



ABCP
ASSOCIATION OF BRITISH
CHINESE PROFESSORS
全英华人教授协会

ABCP Online Research Training Summer School (ABCP-ORTSS) 2020

I. Organising Body

[ABCP \(Association of British Chinese Professors, 全英华人教授协会\)](#) is an independent and non-profitable association dedicated to increasing its members' impact and engaging academic collaborations, in particular collaborations between UK and China. ABCP members represent the highest calibre of Chinese academics in the UK higher education sector across many fields.

The missions of ABCP are:

1. to promote academic excellence in education, engineering, social and physical sciences, medicine and emerging areas;
2. to stimulate academic collaborations between members and beyond;
3. to develop and new talents and provide mentorship to young academics;
4. to promote Sino-UK communications and collaborations in a wide range of disciplines;
5. to provide expert advice to policy-makers both in the UK and China to advance bilateral relations for the benefits of peoples of both countries.

II. Programme Description

The **ABCP Online Research Training Summer School (ABCP-ORTSS)** programme will allow UG students from overseas universities to be trained by UK academics on how to conduct research. The programme will make participants more prepared for future applications for a **postgraduate research** degree (i.e., a **PhD** or a **research master's** degree) or their **future research career** in general (e.g., doing research in a company or a research institute).

The programme will see students working on **cutting-edge research projects** within a **small group** over the **summer** for **8 weeks**, supervised by a **senior academic** who has experience in successfully supervising PhD students at a UK university. **Research training seminars** will be arranged so that students can learn about different aspects of doing research in an international scientific environment like a UK university. They will then apply what they will have learned to the research project they will be working on with their supervisor, to gain **hands-on experiences**. Throughout the programme's duration, students will also be supported by a **peer researcher close to their stage**, i.e., a PhD student or a postdoctoral researcher who is working or recently worked at a UK university. At the end of the programme, students will be assessed by their supervisor and be awarded a **certificate issued by the ABCP**. Students will also have access to the following benefits after the end of the programme:

- the opportunity to get a **recommendation letter** from their supervisor,
- the opportunity to continue their research collaboration with their supervisor, eventually converting their work into (part of) a **co-authored research paper**, and
- the opportunity to pursue a **PhD degree in the UK** with their supervisor or other academics working at a UK university (e.g., via applying for **PhD studentships** made possible by the [China Scholarship Council](#) and/or UK universities, whose deadlines are normally in winter or spring).

In 2020 the summer school programme will involve the following **four academics** from the [University of Kent \(肯特大学\)](#) and **two subjects (Computer Science, Business and Management)**, with **8 proposed research projects**.

We expect that the programme will be extended to more subjects and more UK universities from 2021. After the COVID-19 pandemic is over, we will also consider running (part of) the summer school in the UK physically so that students will have a real-world experience of studying in the UK.

III. Academic Supervisors and Project Descriptions

Subject A. Computer Science

Supervisor A.1:

Prof Shujun Li (李树钧)

Director, [Kent Interdisciplinary Research Centre in Cyber Security \(KirCCS\)](#)

Professor of Cyber Security & Head of [Cyber Security Group](#), [School of Computing](#)

Canterbury Campus, University of Kent

Cornwallis South, Canterbury, Kent, CT2 7NF, UK

<http://www.hooklee.com/>

<https://www.cs.kent.ac.uk/~sl626>



Vice-President for Internal Communications & Public Relations

ABCP (Association of British Chinese Professors, 全英华人教授协会)

