

# Symposium on Neural Engineering and Cognitive Rehabilitation

## 國際研討會：神經工程與認知復康

9 - 10 March, 2018



HK session  
香港會議



Macau session  
澳門會議

# **Symposium on Neural Engineering and Cognitive Rehabilitation**

March 9, 2018 (Friday)

09:30-13:00

Lecture Theatre 9, Yasumoto International Academic Park

The Chinese University of Hong Kong

Shatin, New Territories, Hong Kong

March 10, 2018 (Saturday)

13:30-17:00

Dr. Stanley Ho Medical Development Foundation

9/F, ICBC Tower, Macau Landmark, 555 Avenida da Amizade, Macau

Organized by

Brain and Mind Institute, The Chinese University of Hong Kong

Co-organized and Sponsored by

Dr. Stanley Ho Medical Development Foundation

## 國際研討會：神經工程與認知復康

2018年3月9日（星期五）

09:30-13:00

香港新界沙田香港中文大學康本國際學術園九號演講廳

2018年3月10日（星期六）

13:30-17:00

澳門友誼大馬路 555 號澳門置地廣場工銀(澳門)中心九樓

何鴻燊博士醫療拓展基金會

### 主辦

香港中文大學大腦與認知研究所

### 協辦及贊助

何鴻燊博士醫療拓展基金會

香港中文大學語言學及現代語言系

## Acknowledgements

### 致謝

The Brain and Mind Institute wishes to express its gratitude to the donor, **Dr. Stanley Ho Medical Development Foundation**, whose generosity helped make this Symposium possible.

香港中文大學大腦與認知研究所謹感謝何鴻燊博士醫療拓展基金會對此次研討會的慷慨資助。





It is the vision of the Brain and Mind Institute (BMI) at the Chinese University of Hong Kong (CUHK) to become a world-leading research institute that makes discoveries regarding the basic mechanisms of complex neurological conditions, with the ultimate goal of enhancing the treatment of these conditions using molecular, cellular, behavioral, and engineering therapies and solutions in order to optimize human development, enhance learning, and improve the quality of life.

In 2017, the Stanley Ho Developmental Cohort Study was officially launched, with the aims to strengthen clinicians' and scientists' ability to predict the trajectory of neurocognitive development from the earliest possible time and to identify developmental disorders before they even surface. Through the ability to make developmental predictions, we hope to be in a better position to plan effective educational and clinical interventions. In addition to research, BMI actively participates in public education. We seek to raise awareness of brain health and foster an understanding of neuroscience. We collaborate with elderly centers in the community to deliver messages about healthy living and stroke prevention. BMI also organizes events for high school students in order to enrich their knowledge and strengthen their understanding of neuroscience.

BMI will continue its research into the causes and therapeutic strategies for different developmental disorders. It wishes to bring the different disciplines and partners together to solve some very difficult problems in order to benefit children, learners, older adults, patients, and their families.

大腦與認知研究所(BMI)的願景是成為世界領先的研究機構，希望透過研究找出複雜神經系統疾病的基本機制，進而運用分子、細胞、行為和工程治療技術和解決方案來提升這些疾病的治療效果，以優化人類發展、增強學習，及提高生活質素。

BMI 在 2017 年正式展開「何鴻燊縱向發展研究」，旨在提升臨床醫生和科學家預測神經認知發展軌跡的能力，務求在發展障礙出現之前及早發現。我們亦希望準確的預測可帶來更有效的教育規劃和臨床介入措施。除致力投入科研外，公共教育亦是 BMI 活動中的一個重要範疇。我們積極提高公眾對大腦健康的認識及對神經科學的理解。我們與本地長者中心合作，宣傳健康生活和預防中風的資訊。BMI 亦為高中生舉辦參觀活動，以加深他們對神經科學的認識及理解。

