COMP90052 Computer Vision and Image Processing

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	This subject is not offered in 2012.
Time Commitment:	Contact Hours: 36 hours, made up of 24 one-hour lectures (two per week) and 12 one-hour workshops (one per week) Total Time Commitment: 120 hours
Prerequisites:	Completion of 50 points of third year computing study, or equivalent, or enrolment in Masters degree.
Corequisites:	None
Recommended Background Knowledge:	Previous study in artificial intelligence and computer graphics.
Non Allowed Subjects:	433-480 Computer Vision and Image Processing 433-483 Computer Vision and Image Processing 433-683 Computer Vision and Image Processing
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry.The University is dedicated to provide support to those with special requirements. Further details on the Disability support scheme can be found at the Disability Liaison Unit Website:http://www.services.unimelb.edu.au/disability/
Contact:	Professor Alistair Moffat email: **ammoffat@unimelb.edu.au (mailto:tbaldwin@unimelb.edu.au)**
Subject Overview:	Computer vision is the task of using computers to extract useful information automatically from digital images and videos; image processing is the business of transforming images to be more suitable for human interpretation, storage, transmission, or analysis by computer vision. Computer vision and image processing can be used in such practical applications as: automated inspection for quality control in industry; medical imaging; visual guidance for robots; face recognition; automated surveillance and monitoring; remote sensing. Topics to be covered include low-level, mid-level, and high-level vision; image formation; segmentation; visual motion analysis; stereo; and the Hough transform. Additional topics will be selected from: synopsis of human vision; perceptual organisation; feature extraction; shape from shading and other properties; colour processing; shape analysis; texture; image and video compression; object recognition; image interpretation; and scene understanding.
Objectives:	On completion of this subject students should be able to: # Describe the processes of image formation and digitization at a level sufficient for understanding basic image processing and computer vision # Describe the common techniques used in computer vision and image processing, and be able to fit them into a conceptual framework # Evaluate, select, adapt and apply these techniques appropriately to solve problems in computer vision and image processing
Assessment:	A programming project expected to take approximately 24 hours (30%) due towards the end of the semester A report of 10-12 pages in length about some topic in computer vision anda 15-minute in-class presentation, both due during the second half of the semester (20%) A two-hour end-of-semester written exam (50%)
Prescribed Texts:	None

Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	On completion of this subject students should have the: # Ability to undertake problem identification, formulation, and solution # Ability to utilise a systems approach to complex problems and to design and operational performance # Ability to manage information and documentation # Capacity for creativity and innovation # Ability to communicate effectively, with the engineering team and with the community at large
Related Course(s):	Bachelor of Computer Science (Honours)