Westar House, 139-151 Marylebone Rd, London NW1 5QE, UK

Bio: Shujun Li is Professor of Cyber Security at the [School of Computing](#), University of Kent, since November 2017. He is directing the [Kent Interdisciplinary Research Centre in Cyber Security \(KirCCS\)](#), a UK government recognised Academic Centre of Excellence in Cyber Security Research (ACE-CSR). Before joining the University of Kent, he was a Deputy Director of the Surrey Centre for Cyber Security (SCCS) at the University of Surrey, UK, from 2014 to 2017. His research interests are mostly around interdisciplinary topics covering cyber security, digital forensics and cybercrime, human factors, multimedia computing, and practical applications of artificial intelligence and discrete optimization. Due to the interdisciplinary nature of his research, He is actively working with researchers from other disciplines such as Electronic Engineering, Psychology, Sociology, Law, and Business. He is currently leading two large research projects on human-centric approaches to cyber security and privacy. He has published over 100 peer-reviewed

research papers at international journals and conferences and received two Best Paper Awards. In 2012 he received an ISO/IEC Certificate of Appreciation, for being the lead editor of ISO/IEC 23001-4:2011 “Information technology – MPEG systems technologies – Part 4: Codec configuration representation”, the 2nd edition of the MPEG RVC (Reconfigurable Video Coding) standard. He is currently on the editorial boards of a number of international journals, and has been on the organising or technical program committees of over 100 international conferences and workshops. He is a Fellow of BCS, a Senior Member of IEEE, and a Member of ACM.

Requirements: For both projects below, the applicants are expected to have a sufficient level of programming skills (web programming, Android development, Python, Java, C/C++, etc.). A good understanding of related mathematical concepts. For the first project, past experience with empirical studies and statistical tests will be advantageous. For the second project, the applicants are required to be good at using different software libraries for multiple data analytics tasks.

Project A1.1: Human-centric cyber security and privacy

This topic broadly covers any cyber security and privacy topics having a strong human factor. Example topics include user authentication especially security and usability of textual and graphical passwords; privacy issues about mobile devices/apps, IoT, online social networks; online child protection and parental control of online systems; false information online; fraud detection; usability and accessibility of user interfaces of security systems; security visualization; CAPTCHA; data protection and privacy laws; human behaviours within and attacks on blockchain systems and cryptocurrencies; cyber security games; etc.

Project A1.2: Data driven analysis of user generated contents (UGCs) online

This topic broadly covers applications of data analytics (machine learning, data mining, information retrieval, information visualisation, etc.) to analyse human behaviours online (Internet, Web, online social networks, web forums, instant messaging platforms, P2P platforms, etc.). This can go beyond topics about cyber security, privacy, cybercrime, digital forensics and cyber threat intelligence, but on non-security topics such as emotion, personality, quality of user experience, digital life. In addition to textual analysis using natural language processing (NLP) tools, multimedia data especially semantic information embedded in digital images and videos are of particular interest.

Supervisor A.2:

Dr Caroline Li (李凌)

Deputy Director, Institute for Creative and Cultural Industries (ICCI)
Senior Lecturer (Associate Professor) & Director of Internationalisation,
School of Computing
Medway Campus, University of Kent, ME4 4AG, UK
<https://www.cs.kent.ac.uk/~cl339>



Bio: Dr Li has been leading the multidisciplinary BC² Lab focusing on understanding human health and wellbeing, developing advanced data analytics methods for domain-specific applications. She worked under large scale project including the £6 million EPSRC project “ESPRIT with Pervasive Sensing”. She also works closely with industry and organisations to deliver research impact, including winning of Samsung GRO Award, the DASA funding awards, EIRA funding supported by Research England, Charity funded project (i.e. the £1.3 million project

funded by the LifeArc). She is actively developing cutting-edge technologies in how human interact with the culture and creative domain. She won the British Council “Showcase Your Innovation” bid with the project of the brain composed modern art, Best Paper Award at the Flagship conference ICED 19 (International Conference on Engineering Design). Prior to joining the University of Kent, she gained her PhD and research experiences at the Dept of EEE and Dept of Computing at Imperial College London. She also worked at an investment bank (Goldman Sachs) and as a Manager at Forwessun Ltd. and set up the factory in Shanghai as the Asian Headquarter. She now serves at the editorial board of Brain Informatics and the secretary of IEEE Computing Society in UK and Ireland.

