



香港中文大學理學院
FACULTY OF SCIENCE
THE CHINESE UNIVERSITY OF HONG KONG

Department of Statistics

Newsletter

中大統訊

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Message from the Chairlady

Dear Alumni and Friends,

I am pleased to bring to you Issue 14 of the Department of Statistics Newsletter, which summarises the Department's events, activities and achievements since January 2019.

The Department was honoured to organise the 2019 NBER-NSF Time Series Conference, which was held at Yasumoto International Academic Park from 14 to 15 August 2019. This was only the second time that this conference had been held in Asia. We also worked alongside the Faculty of Science to co-organise lectures series in celebration of the 55th anniversary of The Chinese University of Hong Kong, inviting the distinguished speakers Prof Fan Jianqing and Prof David Siegmund to deliver talks. To enhance its research profile and facilitate the exchange of ideas, the Department regularly organises academic events, including international conferences, seminars and short courses. Information on past and future events of this kind is available on the Department website.

On 1 August 2019, Dr Ouyang Ming joined our department as a lecturer. He is an alumnus of the Department, having obtained his Ph.D. in Statistics here at The Chinese University of Hong Kong. To find out more about Dr Ouyang, please turn to page 2. Please join me in welcoming Dr Ouyang to the department and wishing him well in his new role.

Meanwhile, we bid farewell to Prof Cheung Siu Hung, who left the University in September 2019 after many years of exemplary service. I would like to take this opportunity on behalf of the Department to express my sincere gratitude and appreciation to Prof Cheung for his contributions to the Department and his dedication to teaching. We wish him all the best in his future endeavours.

With a view to the holistic development of students throughout their period of study, the Department offers a range of different activities, ranging from summer internships to exchange trips. Students are encouraged to take advantage of these opportunities to enrich their learning experience. You will read about the student activities in this newsletter.

I hope that you enjoy reading more about our department's activities over the past year in this newsletter. Thanks to your continuous support, I am certain that the Department is now entering another prosperous year.

Wishing you good health, happiness and success over the coming year and always.

Song Xinyuan
Chairlady

New Staff



Dr Ouyang Ming who is an outstanding alumnus of the department has joined the department as Lecturer since 1 August 2019. He obtained his B.Sc. in Statistics from Sun Yat-sen University and then received Ph.D. in Statistics in The Chinese University of Hong Kong.

Farewell

Members of the department hosted a gathering to bid farewell to Prof Cheung Siu Hung who left the University in September 2019 after years of exemplary services. We would like to express our gratitude for his dedication and sterling contribution to the department.



Faculty Exemplary Teaching Award 2018 and SCMP Young Post Interview

Dr John Alexander Wright was awarded the Faculty Exemplary Teaching Award 2018 in recognition of his excellence in teaching.

At the university's HK Scifest 2019, Dr Wright gave a lecture on "How to Win at Monopoly" and was interviewed by South China Morning Post (SCMP) Young Post. You may read the article at the following link:

<https://yp.scmp.com/news/features/article/113361/how-win-monopoly-using-power-maths>

Congratulations to Dr Wright!

Overseas Research Award for PhD Students

The recipients of the Overseas Research Award 2018-19 were Mr. Kang Kai and Miss Tang Wenlu. They undertook research at University of Michigan, U.S.A and Australian National University, Australia respectively.



Advancement

Prof Tony Sit has advanced to Associate Professor with effect from 2 January 2020.

Outstanding Fellow of the Faculty of Science

Prof Wong Hoi Ying has been appointed as Outstanding Fellow of the Faculty of Science on a concurrent basis with effect from 1 August 2019. The University will provide \$50,000/year to Prof Wong for 5 years to support his research activities.

Congratulations to Prof Wong!

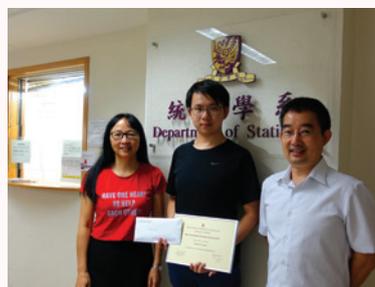
Early Career Award 2019/20

Prof Chan Kin Wai received Early Career Award 2019/20 from Research Grants Council. Among the 166 approved projects of the Early Career Scheme, seven projects were rated "outstanding" and also had their education plans rated "satisfactory". The Principal Investigators of these seven outstanding projects would receive "The Early Career Award 2019/20" and also additional funding for engaging in educational activities. The award presentation ceremony was held in November 2019.

Congratulations to Prof Chan!

Best Teaching Assistant Award 2018-19

Mr. Tsang Ka Ho and Mr. Xi Yiru were awarded the Best Teaching Assistant Award 2018-19 in recognition of their outstanding teaching duties. The prize presentation ceremony was held on 3 September 2019. Congratulations to Ka Ho and Yiru!



Name	Destination	Period	Total Award Amount (in HKD)
KANG, Kai	University of Michigan, USA	16 July 2019 to 15 October 2019	\$32,000
TANG, Wenlu	Australian National University, Australia	03 July 2019 to 03 September 2019	\$26,000



Recipients of Department of Statistics Scholarships

Name	Major / Year in 2018-19	Amount (HK\$)
GOH, Zi Xin	STAT/Yr 1	\$10,000
LAI, Tsz Chun	STAT/Yr 1	\$10,000
TEH, Xin Yi	STAT/Yr 1	\$10,000
TSE, Shun Chi	STAT/Yr 1	\$10,000
WANG, Luyang	STAT/Yr 1	\$10,000
WANG, Qingyang	STAT/Yr 1	\$10,000
WANG, Yingzhi	STAT/Yr 1	\$10,000
WONG, Wai Son	STAT/Yr 1	\$10,000
LEE, Chak Ming	RMSC/Yr 1	\$10,000
WONG, Yin Chi	RMSC/Yr 1	\$10,000
CONG, Qing	STAT/Yr 2	\$2,000
DENG, Rongchen	STAT/Yr 2	\$2,000
QIN, Ruiyang	STAT/Yr 2	\$2,000
YAO, Sicong	STAT/Yr 2	\$2,000
YU, Yangbo	STAT/Yr 2	\$2,000
ZHANG, Xindan	STAT/Yr 2	\$2,000
CHU, Kai Pan	RMSC/Yr 2	\$2,000
KONG Ching Ping	RMSC/Yr 2	\$2,000
LEE, Tsz Lok	RMSC/Yr 2	\$2,000
YEUNG, Kin Tung	RMSC/Yr 2	\$2,000
CHEN, Anni	STAT/Yr 3	\$2,000
HO, Sing Ying Janice	STAT/Yr 3	\$2,000
KUOK, Chio Ieng	STAT/Yr 3	\$2,000
LI, Junyao	STAT/Yr 3	\$2,000
MO, Man Kit	STAT/Yr 3	\$2,000
SONG, Ziwei	STAT/Yr 3	\$2,000
CHAN, Uriel	RMSC/Yr 3	\$2,000
CHEN, Chuyang	RMSC/Yr 3	\$2,000
HU, Yuhan	RMSC/Yr 3	\$2,000
HUANG, Jiayun	RMSC/Yr 3	\$2,000
FUNG, Wing Ngai	STAT/Yr 4	\$2,000
HUI, Wing Ki	STAT/Yr 4	\$2,000
LI, Jinzhao	STAT/Yr 4	\$2,000
TSE, Kwan Nok	STAT/Yr 4	\$2,000
FAN, Tze Ling	RMSC/Yr 4	\$2,000
HOU, Jing Wun	RMSC/Yr 4	\$2,000
LEUNG, Ching Fung	RMSC/Yr 4	\$2,000
KAM, Ling Fung	STAT/Yr 5	\$2,000
LEE, Chun Lung	STAT/Yr 5	\$2,000
LONG, Hou Tin	RMSC/Yr 5	\$2,000

