Course Information

Course Code: 5710483
Course Section: 1
Course Title: INTRODUCTION TO COMPUTER VISION
Course Credit: 3
Course ECTS: 6.0
Course Catalog Description: Image formation, camera models and parameters, stereo vision, shape from stereo, shape from single image cues, apparent motion, optical flow, introduction to 3D shape representation and recognition.
Prerequisites: No prerequisites
Schedule: Monday, 09:40 - 11:30, BMBS
Thursday, 13:40 - 14:30, BMBS
Course Website: http://user.ceng.metu.edu.tr/~gcinbis/courses/Spring18/CENG483

Instructor Information

Name/Title: Assist.Prof.Dr RAMAZAN GÖKBERK CİNBİŞ
Office Address: B205
Email: gcinbis@metu.edu.tr
Personal Website: http://user.ceng.metu.edu.tr/~gcinbis/

Course Assistants

Name/Title: Araş.Gör. CEMAL AKER
Office Address: 
Email: 
Office Hours: 

Course Objectives

The course introduces the basic problems, common terminology and key methods of computer vision. Main objective is to let students gain necessary skills to apply contemporary computer vision techniques to visual understanding problems in computer science and engineering.

Course Learning Outcomes

At the end of this course, students will be able to:

- **Understand** formation of images, the types of camera models and the camera parameters.
- **Apply** different image processing and feature extraction techniques to images to extract low-level meaningful information.
- **Understand** different mid-level and high-level vision problems such as motion estimation, depth estimation, object recognition, scene understanding and apply them on real-world problems.
- **Describe** the different vision theories and the link between visual perception and computer vision.
- Gather hands-on experience on implementing contemporary deep learning based approaches for computer vision.

Tentative Weekly Outline

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Relevant Reading</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>1</td>
<td>Math basics &amp; Linear Algebra overview</td>
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<tr>
<td>2</td>
<td>Image formation, cameras and calibration</td>
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Filtering
Interest point detectors
Local descriptors
Segmentation, clustering, texture
Recognition: learning-based vision
Recognition: object recognition
Recognition: introduction to deep learning
Recognition: deep learning applications in computer vision
Stereo vision
Monocular depth cues
Structure from motion
Shape Models

Course Textbook(s)

Course Material(s) and Reading(s)
Material(s)
None.
Reading(s)
None.

Assessment of Student Learning

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Dates or deadlines</th>
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<tr>
<td>Homeworks</td>
<td>March, April, May</td>
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<tr>
<td>Homeworks will involve programming in Python and utilizing major scientific libraries in Python.</td>
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Course Policies

Class Attendance

Attendance is mandatory, and it will contribute to a fraction of the overall grade.

Information for Students with Disabilities

To obtain disability related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the ODTÜ Disability Support Office as soon as possible. If you need any accommodation for this course because of your disabling condition, please contact me. For detailed information, please visit the website of Disability Support Office: http://engelsiz.metu.edu.tr/

Academic Honesty

The METU Honour Code is as follows: "Every member of METU community adopts the following honour code as one of the core principles of academic life and strives to develop an academic environment where continuous adherence to this code is promoted. The members of the METU community are reliable, responsible and honourable people who embrace only the success and recognition they deserve, and act with integrity in their use, evaluation and presentation of facts, data and documents."