

Academic Year/course: 2021/22

69717 - Computer Vision

Syllabus Information

Academic Year: 2021/22

Subject: 69717 - Percepción y visión por computador

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 633 -

ECTS: 3.0

Year: 2 and 1

Semester: Second semester

Subject Type: Optional

Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

3.1. Assessment tasks (description of tasks, marking system and assessment criteria)

A continuous assessment system is applied. It is composed of the following assessment activities programmed throughout the course:

E1 (40%) Exam composed of short answer questions and problem-solving- Focused on the basic contents of the course and on laboratory practices. The student will be able to use the bibliographic material.

E2 (40%) Practice sessions. Each student selects a practice in which he/she focuses. For this practice, she or he writes a report with a maximum length of 5 pages. As a guide, the report will contain as sections: introduction, 2-3 sections explaining the technique and its fundamentals, experimental results, discussion and bibliography.

E3.- (20%) Presentation of a scientific article. The ability to identify the most relevant aspects of the article, its connection with the contents of the course and the oral presentation quality will be assessed.

Students will also be able to pass the course through a global assessment carried out on the day designated by the school, passing the same activities above mentioned in the continuous assessment.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented. Students are expected to participate actively in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials, including a discussion forum.

Further information regarding the course will be provided on the first day of class.

4.2. Learning tasks

The course includes the following learning tasks:

A01 Lectures (18 hours) Theoretical content sessions. The concepts and foundations will be presented. Students participation will be encouraged through questions and short discussions.

A03 Laboratory practices (8 hours). Exercises of medium complexity. They require combining theoretical concepts with standard computer vision libraries, to implement a software to process actual image sequences. The performance is evaluated experimentally. 4 sessions have been scheduled.

A05 Reading research publications (10 hours). Each student selects a research publication from a list of popular and influential articles in computer vision. Then the student has to make a 10-minute talk to orally present the selected article.

A06 Tutorials (3 hours). Personalized debate with the lecturers.

A08 Assessment (2 hours). The student will take an exam and submit several reports derived from the computer lab sessions and the practical tasks.

A07 Autonomous work (34 hours). Time devoted to study theoretical contents and to make self evaluation exercises. Per each laboratory practice, the student has to do preparative work before the session and also to complete the practices after the session.

4.3. Syllabus

The course will address the following topics:

Theory

1. Image acquisition.
2. Feature detection and matching.
3. Feature-based image alignment.
4. Structure from motion.
5. Computer vision and Augmented Reality.
6. Visual recognition.

Lab sessions

1. Bundle adjustment.
2. Uncalibrated geometry and robust matching.
3. Visual classification.
4. Structure from motion and Augmented Reality.

4.4. Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to <http://moodle.unizar.es/>

4.5. Bibliography and recommended resources

<http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=69717>