Recipients of Undergraduate Student Overseas Exchange Sponsorship Scheme

Name	Major / Year in 2018-19	Host Institution
CHEN, Chuyang	RMSC/3	The University of Melbourne
FUNG, Chi In	STAT/4	Stellenbosch University International
HO, Sin Ying Janice	STAT/3	University of Glasgow
IP, Shing Fung	STAT/5	Shanghai Jiao Tong University
KOO, Chung Tin	RMSC/2	McGill University
KWOK, Tsz Chiu	QFRM/3	University of Toronto
LI, Jianliang	STAT/4	Graz University of Technology
POON, Ling	RMSC/4	Technical University of Denmark
QIN, Kequian	STAT/4	The University of Sydney
SONG, Ziwei	STAT/3	Technical University of Denmark
WANG, Dan	RMSC/3	Lund University
WUN, Tsz Chung	RMSC/4	RMIT University
YAU, Hoi Kei Christy	RMSC/3	University of Hawai'i at Manoa
YUEN, Chun Wing	STAT/4	Nanyang Technological University
ZHANG, Yufei	STAT/3	University of South Carolina

Recipients of Fan Fang Qi Yang Memorial Scholarship 2018/19

Name	Major / Year in 2018-19	Amount (HK\$)
LI, Weihao	STAT/Yr 4	\$5,000
KOO, Chung Tin	RMSC/Yr 3	\$5,000
LI, Zeheng	RMSC/Yr 3	\$5,000

Recipient of To Cho Fong Statistics Prize 2018/19

Name	Major / Year in 2018-19	Amount (HK\$)
LI, Weihao	STAT/Yr 3	2,800

Recipients of CUHK Statistics Alumni Scholarship 2018/19

Name	Major / Year in 2018-19	Amount (HK\$)
YI, Jianyue	STAT/Yr 1	\$10,000
TSE, Pui Shan Iris	RMSC/Yr 1	\$10,000
CHENG, Pok Him	QFRM/Yr 1	\$10,000
WANG, Chao	STAT/Yr 2	\$5,000
IAU, Ka Him	RMSC/Yr 3	\$5,000
LIU, Xu	QFRM/Yr 3	\$5,000

Conference Support to Postgraduate Students

Name	Conference Details
CHEN, Kexin	Quantitative Methods in Finance 2018 Conference during 11-14 Dec 2018
GAO, Lan	Workshop on "Stein's Method and Related Topics" during 8-11 Dec 2018
GU, Zhiling	Quantitative Methods in Finance 2018 Conference during 11-14 Dec 2018
KANG, Kai	Quantitative Methods in Finance 2018 Conference during 11-14 Dec 2018
LI, Chunxue	The 11th International Conference of the ERCIM WG on Computational and Methodological Statistics 2018 during 14-16 Dec 2018
LUO, Li	Workshop on "Stein's Method and Related Topics" during 8-11 Dec 2018
NG, Wai Leong	3rd International Conference on Econometrics and Statistics during 25-27 June 2019
SHI, Jiasheng	Workshop on "Stein's Method and Related Topics" during 8-11 Dec 2018 The 11th International Conference of the ERCIM WG on Computational and Methodological Statistics 2018 during 14-16 Dec 2018
WANG, Xiaoqing	23rd International Conference on Computational Statistics during 28-31 Aug 2018
YAN, Tingjin	Quantitative Methods in Finance 2018 Conference during 11-14 Dec 2018 2019 SIAM Conference on Financial Mathematics & Engineering during 4-7 June 2019 3rd International Conference on Econometrics and Statistics during 25-27 June 2019
YUAN, Gan	Michigan State Symposium on Mathematical Statistics and Application during 14-16 Sep 2018

Department Activities

Exchange Trip to Zhejiang University, Hangzhou

To help us in offering a diverse and rewarding learning experience to students, the Department has established a short-term exchange programme with the School of Mathematical Sciences at Zhejiang University (ZJU). Prof Phillip Yam and Prof Wei Yingying accompanied 14 undergraduate students and 2 postgraduate students on a visit to Zhejiang University from 22 to 26 May 2019.

During the welcoming ceremony, representatives from the two universities gave an overview of their respective departments. A student sharing session was then held to introduce students to the study environment for life and learning in ZJU.

The students then enjoyed a campus tour, attended classes offered by the School of Mathematical Sciences and gave presentations to ZJU students on life at CUHK, discussing their internship experiences, research projects and other learning activities.

Hangzhou is well-known for its natural beauty and historical and cultural heritage. The group therefore seized the chance to visit popular tourist attractions such as West Lake and Qiantang River and to taste the local cuisine before their return to Hong Kong.

Our teaching staff and students had a memorable time and sincerely appreciate the hospitality of Zhejiang University and the effort that was put forth by the hosts to ensure that the trip was valuable and rewarding.



Student Experiences



CHAN, Hiu Yu
STAT (Year 3)

I would like to take this opportunity to thank the Statistics Department for the opportunity to join the exchange trip to Zhejiang University in Hangzhou. I felt honoured to represent CUHK, and the trip is sure to be one of the most memorable experiences of my university life.

During the few days of our visit, I discovered some differences between CUHK and Zhejiang University. Before visiting Zhejiang University, I had considered CUHK to be a large university, given that it is the biggest university in Hong Kong. I discovered, however, that Zhejiang University is much bigger. It covers an area that is about three times larger than CUHK and has seven campuses spread over different districts. Travelling from one campus to another can take twenty or thirty minutes. Teaching and learning are different too. The classrooms are smaller and hold fewer students, which reminded me of secondary schools in Hong Kong. Moreover, they used Putonghua as the teaching language in the classes we visited, whereas English is used in most of the lectures at CUHK.

