CPE-440: Introduction to Artificial Intelligence Engineering

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Office hours: 4-5PM, Monday-Thursday

Textbooks (not required):
[1] AI textbook:
Artificial Intelligence: A Modern Approach (3rd Edition), Stuart Russell and Peter Norvig
http://aima.cs.berkeley.edu
[2] Deep learning textbook:
Deep Learning, Ian Goodfellow, Yoshua Bengio, and Aaron Courville
[3] Machine learning and deep learning textbook:
Hands-On Machine Learning with Scikit-Learn and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems, Aurélien Géron

Grading:
Class participation/Taking notes/Quiz 50%
HW 10%
Term paper/slides 20%
Group presentation 20%

Course Description:
Review of history, concepts and algorithms of artificial intelligence (AI); Explanations and mathematical models of machine learning (ML) and deep learning (DL); Use of tools of machine learning and deep learning (Tensorflow, Matlab, etc.); Studies of various engineering applications using AI, ML, and DL; AI, ML, DL design projects.

Topical Outline:

Lec.	Topic	HW
1	Overview of AI, ML, and DL	HW-1-AI-applications
2	AI/ML/DL Applications and ML/DL Tools	HW-2-Tensorflow-Matlab
3	Machine Learning	HW-3-DTL
4	Machine Learning: kNN	HW-4-kNN
5	Machine Learning: SVM	HW-5-SVM
6	Deep Learning	HW-6-DL
7	Deep Learning: CNN	HW-7-DL-CNN
8	Agents	HW-8-Agents
9	Search	HW-9-Search
10	NLP	HW-10-NLP
11	Another DL model	
12	Another AI topic	
13	Project Presentations	
14	Project Presentations	

Course Assessment Questions:
- Student will be able to understand the relevance of mathematical principles to AI applications.
- Student will be able to identify inputs and outputs in AI model development.
- Student will able to develop ideas for presentation by clearly outlining crucial concepts.
- Student will be able to follow current professional literature in various media.