
SCSSE

School of Computer Science and Software Engineering
Faculty of Informatics

CSCI435 Computer Vision Subject Outline Spring Session 2009

Head of School –Professor Willy Susilo, Student Resource Centre, Tel: (02) 4221 3606

GENERAL INFORMATION

Subject Coordinator

Telephone Number:

Email:

Location:

Dr Wanqing Li

02 4221 5410

wanqing@uow.edu.au

3.101

Dr Li's consultation times during session:

Day

Monday

Tuesday

Time

8:30 - 10:30

10:30 -12:30

Lecturer

Telephone Number:

Email:

Location:

Dr Igor Kharitonenko

02 4221 4825

igor@uow.edu.au

3.108

Dr Kharitonenko's consultation times during session:

Day

Monday

Tuesday

Time

12:30 – 14:30

10:30 – 12:30

Subject Organisation

Session:

Credit Points

Contact hours per week:

Lecture Times & Location:

Tutorial Day, Time and Location can be found at:

Spring Session, Wollongong Campus

6 credit points

2 hours lectures

8:30–10:30 Tues, 3.121

<http://www.uow.edu.au/student/timetables/index.html>

Students should check the subject's web site regularly as important information, including details of unavoidable changes in assessment requirements will be posted from time to time via e-Learning space <http://www.uow.edu.au/student/>. Any information posted to the web site is deemed to have been notified to all students.

Subject Description

This subject is designed to equip the student with an understanding of the fundamental tools required to analyse, design and implement computer vision systems. Topics covered include low-level, mid-level, and high-level vision; image formation; camera model and calibration, stereo vision; edge detection and segmentation; thinning and skeletonising, binary morphological operations; object recognition, image interpretation and scene understanding.

Subject Objectives

On successful completion of this subject, students should be able to:

1. Describe and use camera model and calibration in computer vision systems
2. Describe and use edge detection and segmentation techniques
3. Use morphological operations and object counting.
4. Use object recognition and scene analysis techniques.
5. Design and implement simple computer vision systems

Graduate Qualities

This subject will continue to the following graduate qualities:

Informed
Independent Learners
Problem Solvers
Innovation & Design

Further information can be found at:

<http://www.uow.edu.au/informatics/scsse/current/SubjectInformation/UOW049401.html>

Attendance Requirements:

It is the responsibility of students to attend all lectures/tutorials/labs/seminars/ practical work for subjects for which you are enrolled. It should be noted that the amount of time spent on each 6 credit point subject should be at least 12 hours per week, which includes lectures/tutorials/labs etc.

Satisfactory attendance is deemed by the University, to be attendance at approximately 80% of the allocated contact hours.

Attendance rolls will be kept for lectures. If you are present for less than 80% and would have otherwise passed you need to apply for student academic consideration, otherwise a TF (technical fail) grade will be recorded.

Method of Presentation:

In order to maximize learning outcomes, it is strongly recommended that students attend all lectures.

Lecture Schedule:

A proposed Lecture schedule for the subject is as follows:

Week	Topic
1	Subject Overview. The concept of Computer Vision
2	Photometry and Colorimetry
3	Image Acquisition. Digital Cameras
4	Image quality. Image enhancement
5	Edge detection. Morphological algorithms
6	Parametric transforms. Shape detection
7	Image Segmentation
8	Face detection
9	Face recognition
10	Image sequences (videos) and motion
11	Moving Object Extraction (background subtraction)
12	Applications
13	Revision

Changes to the above schedule will be posted via e-Learning space <http://www.uow.edu.au/student/>.

Any information posted to the web site is deemed to have been notified to all students.

Subject Materials:

Any readings/references are recommended only and are not intended to be an exhaustive list. Students are encouraged to use the library catalogue and databases to locate additional readings

Textbook(s):

D. Forsyth, J. Ponce. Computer Vision a Modern Approach, Prentice Hall 2003.

Other Resources:

R. Jain, "Machine vision", McGraw-Hill, 1995

Lecture notes:

The lecture notes will be available on e-Learning <http://www.uow.edu.au/student/lo/>. Students are encouraged to print their copies. These readings/references are recommended only and are not intended to be an exhaustive list. Students are encouraged to use the library catalogue and databases to locate additional readings

Assessment:

This subject has the following assessment components.

