity to discover the working principle of a nuclear generator.

We also visited the National Taiwan University of Science and Technology and the National Tsing Hua University. We had a great time with the undergraduates and professors there. I was delighted to discuss the learning culture with Taiwanese students. I found that most of them are top students and they paid extra effort in their studies. It inspired me to focus on my goal and always strive for excellence in learning.

Lastly, as a person in charge of the Interflow Tour, it is an unforgettable experience to me. It is my first time to organize an Interflow Tour. It was harder than I expected as there were many things to be prior planned and prepared. Moreover, I made some careless mistakes in the early stage. It is always important to admit errors, learn from them and correct them as soon as possible. I also learnt to be more detail-minded in planning an activity and acquired problem-solving skills for handling any unexpected problems or situations.

To sum up, it was a meaningful trip and encouraged me to improve myself. It is certainly an unforgettable memory in my university life.



Wonderful Interflow Tour in Taipei

YUEN Chung Yee, Pinkie
BENG4-ECE, Year 3

At the beginning, I asked myself a bucket of questions. What can I learn from this journey? What do I want to get out of it? Who do I want to become? From these six-day interflow tour, it seemed that I have found the answers. The experiences were all amazing and memorable and they also marked the end of being a student ambassador this year.

This year, we had chosen Taipei as the destination of the interflow tour because of its remarkable development and tremendous progress in boosting the electronic engineering industry. We hoped to explore the reasons of its fast development behind so that we could learn from them, share with all of you and turn Hong Kong into a better place by devoting our endeavor into this sector.

National Tsing Hua University (NTHU) and National Taipei University of Science and Technology (NTUST) were the two universities that we visited. The former one has distinguished programmes in science and engineering and the latter one is a leading technical institute under vocational education system. Unlike the traditional universities such as NTHU, the technical institutes like NTUST focus on teaching practical and specialized skills in engineering. Yet, the traditional one puts more emphasis on engineering theories. This is the merit of Taiwan's tertiary education system. Students can choose to specialize in acquiring theory-based knowledge or practical skills. These two training approaches contributed to the professional development of electronic engineering in Taiwan.

Other than visiting the universities in Taiwan, we visited Taipower Exhibit Centre in Northern Taiwan and Hsinchu Science Park (HSP) Link to taste the development of science and technology in Taiwan. Nuclear power has occupied a significant percentage of energy consumption and electricity generation in Taiwan. Also, in HSP Link, we have exposed to many innovative products like bluetooth speakers in better sound quality, monitors with multiple touches at the same time, etc. All these demonstrate the creativity of Taiwan people. Most importantly, Taiwan government placed much emphasis on the technology and is willing to invest on innovative technology. Though in recent years the Hong Kong government has started putting more emphasis on technology development, its development still lags behind that of Taiwan. The HSP Link was established since the 80s, while the Hong Kong Science and Technology Parks was established in 2001. Taiwan's success stories on technology development worth our attention.

We also visited major landmarks in Taipei, namely Chiang Kai-Shek Memorial Hall, National Palace Museum, Tamsui and Jiufen to know Taiwan from other perspectives. Seldom can we see the Palace, it is a valuable chance for us to visit the National Palace Museum. The exhibits there tell us the history of the Tsing Dynasty and how the Emperor and Queen lived so luxuriously. Also, we understood more the biography of Mr. Chiang and how he became the president of Taiwan at Chiang Kai-Shek Memorial Hall. In Tamsui and Jiufen, we knew about the life and culture of Taiwan by food tasting! When talking about these places, things popped up in my mind are those roasted sausages, duck tongues and souvenirs.

Last but not least, I have visited the night market during free time. The night market I visited is called Yonghe. The black pepper pork bun sold there is too wonderful to tourists. This is the place I recommend to all of you!

From this journey, I not only got the chance to expose to the development of electronic engineering in Taiwan, but also tasted the history and culture of Taiwan. I am so delighted to be the EE student ambassador and have joined this interflow tour.