未來，BMI 將繼續研究不同發展障礙的成因和治療方案。我們冀望與不同學科的夥伴合作，一起解決複雜的難題，令兒童、學生、長者、患者及其家人受惠。



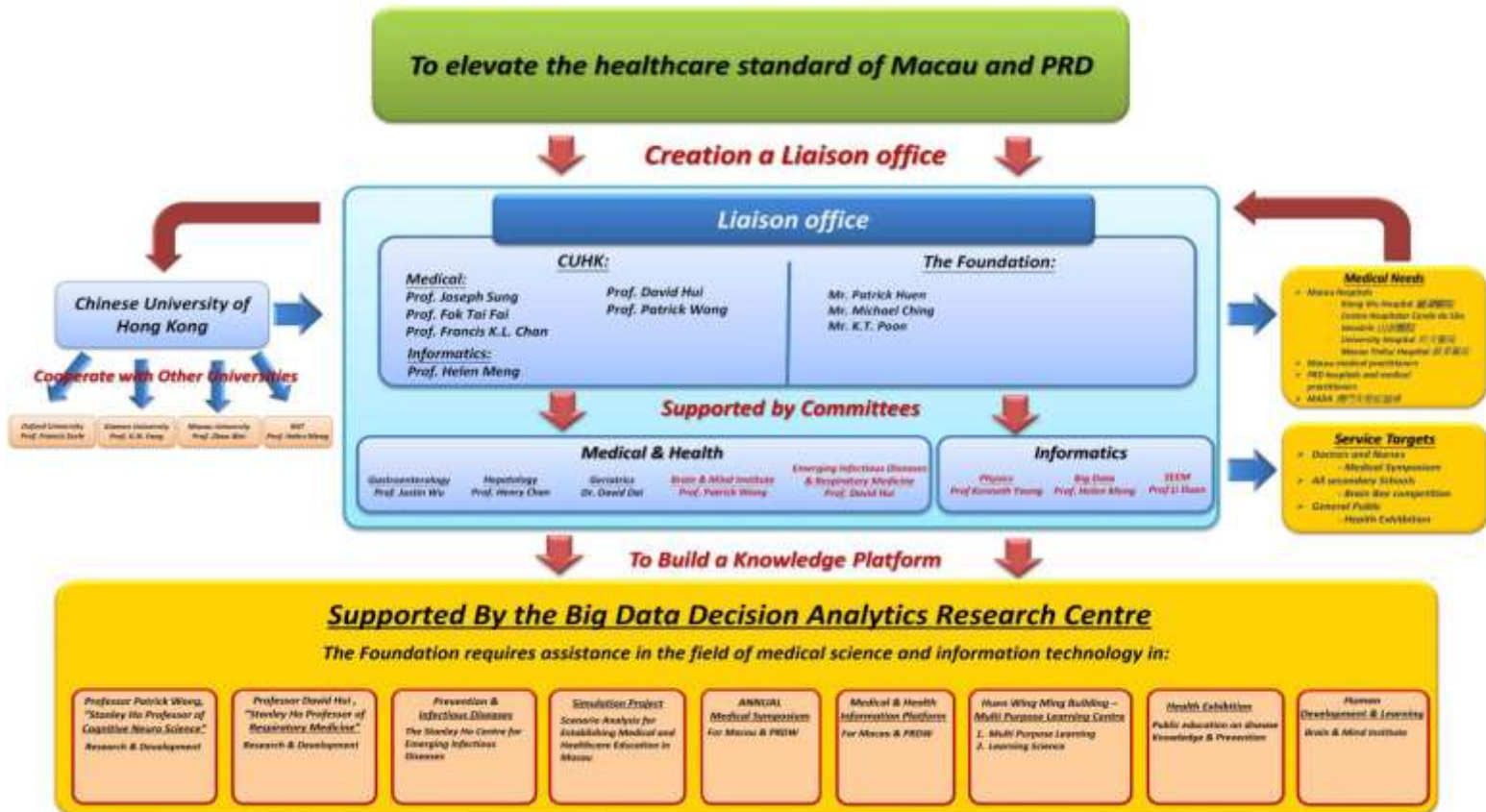
**Hong Kong Session 香港會議**

**March 9, 2018 (Friday) 二零一八年三月九日 (星期五)**

- 09:00 Registration / 入席登記
- 09:30 Opening Address / 開幕致辭
- 09:45 **Keynote Speech: The Biology of Cognitive Aging / 主題演講：認知老化生物學**  
Professor Joel Kramer  
Joel Kramer 教授
- 10:35 **Helping the Aging Brain Learn Better / 幫助衰老的大腦學習得更好**  
Professor Annabel Shen-Hsing Chen  
陳聖馨教授
- 11:10 Break Time / 休息時間
- 11:30 **Keynote Speech: Electromagnetic Imaging of Brain Oscillations during rest and during speech / 主題演講：靜息態及說話時的腦電波**  
Professor Srikantan Nagarajan  
Srikantan Nagarajan 教授
- 12:20 **Neuroplastic Changes in the Brain using Intention-driven Robotic Training in Stroke Rehabilitation / 以念力訓練大腦神經從而復健中風病人**  
Professor Raymond Tong  
湯啟宇教授

# Dr. Stanley Ho Medical Development Foundation

## 何鴻燊博士醫療拓展基金會 Development Plan 發展藍圖



In order to achieve the mission of **elevating the healthcare standard of Macau and the Pearl River Delta**, the Foundation aims to create a 'liaison office' to link up Macau with worldwide access points for knowledge and resource sharing.

We envision that the concept of creating this 'liaison office' can best be realized through a web-based digital platform. We are working closely with worldwide technological experts who will guide us through the process of selecting and building the most suitable data warehouse for medical practitioners and the general public to gain access to the most updated information efficiently.

為達成提升澳門和珠三角醫療水平的使命，基金會期望透過建立一個聯絡樞紐，把來自世界各地相關的知識和資源轉介給澳門。

要實現這個概念，最佳方法是建立一個網上數碼平台。我們正與全球頂尖的科技專家共同商討，挑選和構建最合適的數據庫，使澳門的醫護人員及市民大眾能快捷獲取醫療資訊。

## Macau Session 澳門會議

March 10, 2018 (Saturday) 二零一八年三月十日 (星期六)

- 13:00 Registration / 入席登記
- 13:30 Opening Address / 開幕致辭
