433-483 Computer Vision and Image Processing

Credit Points:	12.500
Level:	Undergraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Semester 2, - Taught on campus.
Time Commitment:	Contact Hours: Twenty-four hours of lectures, 11 hours of workshops Total Time Commitment: Not available
Prerequisites:	Study at the third-year level in at least four of the following areas: artificial intelligence, computer design, database systems, graphics, interactive system design, networks and communications, operating systems, programming languages, software engineering, and theory of computation. Prior study in the areas of artificial intelligence and computer graphics would be an advantage.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Subject Overview:	This subject gives an introduction to computer vision and image processing. Computer vision is the business 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 subsequent 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 to a degree providing a visual sense for machines. Topics covered include low-level, mid-level, and high-level vision; image formation; synopsis of human vision; segmentation and feature extraction; perceptual organisation; visual motion analysis; stereo; shape from shading and other properties; colour processing; shape analysis; texture; Hough transform; image compression; object recognition; and image interpretation and scene understanding.
Assessment:	One assignment which will involve writing a report of around five pages in length about some topic in computer vision and an in-class presentation of around 15 minutes (20%); one programming project during semester, expected to take about 36 hours (30%); and a 2-hour end-of-semester written examination (50%).
Prescribed Texts:	None
Recommended Texts:	Information Not Available
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:	Information Not Available
Notes:	Credit may not be gained for both 433-483 Computer Vision and Image Processing and 433-683 Computer Vision and Image Processing.
Related Course(s):	Bachelor of Computer Science (Honours) Bachelor of Engineering (Computer Engineering) Bachelor of Engineering (Electrical Engineering) Bachelor of Engineering (Mechatronics) and Bachelor of Computer Science Bachelor of Engineering (Software Engineering)