Feeling Blissful on being a Mentee and a Mentor

SHCHERBAKOVA Monisha
BENG4-CDE, Yr 2

I remember when I knew there would be a mentor assigned to me before coming to CityU, I felt so blessed to have a senior figure assist me in getting to know the university because it may be daunting when living alone in a new country. My mentor helped me a lot such as study planning, registration and figuring out residence matters. A mentor also serves as a friend who is always there when you need him. Having a senior student to give you advice on handling the trials and tribulations of university life is important for a young freshman.

I knew immediately at the end of my first year that I wanted to be a mentor. I wanted to give my juniors the same experience that I had because I understood that timely help could change someone's outlook on university life for the better. My experience of being a mentor has been a very positive one. It has not only brought me closer to the freshmen, but it has strengthened my relationships with the people that work in the department. It has taught me the subtleties of interacting with international students and how to assist someone in need. Being a mentor is a responsibility that teaches you how to possess a good work ethic that can be applied to other spheres of life. It enhanced my sense of responsibility which drove me to work efficiently and be a more reliable person.

The fact that the Department works hard on building a welcoming environment for freshmen is what motivated me to serve the Department in all endeavours. It is the scheme like this one that inspires students to step out of their comfort zone and actively participate in serving and contributing to the Department.

Thanks to Student Mentoring Scheme

YOGISH Suhas
BDEE, Yr 1

Coming to CityU was one of the biggest decisions I have made in my life. Leaving home at the age of eighteen, moving to a new country was not something I had imagined myself doing. I was sure that life would become tough once I moved to Hong Kong. I was scared that I wouldn't fit in, that I would have trouble settling down, and have trouble with my courses, etc. I had imagined the worst of the worst situations to occur. But fortunately, I can say that I survived, and I haven't been happier than in the last two semesters, all thanks to the Student Mentoring Scheme.

My student mentor was Monisha Shcherbakova. Monisha is an extremely helpful and supportive person. Being an overseas student herself, she knew all the answers to the questions that I had. She helped me settle down in Hong Kong quickly and advised me about my coursework from time to time. She made sure that all the mentees could approach her if they had any sort of queries. Monisha fits perfectly into the role of a mentor and had done a good job. She inspired me to apply for the mentor role so that I may have a chance to do my part in helping my juniors and freshman adapt to the life in CityU.

Gaining Unexpected Learning Experience as a Tutee

CHU Tsz Kit, Bobby
BENG2-INFE, Yr 2

It has been a year after joining the Peer Tutoring Scheme. At first, I only treated it as an additional tutorial lesson where the teacher switches from professor or teaching assistant to senior undergraduate. I thought my tutor would only cover the teaching materials once again and, perhaps, give me some insights before midterms. Surprisingly, the things that I learnt from this scheme were not only confined to those lecture notes, but also to the way of studying as well as tips for the future career.

My tutor gave me a lot of insightful hints on studying my year-2 courses. He understood thoroughly about those obstacles that students would normally face, so he could directly show us the best route to overcome them. Taking studying EE2000 as an example, chapter 5 onwards about Flip-Flop circuits are particularly difficult in which many students taken this course before got lost. Consequently, tutor could show us an efficient way of understanding the concepts and I could learn faster after following his guidelines. The shared learning experience from tutor helped me a lot, at least getting a B+ in this course. Furthermore, my tutor was willing to give guidelines on other courses. I feel lucky to meet my tutor who spent more time on teaching me the concepts of EE2108 and I got an A+ in this course.

More importantly, my tutor and his friends who are also tutors shared with me the career paths in electronic engineering. This definitely broadened my horizons. Therefore, by joining the scheme, the one you meet is not simply a tutor, but more crucially a career mentor who may change your life.

More than I Expected from being a Tutor

MAN Ka Shing, Charles
BENG4-ECE, Yr 3

When I joined the Peer Tutoring Scheme, I expected that I could provide the best help to the tutees and make sure that they could learn more on electronic engineering. However, the reward from being a tutor is more than I expected.

I was very glad to meet with the tutees. The first tutorial conducted was mainly a unidirectional one. I could only see the tutees kept nodding their heads. At the end of the first tutorial, I left a message to them that they could raise some questions next time and I would try my best to help.

