Course Catalogue

Appendix B

AI & Data Science Track

1 What is AI & Data science

AI Introduction & Data science introduction
- What is AI & Data science
- The relationship between AI & Data science
- Turing Test

Basic concept of AI
- Agent
- Tree & Tree search

2 Searching

Tree Search
- Algorithm - uninformed search: Breadth-first search & Depth-first search, Uniform-cost search
- Algorithm - Informed search: Greedy best-first search, A* Search
- Example: N-queen problem

Game Tree
- Local Search
- Constraint Satisfaction Problems

3 Clustering & Classification

Data Preprocessing

Concept of learning
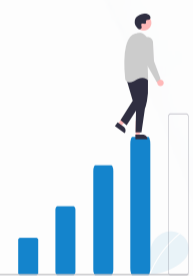- Supervised learning
- Unsupervised learning

Classification
- Decision tree based algorithms
- Bayesian approach
- Statistical approaches
- Nearest neighbour approach

Clustering
- K-means algorithm
- Hierarchical algorithm

4 Neural Network

Concept of Neural Network
- Neuron v.s. Artificial Neuron
- Regression

Multi-Layer Perceptron

Performance on different non linearly separable problems

AI & Data Science Track

5

Application and Use case

- Chatbot
- AlphaGo
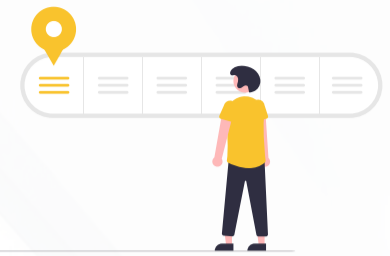- Other business applications

6

Capstone Project

Blockchain Track

1

What is blockchain?

Blockchain Introduction
- Chain Analogy + Magic Ledger
- Internet of Information to Internet of Value
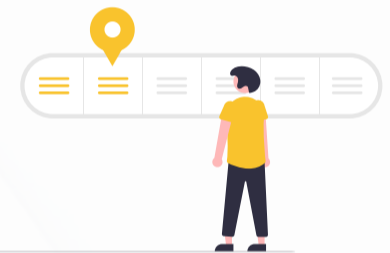- Double Spending Problem

Why blockchain matters?
- 13 Problems
- Blockchain platforms
- Origins of Blockchain platforms

2

Blockchain Business & Opportunities

- Public Chain v.s. Private Chain
- Enterprise blockchain
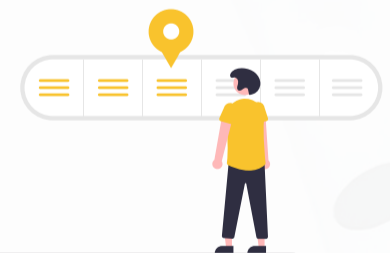- Blockchain Project Examples

3

How does blockchain work?

Centralised System & Decentralised System
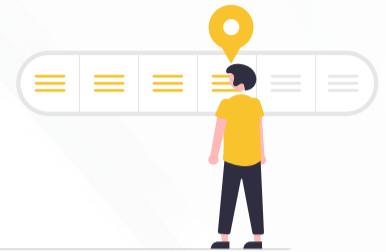
Cryptography
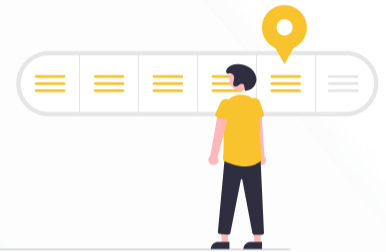- Caesar Cipher
- Hash

Identity
- Data Breaches
- GDPR

4 Blockchain Solution

5 White Paper & Pitching skills

6 Case Study