We also took the opportunity to visit some famous tourist attractions, taste some local food and try out some entertaining local activities. The five days of this trip were definitely precious and enjoyable for me.



CHAN, Uriel
RMSC (Year 3)

The Department of Statistics at CUHK organised an exchange trip to Zhejiang University (ZJU) from the 22nd to the 26th of May, 2019. The trip was inspiring and has broadened my horizons.

During the first three days, we had the chance to walk around the campus and to meet students from the Mathematical Science Department of the university. The ZJU students were enthusiastic in welcoming us on our arrival, and they guided us around the university campus. The campus is very large, and the buildings are designed in a style that is very different from those in Hong Kong. I noticed some unexpected similarities between CUHK and ZJU as well, such as their students gathering together to dance in the plaza (which reminded me of the activities for promoting CUHK societies) and the greenness of the campus.

The most rewarding aspect of the visit for me was interacting with the professors and other students on the trip. Even though we are in the same department and sometimes attend the same courses, I have barely had a chance to get to know many of them. The exchange trip brought us all together to eat, work, go sightseeing and even share a karaoke night, and it made us feel like part of a big family.



JIN, Manting
QFRM (Year 2)

Hangzhou is an internationally famous city with a picturesque landscape and a status as an Electronic Commerce Centre, and Zhejiang University is one of the top academies for higher education in mainland China. I am very pleased to have had the chance to participate in the exchange trip to Zhejiang University and to have been given such a great view of Hangzhou.

During the first two days in Hangzhou, I gained a deeper insight into Zhejiang University through campus visits and listening to academic talks and to local students sharing their experiences. I was even able to experience a class just as if I was enrolled in the university. The courses begin at 8:00am, which is earlier than CUHK, and it is hard to find a seat in the front of the classroom if you do not arrive early.

I found that the students there attach great importance to academic study. Some of them study the postgraduate course by themselves, and they will organise regular seminars to discuss a book or paper they are reading. I was really impressed by the learning atmosphere at ZJU, especially when I saw a group of students going to the study room together in the evening.



Zhejiang University – The Chinese University Statistics Student Interflow Programme

A group of 18 staff and students from Zhejiang University visited the department from 7 to 13 April 2019. In the welcoming session, Chairlady Prof Song Xinyuan delivered a welcome speech and introduced the Department. The visitors were then invited to audit classes and attended a student sharing session to exchange their learning experiences with our undergraduate and postgraduate students.



Interactive Activity for Teachers and Postgraduate Students

Autumn is a pleasant season for outdoor activities. Around 40 teaching staff and research postgraduate students went on a hiking trip together at Shing Mun Country Park on 10 November 2018, and afterwards, they enjoy a seafood dinner in Tai Po. The hike helped to build a positive relationship between teachers and students and provided an opportunity for them to relieve the pressures of school.



MSc Annual Dinner

M.Sc. in Data Science and Business Statistics

The Annual Dinner for M.Sc. students in the Data Science and Business Statistics Programme was held at the Salisbury YMCA in Hong Kong on 4 May 2019. 70 guests, including students, alumni, staff and guest speakers, attended the annual dinner. Academic Excellent Awards were presented to the 7 graduates who had achieved the best academic performance.



M.Sc. Risk Management Science

The M.Sc. Risk Management Science held its Annual Dinner at the Salisbury YMCA in Hong Kong on 27 April 2019. The event was attended by 68 students, alumni, staff and guest speakers. Academic Excellence Awards were presented to the 8 graduates who had achieved the best academic performance.



Department Activities

2019 NBER-NSF Time Series Conference



The 2019 NBER-NSF Time Series Conference was held at Yasumoto International Academic Park on 14 and 15 August 2019. The event was co-organised by The National Bureau of Economic Research and National Science Foundation. Held annually since the early 1980s, the NBER-NSF Time Series Conference is a highly acclaimed event that brings together the foremost researchers in economics and statistics to exchange important ideas. This was only the second time that the conference had been held in Asia.

More than 65 scholars from local and overseas institutions participated in the conference, with 21 invited talks and 3 poster sessions covering state-of-the-art developments in financial and econometric time series. Professor Rocky Tuan, Vice-Chancellor of The Chinese University of Hong Kong (CUHK), officiated the opening ceremony and delivered a welcome speech to participants from all over the world.

Invited Talks



Representation of I(1) And I(2) Autoregressive Hilbertian Processes
Brendan Beare,
University of California, San Diego



Consistent Testing for Structural Changes in Time Series Models via Discrete Fourier Transform
Yongmiao Hong,
Cornell University



Boosting the Hodrick-Prescott Filter
Zhentao Shi,
The Chinese University of Hong Kong



Simple Estimators for Higher-Order Stochastic Volatility Models and Forecasting
Jean Marie Dufour,
McGill University



Sparse Causal Dynamic Linear Regression
Rui Huang,
University of Iowa



Statistical Inference for Preferential Attachment Networks
Samuel P. Wong,
The Chinese University of Hong Kong



Spatial Temporal Modeling of Rainfall Extremes
Katherine Ensor,
Rice University



On Model Selection for ARFIMA Processes without Constraints on Memory Parameters
Ching-Kang Ing,
National Tsing Hua University



Thousands of Alpha Tests
Dacheng Xiu,
University of Chicago



Testing for Intensity Jumps Conditional on Information Arrivals
Deniz Erdemlioglu,
IESEG School of Management



Automated Estimation of Heavy-Tailed Vector Error Correction Models
Shiqing Ling,
Hong Kong University of Science and Technology



Estimation of Weak Factor Models
Takashi Yamagata,
Osaka University/University of York



Semi-Parametric Estimation of Multivariate Possibly Non-Causal and Possibly Non Invertible Time Series Models
Bernd Funovits,
University of Helsinki



Semiparametric Modeling of Multiple Quantiles
Alessandra Luati,
University of Bologna



Optimal Estimation for Change-Point in Time Series
Chun Yip Yau,
The Chinese University of Hong Kong



Time Series Analysis with Unsupervised Learning
Meihui Guo,
National Sun Yat-sen University



A Nonparametric Dynamic Causal Model for Macroeconometrics
Ashesh Rambachan,
Harvard University



Cointegration Rank Estimation for High-dimensional Time Series with Breaks
Rongmao Zhang,
Zhejiang University



Asymptotic Properties of Mildly Explosive Processes with Locally Stationary Disturbance
Junichi Hirukawa,
Niigata University



When the Going Gets Tough: Extreme Overdispersion and Persistence in Time Series of Counts
Paolo Santu,
LUISS University and CREATES



Testing and Modelling for The Structural Change in Matrix Time Series
Ke Zhu,
The University of Hong Kong



Science Faculty Lecture Series 2018-19

In celebration of the 55th anniversary of The Chinese University of Hong Kong, a lecture series was organized by the Department in conjunction with the Faculty of Science. Renowned scholars Prof Fan Jianqing and Prof David Siegmund were invited to present their current research in Statistics.

