Universitat Autònoma de Barcelona

2022/2023

Master's Dissertation

Code: 44664
ECTS Credits: 12

Degree	Type	Year	Semester
4314099 Computer Vision	OB	0	2

Contact

Name: Maria Vanrell Martorell

Email: maria.vanrell@uab.cat

Use of Languages

Principal working language: english (eng)

Teachers

Ramón Baldrich Caselles

External teachers

Coloma Ballester

Josep R. Casas

Xavier Baró

Prerequisites

Degree in Engineering, Maths, Physics or similar.

Objectives and Contextualisation

The main goal of this module is the development of a project where students should apply the knowledge acquired in the previous modules and their own skills and abilities to solve a practical problem in Computer Vision.

For students willing to pursue a PhD program after completion of the master, the master thesis should be the first stage of their PhD thesis.

To this end, students must be able to analyse the problem, pose an initial hypothesis to solve it, design an appropriate methodology to validate this hypothesis and draw relevant conclusions from their work.

As a result, students must write a final report and pass a public defence before an evaluation committee where they should show their ability to communicate in a clear way their work. The expected total workload of this module thesis is about 300 hours.

Competences

- Accept responsibilities for information and knowledge management.
- Apply the research methodology, choose the techniques and information sources and organise the specific resources for research in the field of computer vision.

- Choose the most suitable software tools and training sets for developing solutions to problems in computer vision.
- Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
- Conceptualise alternatives to complex solutions for vision problems and create prototypes to show the validity of the system proposed.
- Continue the learning process, to a large extent autonomously.
- Identify concepts and apply the most appropriate fundamental techniques for solving basic problems in computer vision.
- Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
- Plan, develop, evaluate and manage solutions for projects in the different areas of computer vision.
- Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
- Understand, analyse and synthesise advanced knowledge in the area, and put forward innovative ideas.

Learning Outcomes

1. Accept responsibilities for information and knowledge management.
2. Apply research methodology to solve the problem addressed in Master's Dissertation.
3. Choose information sources needed to solve the problem addressed in Master's Dissertation.
4. Choose the learnt techniques and the training sets and design training to solve the problem addressed in Master's Dissertation.
5. Communicate and justify conclusions clearly and unambiguously to both specialist and non-specialist audiences.
6. Continue the learning process, to a large extent autonomously.
7. Identify the basic problems to be solved in the problem addressed in Master's Dissertation, and the most suitable techniques for solving them.
8. Identify the best representations that can be defined for solving the problem addressed in Master's Dissertation.
9. Integrate knowledge and use it to make judgements in complex situations, with incomplete information, while keeping in mind social and ethical responsibilities.
10. Obtain and organise the specific resources needed to solve the problem addressed in Master's Dissertation.
11. Plan, develop, evaluate and manage the solution to the problem addressed in Master's Dissertation.
12. Solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to the field of study.
13. Understand, analyse and synthesise advanced knowledge in the area, and put forward innovative ideas.

Content

The Master dissertation is an individual academic work, consisting of 3 well differentiated parts, which are:

- the realization of the project,
- the writing of the technical report, and
- the public presentation and defense of the project, which will take place at the end of the first semester of the second.

The aim of the Project realization is the student to apply the steps of the scientific method.

All the information about these steps are given at the M9 moodle room in the Campus Virtual (cv.uab.cat), there you can find:

- Calendar divided in three steps:

- Project proposals (October-March) are visible as soon as they arrive and are validated by the M9 coordinators. You are welcome to start discussing with the academic supervisors the proposals that interest you. Take note that a good number of proposals enter the system late and will only be visible by the end of March. Project proposals can be seen at:
  Academic Project Proposals <here>
  Company Project Proposals <here>
  Student Proposals can be inserted at the master web page <here>

  We recommend you to take your time to take a decision, specially we suggest to wait for having started all the remaining modules (M5 and M6) in order to have a global overview about what topic you do prefer.

- Selection period (April) during the selection period the tudents should discuss with academic supervisors and select a project. The students will have to select their preferred project using the Webpage of the Master, we will give you specificinformation about how to perform the assignment process, since you need to receive a confirmation of the assigned project.

  Master project development (May to July or September) carries 300 hours of work, starting with the elaboration of the state of the art of your topic and agreeing with your supervisor on a time plan in advance to ensure that you will complete your project on time.
- Defense of the thesis (July or September) requires to deliver a report of your work and being evaluated by a committee of 3 members

Methodology

Each student will have to select a project, it can be an academic project proposed by the academic staff, or can be a project proposed by a company.

Students can also propose their on project proposal. In any case an academic supervisor will be assigned from any of the 4 university departments involved in the master.

The supervisor will guide the student in a personalized manner in the completion of the project. The academic selects and provides guidance around the objectives of the project, supervises and resolves doubts.

A series of activities will be carried out (deliveries and meetings) that allow to control the follow-up of the work carried out by the student. Students should contact their tutor to arrange the meetings they will hold throughout the course.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Supervised			
Meetings with the supervisor	39	1.56	8, 7, 11, 5, 4
Type: Autonomous			
Autonomous work	220	8.8	2, 1, 13, 10, 9, 12, 6, 3

Assessment

The final mark for this module will be computed with the following formula:

Final Mark = 0.25 x Supervisor Mark + 0.75 x Committee Mark

where,

Supervisor Mark: is the result of applying a three stage rubric to the document of the thesis proposal. The project advisor will evaluate the student before the presentation, and provide the evaluation scores to the Master Thesis committee.

Committee Mark: is the average mark provided by the three members of the evaluation committee. The committee members will receive the Master Thesis document at least 7 days before the public presentation. After each presentation the three members will discuss privately the evaluation of the written reports and the presentations.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Master thesis	0.5	30	1.2	2, 1, 13, 7, 9, 12, 5, 3
Meetings with the supervisor	0.25	10	0.4	8, 10, 11, 9, 5, 4
Oral presentation and thesis defence	0.25	1	0.04	1, 13, 9, 5, 6

Bibliography

Specific bibliography will depend on individual projects and will be suggested by the academic in charge

Software

Specific software depends on the individual project topic