國 立 中 央 大 學

統 計 研 究 所

學 術 演 講

時　　　間：106 年 6 月 8 日（星期二）第一場 10：00～10：50、第二場 11：00～11：50
地　　　點：中央大學鴻經館 M219 室
茶　　　會：上午 9：30～10：00　　　　　　　　　　　　地　　　點：鴻經館 510 室

第一場 主講人：張明中博士（中央研究院統計所 博士後研究員）

講題：**The selection of efficient multi-stratum factorial designs: a Bayesian approach**

ABSTRACT

Multi-stratum factorial designs are quite common in industrial investigations; a simple example is the so-called split-plot designs. In a multi-stratum experiment, there are multiple error terms (strata) with different variances that arise from complicated structures of the experimental units. For unstructured (single-stratum) experimental units, minimum aberration is a popular criterion for choosing fractional factorial designs. Many works in the literature extended this criterion to multi-stratum units. One difficulty is that the formulation of a wordlength pattern based on which minimum aberration is defined requires an order of desirability among the relevant words, but a natural order is often lacking. Furthermore, a criterion based only on wordlength patterns does not account for the different stratum variances. Chang and Cheng (2017), which presents a study of optimal and efficient two-level multi-stratum factorial designs via a Bayesian approach, overcomes this difficulty and works for general nonregular/nonorthogonal designs. In addition to the standard Bayesian A- and D-optimal criteria, a more manageable two-stage surrogate criterion is derived and a useful tool for eliminating inferior designs is developed. In this talk, I will give a detailed account of Chang and Cheng (2017), including some preliminary materials about multi-stratum designs, and use an example to illustrate the theory.

第二場 主講人：蔡芸琤博士（國立臺灣大學共同教育中心 助理教授）

講題：**Algorithmic Trading of Foreign Exchange via Deep Learning**

ABSTRACT

Deep learning is a type of machine learning for a set of algorithms. More recent research findings try to use deep learning to solve many puzzles. Deep learning is a good approach to solve image recognition problems especially. In addition, people like to think intuitively from the trading chart. Hence, this paper tries to use the characteristic of deep learning to train the computer how to imitate people's thinking from the trading chart directly. We would like to design an intelligent finance management by using deep learning. We propose three steps as follows to develop the training system.The first, we do not use the meridional price as our input and need to pre-process our trading data from quantitative data to trading chart before training, next, we use Convolutional-Neural-Network (CNN), a type of the deep learning, to train our trading model, finally, we use foreign exchange (FX) market return to test our model performance and accuracy. After all, we can obtain a trading model to help us make trading strategies. The main application is to help clients obtain personalize trading strategies automatically. When the model detects lost in your trading activity, the system will alarmclients. When the model detects the earning pattern, the system will inform clients to execute trades.

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