From the second tutorial, they tried to ask more and more questions. The learning atmosphere started to build up. We started to debate on some questions and ended up everyone learned more with happiness. Things became bidirectional and we even thought of some unexpected ideas that I never realize.

To sum up, my experience is that “I am being helped by helping a group of lovely tutees”. I believe that the Peer Tutoring Scheme is good to those who want to exchange ideas, revise the things they have learned and be an all-rounded person they have not even thought of.

Pushing Myself to be a Better One

SHI Jiawei, Leon
BENG4-ECE, Yr 4

When I decided to join the Peer Tutoring Scheme a year ago, I never thought that I can learn so many things from my tutees. As a tutor, it is more like a part-time internship for me to earn more working experience and money. However, just a very short time after kicking off the scheme, I realized that I was wrong. It is never just a campus internship for me until now.

I realized that it is not easy to be a professional tutor when comparing with being a student tutor assisting lecturers on teaching tutorials. The first difference is the scope of curriculum. In each meeting, tons of questions covering nearly all the courses required in year 2 were thrown to me, which I have never experienced when being a student tutor at tutorials. There is no doubt that it was not an easy task to review all the courses I have learned before. The second thing is the passion of tutees. I remember, one year ago, I mentioned in the interview that the most important thing for this job is enthusiasm. Out of my expectation, my tutees were curious and passionate toward what they were studying in. Frankly, I was tired of their questions sometimes but I could not stop finding solutions for them because their passion touched me and pushed me to do so.

All of my tutees are really hardworking students. Because of them, I must push myself to be a better one. I cannot have them disappointed or discouraged at my unprofessional performance. Many times, they trusted me and encouraged me even though I felt helpless toward some difficult problems. Gradually, a good fellowship has been built between a better me and the better them. I would like to say that what I have learnt from joining EE Peer Tutoring Scheme will be an irreplaceable experience in my life. I am glad to meet such a group of excellent “students” when being a first-time “teacher”.

It’s more than Just a Better Academic Result

Wong Shing Fung
BENG4-CDE, Year 2

At the start of this academic year, I joined the Peer Tutoring Scheme solely because I want to get a better academic result. However, after a year, I found that it actually helped me on both academic and non-academic side.

In terms of the academic side, the tutor is very helpful on boosting my grades in EE courses. The tutor could point out the key points and the difficult part of a course and focus on teaching us those parts. Also, sometimes it is more efficient and effective to learn from tutors than by asking professor questions because tutor would teach you from a student perspective. So joining the scheme can definitely boost the academic results.

In addition, you can make new friends with your tutor and other tutees, and exchange idea and information with them. For example, you can exchange information like which talk is useful and what GE course is good. Moreover, we could share feelings on studying which helped me release some studying pressure.

To conclude, the scheme is useful to help students in developing their different aspects.

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把握機遇

為了追尋夢想而開始創業(startup)的路? 事實並非這樣。我過往走過創業的路全是因緣際遇，全是得到家人、大學、企業及社會福利機構的支持。祖母獨自留在家中不慎跌倒，幸得保安發現，送院治療後已康復。此體驗讓我決心研究出「老人跌倒偵測系統」這個畢業習作，因此順利畢業的同時，本身有參與香港青年協會社會福利建設的我，在一次香港仔媒體中心M21的開站研討會中提出了我的畢業習作，隨即被採用於開站展覽之中。及後，此項目在社聯的年度科技產品發佈會上也得到熱烈的歡迎，收到不少來賓的提議，認為該產品在市場上仍未開賣，屬於創新項目，非常值得開發這門生意。可惜當時初出社會、住在狹房的我，為了生活，需要專注於日間的全職工作，無力發展這門生意。即使當時政府及其他機構有提供些許資助及貸款，但我對於維持當時的生活仍感乏力，因此最後未能落實發展這門生意。事已至此，所有的一切都是天意、因緣際會，順天而行也。盼望藉此分享，勉勵EE的同學們，盡量把握任何機遇，盡力而為，不論結果如何，過程中的體會與學習，也必非常受用。