ASSESSMENT ITEMS & FORMAT	% OF FINAL MARK	GROUP/ INDIVIDUAL	DUE DATE
Three Assignments	50%	Individual	Due in week 5, 8 & 10
Final Project	50%	Individual	Week 14

Notes on Assessment:

All assignments are expected to be completed independently. Plagiarism may result in a FAIL grade being recorded for that assignment.

Electronic Submission of Assessment Items:

Unless otherwise notified by the subject coordinator, all written assignments must be submitted electronically.

Other Procedures for the submission of assessment items:

All assignments will be returned within 2 weeks of their submission.

- (a) There will be 3 assignments, which will be assessed. All assignments are expected to be completed independently. Plagiarism may result in a FAIL grade being recorded for that assignment.
- (b) Assignments are to be submitted electronically or in hard copy as specified during the scheduled week. It is the student's responsibility to keep a backup of his/her work. There will be no extension granted due to any circumstance related to the failure of a student's own equipment.
- (c) As assignments are intended to assess students' understanding of the subject material covered in the lectures, each assignment must be solved using only material covered up to that point in the lectures (unless otherwise stated in the question).
- (d) **Late assignments will not be accepted without a granted student academic consideration.** The exact time after which the submitted assignment will not be accepted will be indicated in every assignment specification.
- (e) Marked assignments will be returned in lectures. Enquiries about the marks can only be made within a **maximum of 1 week after the assignment is handed back.** After 1 week, **no more marks can be changed.**

- (f) Requests for extensions should be made electronically by logging on to SOLS at, <http://www.uow.edu.au/student/index.html>, and following the Student academic consideration link. All such requests must be made prior to the due date and supporting documentation (e.g. medical certificates) should be lodged with administration. Please note that such requests are not necessarily granted. In particular, no extension will be allowed after model solutions have been released or discussed in class. The following advice, which forms part of the Student academic consideration application process, should also be noted.

“Please be aware that your Subject Coordinator(s) may not be able to consider your application for student academic consideration immediately. If the nature of assistance sought is urgent, or you are seeking a short extension of time to submit your assessment item, please approach your Subject Coordinator directly, soon after submitting the form.”

Thus, you should not assume your application has been granted. You should discuss the situation with your subject coordinator or lecturer as soon as possible after submitting your application and prior to the due date for the assessment item.

- (g) **To be eligible for a Pass in this subject a student must** Achieve an overall score of at least 50%.

Procedures for the return of assessment items:

Marked assignments will be returned in lectures.

Penalties for late submission of assessment items:

Penalties apply to all late work, except if student academic consideration has been granted. Late submissions will not be accepted and a mark of zero will be given.

Tutorial/Lab Closure Policy

If for any reason, the number of students in a tutorial or lab falls below a sustainable enrolment level, as determined by the Head of School, tutorials/labs offered for that subject may be collapsed or deleted.

You will have to attend the new tutorials/lab if this closure affects the one you are attending.

We will endeavour to make this decision no later than Week 4 of session.

Supplementary Exams

Supplementary Exams will be dealt with in accordance with student academic consideration policy (<http://www.uow.edu.au/about/policy/studentacademicconsiderationpolicy.pdf>) 9.2 Timing of Supplementary Exams.

While the School normally grants supplementary exams when the student does not sit the standard exam for an acceptable reason, each case will be assessed on its own merit and there is no guarantee a supplementary exam will be granted. If a supplementary exam is granted, you will normally be notified via SOLS Mail the time and date of this supplementary exam. You must follow the instructions given in the email message.

Please note that if this is your last session and you are granted a supplementary exam, be aware that your results will not be processed in time to meet the graduation deadline.

Student Academic Consideration Policy

The School recognises that it has a responsibility to ensure equity and consistency across its subjects for all students. Sometimes, in exceptional circumstances, students need to apply for student academic consideration in order to complete all assessable work.

The University applies strict criteria to the granting of student academic consideration. Before applying for student academic consideration, students should carefully read the University's policy which can be found at: <http://www.uow.edu.au/about/policy/studentacademicconsiderationpolicy.pdf>.

