האוניברסיטה העברית בירושלים
THE HEBREW UNIVERSITY OF JERUSALEM

The Hebrew University of Jerusalem

Syllabus

COMPUTER VISION-3D - 67542

Last update 14-03-2021

HU Credits: 4

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Computer Sciences

Academic year: 2021

Semester: 2nd Semester

Teaching Languages: Hebrew

Campus: E. Safra

Course/Module Coordinator: Prof Mıichael Werman

Coordinator Email: michael.werman@mail.huji.ac.il

Coordinator Office Hours: Coordinate in advance

Teaching Staff:

Prof Michael Werman

Course/Module description:

Computer vision seeks to interpret the visual world in ways that replicate the astonishing capabilities of human perception. The input/output process can be succinctly described as inferring the high-level properties of the scene such as location and identities of objects, the surfaces that make the scene, the motion of the observer and other objects and the actions of the various objects (like people, animals). The input is merely a video, i.e., a collection of 2D images of the scene. Humans can readily infer a great deal of those properties from a single image. The goal of computer vision is to be able to do the same but by a computer algorithm.

The course will present the fundamental computational models behind scene interpretation, motion understanding and object recognition. We will focus on specific problems which have witnessed remarkable success including object recognition (faces, people), 3D reconstruction, segmentation and scene categorization. The student will be exposed to tools from statistical learning and image processing while obtaining an understanding of key leading techniques for the main problems of computer vision: recognition, reconstruction and segmentation.

Course/Module aims:

See learning outcomes

Learning outcomes - On successful completion of this module, students should be able to:

Students will master the techniques of reconstruction, and visual recognition. Each of the above would be subject to a programming exercise

Attendance requirements(%):

93

Teaching arrangement and method of instruction: Mixture of Power-Point and whiteboard writing.

Course/Module Content:

1) geometry (camera + projective + multicamera)
2) color + shading

Required Reading:
NA

Additional Reading Material:
NA

Course/Module evaluation:
End of year written/oral examination 0 %
Presentation 0 %
Participation in Tutorials 0 %
Project work 0 %
Assignments 50 %
Reports 0 %
Research project 50 %
Quizzes 0 %
Other 0 %

Additional information:
Students are expected to know the material from Image Processing