IE4414 Machine Learning Design and Application

Course Overview and Introduction

Course Overview	
Academic Units	2
General Structure	Lectures and Practices
Pre-requisite	EE/IM4483 Artificial Intelligence & Data Mining
Description	This course is intended to introduce you to a broad introduction of artificial intelligence, machine learning and particularly neural networks. It will introduce several major popular state-of-the-art neural networks architectures as well as deep learning implementation environments. You would need to have basic programming skills.

Teaching

- Instructors:
  - Part 1 (Week 1-7) : Prof Lu Yilong
  - Part 2 (Week 8-13): Prof Yap Kim Hui
- Course Coordinator: Prof Yap Kim Hui
- All lectures and practices will be conducted in the lab, unless advised otherwise.

Schedule

Week	Topic	Activities
1	Introduction to artificial intelligence (AI), machine learning (ML) and neural networks	Lecture
2-3	Multi-layer perceptron networks and back-propagation (BP) algorithm	Lecture
4	Back-propagation (BP) algorithm for classification and regression: Design I	Practice (10%)
5	Support vector machines (SVM)	Lecture
6	Support vector machines (SVM) for classification: Design II	Practice (10%)
7	Quiz I	Practice (30%)
8	Convolutional neural networks (CNN)	Lecture & Lab Intro
9	CNN for computer vision and classifications: Design III	Practice (15%)
10	Long short-term memory (LSTM)	Lecture & Lab Intro
11	LSTM for time series classifications: Design IV	Practice (15%)
12	Team Practice (Session 1)	Practice
13	Team Practice (Session 2)	Practice (20%)