Requirements: For both projects below, the applicants are expected to have a sufficient level of programming skills and a good understanding of related mathematical concepts. Past experience with Python and statistics are advantageous.

Project A2.1: Can AI replace clinical doctors? Can AI help us to find treatment for Covid-19 or other disease? Exploring AI for clinical data analysis

We have seen an AI boost for clinical trials, to name a few: predictive models can be built with Deep Neural Network, Markov Models and etc. It is hypothesised that big data and artificial intelligence could help to accelerate clinical workflow. An interesting reading from Nature article by Marcus Woo can be found via this link: <https://www.nature.com/articles/d41586-019-02871-3>

In order to answer these questions, we will explore this topic and use data collected from a real clinical environment. It broadly covers a variety of data processing and machine learning methods (including AI) used in clinical settings. As part of the project, students will be expected to:

- * Familiarise themselves with the pipeline from formulating the research question, data curation, data pre-processing up to complicated machine learning models and model evaluation.
- * Familiarise themselves with some relevant existing work in statistics, AI and clinical data analysis.
- * Design, implement, test and evaluate models using appropriate methods.

Requirements: Good programming skills required. Knowledge in Python is a bonus. Ability to engage with clinical research preferred.

Project A2.2: Wearable devices, Human Machine Interaction and AI

Wearable sensors are becoming more and more popular and they are developed to measure heart rate, breathing frequency, brain and muscle signals. These can be used to control robots, just as you have seen in the film (The Matrix). For example, Myoelectric prostheses allow users to control a robotic device <https://www.nature.com/articles/s42256-019-0093-5>
“AI-powered shoes”: <https://techxplore.com/news/2020-03-ai-powered-secrets-sole.html>

In order to understand more about this topic, we will use data collected from a real world environment and explore a variety of Deep Neural Network models. Students will be expected to:

- * Familiarise themselves with wearable devices (such as muscle signals, ink-jet printed smart insoles) and models to understand the human physical state (i.e. hand gestures, gait patterns, and fatigue).

* Design, implement, test and evaluate models using appropriate methods.

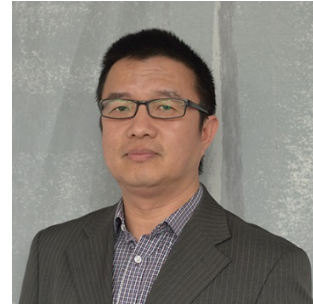
Requirements: Good programming skills required. Knowledge in Python is a bonus. Interest in wearable devices preferred.

Subject B. Business, Finance and Economics

Supervisor B.1:

Prof Shaomin (Simon) Wu (吴少敏)

Professor in Business/Applied Statistics, Kent Business School
Canterbury Campus, University of Kent
Sibson Building, Canterbury, Kent, CT2 7FS, UK
<https://www.kent.ac.uk/kent-business-school/people/899/www.kent.ac.uk/kent-business-school/people/899/wu-shaomin>



Bio: Shaomin Wu is Professor in Business/Applied Statistics, Kent Business School, University of Kent. currently Programme Director for the MSc Business Analytics and coordinates the Student Implant Scheme. He received his PhD and MSc in Applied Statistics. Shaomin has considerable experience in a range of research areas, including Applied Stochastic Processes, Business Data Analysis, Statistical Data Analysis, Data Mining, and Risk Management. Professor Wu serves on the editorial board of several journals, including IJSE Transactions, Reliability Engineering and System Safety, and IMA Journal of Management Mathematics. He has co-chaired 3 international conferences, has been invited to act as scientific committee members by more than 18 international conferences has edited 3 special issues, has been invited to review research proposals for four countries, and has published over 60 papers in academic journals. Professor Wu has also won research funding from the EPSRC as the PI and a Co-I, respectively. He is currently undertaking a research project funded by the ESRC as a co-investigator.

Requirements: Ideally, the applicant should be from a subject in mathematics, physics or computing. Social scientists will be considered as well if they have a good understanding of the techniques involved.