Ms Crystal Leung (BEng EE, 2002; MScEIE 2009)

職場上扶搖直上的她

淺談畢業後的個人成長路

Crystal現任職一家業務分佈220個國家的跨國IT及通信服務供應商，負責亞太區業務拓展。同時兼顧事業家庭的她，於百忙中抽空回母校，走進講堂跟EE的同學分享她離開校園後，個人成長的體會與職場上的經驗，寄望同學們從中能有所啟發，成為有擔當的新一輩人才。筆者把握機會，單獨跟Crystal攀談30分鐘，以下是部分訪問內容。

問： *Idy Pang*

答： *Crystal Leung*

問： 畢業後你如何開始並發展你的事業？回望當年的你，在學校及剛畢業的時候，她是怎樣的一個年青人？

答： 回望當年，我來自普通家庭，跟一般年青人一樣，沒有什麼計劃，不太清楚世界正發生什麼事，亦沒有父蔭。畢業後的兩三年，只是傻頭傻腦的埋首工作，對自己的能力、優點缺點也沒有特別留意。

不過幸運地，學習及發展的機會，在不知不覺間隨隨出現。早在第一份工作，我是好幾個香港初級工程師中的其中一位，被公司Hutchison調派到英國實訓工作。那是我第一次踏足歐洲，到達不久後便發現自己對很多事情都缺乏基本概念，很難為情，於是馬上加多留意並改善。

問： 是哪一方面的基本概念？

答： 令人貽笑大方的並不是硬技術coding等在學校內學到的知識的缺乏，而是對一些社交應對及基本餐桌禮儀的無知。其實這些看來與能力毫無關系的東西是common sense，在職場上很重要，有時候甚至比硬知識更關鍵，但部分剛畢業的人往往不以為然。事實上這方面很受制於個人的見識眼界，並不是從書本上學校裡直接學到的。

問： 那麼早便有機會到英國工作，並發現自己的不足，的確是難得的成長經歷。

答： 我們無辦法知道機會在什麼時候到訪。我覺得在讀書期間，培養個人正面的性格及良好工作態度、建立對人真誠、處事嚴謹等習慣十分重要。如果你平日的各方面都表現良好，主動學習並樂於解決問題，老闆便會在關鍵時刻自然想起你，你的機會便會出現。這並不是一時三刻能刻意裝出來的。

問： 你怎樣會從起初單專注於技術層面，慢慢轉到solution design、consulting、再發展到近年project management、business development的工作範疇？這是否在你的職涯規劃內預先所設定?

答： 簡單的說是命運，但其實事情是種出來。正如我剛才所說，事業的發展往往是平日的表現積累下來，在某些時刻公司有需要並想起你，機會便這樣出現。我是電子工程出身，畢業初期所擔任的位置是Technician、Engineer，繼而成為consultant，到後期擔任solution architect，全是專注於技術層面。直至當年我服務的公司Ericsson有新的技術開發，簽了好幾個日本客戶，我便被選派到日本兩年，負責那個新項目，這同時成為我工作上的一個突破點。這並不是我能預料到的，只是機會來的時候，你能否把握，能否做出適當的平衡併發揮你自己。

問： 你對我們的同學、初出茅廬的還有什麼其他建議？

答： 首先，應該盡力把hard skill方面學好，在自己的範疇內做到最好。因為科技變得很快，這一行變化很大。如果你自問本身不喜歡學習，不喜歡主動尋找進步的空間，很大可能你不太適合這一行，這是個基本條件。

同時，對人必須要好。重要的是必須懂得如何貢獻自己幫助別人，不會只著眼於個人的眼前利益，只考慮自己的好處。一個團體、一個社會裡的人會不會互相幫助，是一個齒輪關係。只有人們互相幫助，這個社會才會變得更好，最終大家都會有所獲益。比如說，今天我花時間跟我的師弟師妹分享經驗，如果能令他們他日更出色、更有成就，對我而言，我作為城大EE的一分子也有好處。如果我們幫助貧窮的人在社會的階梯更容易往上流，整體香港便會變得更美好更和諧，最終大家也有好處。同學們應該儘早便開始有這種想法、並賦予行動把它體現出來。