Plagiarism

When you submit an assessment task, you are declaring the following

1. It is your own work and you did not collaborate with or copy from others.
2. You have read and understand your responsibilities under the University of Wollongong's policy on plagiarism.
3. You have not plagiarised from published work (including the internet). Where you have used the work from others, you have referenced it in the text and provided a reference list at the end of the assignment.

Students must remember that:

Plagiarism will not be tolerated.

Students are responsible for submitting original work for assessment, without plagiarising or cheating, abiding by the University's policies on Plagiarism as set out in the University Handbook under University Policy Directory and in Faculty handbooks and subject guides. Plagiarism has led to the expulsion from the University.

Student Academic Grievance Policy

The School aims to provide a fair, equitable and productive learning environment for all its students. The Student Academic Grievance Policy seeks to support the achievement of this goal by providing a transparent and consistent process for resolving student academic grievances.

Any student who has a grievance over a result should obtain a Faculty of Informatics Appeal Against Decision or Action Affecting Academic Experience form from the Informatics Student Enquiry Centre. (<http://www.uow.edu.au/content/groups/public/@web/@inf/@faculty/documents/doc/uow017433.pdf>) The student should firstly take the form to the marker/lecturer to discuss the matter and, if the student is still not satisfied, s/he should take the next step as outlined on the form.

Once the grievance has been considered by the Faculty, if the student still feels the situation has not been fully resolved s/he may consult the Dean of Students. However, the Dean of Students can have no input into the academic judgment of the lecturer and can only review the grievance to ensure proper procedure has been followed.

Relevant University Policies, procedures and students services:

For more information students must refer to the Faculty handbook, online references or consult the UOW policy in full at <http://www.uow.edu.au/handbook/courserules/studacgrievpol.html> which contains a range of policies on educational issues and student matters.

This subject outline can be found at: <http://www.uow.edu.au/informatics/scsse/current>

This outline should be read in conjunction with the following documents:

Code of Practice - Teaching and Assessment http://www.uow.edu.au/handbook/codesofprac/teaching_code.pdf	Code of Practice - Students http://www.uow.edu.au/handbook/codesofprac/cop_students.html
Code of Practice-Honours http://www.uow.edu.au/handbook/CodeofPractice-Honours.pdf	Acknowledgement Practice Plagiarism will not be tolerated: http://www.uow.edu.au/handbook/courserules/plagiarism.html
Key Dates http://www.uow.edu.au/student/dates.html	Student Academic Consideration Policy: http://www.uow.edu.au/about/policy/studentacademicconsiderationpolicy.pdf
Course Progress Requirements: http://www.uow.edu.au/student/mrp/index.html	Graduate Qualities Policy: http://www.uow.edu.au/about/teaching/qualities/index.html#_The new UOW
Academic Grievance Policy (Coursework and honours students) http://www.uow.edu.au/handbook/courserules/studacgrievpol.html	Non-Discriminatory Language Practice and Presentation http://staff.uow.edu.au/eed/nondiscrimlanguage.html
Occupational Health and Safety http://staff.uow.edu.au/ohs/commitment/ohspolicy/index.html	Ownership of Work & Intellectual Property Policy: http://www.uow.edu.au/handbook/generalcourserules/UOW028651.html
Human Research Ethics Committee: http://www.uow.edu.au/research/rso/ethics/human/	Rules for student conduct: http://www.uow.edu.au/handbook/generalrules/StudentConductRules.pdf
Independent Learners' Introductory Program http://www.uow.edu.au/student/attributes/ilip/	Informatics Faculty Librarian, Ms Annette Meldrum, phone: 4221 4637, email: ameldrum@uow.edu.au
Student Support Services: http://www.uow.edu.au/student/services/ Informatics Faculty SEDLO (Student Equity and Diversity Liaison Officers) Virginie Schmelitschek, phone 4221 3833, virginie@uow.edu.au	SCSSE Internet Access & Student Resource Centre http://www.uow.edu.au/informatics/common/uow024466.html
SCSSE Computer Usage Rules http://www.uow.edu.au/informatics/common/uow024457.html	SCSSE Subject Outlines http://www.uow.edu.au/informatics/scsse/current