Project B1.1: Consumer credit risk analysis

Due to the advance of the e-finance technology, the consumer credit market is undergoing a pathbreaking revolution. Interesting research areas in this market include modelling consumer credit risk, monitoring customer performance, recognising behaviour patterns, and a wide spectrum of challenges. Statistical methods, machine learning including deep learning have been used. This project aims to gain an in-depth understanding of the state-of-the-art development in this area and propose potential research challenges. The project can be investigated from various perspectives, time series analysis, classification, cluster analysis, risk analysis, novelty detection, and resilience management, among others.

Project B1.2: Recurrent neural networks and counting processes

Recurrent neural networks (RNNs), including long short term memory in deep learning, has been used in many areas, in natural language processing, time series prediction, to name a few.

This project aims to investigate how the application of the RNN can be improved. You may be interested in exploring this project from the following perspectives:

- Change point detection (CPD) is the problem of finding abrupt changes in time series data. Real world examples include the sudden collapse of a bridge and the tipping point of a series of events.
- Many real world events reoccur over time. For example, a vehicle may fail for many times during its lifetime, a patient may visit his doctor repeatedly, etc. The number of occurrences of those events is an interesting research topic. Accurately estimating this number can provide useful information in decision making.

Supervisor B.2:

Dr Maggie (Jing) Zeng (曾菁)

Senior Lecturer (Associate Professor) in Entrepreneurship, Kent Business School

Canterbury Campus, University of Kent

Chipperfield Building, Canterbury, Kent, CT2 7PE, UK

<https://www.kent.ac.uk/kent-business-school/people/2554/zeng-maggie-jing>



Bio: Dr Maggie (Jing) Zeng is a Senior Lecturer at Kent Business School, University of Kent. She holds a PhD from the University of Newcastle. Her main research includes emerging strategies in platform economies, digital innovation and transformation, and ecosystem emergence. She has published in journals such as the *British Journal of Management*, *Strategic Organization*, *Industrial and Corporate Change*, *Information & Management*, *Management and Organization Review* and *International Business Review*.

Requirements: For both projects below, ideally, the applicants are expected to have a sufficient understanding of related business and management theories. However, students from different disciplinary backgrounds are also encouraged to apply if they show great interest in the topics.

Project B2.1: Nonlinear organizational change and routine

Organizations are constituted by the continual unfolding and repetitive routine of actions. Traditional routine literature tends to emphasize stability and nearly automatic repetition. Current organizations are characterized by complexity and continuous adaptation, rather than those characterized by traditional views of organizations as stable hierarchies. Such nonlinear and continuous changes raise questions around the applicability of our current understanding of routine. This topic explores how routines may accommodate continual and non-linear organizational change.

Project B2.2: The rise and fall of the sharing economy in China

The rapid development of the sharing economy globally has profoundly changed the way of production and life, the consumption concept, and employment modes. China's sharing economy has been leaping forward in recent years, reshaping China's consumption and economic patterns. While some sharing economy platforms are able to enjoy sustainable growth, others have gradually disappeared from the market. This topic investigates the rise and fall of the sharing economy phenomenon in China using relevant theoretical frameworks.

IV. COST

The cost of the programme is **£1550**.

V. How to Apply

In 2020, the programme is expected to last for **8 weeks**, starting on **Monday 20th July 2020** and end on **Friday 11th September 2020**.

UG students who are currently studying an **UG course in Year 2 or above** at a **non-UK university** are eligible to apply.

When applying for participating the programme, applicants should select an academic supervisor and express interests in one or two projects proposed by the supervisor. Applicants will be considered by the academic supervisor and an interview will be organised to decide if the application will be made an offer. Applicants who decide to take an offer should pay the fee before the start date of the programme. The maximum vacancies for each project is 4-5 students.

Interested students in China should contact the following person on how to apply to participate:

- Pei (Patch) Huang (黄佩): patch@behemon.com

Interested students from other countries should contact:

- Rong'e Wang (王荣娥): Ronge.Wang@abcp.org.uk