筆者感言：

一個人能在職場上扶搖直上，一定有原因。對於還未進入社會的同學來說，有可能不太明白Crystal認為重要的為什麼那麼重要。其實，Crystal正不經意間透露了能夠在職場上突圍而出，令機會不斷出現在自己身上的原因及個人特質。

**** Mathematical Amusement (No. 34) ****

1 = 1^{23456789}	51 = 1^{23} + 4 × 5 + 6 + 7 + 8 + 9
2 = 123 + 4 − 56 − 78 + 9	*52 = 1^{2} − 3 − 45 + 6 − 7 + 89*
3 = 123 − 45 − 6 − 78 + 9	53 = 12 × 3 + 4 × 5 + 6 + 7 + 8 + 9
4 = 12 − 34 − 56 − 7 + 89	54 = 12 + 3 + 4 + 5 + 6 + 7 + 8 + 9
5 = 12 − 34 + 5 − 67 + 89	55 = 1 × 2 + 3 + 4 × 5 + 6 + 7 + 8 + 9
6 = 12 + 34 + 56 − 7 − 89	56 = 1 + 2 + 3 + 4 × 5 + 6 + 7 + 8 + 9
7 = 1 + 23 − 4 + 56 − 78 + 9	57 = 1 + 2 × 3 + 4 × 5 + 6 + 7 + 8 + 9
8 = 1 − 23 − 45 + 6 + 78 − 9	58 = 1 × 2^{3} + 4 × 5 + 6 + 7 + 8 + 9
9 = 1^{2345678} × 9	59 = 1 × 2 × 3 × 4 + 5 + 6 + 7 + 8 + 9
10 = 1^{2345678} + 9	60 = 1 + 2 × 3 × 4 + 5 + 6 + 7 + 8 + 9
11 = 1 + 23 + 4 + 5 + 67 − 89	61 = 1^{2} × 3 + 4 + 5 × 6 + 7 + 8 + 9
12 = 123 + 45 − 67 − 89	62 = 1 × 23 + 4 + 5 + 6 + 7 + 8 + 9
13 = 1 − 23 + 4 − 56 + 78 + 9	63 = 1 + 23 + 4 + 5 + 6 + 7 + 8 + 9
14 = 12 − 3 − 45 + 67 − 8 − 9	64 = 1 + 2 + 3 + 4 + 5 × 6 + 7 + 8 + 9
15 = 123 − 45 + 6 − 78 + 9	65 = 12 + 3 + 4 × 5 + 6 + 7 + 8 + 9
16 = 1 − 2 + 34 + 5 + 67 − 89	66 = 1 × 2^{3} + 4 + 5 × 6 + 7 + 8 + 9
17 = 1^{234567} × 8 + 9	67 = 1 + 2^{3} + 4 + 5 × 6 + 7 + 8 + 9
18 = 1^{234567} + 8 + 9	68 = 1 × 2 + 3 × 4 + 5 × 6 + 7 + 8 + 9
19 = 12 + 34 − 5 + 67 − 89	69 = 1 + 2 + 3 × 4 + 5 × 6 + 7 + 8 + 9
20 = 12 + 3 − 45 + 67 − 8 − 9	70 = 1^{2} + 34 + 5 + 6 + 7 + 8 + 9
21 = 1 − 23 − 45 + 6 − 7 + 89	71 = 1 × 2 + 34 + 5 + 6 + 7 + 8 + 9
22 = 1 − 23 + 4 − 56 + 7 + 89	72 = 1 + 2 + 34 + 5 + 6 + 7 + 8 + 9
23 = 1 + 2 − 3 + 45 + 67 − 89	73 = 12 + 3 + 4 + 5 × 6 + 7 + 8 + 9
24 = 1^{23456} × 7 + 8 + 9	74 = 1 + 2 + 3 + 4 + 5 + 6 × 7 + 8 + 9
25 = 1^{23456} + 7 + 8 + 9	75 = 12 × 3 + 4 + 5 + 6 + 7 + 8 + 9
26 = 12 − 3 + 4 − 56 + 78 − 9	76 = 1 × 2^{3} + 4 + 5 + 6 × 7 + 8 + 9