Prof Fan Jianqing delivered a lecture entitled “Statistics: Genesis of Machine Learning and AI” on 29 March 2019, and Prof David Siegmund gave a presentation about “Change-point Detection: Past and Present” on 28 May 2019.



Distinguished Lectures and Seminars in 2019

The Department organised a number of seminars and distinguished lectures in 2019. The list of distinguished lectures given in 2019 is provided below. Please also visit our website for information in past events conducted by the Department.



18 January 2019
MCMC with Sequential State Substitutions: Time Series
Prof Tze Leung LAI



26 March 2019
Multiplier Processes in Statistics: a new multiplier inequality and implications
Prof Jon A. WELLNER



8 March 2019
Low Rank Tensor Methods in High Dimensional Data Analysis
Prof Ming YUAN



18 April 2019
Impacts of Biostatistics on Advancing Human Health in the 20th Century: My Personal View
Prof Kung-Yee LIANG

Global Young Scientists Summit 2019

SHI, Jiasheng

PhD in Statistics

It was my honour to attend the Global Young Scientists Summit 2019 (GYSS) in Singapore. The 2019 GYSS was held at Nanyang Technology University, which is recognised as one of the world's best universities for scientific research. At the Summit, I had the precious opportunity to listen to talks given by Nobel Prize winners and Fields Medallists. The Summit consisted of three parts: plenary lectures, panel discussions and small group sessions.

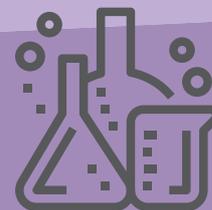


Sixteen distinguished scientists and researchers gave inspiring lectures to this year's Summit covering a broad range of scientific fields from chemistry, medicine, physics, mathematics and computer science, and speaking of life-enhancing technological innovations. However, the talk that was of the greatest interest to me was that given by Barry Barish, the 2017 Nobel Prize winner in Physics. He gave a fascinating narrative, explaining and demonstrating the significance of his observation of a collision of two black holes, an event that happened over a billion years ago. His work at the Laser Interferometer Gravitational-Wave Observatory (LIGO) thrilled the whole world, as it helped in the understanding of Einstein's theory of general relativity a century after the theory was presented. The talk revealed how scientific research, even for this great and successful scientist, was hard daily work following a dimly lit path. One must be able to suffer the disappointments emerging from every trial before they see a slight chance of working something out. It is the most difficult path for anyone to follow, but also the most meaningful.

Another talk that impressed me was that given by Efim Zelmanov, winner of the Fields medal, who talked about the beauty and art of mathematics. He said, "Mathematics is an elitist art, yet is the best supported art." The beauty of mathematics is in the simplicity of a complicated and deep proof, exemplified by the Fermat problem. Beauty comes from unexpected ideas or from generality when the same idea, sometimes in different forms, shows its relevance to different contexts. As a statistics major with research interests in probability theory, I felt the meaning of his words deeply and the philosophy of mathematics research and Zelmanov's ideas of what this art is all about resonated with me. From the most fundamental algebraic mathematics to elaborate mathematical physics models, a simple yet glorious equation can influence the everyday life of regular people, and the process of finding these simple truths hidden within massive and complicated mechanisms and models is an honourable and enjoyable journey for every mathematics researcher.

After the plenary lectures, I had a chance to interact with and hear various stories about the scientific journey of Professor Ada Yonath, the 2009 Nobel Prize winner in Chemistry. Professor Yonath shared her experience of winning the Nobel Prize and used her story of being ridiculed by other senior scientists to encourage us to always keep positive, stand our ground and have faith in our research. As she said, we should stop worrying about how to find a good problem and just hold on to our passion for what might seem like a trivial question.

I am grateful for this opportunity to attend the Global Young Scientists Summit 2019 and to make many new friends from other fields. I believe these interactions with scientists coming from different perspectives will help me to grow in my own research life. There is a theory that any two people in the world are only six handshakes apart, but it is much better to shake hands with other brilliant young scientists in person.



SONG, Fengda

PhD in Statistics

It is truly my honour to have been nominated by our department to attend the Global Young Scientists Summit (GYSS) 2019 at Nanyang Technological University (NTU) in Singapore. Attending the Summit exposed me to the frontiers of mathematics, physics, chemistry, biology and many other scientific fields. Many globally recognised scientific leaders, including recipients of the Nobel Prize, Fields Medal, Millennium Technology Prize and Turing Award, shared their experiences and important studies.

The first part of GYSS consisted of plenary lectures and panel discussions. Each speaker introduced the background and cutting-edge developments of their fields, and several speakers discussed important interdisciplinary topics, such as the future of medicine and healthcare.

Prof Ada Yonath was awarded the Nobel Prize in Chemistry for her contribution to mapping the ribosomal crystals. She recently found the potential binding sites of bacterial ribosomes. Her team was able to create new antibiotics targeting these binding sites to paralyse ribosomes and eliminate bacteria. Her main motivation for this work was to promote the development of antibiotics. Drug resistance to general antibiotics exists even in patients who have never used them, and this is reducing the ability of pharmaceutical companies to develop new antibiotics. Because the ribosome structure of a specific kind of bacteria is relatively stable, bacteria is generally sensitive to antibiotics that target its specific ribosome binding sites. Consequently, her discovery could reduce the risk of potential drug resistance and promote the invention of new antibiotics. I admired the fact that she extended her study of ribosome structure to the design of more effective antibiotics.



Prof Aaron Ciechanover, who won the Nobel Prize in Chemistry, told us that the next revolution of our lifetime should be drug discovery and biomedical research. He stated his support for the 4 Ps of medicine: personalised, predictive, preventive and participatory. Ciechanover told us of his belief that patients with a specific kind of cancer could be classified into several subgroups. Patients within the same subgroup experience similar treatment effects from a specific therapy, and those in different subgroups experience different effects from the same therapy. We can classify patients according to their genomics and epigenomics measurements. Ciechanover's speech inspired me to think about further partitioning patients with the same kind of cancer and searching for personalised therapies.



Besides plenary activities, the Summit included small group discussions that allowed us to talk face-to-face with international science and technology leaders. I attended Prof Ben Feringa's section, where he shared his ideas about ageing in scientific research. He noted that the average age of those receiving grants in the US had increased from 42 in 1980 to 53 in 2015. Meanwhile, young scientists are now required to spend much more time on education to find a position in a university. Thus, he would like to call on universities and journal committees to pay more attention to young scholars. In my opinion, although it is true that we are facing challenges as young scientists, the information age also provides us with unprecedented opportunities to easily access the latest research results and data.

