FIN559 Big Data, Cloud Computing and Machine Learning

Level: 5
Credit Units: 5 Credit Units
Language: ENGLISH
Presentation Pattern: EVERY JAN

Synopsis:

FIN559 Big Data, Cloud Computing and Machine learning provides an overview of computing and cloud technology that brings disruptive changes to various businesses including financial services. It starts with providing a foundational understanding of big data processing framework and approaches, and follows by introducing relevant tools to students through case studies and hands-on training. The course then examines the core elements of cloud computing, the different types of clouds, and the risk and security issues in cloud computing. It provides a framework for selecting the optimal combination of cloud technology to meet business requirements. Furthermore, the course
introduces machine learning, covering both supervised and unsupervised algorithms. It discusses biasvariance trade-off for selecting the appropriate models and introduces neural networks and convolutional neural networks. Lastly the course discusses the applications of artificial intelligence and machine learning via case studies.

Topics:
- Challenges of big-data computing (the 5 V's of big data)
- Big-data computing requirements and framework
- Programming tool and API for big-data computing
- Integrating big-data computing in smart solutions
- Core elements of cloud computing and different types of clouds
- Security and privacy threats in cloud computing
- Risk management plan for cloud computing
- Technical and business models of cloud computing: IaaS, PaaS and SaaS
- Implementing cloud computing using open source software
- Introduction to machine learning
- Supervised learning and unsupervised learning
- Bias-variance tradeoff
- Neural networks and convolutional neural networks
- Artificial intelligence and machine learning applications and case studies

Learning Outcome:
- Appraise big-data computing framework, the challenges in big-data computing issues and the approaches to resolve them
- Assess different types of clouds, core elements and risk management plans of cloud computing
- Evaluate IaaS, PaaS and SaaS technology
- Compare supervised learning against unsupervised learning, and neural networks against convolutional neural networks
- Construct smart solution based on big-data computing
- Formulate calculation for practicing cloud economics
- Implement cloud computing using open source software
- Design and develop machine learning applications

Assessment Strategies:

Continuous Assessment Component	Weightage (%)
PARTICIPATION	10
GROUP BASED ASSIGNMENT	40
Sub-Total	**50**

Examinable Component	Weightage (%)
ECA	50
Sub-Total	**50**

Weightage Total   **100**