27 = 12 − 3 − 45 − 6 + 78 − 9	77 = 1^{2} + 3 × 4 + 5 + 6 × 7 + 8 + 9
28 = 12 + 3 − 4 − 5 − 67 + 89	78 = 12 + 3 × 4 + 5 × 6 + 7 + 8 + 9
29 = 12 + 34 + 5 + 67 − 89	79 = 1 + 2 + 3 × 4 + 5 + 6 × 7 + 8 + 9
30 = 1^{2345} × 6 + 7 + 8 + 9	80 = 1 × 2 + 3 + 45 + 6 + 7 + 8 + 9
31 = 1^{2345} + 6 + 7 + 8 + 9	81 = 1 + 2 + 3 + 45 + 6 + 7 + 8 + 9
32 = 12 − 3 + 45 + 67 − 89	82 = 1 + 2 × 3 + 45 + 6 + 7 + 8 + 9
33 = 12 + 34 + 56 − 78 + 9	83 = 12 + 3 + 4 + 5 + 6 × 7 + 8 + 9
34 = 123 + 4 − 5 − 6 + 7 − 89	84 = 1 × 2 + 3 + 4 × 5 + 6 × 7 + 8 + 9
35 = 1234 × 5 + 6 + 7 + 8 + 9	85 = 1 + 2 + 3 + 4 × 5 + 6 × 7 + 8 + 9
36 = 1234 + 5 + 6 + 7 + 8 + 9	86 = 1 + 2 + 3 + 4 + 5 + 6 + 7 × 8 + 9
37 = 1 + 23 − 4 − 5 − 67 + 89	87 = 1 + 2 × 3 + 4 + 5 + 6 + 7 × 8 + 9
38 = 12 + 3 + 45 + 67 − 89	88 = 12 + 3 × 4 + 5 + 6 × 7 + 8 + 9
39 = 123 × 4 + 5 + 6 + 7 + 8 + 9	89 = 1 × 2 + 3 + 4 + 56 + 7 + 8 + 9
40 = 123 + 4 + 5 + 6 + 7 + 8 + 9	90 = 12 + 3 + 45 + 6 + 7 + 8 + 9
41 = 12 − 34 − 5 + 67 − 8 + 9	91 = 1 + 2 + 34 + 5 × 6 + 7 + 8 + 9
42 = 1^{2} × 3 + 4 + 5 + 6 + 7 + 8 + 9	92 = 1 + 23 + 4 + 5 + 6 × 7 + 8 + 9
43 = 1^{2} + 3 + 4 + 5 + 6 + 7 + 8 + 9	93 = 1 + 2 + 3 × 4 × 5 + 6 + 7 + 8 + 9
44 = 1 × 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9	94 = 1 × 2 + 3 × 4 + 56 + 7 + 8 + 9
45 = 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9	95 = 12 + 3 + 4 + 5 + 6 + 7 × 8 + 9
46 = 1 + 2 × 3 + 4 + 5 + 6 + 7 + 8 + 9	96 = 1 × 2 + 3 + 4 × 5 + 6 + 7 × 8 + 9
47 = 1 × 2^{3} + 4 + 5 + 6 + 7 + 8 + 9	97 = 1 + 2 + 3 + 4 × 5 + 6 + 7 × 8 + 9
48 = 1 + 2^{3} + 4 + 5 + 6 + 7 + 8 + 9	98 = 1 × 23 + 45 + 6 + 7 + 8 + 9
49 = 1 × 2 + 3 × 4 + 5 + 6 + 7 + 8 + 9	99 = 1 + 2 + 3 + 4 + 5 + 67 + 8 + 9
50 = 1 + 2 + 3 × 4 + 5 + 6 + 7 + 8 + 9	100 = 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 × 9

Note: Believe it or not, this table can continuously go on, 101, 102, …… to number 11111 GRC ☺