In addition, I took part in social activities to experience the three major cultures in Singapore: Chinese, Malay and Indian. The tour guide introduced us to the origins of Singapore's multi-ethnicity. Singapore used to be an important commercial port from China to India. Businessmen who wanted to trade goods between China and India would have to spend several months waiting for the monsoon in Singapore. Instead, they directly traded in Singapore and only shipped goods between China or India and Singapore, saving time and half of the transportation costs. Finally, some of them settled in Singapore. At nightfall, we enjoyed the delights of the Food Street of Chinatown. As the Spring Festival was approaching, Chinatown was immersed in the atmosphere of Chinese New Year.

Last, but not least, I made friends with many other students from different majors, including physics, chemistry, medicine and engineering. They had come to the Summit from different universities in mainland China, Hong Kong and Taiwan. We walked around the campus of NTU and discussed our experiences of doctoral study, and have kept in touch after the Summit.

I sincerely appreciate the precious opportunity to take part in GYSS 2019, and I want to express my gratitude to our department for its recommendation and support.

Sharing from Awardees of Overseas Research Award for PhD Students



KANG, Kai

PhD in Statistics

University of Michigan, USA

Thanks to the Overseas Research Award supported by our department, I had the opportunity to visit the University of Michigan and work with Prof Peter X. K. Song of Biostatistics in the School of Public Health. Professor Peter X. K. Song is a statistician known throughout the world for developing novel statistical methods and insightful biostatistical applications. During my three-month visit, his professional expertise and suggestions were extremely valuable for my research.

Under the supervision of Professor Song, I conducted a new project on Bayesian causal mediation analysis with mixed type data. This work was motivated by a real-world medical application: the effects of exposure to a disease may be mediated by one or more factors. Because the exposure, mediators and outcome may be discrete and follow a non-normal distribution, it is of great importance to establish a general framework to permit mixed type data in the mediation analysis. We used a Gaussian copula model to consider the joint distribution of exposure, multiple mediators and the outcome, and we provided an efficient Bayesian estimation procedure for such a framework. This project was quite challenging, and I spent almost a month coding the parameter estimation. Hypothesis testing for the causal mediation effects proved even more difficult and was left for a follow-up proposal. It was very exciting to learn mediation analysis and the Gaussian copula, and I am certain that knowledge of these will be beneficial to my future academic work.



Every Monday, Professor Song's lab held a group meeting, at which a Ph.D. student or postdoc fellow presented on a specific topic each week. I enjoyed attending these meetings and picked up many insights on a variety of interesting topics. Their presentation skills and slide designs were also very impressive. One of the speakers even shared their experience of an internship at Google during summer vacation.

I want to express my sincere gratitude to Professor Peter X. K. Song for providing me with tremendous help over the three months of my visit, and to my supervisor, Professor Xinyuan Song, for her support and care while I was in the United States.

TANG, Wenlu

PhD in Statistics

Australian National University, Australia

Supported by the Overseas Research Award for Ph.D. students in Statistics, I visited Professor Yanrong Yang at Australian National University and Professor Jiti Gao at Monash University from 5 July to 7 September. It was a memorable experience for me to visit two of the world's top universities and learn from these outstanding scholars.

Australian National University is located in Canberra, the capital city of Australia. Unlike the modern cities of Sydney and Melbourne, with their skyscrapers and attractive harbours, Canberra is a fairly quiet and peaceful town. The university and parliament buildings make up the major part of the city. The environment is very pleasant, and you can often see swans in the lake and kangaroos in the bush. In this quiet city with few distractions, students study hard and scholars concentrate on their research. I enjoyed a productive two months at Australian National University.



I was very fortunate to be able to attend Professor Yang's group meeting every week. We discussed research topics on functional data applications and theoretical asymptotic results on panel data. Based on this shared information, we commenced a new research project on quantile estimation on functional panel data with an application for mortality data. Professor Yang introduced me to knowledge on functional data, panel data and leading-edge applications, building on my previous research experience. Quantile estimation can be applied to functional panel data to solve the problem of heterogeneity in practice. Professor Yang and the students in her group provided a great deal of guidance and references relating to problems like conducting FPCA on panel data and applying the two-step method to panel data. During my two-month visit, the simulation and real application phases of this project were completed. The simulation result indicated that this method was feasible for functional panel data estimation. Professor Jiti Gao gave me some guidance on the theoretical results during my visit to Monash University. Discussions with visiting scholars Prof Jianfeng Yao, Prof Qingliang Fan and Prof Pingshou Zhou in the weekly seminar also gave me tremendous inspiration for working on these complicated problems. Some of the asymptotic proof remains to be done with the guidance of my supervisor, Prof Lin, back in Hong Kong.

During my short trip to Monash University, Professor Jiti Gao met with me, and we had some research discussions. His group also showed me around the Monash campus and the city of Melbourne. I was quite impressed with the relaxed lifestyle in Melbourne, with people enjoying outdoor activities in their spare time. The students at Monash University are hardworking and enthusiastic about research. The ideas that they put forward in our discussions were very inspiring.

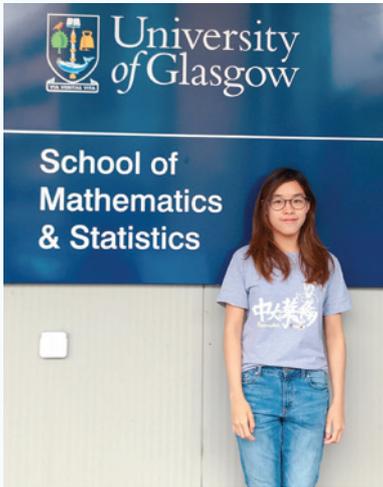
I am deeply grateful for my supervisor Prof Lin and my host supervisors Prof Yang and Prof Gao for their kindness and guidance. I also want to express my sincere thanks to the Department of Statistics for offering this valuable opportunity.



HO, Sin Ying Janice



BSc in Statistics
University of Glasgow, United Kingdom



Last semester, I joined a half-year study abroad programme to the University of Glasgow in Scotland. The overall exchange experience was memorable and valuable. Not only did I learn a lot from the courses, I also broadened my horizons by meeting people from all over the world and experiencing different cultures.

During the exchange period, I took five courses in total. Two of these were statistics courses, which I enjoyed the most. The professors always provided ample practical examples to help us comprehend abstract concepts and their applications in daily life. I enjoyed the fact that the courses and exams focused more on discussion and applications than on mathematical calculations and proofs. The focus on real situations instead of on memorising theories and formulas helped me to understand the mathematics thoroughly and more easily apply it. Apart from the excellent teaching methods, I appreciated the learning attitude of my classmates, who asked many interesting questions that inspired me to think more rather than simply focusing on the lecture notes. I am pleased to have studied these courses at the University of Glasgow, as they strengthened my statistical skills and reinvigorated my interest in Statistics.

