FUTURE UNIVERSITY IN EGYPT جامعة المستقبل

Faculty of Computers and Information Technology

Computer Vision

Information :

Course Code : DM428 **Level :** Undergraduate **Course Hours :** 3.00- Hours

Department : Digital Media Technology

Instructor Information :

Title	Name	Office hours
Lecturer	Heba Hamdy Ali Hussien	3
Teaching Assistant	Reem Khaled Mohamed Elsayed	
Teaching Assistant	Nesma Tamer Mohamed Mohamed Abd AlsalamAlabyd	

Area Of Study :

ÅConstruct detailed models of the image formation process and develop mathematical and computational techniques to recover the quantities of interest.
ÅUnderstand and analyze basic principles and techniques of image processing and image understanding.
ÅDevelop skills in design and implementation of computer vision algorithms.
ÅExplain fundamentals of 3D shape reconstruction.

Description :

This course presents the field of computer vision from computer science viewpoint. These basic concepts of image processing should be addressed as many of these concepts are essential to device good vision algorithms. The purpose of this course is to gain a perspective of current computer vision topics to help the student prepare for advanced research studies in this field

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Discuss the fundamental issues and techniques of computer vision
2 -	Distinguish different edge detection, segmentation and image transformations algorithms.
3 -	Differentiate three-dimensional Object recognition principles
b.Intellectual Skills: :	
1 -	Enhance the ability to choose the appropriate technique for a given problem. (I11)
2 -	Go through the detailed computational procedures for computer vision.
3 -	Analyze and test computer vision methods in real world applications
c.Professional and Practical Skills: :	
1 -	Apply different vision algorithms using MATLAB
2 -	Apply different skills as writing reports and presentation
d.General and Transferable Skills: :	
1 -	Search available data and knowledge resources

2 -	Search for information for self-learning, read advanced textbooks
3 -	Demonstrate skills relating to scientific method, systematic problem solving and creative problem solving

ABET Course outcomes :	
1 -	Demonstrate adequate understanding of different models of image formation process and develop mathematical and computational techniques to recover the quantities of interest
2 -	Identify and analyze basic principles and techniques of image processing and image understanding
3 -	Develop skills in design and implementation of computer vision algorithms
4 -	Demonstrate adequate fundamentals of 3D shape reconstruction

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to computer vision	4	2	2
Images, Camera and Optics	4	2	2
Image Filtering	4	2	2
Edge Detection	4	2	2
Feature matching	4	2	2
Image Segmentation	4	2	2
Colors, Hough Transform, DWT	4	2	2
Image compression	4	2	2
Mid-Term Exam	2		
Stereo Introduction	4	2	2
Camera Calibration	4	2	2
Optical Flow	4	2	2
Recognition	4	2	2
Final Exam	2		