



Big Data & Artificial Intelligence : Deep Learning & Application

Course Fee: HK\$4,800 (May apply up to HK\$3,200 subsidy)

*Maximum saving, with the final grant subjects to approval.



Deep Learning Technology is a cross-discipline of technology among Big Data Analytics, Statistics and Neuroscience Technology.

It simulates how a human brain learns “Knowledge” from the real world. Some eye-popping results have shown up in addressing longstanding artificial intelligence problems.

Programme code	10010206
Date and time	30-31 Jul 2020 (9:30am-5pm) (Total: 12 training hours)
Venue	Rm 125, 1/F HKPC Building, 78 Tat Chee Avenue, Kowloon Tong
Language	Cantonese (English terms will be used where appropriate)
Course fee	HK\$4,800 (May apply up to HK\$3,200 subsidy)
Prerequisites	It is highly recommended that participants process basic programming knowledge (Python) and basic statistical knowledge

Course Description

This is a two-day course that will elaborate from the ground-up in practical ways. Starting from basic big data machine learning concept, statistics methodology, and practical programmes running, commercial deployment for project managers.

Through this course, it aims to provide participants with:

- ❖ Understand how this technology helps in Internet of Things Projects and works with big data infrastructure
- ❖ Understanding state-of-the-art Big Data Artificial Intelligence Technology
- ❖ Learn how deep learning algorithms improve the accuracies of traditional AI algorithms
- ❖ Learn basic statistics used in Big Data
- ❖ Learn basic machine learning methodology
- ❖ How deep learning helps in image recognition and object tracking, sentiment analysis and decision making such as Chess / “Go” game
- ❖ Practical Experience in writing deep learning programmes

Course Content Description by topics

Basic Knowledge in Big Data Analytics

- What is Big Data, Big Data Infrastructure and Big Data Analytics
- Trend and History of Big Data
- 4 Vs of Big Data
- Examples of Machine Learning

Overview of Neural Networks

- Applications Examples in such as Artificial Neural Network, Recurrent Neural Network, Long-Short-Term Memory Network
- Removal of Feature Engineering
- Supervised & Unsupervised Learning

Overview of Deep Learning

- Big Data Technology and Deep Learning
- Introduction to Machine Learning
- Introduction to Artificial Intelligence
- What is / Why Deep Learning
- Explosive Emerging Trends in Machine Intelligence
- Supervised and Unsupervised Learning
- Blending with Neuroscience Technology
- Key Enabler: Big Data and Mathematics
- The Challenge of Explosive Computational Bottleneck, Big Data Storage and Analytics
- Impact to the Smart City
- Internet of Things Intelligence
- Applications of Deep Learning

Basic Working Principles of Neural

- Network
- Statistics Basics
- Linear Regression
- Logistic Regression
- Multiplayer Perception
- Training and Testing DataSets
- Over-fitting & Regularization

Convolutional Neural Network

- Convolution Layer
- Max & Avg Pooling Layer
- Filtering and Max-Pooling
- SoftMax
- Dropout Technique and Over-fitting
- Data Augmentation
- Applications of Convolution Neural Network

Artificial Neural Network

- Deep Convolutional Network
- Over-fitting
- Perceptron Model
- Forward Propagation
- Back Propagation
- Error Optimization and Loss Function
- Differentiation Chain Rule
- Activation function & Non-linearity
- Sigmoid, ReLu, tanh functions
- Gradient descent
- Momentum & Learning Rate
- Vanishing Gradient Problem

Deep Q Learning & Reinforcement Learning

- Basic Concept of Reinforcement Learning, Q Learning and Markov Decision Process
- Use of Deep Learning in Q Learning
- Bellman's Equation
- Concept of Value-Based and Policy-Based Learning
- Understanding on the use of Reinforcement Learning in Robotic Control, Playing Chess and Self-Driving Car

RNN & LSTM Network

- Basic Concepts of Recurrent Neural Network
- Basic Concepts of Word2Vec
- Basic Understanding in using RNN in Textual Analysis
- Application Examples of Recurrent Neural Network and LSTM

Case Study - Integration of AI into Big Data

Infrastructure

- Typical Infrastructure on Big Data Architecture with AI capability
- Python in Machine Learning
- Practical Examples of Artificial Intelligence and Deep Learning

In-Depth Case Studies

- Deep Learning in Image Processing, Audio Recognition, Sentiment Analysis, Natural Language Processing and Chess Contest & Playing Games

Python AI Examples

- Python Examples in Spark and Tensorflow
- Use of Python Spark for Data Preparation for AI Data Input
- Python Tensor-flow Network Programming Examples

Course Outline

Highlights

1. Basic Knowledge in Big Data Analytics
2. Overview of Deep Learning
3. Overview of Neural Networks
4. Basic Working Principles of Neural Network
5. Artificial Neural Network
6. Convolutional Neural Network
7. RNN & LSTM Network
8. Deep Q Learning & Reinforcement Learning
9. Case Study - Integration of AI into Big Data Infrastructure
10. In-Depth Case Studies
11. Python AI Examples

Who Should Attend?

It is designed for project managers, software developers, and statisticians. It is an advanced extension to Internet of Things and Big Data Project. Project manager, who intends to utilize Big Data Intelligence into their projects, can learn what, why and how Deep Learning works in the project; Software developers and system integrators can learn practically how algorithms and software can be written.

Trainer

Mr. LEE Chi Man, Alan graduated from the Chinese University of HK with a Master of Philosophy degree in Information Engineering and a Bachelor of Engineering degree in Information Engineering (with a First Class Honor). Before founding his company, Alan held senior management role in technology group and director position in investment bank. Alan Lee oversaw the corporate strategy, merger and acquisition, product development and production management. Prior to this, he served in investment bank and capital market on risks, production management, technology, research, analytics roles and high frequency technology positions.

Award of Certificate Participants who have attained 100% attendance will be awarded a certificate of attendance issued by the Hong Kong Productivity Council.

Enrolment methods

Apply Now!



1. Scan the QR code to complete the enrolment and payment online.
2. Mail the crossed cheque with payee name "Hong Kong Productivity Council" (in HK dollar) and the application form should be mailed to HKPC Academy, Hong Kong Productivity Council, 3/F, HKPC Building, 78 Tat Chee Avenue, Kowloon (attention to Ms Cherry LAM). Please indicate the course name and course code on the envelope.

Supporting Organisations :



RTTP Training Grant Application

Companies should submit their RTTP training grant application for their employee(s) via <https://rttp.vtc.edu.hk/rttp/login> at least two weeks before course commencement. Alternatively, application form could be submitted by email to rttp@vtc.edu.hk along with supporting documents.