This study abroad programme was not only a chance to learn about diverse foreign cultures, but also a time for me to learn more about my own. During the exchange, I had many opportunities to share with other students the history and politics of Hong Kong, which motivated me to do some research and gain a better understanding of my home city.

KOO, Chung Tin

BSc in Risk Management Science
McGill University, Canada

It has been a wonderful experience for me to participate in the exchange programme at McGill University. During my time at McGill, I participated in a range of exchange activities. During the first week after arrival, the University provided some orientation activities for exchange students. The most valuable of these was an orientation brunch, which offered a free meal and a great opportunity for exchange students to meet each other.

There were some courses at McGill University that I thought were valuable. I took a mathematical finance course during my studies. This course reviewed basic concepts of derivative pricing and then moved into an introduction to measure and probability theory, followed by some more advanced discrete and continuous time mathematical models with applications in option pricing. It was essentially an elementary version of the stochastic calculus course offered by the CUHK RMSC programme. I was able to pick up on some fundamental aspects of this topic that will benefit my studies in the future. I found that the way classes are run in McGill is quite different from CUHK. The professor did not upload any lecture notes to a learning platform. Instead, he wrote notes on the blackboard so that students could copy them. This is a major incentive for students to attend lessons, as catching up after missing a class would be difficult.



The exchange programme provided me with new goals and aspirations for my future. Spending a semester studying abroad was a precious opportunity to try something new and experience life outside of Hong Kong. I truly believe that one should treasure such opportunities to do something different.

KWOK, Tsz Chiu

BSc in Quantitative Finance and Risk Management Science
University of Toronto, Canada



I had a wonderful, fruitful and well-rounded learning experience at the University of Toronto, which adopts a completely different teaching style from what I am used to. The University of Toronto places a strong emphasis on self-learning, discussion and creativity, to which universities in Hong Kong pay less attention. The most memorable course I took was Futures and Options Market. In every class, we were given an opportunity to discuss interesting and up-to-date topics that the textbook did not cover, such as the appropriate discount rate for cryptocurrency futures. What is more, despite the fact that the course was offered by business school, we had a project on Machine Learning that required knowledge of statistics and programming, as the professor believed that Machine Learning would be widely adopted by financial institutions.

I was highly appreciative of the Undergraduate Student Overseas Exchange Sponsorship from the Department of Statistics. Because I grew up in an underprivileged family, the cost of going on an exchange would have been a heavy burden on my family. The sponsorship alleviated this financial burden. On behalf of my whole family, I would like to express my gratitude to the Department of Statistics for supporting my exchange education. The Department's generosity has inspired me to assist the needy and contribute to the community, and I hope I will be able to offer a helping hand to other students to accomplish their dreams in the future. Thank you again for your thoughtful and generous support.



POON, Ling

BSc in Risk Management Science
Danmarks Tekniske Universitet, Denmark

I am glad to have had the opportunity to attend Danmarks Tekniske Universitet (DTU) for a semester-long exchange, where I met people from diverse cultural backgrounds and gained knowledge about statistics and computer science from top-tier teachers.

Academically, during my exchange at Danmarks Tekniske Universitet, I focused on computer science and statistics courses on topics that are interesting to me and useful for my education, such as machine learning, discrete mathematics and software engineering. The teaching method at DTU is vastly different from that of the RMSC programme in CUHK. They emphasise and encourage co-operation and hands-on experience by placing a heavy focus on group work and projects. I found this teaching approach very effective.



The hall mates I lived with were also very friendly. We saw one another every day and therefore became very close. We exchanged information about the culture of our home countries, and I learnt a lot from them. Before going on the exchange, I had already set myself a mission to promote Hong Kong internationally. I told my hall mates stories about Hong Kong, introducing them to its culture and politics. I was pleased to find that they liked to listen to me talk about Hong Kong, and I came to know about their countries as well.

The exchange was very rewarding, and I would like to thank the Statistics Department for financially supporting the personal development of students by providing this scholarship.

QIN, Keqian

BSc in Statistics
University of Sydney, Australia



Last semester, I went on exchange to the University of Sydney under the Shaw College Exchange Programme. It was a very memorable and pleasant experience for me, and I greatly enjoyed my stay in Australia. This report gives a brief description of my academic and non-academic experiences during the exchange.

I took four courses at USYD, not all of which were related to my major: introductory logic, digital business innovation, probability and decision theory, and the Chinese language present and past. I was not able to take any courses from my major because it was the second semester there, during which there were only two statistics courses that I could choose from. Unfortunately, those two courses were very similar to courses I had already taken at CUHK. Therefore, I chose courses that I was interested in and was exposed to how the professors at USYD teach those courses from a lay perspective. The course I found most impressive was introductory logic. It is an introductory course in philosophy that I found very deep and interesting, and I obtained many fundamental concepts and practices for the proof of arguments from it.

The exchange experience has been of great benefit to me in many respects. I enjoyed the pleasant learning experience and developed my intellectual and personal strengths within a multi-national learning atmosphere. Communicating with people from different cultural backgrounds and with different ethical frameworks also helped me to adopt a more open-minded way of thinking. This is one of the biggest attractions of exchange programmes. I can now present my own views more effectively, and I have learnt how to reach a consensus with people whose perspectives may be very different from mine. Learning and living in a completely new environment has also enhanced my analytical, interpersonal, problem-solving and even cooking skills.



Census and Statistics Department +

In this internship programme, I was assigned to the Trade Statistics Branch (2), Electronic Trading and Manifests Services Section. This section mainly collects and analyses shipping data. Over the two months of the internship, I was basically responsible for three tasks. First, I researched and executed a text tokenisation algorithm used in Natural Language Processing, namely byte pair encoding. Second, I translated R code for text analytics (such as regular expressions and the tokenisation algorithm) into Python. Third, I performed quality assurance duties by testing a Python command-line program for text classification.

I initially struggled when I first encountered these tasks because I felt that I lacked the knowledge to complete them. Fortunately, my supervisor Sam was kind and patient and guided me to the right track. My coding skills greatly improved during the internship period. I was also exposed to a lot of deep learning code for Natural Language Processing and gained an idea of how such processing is performed, which increased my interest in this field.

I would also like to thank Professor Yau, who was kind and gave me some valuable advice on ways of learning. My task from him was to modify some LaTeX notes with a wide range of statistics material.

It was my pleasure to be a part of this internship programme. I would like to thank Sam, my supervisor in C&SD, and my supervisor Professor Yau, both of whom gave me many tips about learning and determining my plans for the future. After this internship programme, I have a clearer insight into what I want to do and what skills I need to work on to prepare for the future.



CHENG, Wing
BSc in Statistics



GUO, Erya
BSc in Statistics

During the internship period, I was assigned to the Science and Technology Section. This section is mainly responsible for collecting statistics that reflect public technology usage in Hong Kong and the status of innovation, which are essential factors in defining Hong Kong as a knowledge-based economy.

