

CAI3103 Deep Learning

COURSE INFORMATION

Prerequisites	Academic Year & Level		Teaching Methods			Credit Hrs.
	Year	Semester	Lecture	Tutorial	Laboratory	
CAI3101	3	5	2	2	0	3

COURSE AIM

- Explain the basic mathematical foundation for machine learning techniques.
- Identify the main Deep Learning algorithms and their applicability in Machine Learning tasks
- Explain details of layered-architectures and their learning algorithms.
- Explain how real-world problems are modelled and solved by Deep Learning techniques.
- Elaborate on the strengths of the state-of-the-art of Deep Learning techniques and the challenges that remain.
- Develop programs using a Deep Learning toolbox.
- Apply metrics for evaluating outcomes of Deep Learning program and analyzing results.

COURSE WEEKLY CONTENTS

1	Why go deep?
2	ANN
3	CNNs for classification
4	CNNs for semantic segmentation
5	Recurrent Neural Networks
6	Hyper-parameters
7	Boltzmann machines
8	Restricted Boltzmann machines
9	Autoencoders
10	Basics of GANs
11	Performance measures
12	Performance analysis
13	Deep models and reinforcement learning
14	Explainable AI basics
15	Revision

STUDENT GRADING & ASSESSMENT

Weeks	Exams	Assign.	Quizzes	Reports	Present.	Lab.	Total
1 to 7	←		30	MARKS		→	30
8 to 12	←		20	MARKS		→	20
1 to 15	←		10	MARKS		→	10
16 or 17	40	Final					40

REFERENCES

Textbook	Ian Goodfellow and Yoshua Bengio, Deep Learning, MIT Press.
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