UNIVERSITI TEKNOLOGI MARA

CSC728: MACHINE LEARNING

Course Name (English)	MACHINE LEARNING APPROVED
Course Code	CSC728

MQF Credit	3

Course Description	The ability to learn is a fundamental characteristic of intelligent behavior. This course aims to introduce Machine Learning to postgraduate students in Artificial Intelligence. Machine Learning refers to a system capable of the autonomous acquisition and integration of knowledge. The main learning methods that will be discussed in this course are: (1) supervised learning, (2) unsupervised learning, (3) reinforcement learning. The research in Machine Learning has developed into broad areas of AI, the four main thrusts of research are (1) the improvement of classification accuracy by learning ensembles of classifiers, (2) methods for scaling up supervised learning algorithms, (3) reinforcement learning, and (4) the learning of complex stochastic models."

Transferable Skills	At the end of the course, students should be able to: 1. Apply the machine learning strategies design techniques in designing a machine learning applications. (C3) 2. Design machine learning based on the existing machine learning strategies design techniques. (C6) 3. Build a machine learning application using various types of machine learning strategies in solving complex problems. (P5)

Teaching Methodologies	Lectures, Discussion

CLO	CLO1 Apply the machine learning strategies design techniques in designing a machine learning applications. CLO2 Build a machine learning application using various types of machine learning strategies in solving complex problems. CLO3 Design machine learning based on the existing machine learning strategies design techniques.

Pre-Requisite Courses	No course recommendations

Topics
1. 1. Machine Learning Fundamentals 1.1) N/A
2. 2. Supervised learning 2.1) N/A
3. 3. Learning theory. 3.1) N/A
4. 4. Unsupervised learning. 4.1) N/A
5. 5. Reinforcement learning and control 5.1) N/A
6. 6. Stochastic Learning Algorithms 6.1) N/A
7. 7. Future Directions 7.1) N/A

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment

Assessment Type	Assessment Description	% of Total Mark	CLO
Assignment	Assignment 3	10%	CLO3
Assignment	Assignment 5	10%	CLO3
Assignment	Assignment 1	10%	CLO3
Assignment	Assignment 2	10%	CLO3
Assignment	Assignment 3	10%	CLO1
Assignment	Assignment 4	10%	CLO1
Final Project	Mini Project	20%	CLO2
Test	Test 1	10%	CLO1
Test	Test 2	10%	CLO3

Reading List

Recommended Text

- **Andreas Müller C.. Sarah Guido 2016, *Introduction to Machine Learning with Python*, O'reilly [ISBN: 9781449369880]**
- **Shai Shalev-Shwartz,Shai Ben-David 2014, *Understanding Machine Learning*, Cambridge University Press [ISBN: 9781107057135]**

Reference Book Resources

- **Rodrigo Fernandes de Mello,Moacir Antonelli Ponti 2018, *Machine Learning*, Springer [ISBN: 9783319949888]**
- **Adam Gibson,Josh Patterson 2015, *Deep Learning*, O'Reilly Media [ISBN: 9781491914250]**
- **Khosrow-Pour, D.B.A., Mehdi 2018, *Advanced Methodologies and Technologies in Network Architecture, Mobile Computing, and Data Analytics*, IGI Global [ISBN: 978144199634]**
- **Mehryar Mohri,Afshin Rostamizadeh,Ameet Talwalkar 2018, *Foundations of Machine Learning*, MIT Press [ISBN: 0262039400]**

Article/Paper List: This Course does not have any article/paper resources

Other References: This Course does not have any other resources