- 13:40 Souvenir Presentation and Group Photos / 致送紀念品及大合照
- 13:50 **Keynote Speech: The Biology of Cognitive Aging / 主題演講：認知老化生物學**  
Professor Joel Kramer  
Joel Kramer 教授
- 14:35 **Helping the Aging Brain Learn Better / 幫助衰老的大腦學習得更好**  
Professor Annabel Shen-Hsing Chen  
陳聖馨教授
- 15:05 Break Time / 休息時間
- 15:25 **Electromagnetic Imaging of Brain Oscillations during rest and during speech / 主題演講：靜息態及說話時的腦電波**  
Professor Srikantan Nagarajan  
Srikantan Nagarajan 教授
- 16:10 **Neuroplastic Changes in the Brain using Intention-driven Robotic Training in Stroke Rehabilitation / 以念力訓練大腦神經從而復健中風病人**  
Professor Raymond Tong  
湯啟宇教授
- 16:40 **Concluding Discussion / 綜合座談**  
Professor Daisy Hung and Professor Ovid Tzeng  
洪蘭教授及曾志朗教授



## Introduction

Technological advances in brain imaging and machine learning have advanced to a point where it can provide concrete solutions to address issues related to age-typical cognitive decline and neurocognitive disorders across different populations. Brain imaging has been particularly helpful in identifying the sources of brain changes, which in turn can guide the designing of appropriate therapies. In this symposium, world renowned scientists and engineers will provide us with an overview of how brain imaging is used to study aging and how various rehabilitation strategies have been implemented to enhance brain health across populations.

## 引言

不同群體中都存在隨年齡增長而來的認知衰退及和神經認知障礙問題，而先進的大腦掃描和機器學習技術已經能夠為這些問題提供具體解決方案。大腦掃描技術能夠讓我們識別大腦變化的源頭，從而協助設計合適的治療方案。在是次研討會上，世界知名的科學家和工程師將雲集一堂，共同探討大腦掃描技術如何應用于高齡化研究，以及剖析不同群體的認知康復策略。

## Keynote Speakers 主題講者



Professor Joel Kramer  
University of California, San Francisco  
Joel Kramer 教授  
加州大學舊金山分校



Professor Srikantan Nagarajan  
University of California, San Francisco  
Srikantan Nagarajan 教授  
加州大學舊金山分校

