Artificial Intelligence: Essentials & Application

AI is getting more important not just in the workplace but also in daily life. If your organisation want to become better at using AI, this is the course for both technical and non-technical colleagues. This course will introduce the meaning behind common AI terminology, including neural networks, machine learning, deep learning, and data science. You will also learn what AI realistically can and cannot do, and how to spot opportunities to apply AI to solve problems in your own organisation.

Programme code	10011123
Date and time	25 & 26 March 2021 (Thu & Fri) 09:30 – 17:00 (total 12 lecture hours)
Venue	1/F, HKPC Building, 78 Tat Chee Avenue, Kowloon Tong
Medium	Cantonese (English terms will be used where appropriate)
Course fee	HK$4,800
Award of Certificate	Participants who have completed 100% attendance will be awarded a certificate of attendance issued by the Hong Kong Productivity Council

Programme Highlights

- The first and most essential course in the whole AI series
- Understand the state-of-the-art Big Data Artificial Intelligence Technology
- Learn the principles of AI algorithms from the ground up, basic statistics and basic machine learning methodology
- AI Technology including ANN, RNN, LSTM, DQN
- Understand how deep learning helps in image recognition, speech recognition, textual analytics, trend prediction, robotic control, self-driving, chess playing etc.

Who Should Attend?

- For anyone who is interested in understanding the applications and principles of AI and strategies.
- Project Managers and Management Executives, who intend to plan and utilise AI in their projects. They can learn what, why and how deep learning works in the projects.
- Software Developers and System integrators, who can learn algorithms and AI basics from the ground up.

Supporting Organisation:

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Course Structure

Chapter 1 : Introduction to Big Data Analytics
- What is Big Data Infrastructure
- What is Big Data Analytics
- Trends & History
- Big Data 4Vs
- Framework
- Concepts of Unstructured Data

Chapter 2 : Introduction to Artificial Intelligence
- Introduction to AI & History
- Examples in Deep Learning
- AI Applications in Computer Visions
- AI Applications in Face and Gesture Recognition
- AI Applications in Object Detection
- AI Applications in Activity Recognition
- AI Applications in Image Generation
- AI Applications in Robotic Controls
- AI Natural Language Processing
- GPU and Hardware in AI

Chapter 3 : Introduction to Deep Learning
- Global Deep Learning Trends
- Machine Learning Process
- Supervised & Unsupervised Learning
- Reinforcement Learning
- Classification Application Type
- Regression Application Type
- Clustering Application Type
- Error Rate & Accuracy
- Concepts of Feature Engineering
- Revolution of Depth Layers

Chapter 4 : From Regression
- Machine Learning Basics
- Training, Test & Validation Process
- Over-fitting & Under-fitting
- From the Ground Up: Regression
- Linear Regression
- Logistic Regression
- Principles in Perceptron
- Impact of Data Cleansing and Data Transformation
- Impact of Feature Engineering

Chapter 5 : Neural Network Basics, ANN, CNN
- Neural Network Basics
- Neurons
- Activation Functions
- Optimisation & Loss
- Activation Functions
- Neural Network Layers
- Artificial Neural Networks
- Principles in Gradient Descent
- Neural Network Weight Update Mechanisms
- Basic Structures in Artificial Neural Network
- 2D & 3D Convolution Operation
- Convolutional Neurons
- Feature Maps
- Convolution Neural Networks
- Word2Vec Embedding

Chapter 6 : Recurrent Neural Basics (RNN, LSTM)
- Introduction to Recurrent Neural Network
- Unrolling RNN Cells
- Gates in Memory Cells
- Memory Concepts in AI Models
- Long-Short-Term-Memory Cells
- Why GPU Hardware is significant
- Applications in Speech Recognition

Chapter 7 : Recurrent Neural Network in Text Analytics
- Textual Feature Engineering
- Features: TF-IDF, N-grams
- Application in Handwritten Sequence Generation
- Application in Reading Comprehension
- Application in Part-of-Speech Recognition
- Application in Text Summarisation
- Application in Co-reference Resolution
- Application in Time Series Analysis
- Applications in Textual Analytics
- Brief Introduction to BERT Models for AI Text

Chapter 8 : Reinforcement Learning (DQN)
- Concepts in Reinforcement Learning
- Principles in Deep-Q-Learning
- Applications in Robotic Control
- Applications in Game-Strategy Playing
- Applications in Chess Playing
- Applications in Self-Driving Car

Instructor: Mr Alan LEE

Mr LEE Chi Man, Alan held a senior management role in the technology division of an investment bank, overseeing the corporate strategy, product development and production management for more than 14 years. With extensive IT background, Mr LEE possesses practical project experience on sophisticated analytics and large-scale global technology project management. He also has rich training experience in the design and delivery of Big Data analytics, Fintech and Blockchain Technologies and Applications.

Enrolment method

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 Hong Kong Productivity Council, 3/F, HKPC Building, 78 Tat Chee Avenue, Kowloon (attention to Ms Sarah MA). Please indicate the course name and course code on the envelope. Enrolment form can be downloaded at https://www.hkpcacademy.org