My first duty was assisting with the preparation of the latest issue of "Hong Kong as a Knowledge-based Economy". I presented different types of datasets using various means of data visualization to clarify the tendencies and comparisons. I also learned how to compile a statistical publication to make it both objective and comprehensible. The second task was more profound, as I was asked to review the Inland Tax Ordinance and reconcile research and development (R&D) statistics.

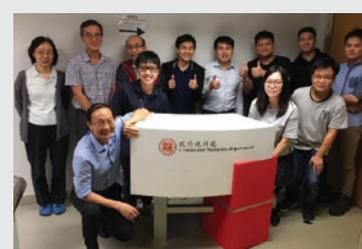
I also acquired a lot of knowledge from my supervisor at school, Professor WEI Yingying. Her current research field is image recognition and artificial intelligence (AI). This was the first time that I had stepped into the machine learning and AI area. I also optimised the web crawler for picture extraction from Google. That was a real challenge for me, but with my supervisor's instruction, I was put on the right track and eventually came up with the working code. This broadened my horizons and helped me to learn more about the mechanisms of machine learning.

The programme was a very nice change from the structure of a regular course. My supervisors and colleagues were patient and helpful, always willing to provide suggestions when I encountered obstacles. I built deep friendships with them over the course of the internship. To sum up, the Professional Attachment internship programme is definitely a valuable opportunity for students who would like to pursue further study in Statistics and related fields.

I am grateful to have had the chance to work in the Statistical Processing Systems Branch (SPSB) this summer. This section mainly develops software and IT systems for the Census and Statistics Department. I was responsible for three tasks: to construct an automatic address lookup programme using R, to build a user interface for R and to present the programme to users who seldom or never use R.

The first task was writing code to match some survey address inputs with records in a database. I did not encounter many problems with this task. Because some users are not familiar with R, I was asked to build a user interface for the R programme, which has a command-line interface. This was important because SPSB places user-friendliness as its top priority for all of the software development work that they do for C&SD. This second task presented the greatest difficulties for me. Fortunately, my supervisor was patient and gave me a lot of advice. He researched the problem extensively and suggested several libraries for me to try. Using these libraries, I successfully completed the task and presented the programme to colleagues.

The internship at C&SD gave me valuable work experience in the field of statistics. Through the internship, I was able to get a glimpse into the section's working routine and techniques, and I had the chance to apply the knowledge that I had learned in college. The experience of constructing and presenting an entire project is very different from that of learning in college, but my supervisor and colleagues were patient and gave me valuable suggestions when I ran into difficulties. The Professional Attachment internship is definitely a valuable experience for students.



HUNG, Fan Hin
BSc in Statistics

Census and Statistics Department

KUOK, Chio leng

BSc in Statistics

I am grateful to have been given the precious opportunity to work as an intern in the Census and Statistics Department. I was assigned to the Trade Analytics Section, which is mainly responsible for computing statistics for the merchandise trade. These figures are important indicators of the development of trade in Hong Kong.

My supervisor Ms Carly Yuk Ling Lai was very nice and introduced me to the project she was currently working on. The main task of the programme was to apply deep learning techniques to the classification of commodity codes with a commodity description. My exposure to this project was valuable because in running a neural network, there are stringent requirements on the size of the dataset and the amount of computational power. We were also assigned some desk research that enabled us to acquire knowledge about the conditions of merchandise trade in Hong Kong and how these statistics were being computed.

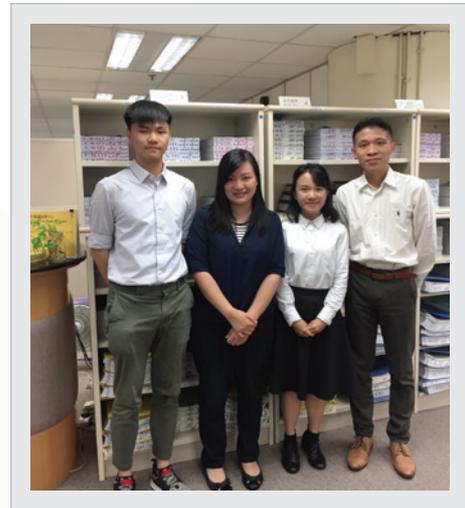
WONG, Man Him

BSc in Statistics

I am grateful to have had the opportunity to work in the Census and Statistics Department over the past two months. I was assigned to the Trade Analysis Section (2) of Trade Statistics Branch (1). This section mainly deals with external merchandise trade statistics but also conducts some customer opinion surveys.

The internship was comprehensive and gave me many new experiences. Because I was assigned to the trading branch, I gained a lot of knowledge about the trading system, not only in Hong Kong but also in its trading partners. From knowing how to complete the import/export declarations, classifying commodities by the Harmonized Commodity Description and Coding System (HS), and analysing the discrepancy of trading records, I have had a taste of what it is like to be a statistician.

This work experience gave me a taste of what the work of a real statistician is like, especially because the projects undertaken at C&SD are demanding and call for the application of statistical theories in real-world projects. This also taught me about the difficulties that can be encountered when handling data in large-scale projects. I would like to express my gratitude to both of my supervisors, Ms Lai and Professor Philip Yam, who provided much reading material for me to familiarise myself with neural networks for my work in C&SD. I believe that all of the things I learnt in the course of this internship will be useful in my future career.



I was honoured that my supervisors allowed me to investigate their applied model of text analytics, which is used for transforming the commodity descriptions on the Import/Export declarations to numeric vectors. From this I learnt some practical R computing techniques and some machine learning concepts.

Finally, thanks to the one-day course held by C&SD, I gained insight into the whole structure of the organisation. During this course, the instructors gave us brief but clear introductions to almost all of the branches of C&SD, and of the potential career paths and working conditions inside the Department.

Overall, the internship was interesting and fruitful, and I am thankful to the Statistics Department and C&SD for providing me with a wonderful experience.



Centre for Clinical Research and Biostatistics

CONG, Qing BSc in Statistics

Working at the CCRB for a two-month summer internship was a great experience. It is an honour to have had such a good opportunity to work with Professor Zee and the CCRB staff, who were all very willing to help me with my work.

During my internship, a study was conducted in which subjects had their retinal images taken and their health information collected to examine their lifestyles and analyse their risk of stroke. The main task I was assigned was to help in collecting first-hand data from these retinal images. To complete the task, I was asked to use a statistical application called ImageJ. It was my first time working on a real project, and it was not done well at first. However, Professor Zee kindly explained to me how to go about it. He also taught me the importance of communicating well with others, because knowing what your supervisor required was important, and your colleagues may also provide useful suggestions and support.