## Invited Speakers 講者



Professor Annabel Shen-Hsing Chen  
Nanyang Technological University  
陳聖馨教授  
南洋理工大學



Professor Raymond Tong  
The Chinese University of Hong Kong  
湯啟宇教授  
香港中文大學

## Special Guests 特邀嘉賓



Professor Daisy Hung  
National Central University  
洪蘭教授  
國立中央大學



Professor Ovid Tzeng  
Academia Sinica  
曾志朗教授  
中央研究院

## **Keynote Speech: The Biology of Cognitive Aging**

**Professor Joel Kramer**

**主題演講：認知老化生物學**

**Joel Kramer 教授**

### **Abstract**

There are over 1 million people in Hong Kong over the age of 65, and this number will only grow as our population ages. This shift in demographic increases the number of older individuals with cognitive impairment, highlighting the need for cognitive rehabilitation and the use of technology to improve patient care and optimize daily functioning. In this presentation, I will review the types of cognitive changes associated with aging and age-related conditions like cerebrovascular disease, neurodegenerative disease, and chronic inflammation. There will be an emphasis on the range of cognitive-aging trajectories, including data suggesting that there is a subset of super-agers who maintain high levels of cognitive performance across many years. I will also discuss several different biological influences on brain aging, including genetics and lifestyle.

### **摘要**

全港有逾一百萬人超過 65 歲，而隨着人口不斷老化，這個數目將有增無減。伴隨着人口結構的轉變，患上認知障礙症的老年人數目會增加，凸顯出認知復康和通過科技來優化病人護理和日常功能的需求上升。在這個演講，我會探討與衰老有關的認知轉變如腦血管疾病、神經退化性疾病和慢性炎症。內容會強調認知老化軌跡的不同幅度，通過數據展示有部分能多年來維持高認知水平的「超級老人」。我也會討論幾種會影響大腦衰老過程的生物因素，包括遺傳學和生活方式。



Prof. Joel Kramer  
Joel Kramer 教授

## Biography

Dr. Kramer is a Professor of Neuropsychology in Neurology and the Director of the Memory and Aging Center Neuropsychology program. He earned his doctorate in psychology at Baylor University and completed a postdoctoral fellowship in neuropsychology at the Martinez VA hospital. Dr. Kramer is board certified in clinical neuropsychology.

Dr. Kramer has been extensively involved in studying the cognitive changes associated with brain disorders for the past three decades. He has co-authored widely used neuropsychological measures of memory and executive functioning. Much of his work has been devoted to identifying the different ways in which aging and neurodegenerative diseases affect memory and other abilities and utilizing these differences to improve differential diagnosis in clinical care.

Presently, Dr. Kramer's active areas of research use neuroimaging, neuropsychology, neuroimmunology, and genetics to study the underlying biological mechanisms of cognitive aging, the cognitive effects of cerebrovascular disease and frontotemporal dementia, and the relationships between cognitive functioning, behavioral control, and reward systems.

## 講者簡介

Kramer 博士於加州大學舊金山分校 (University of California, San Francisco) 擔任神經學系神經心理學教授及記憶和年老中心神經心理學課程主任。他在貝勒大學 (Baylor University) 取得心理學博士學位，並於馬丁內斯退伍軍人管理局醫院 (Martinez VA hospital) 完成神經心理學的博士後研究。Kramer 博士亦獲得臨床神經心理學領域的認證。

過去 30 多年來，Kramer 博士致力於研究與腦部疾病相關的認知轉變。他也合著了獲廣泛使用的記憶和執行功能的神經心理學量表。他大部分的工作投入於識別年老和神經退化疾病如何影響記憶力和其他能力，並應用這些差異來改善臨床的鑑別診斷。

現時，Kramer 博士通過神經成像、神經心理學、神經免疫學和遺傳學來研究認知衰老的生物機制、腦血管疾病和額顳失智症對認知的影響以及認知功能、行為控制和獎賞機制間的關係。

## **Keynote Speech: Electromagnetic Imaging of Brain Oscillations during rest and during speech**

**Professor Srikantan Nagarajan**

**主題演講：靜息態及說話時的腦電波**

**Srikantan Nagarajan 教授**

### **Abstract**

I will introduce the challenges of functional brain imaging of neural oscillations with non-invasive recordings of electromagnetic signals (MEG and EEG) from the brain, and discuss recent algorithm advances that use machine learning to overcome problems in these imaging modalities. I will then provide examples of imaging resting-state oscillations with MEG. Finally, I will discuss applications of electromagnetic brain imaging to examine speech and language networks both in the basic context as well as clinical neuroscience studies.

