**Course Description**

Deep learning (DL) is a promising way for developing Artificial Intelligence applications. It is exceptionally useful for training a large amount of unstructured historical datasets of inputs and outputs, and predicting the most-likely outputs. DL can be applied in many business areas such as finance, marketing, customer services, information security and so on, and most importantly DL can outperform existing tools and systems due to its characteristics of neural network by nature. Therefore, many organizations have started to explore how to use DL to add values to their businesses; and develop deep learning business applications to meet their business objectives.

This course intends to cover and discuss basic principles of DL for business applications. Students will apply knowledge in current and future trends of DL to design business applications. Topics of business applications to be covered include, customer services, finance, marketing, IS security, and so on.

**Topics**

1. Introduction to Deep Learning  
2. Differences among artificial intelligence, machine learning, data mining, and deep learning  
3. Supervised learning Vs Unsupervised learning  
4. Types of deep learning, e.g., recurrence neural network, convolutional neural network, reinforcement learning  
5. Deep learning business applications (finance) – stock analysis  
6. Deep learning business applications (marketing) – customer services  
7. Deep learning business applications (management) – recommender systems  
8. Deep learning business applications (information security) – hacking and defending

**Grading Scheme**

- Case discussion and Presentation (60%)  
- Group Project (30%)  
- Course Participation (10%)

[Topics and grading schemes are subject to change as deemed appropriate. Students will receive information and guidelines in class on how they will be assessed for the course.]

**Instructor**

**Prof. James KWOK**

Prof. Kwok is an Associate Professor of Business Education in the Department of Information Systems, Business Statistics, and Operations at HKUST. He joined HKUST in 1997 as an Assistant Professor, and joined California State University, Long Beach in 2004 as an Associate Professor. Prof Kwok returned to HKUST as a teaching faculty in 2005. He has published in more than 60 journal and conference papers. His research areas include digital rights management, digital watermarking techniques, computer security, and hacking techniques. Prof Kwok has been teaching at HKUST Summer Institute since 2011. He has been very well-received by students and consistently received remarkable scores from the student evaluations. Prof Kwok has been recognized by previous Summer Institute participants to be approachable and encouraging. Many have complimented on and the interactive and relaxing learning atmosphere that he created in class, engaging students in an effective learning environment.