Jordan University of Science and Technology

Faculty of Computer & Information Technology

Computer Information Systems Department

CIS735 Deep Learning - JNQF Level: 6

First Semester 2023-2024

Course Catalog
3 Credit Hours. CIS 735: Deep Learning (3 CHs) Prerequisite/passing: CIS 711 3 Credit Hours.Introduction to deep learning, including necessary mathematics background (linear algebra, probability, numerical analysis, and machine learning), deep sequence learning (including RNN, GRUs, and LSTM), Deep computer vision (CNN and its variants), deep generative models (VAEs and GANs), and deep reinforcement learning. This course also covers word embedding (CBOW, Skip Gram, and Glove) and neural machine translation. Tensorflow and Keras packages are covered in this course as well. The students must apply a deep learning architecture of their choice to solve problems in the following fields: computer vision, speech recognition, machine translation, natural language processing, and understanding.

Text Book	
Title	Deep Learning
Author(s)	Ian Goodfellow and Yoshua Bengio and Aaron Courville
Edition	1st Edition
Short Name	Textbook
Other Information	

Instructor	
Name	**Dr. Heba Alawneh**
Office Location	-
Office Hours	Sun : 12:30 - 14:00 Mon : 09:45 - 11:15 Tue : 11:00 - 12:30 Thu : 12:30 - 14:00
Email	hzalawneh@just.edu.jo

Class Schedule & Room

Section 1:
Lecture Time: Mon : 13:00 - 16:00
Room: A2120

Tentative List of Topics Covered		
Weeks	**Topic**	**References**
Weeks 1, 2, 3, 4	Introduction to neural networks, backpropagation and gradient decent, optimization, and regularization.	
Weeks 5, 6	Deep learning in computer vision, CNN and its variants.	
Weeks 7, 8, 9	Deep sequence modeling: RNN, GRU and LSTM. Text, word-embeddings and transformers.	
Weeks 10, 11	Deep generative models: GANs	
Weeks 12, 13, 14	Self-Supervised Learning	

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Comprehend the core principles of deep learning, including neural networks, backpropagation, gradient descent, optimization, and regularization. [1SO1] [1L6K2]	15%	
Implement, assess, and ethically scrutinize deep learning models, demonstrating advanced problem-solving capabilities in real-world computer vision projects. [1SO2, 1SO3] [1L6C1]	30%	
Comprehend and apply the core deep convolutional network architectures and operations. [1SO2] [1L6S1]	25%	
Understand and analyze advanced deep-learning topics, including deep sequence modeling (e.g., RNN and LSTM), attention mechanisms, deep generative modeling (e.g., GANs, VAEs), and Self-Supervised Learning. [1SO1] [1L6S2]	30%	

Relationship to Program Student Outcomes (Out of 100%)																
A	B	C	D	E	F	G	H	I	J	K	SO1	SO2	SO3	SO4	SO5	SO6
											45	40	15			

Relationship to NQF Outcomes (Out of 100%)			
L6K2	L6S1	L6S2	L6C1
15	25	30	30

Evaluation

Assessment Tool	Weight
Midterm Exam	30%
Final Exam	30%
Assignments	20%
Project	20%

Policy	
p1	Email is the primary form of communication. I will use your formal email provided by JUST. Check your email and eLearning website often for updates related to the course.
p2	Students are required to read all posted material. All material, including reading assignments, will be part of the exams.
p3	Students must attend the lectures and not skip any lectures.
p4	Project is team-based while assignments are individual work

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