### **摘要**

我會介紹非入侵的功能性大腦成像(腦磁圖和腦電圖)於記錄腦電波時遇到的挑戰和討論現時的演算法於機器學習幫助下達致的進步，從而解決成像模式的問題。我也會舉例以腦磁圖(MEG)記錄靜息態下的腦電波。最後，我會討論電磁腦成像技術可以如何應用於語境基礎和臨床神經科學研究來檢視話語和語言網絡。





Prof. Srikantan  
Nagarajan  
Srikantan Nagarajan  
教授

## Biography

Dr. Srikantan (Sri) Nagarajan is a Full Professor in the Departments of Radiology and Biomedical Imaging, Bioengineering and Therapeutic Sciences and Otolaryngology, Head and Neck Surgery at the University of California, San Francisco (UCSF). He obtained his PhD in Biomedical Engineering from Case Western Reserve University and did a postdoctoral fellowship at the Keck Center for Integrative Neuroscience at UCSF. He has been the Director of the UCSF Biomagnetic Imaging Laboratory, and involved in the development and improvement of machine learning and statistical signal processing algorithms for multimodal brain imaging methods such as magnetoencephalography (MEG), electroencephalography (EEG), electrocorticography (ECoG), fMRI, diffusion MRI and transcranial magnetic stimulation (TMS). He has also been involved in several basic and clinical neuroscience studies applying these imaging technologies, with applications to the study of speech motor control, and imaging of human brain plasticity. He is a Fellow of the IEEE and a recipient of the Mid-Career Award from the International Society of Biomagnetism.

## 講者簡介

Srikantan (Sri) Nagarajan 博士是加州大學舊金山分校(UCSF) 放射學及生物醫學成像、生物工程與治療科學及耳鼻喉頭頸外科學系的全職教授。他於凱斯西儲大學(Case Western Reserve University)取得生物醫學工程學博士學位，並於加州大學舊金山分校的凱克綜合神經科學中心進行博士後研究。他曾於加州大學舊金山分校的生物磁性成像實驗室擔任主任，並致力發展及完善機器學習和不同大腦成像技術的數據信息處理演算法，例如腦磁圖(MEG)、腦電圖(EEG)、腦皮層電圖(ECoG)、功能磁共振成像(fMRI)、擴散核磁造影(diffusion MRI)和穿顱磁刺激(TMS)。他也參與了幾項基礎和臨床神經科學研究，運用以上技術來探討語言運動的控制和人類大腦的可塑性。他是電機電子工程師學會(IEEE)的成員，也是國際生物磁學協會的中期職業獎得主。

**Helping the Aging Brain Learn Better**  
**Professor Annabel Shen-Hsing Chen**

**幫助衰老的大腦學習得更好**  
**陳聖馨教授**

**Abstract**

Functional neuroimaging has allowed us to begin to study age-related changes in task activated and resting-state brain networks. These efforts have advanced the field of aging neuroscience where functional neuroimaging models of aging have evolved from concepts of neural compensation and dedifferentiation to understanding the different phenomena seen in large-scale neuro-networks. These neuroimaging aging models have provided testable hypotheses to probe the underlying mechanisms such as cognitive reserve and have opened up avenues for us to examine individual differences in cognitive changes. However, the capacity of the aging brain to learn is less investigated and not as well understood. One of the earliest signs of cognitive aging involves decline in working memory and the ability to discriminate memory in regard to similar information (memory discrimination). The presentation will provide findings from cognitive and exercise-cognition training paradigms that have been shown to improve memory discrimination associated with changes in brain oscillations (EEG). Thus, plasticity of the aging brain can be stimulated via cognitive training as a potential way to boost cognitive function, possibly by strengthening the declining neural networks. These neuromodulation techniques have great potential to optimize and perhaps help the aging brain to learn better in the hopes of maintaining and improving the quality of life in our older years.