In school, we seldom have a chance to collect data ourselves, as the professor usually gives us a dataset on which to do the analysis. After going through this process, I now understand that data collection is an important part of analysis because the quality of the data we obtained would affect the result.

I am grateful for the valuable opportunity to work at the CCRB this summer. The people I met there were very nice and taught me many things that the textbooks cannot teach. I had a great experience in the CCRB's summer programme.



CUI, Tianye
BSc in Statistics

My first task at CCRB was to analyse data from a survey and write a report on it. After cleaning the data, I explored the meaning behind it using some statistical techniques. With some excellent assistance from the CCRB staff and some of my own study, I learned how to write a survey report.

The second task assigned to me was to analyse a more complicated dataset. At first, I felt stuck and spent a lot of time fumbling around. When I turned to Professor Zee for help, he taught me that I needed to look deep into the dataset and focus on understanding the data themselves rather than just thinking about using the knowledge I had learned at school. This was enlightening, as I realised that I did not even know anything about the data collection, which was an important part of the analysis. It was exciting to see the seemingly meaningless numbers becoming meaningful once they had been properly organised and interpreted.

It was a great pleasure to work at CCRB with Professor Zee and all of the kind staff there. Professor Zee not only taught me how to be a good statistician but also shed some light on my future career. The staff at CCRB were very nice and always willing to help. I greatly appreciate the opportunity our department provided for me to take up this internship because it will definitely prove helpful for my future.

New Media Group

This summer, I was pleased to have the opportunity to work as an intern in New Media Group. I was placed in the IT department, where my primary duty was to work with the customer database, performing clean-up, reconstruction, modelling analysis and other tasks. To help the sales department make marketing decisions and identify potential clients, I put ordinary databases through analysis modelling and calculated some values for them to use as a reference. This process required the use of some statistical techniques, thus matching what I had learned in college to the world of business practice. Furthermore, to help the sales department understand the analysis outcomes, I produced various dashboards to visualise the data. At the end of the internship, I did some research into the advertising algorithms of Facebook and Instagram. The information was not easily accessible, but I learned a considerable amount of specialised knowledge, and I hope that it will contribute at least a little to the team in their future work.

I was very fortunate to work with such a warm team. Although I was the youngest member and my Cantonese was not good at the beginning, they were always patient and looked after me. I will never forget the social activities, a happy hour, a colleague's birthday lunch and my farewell dinner, all of which helped me to see different possibilities in life through talking to my colleagues. I would especially like to thank my leader, who not only taught me professional skills for work, but also provided inspiration for my future career and life plans. It was a precious opportunity and an enlightening experience, and I greatly appreciate the efforts of Department of Statistics and New Media Group in making the internship possible.



MAO, Ruiqi
BSc in Risk Management Science

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CHENG, Tsun Him

BSc in Risk Management Science
PartnerRe Limited



PartnerRe Limited is a US-based reinsurance company that underwrites non-life reinsurance treaties with major insurance companies worldwide. As an intern on the actuarial team, I helped pricing actuaries based in the UK to price motor and liability treaties on a day-to-day basis. I was responsible for analysing reinsurance treaties and developing initial pricing results for the actuaries. I was also tasked with consistently monitoring and improving the

pricing models used for various treaties. As most of the pricing models were sophisticated statistical models, I was able to use the concepts taught in some of my statistics courses to improve them.

During this internship, I gained a broader understanding of how to model risk using statistical models. For example, some of the price reinsurance treaties I worked with had extra features that behaved just like options in finance, so I could apply the principles underlying financial options to the treaties. It was inspiring to see the link between derivative pricing and the reinsurance world. Various statistical techniques were used daily to update the existing pricing model, which was also a great opportunity for me to demonstrate what I had learned in lectures. Lastly, my day-to-day tasks relied heavily on efficient communication with UK-based actuaries, so it was essential for me to work well with colleagues from different cultures. There was also one Korean intern in the Hong Kong office. I am grateful to have had the opportunity to work in this multicultural environment.

LEUNG, Hoi Ching

BSc in Risk Management Science
HSBC Life

I worked in HSBC Life as a co-op student trainee for six months in the actuarial, risk and analytics department. I enjoyed being part of such a harmonious team and gained valuable experience.



My main task was to support scenario generation using Moody's Economic Scenario Generator. Although I had never used the relevant software before, the company provided solid training that enabled me to carry out my work smoothly. Thanks to the courses provided by CUHK for RMSC students, I had a good understanding of my work and the figures I was supposed to use for analysis. My background knowledge – from minor concepts such as different rates and their implications to major concepts such as the various assumptions made when simulating the distribution of a project – made me more confident in undertaking the multiple aspects of my work.

I also helped with financial reporting, which is related to business and does not involve complicated calculations. Again, the RMSC courses had provided me with relevant knowledge of basic economics and accounting. Therefore, I was able to identify the workings of spreadsheets in terms of accounting accuracy.

In sum, the internship gave me real-world work experience and equipped me with appropriate professional attitudes and communication skills. The RMSC Programme has provided me with knowledge relevant to my future career.

LEUNG, Chung Shun

BSc in Risk Management Science
LegendArb Financial Limited

Interning as a quantitative research analyst at LegendArb Financial Limited gave me a great opportunity to learn about finance and trading. Most importantly, I gained exposure to quantitative and algorithmic arbitrage trading. Throughout my time at the company, all of my colleagues, and especially my supervisor Mr Richard SHI, gave me a lot of support and guidance, which allowed me to learn and perform my tasks efficiently in a friendly working environment. They also gave me great insights into arbitrage trading.



I was assigned several tasks, such as data analysis, strategic trade research, algorithm improvement and database handling. I started by doing some paper-based research to gain inspiration for creating new trading strategies. Next, I began coding with Python to build and back-test an algorithm. Once a strategy has been shown to be profitable through a back-test and live simulation, it can be deployed in the real financial market.

During my five-month internship, I gained a lot of knowledge in several areas. In terms of data handling, I learned how to build a dataset for use when building or back-testing an algorithm, including ways of handling missing data. I also had the chance to apply my quantitative analysis and trading skills in real markets, such as using spreads or regression when viewing charts and hedging during trading. These fundamental trading techniques provide a basis for the more complicated trading techniques I will learn in the future.

In addition, I used several programming-related tools and languages during the internship. For example, Excel VBA, SQL, Python, C#, Tortoise and the Bloomberg Terminal enabled me to more effectively and efficiently build programming structures and analyse datasets in greater depth.

In sum, my internship at LegendArb was a fruitful experience. I learned a lot, and it gave me a good opportunity to apply in practice all of the knowledge I had gained at undergraduate level. It showed me that programming plays an important role in statistics, especially with the rise of big data and machine learning. Again, I am grateful to LegendArb and CUHK's Department of Statistics for this internship opportunity and all of their help and support.