**摘要**

有賴於功能性神經成像技術的發展，我們可以研究與年齡增長有關、大腦網絡於任務激發和靜息狀的變化。相關研究有助老化神經科學的發展，令我們可以從神經補償和去分化，發展出功能性神經成像模型，從而了解大規模神經網絡的不同現象。這些神經成像的老化模型提供了可測試的假說來探索潛在的機制，例如認知儲備，也幫助我們檢視認知轉變的個體差異。可是，關於老化大腦的學習能力研究較少，我們也不甚了解。其中一個認知老化的徵兆包括工作記憶功能和區分內存類似信息(記憶識別)能力的下降。我的演講會展示從認知和運動-認知訓練範式的發現，這些範式已被證明可以改善與腦電波變化相關的記憶辨別。因此，老化大腦的可塑性可以透過認知訓練來刺激，從而增進認知功能，也可望能增強逐漸衰弱的神經網絡。這些神經調節技術有很大潛力可以優化甚至幫助衰老的大腦可以學習得更好，以維持甚至改善老年人的生活水平。



Prof. Annabel Chen  
陳聖馨教授

## Biography

Dr. SH Annabel Chen is a clinical neuropsychologist, Professor of Psychology at the School of Social Sciences, LKCMedicine and Acting Director of the Centre of Research and Development in Learning (CRADLE), at Nanyang Technological University. After obtaining her PhD in Clinical Rehabilitation Psychology from Purdue University and completing a Clinical Psychology Internship at West Virginia University School of Medicine, she continued with a post-doctoral residency in Clinical Neuropsychology at the Department of Neurology, Medical College of Wisconsin. Her research interests in clinical applications of advanced neuroimaging led her to further pursue post-doctoral research at the Department of Radiology, Stanford University School of Medicine. Her Clinical Brain Lab applies neuropsychological principles to understand disturbance in the brain and behavior using neuroimaging techniques, such as fMRI, diffusion MRI, electroencephalography (EEG). Transcranial Magnetic Stimulation (TMS), and transcranial Direct Current Stimulation (tDCS). Her current research focuses on cerebellar contributions to higher cognition, optimizing cognition in aging neuroscience, affective neuroscience in learning, and translating neuroscience for education. Her research aims to develop neuroimaging markers in the cerebro-cerebellar circuitry to further understand the processes of neurodevelopmental and neurodegenerative conditions that will be informative to the science of learning and evidence-based interventions.

## 講者簡介

陳聖馨博士是一位臨床神經心理學家，並於新加坡南洋理工大學社會科學系和李光前醫學院擔任心理學教授以及於研究與發展學習中心(CRADLE)擔任代理主任。於普渡大學修畢臨床康復心理學博士學位並於西弗吉尼亞大學醫學院完成臨床心理學實習後，陳博士於美國威斯康辛醫學院神經系任職臨床神經心理學博士後住院醫師。對於高等神經成像在臨床應用方面的研究興趣使陳博士進一步於史丹福大學醫學院放射學系從事博士後研究工作。她的臨床大腦實驗室(Clinical Brain Lab)運用神經心理學原理來闡釋大腦和行為的干擾，並配合神經成像技術，如功能磁共振成像(fMRI)、擴散核磁造影(diffusion MRI)、腦電圖 (EEG)、穿顱磁刺激 (TMS)和經顱直流電刺激(tDCS)。她現時的研究集中於探討小腦對高認知的貢獻、優化對於衰老神經科學的認知、學習時的情感神經科學和把神經科學應用於教育領域。她的研究旨於發展神經成像於大腦-小腦電路中的標記，從而進一步了解神經發展的進程和神經衰退現象，進而為學習的科學和實證介入治療提供有用的信息。

# Neuroplastic Changes in the Brain using Intention-driven Robotic Training in Stroke Rehabilitation

Professor Raymond Tong

以念力訓練大腦神經從而復健中風病人

湯啟宇教授

## Abstract

Effective motor recovery after stroke depends on intensive voluntary exercising of the paretic limbs. We investigate the characteristics of brain waves and muscle activities related to paretic upper limb movements after stroke. Brain waves and muscle activities are recorded by electroencephalography (EEG) and electromyography (EMG) respectively through electrodes attached to the scalp and skin surface. EEG has been applied in Brain-computer-interface (BCI) applications, which is opening doors to using the power of the mind to overcome the limitations of the body. Then, we developed interactive control strategies to control different rehabilitation training systems for hand training in clinical trials, such as functional electrical stimulation (FES) and rehabilitation robots. The system incorporates the EMG and EEG as the bio-parameters to indicate the voluntary effort from a subject. We have applied these engineering-based technologies in the field of Neurorehabilitation, and robotic systems use electric motors to provide external assistive force during rehabilitation training. Clinical studies have indicated functional improvement in the clinical outcome measures for the upper limb. EEG and MRI analyses have demonstrated the neuroplastic changes.

## 摘要

中風後有效的肢體復原需要高強度地主動訓練麻痺的四肢。我們研究中風病人的腦電圖(EEG)和偏癱患者上肢的肌動電流圖(EMG)：透過將電極貼於病人的頭皮和皮膚表面，收集病人的腦電波和肌肉活動數據。腦電圖(EEG)可以應用於腦機介面(BCI)，用大腦意念克服身體的限制。另外，我們研發了互動控制策略來運用不同的復健訓練系統作為手部控制的臨床試驗，例如功能性電刺激(FES)和復健機械人。這個系統結合了腦電圖(EEG)和肌動電流圖(EMG)的生理參數來顯示病人的主動努力。我們在神經修復的領域應用了工程學的技術，以機械系統來為復健過程提供外在的助力。臨床研究指出上肢的活動功能有改善。腦電圖(EEG)和磁力共振成像(MRI)數據顯示大腦有神經改變。



Prof. Raymond Tong  
湯啓宇教授

## Biography

Prof. Raymond Kai-yu Tong is a Biomedical Engineer. He received his PhD in Bioengineering from the University of Strathclyde, Glasgow, UK in 1999. Raymond currently is the Professor and Chairman in the Department of Biomedical Engineering. His research interests include Rehabilitation Robotics (e.g. Hand of Hope), Brain-Computer Control Interface (BCI), Neural Engineering, Functional Electrical Stimulation (FES) and Cognitive Assessment Software. Projects have been funded by the Innovation and Technology Fund and UGC CERG/GRF with Raymond as the principal investigator. His research, innovation and service resulted in him being the awardee of the 2013 Ten Outstanding Young Persons (Hong Kong), the Grand Prix Award (the highest honor) of the International Exhibition of Inventions of Geneva 2012, Winner Award (e-Health) (the highest honor) in the Asia Pacific ICT Award 2012, and HKIE innovation awards for young members (2008), and gold awards in international invention exhibitions (2004, 2007, 2010, 2015, 2016).

## 講者簡介

湯啓宇教授(Prof. Raymond Kai-yu Tong)是一位生物醫學工程師。他於 1999 年於英國格拉斯哥的特拉斯克萊德大學(University of Strathclyde)取得生物工程學博士學位。他現為香港中文大學生物醫學工程學系教授及系主任。他研究的領域包括復健機械人(如「希望之手」)、腦機介面(BCI)、神經工程學、功能性電刺激(FES)和認知評估軟件。湯教授領導的研究獲得創新及科技基金及研究資助局(UGC)支持。他的研究、創新和服務成就獲得多個獎項認可，包括 2013 年香港十大傑出青年、瑞士日內瓦國際發明展大獎賽 2012 最高榮譽殊榮、亞太資訊及通訊科技大獎 2012 電子健康類別最高榮譽獎、香港工程師學會青年會員創意獎(2008)及國際發明展覽金獎 (2004, 2007, 2010, 2015, 2016)等。

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## Special Guests 特邀嘉賓



Prof. Daisy Hung  
洪蘭教授

Prof. Daisy Lan Hung was born in Taiwan and graduated from National Taiwan University in 1969. She obtained her Ph.D. from the University of California, Riverside in psychology. She did her postgraduate research at Haskins' Laboratory at Yale and also at the Dept. of Neurology, School of Medicine, University of California, Irvine. She worked as a research fellow at the Salk Institute, LaJolla, CA and later became a research professor at the University of California, Riverside. In 1992, Prof. Hung returned to Taiwan, teaching at the department of Psychology of National Chung Cheng University and then at the Institute of Neuroscience of National Yang-Ming University. Since 2003, she has founded the Institute of Cognitive Neuroscience at the National Central University and served as the Director. She is currently a Chair Professor at National Central University and Taipei Medical University. Besides research and teaching, Prof. Hung has translated more than sixty books into Chinese in the fields of biology, neurology, psychology and education and is the recipient of multiple awards. She advocates reading in her many talks around Taiwan, China and Southeast Asia as she believes that education is the foundation of any country. Numerous prizes and awards have honored her, including the Outstanding Chinese Leadership Lifetime Achievement Award by Global Views Monthly (2011), and Special Contribution Award by Teco Technology Foundation (2005) for her dedication to reading promotion in rural areas in Taiwan.

洪蘭教授生於台灣，1969 年台灣大學畢業後，即赴美留學，取得加州大學實驗心理學博士學位。曾在耶魯大學哈斯金實驗室及加州大學爾灣醫學院神經科接受博士後訓練，之後進入聖地牙哥沙克生物研究所任研究員，並於加州大學河濱校區擔任研究教授。1992 年回台先後任教於中正大學心理所，陽明大學神經科學研究所，2003 年起為中央大學認知神經科學研究所創所所長；現任中央大學及台北醫學大學講座教授。洪教授研究、講學之餘，致力科普書籍的譯作，已翻譯六十多本生物科技及心理學方面的好書。近年來有感於教育是國家的根本，而閱讀是教育的根本，更致力於閱讀習慣的推廣，足跡遍及台灣各縣市城鄉及離島近千所的中小學，以及中國各省分及東南亞等國做推廣閱讀的演講。洪教授獲獎無數，包括 2005 年東元特別貢獻獎及 2011 年華人領袖終身成就獎



Prof. Ovid Tzeng  
曾志朗教授

Professor Ovid J. L. Tzeng is Chancellor of the University System of Taiwan (UST) and a distinguished research Fellow and an Academician of Academia Sinica. He was the Minister of Education, Vice President of Academia Sinica, the Minister without Portfolio of the Executive Yuan, and the Minister of Council for Cultural Affairs. He is an outstanding researcher in cognitive neuroscience and neurolinguistics and an experienced administrator in academic institutions. He has established the UST to oversee and integrate the research and teaching developments of Taiwan's four top research universities, namely, Central-, Chiao Tung-, Tsing Hua- and Yang-Ming Universities and has been the Chancellor of the System since 2012. Prior to his chancellorship, Professor Tzeng was Vice President of the Academia Sinica in Taiwan, in charge of the International Scholarly Exchange Program as well as the development of Taiwan's International Graduate Program (TIGP), which has especially well served students from developing countries. Professor Tzeng was named a Fellow of the World Academy of Sciences in 2010. He received the Distinguished Alumnus Award from Pennsylvania State University in the US and the First-class Professional Education-Culture Medal from the Ministry of Education in 2011 and 2012, respectively. In 2017, he was awarded as member of the European Academy of Sciences and Arts (EASA).

曾志朗教授是台灣聯合大學系統的系統校長，中央研究院院士及語言學研究所特聘研究員。他是認知神經科學和神經語言學的傑出研究員，且學術行政管理資歷豐富完整，曾任教育部部長，中央研究院副院長及行政院政務委員及文化建設委員會主任委員等職務。他成立了台灣聯合大學系統，負責監督和整合台灣四所頂尖研究型大學(即中央大學，交通大學，清華大學和陽明大學)的研究和教學發展，並自 2012 年起擔任該系統的校長。在擔任系統校長之前曾擔任台灣中央研究院副院長，負責國際學術交流和台灣國際研究生學程 (TIGP) 的發展，對於培育發展中國家的高級研究人才具有貢獻。曾教授於 2010 年獲選為世界科學院(TWAS)院士，分別於 2011 年和 2012 年獲得美國賓夕法尼亞州立大學傑出校友獎和教育部一級教育文化獎章，及 2017 年獲選為歐洲科學與藝術學院院士(EASA)

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