Course Summary

Course code: 3006ICT

Course title: Robotics and Computer Vision

Study level: Undergraduate

Study period: Trimester 2, 2026

Mode: Online

Location: Online

School: School of Information and Communication Technology

Credit Points (awarded): 10

Student Contribution Band: Band 2: Further information is available at www.griffith.edu.au/students/enrolment-timetables-fees/paying-your-fees/student-contribution-amount

Course Overview

This course introduces the principles and methods that enable robots to perceive and understand the physical world using cameras and vision-based sensing. It covers coordinate frames, image formation, camera calibration, geometric vision, feature extraction, motion estimation, depth perception, object perception, visual localisation, mapping, and vision-guided robotic operation. Students learn how computer vision supports embodied intelligence in mobile robots, robot manipulators, and other autonomous systems, and how perception modules are integrated into complete robotic pipelines. The course emphasises robotics-specific computer vision rather than general machine learning or generic image classification. Students will develop the conceptual and practical foundations needed to design perception pipelines for tasks such as localisation, mapping, tracking, grasping, navigation, and autonomous operation in real-world environments.

Students must be enrolled in either 1534 Bachelor of Computer Science or 1585 B Engineering (Hon)/BComp Science.

Prerequisites:
Must have completed 2801ICT Computing Algorithms AND must have completed 2802ICT Intelligent Systems,

Usually available

- Gold Coast Trimester 2
- Online Trimester 2

Key dates

13 July 2026
Start Date

26 July 2026
Last date to add course

10 August 2026
Last date to drop course without financial penalty (Census date)

13 September 2026
Last date to drop course without academic failure

Classes

Trimester 2, 2026

If your class is full, please view Full Class information at www.griffith.edu.au/students/enrolment-timetables-fees/managing-your-enrolment/full-class-information

Lecture

Class	Availability	When	Where	Notes
You must enrol in this Lecture				
Lecture (44813)	In High Demand	Tuesday 10:00 - 11:50 Week 1 - 4, 5 - 12	Live streamed Online	

Computer Laboratory

Class	Availability	When	Where	Notes
You must enrol in this Computer Laboratory				
Computer Laboratory (44814)	In High Demand	Tuesday 15:00 - 16:50 Week 1 - 4, 5 - 12	Live streamed Online	

Assessment

Summary

Assignment (3) | Group assessment (1) | Mandatory pass (1)

Assessment name	Type	Weighting	Due date
Weekly Assignment	Practice-based assignment	10%	Week 1 Mon - Week 1 Sun Week 2 Mon - Week 2 Sun Week 3 Mon - Week 3 Sun Week 4 Mon - Week 4 Sun Week 5 Mon - Week 5 Sun Week 6 Mon - Week 6 Sun Week 7 Mon - Week 7 Sun Week 8 Mon - Week 8 Sun Week 9 Mon - Week 9 Sun Week 10 Mon - Week 10 Sun

This assessment item:
- Individual activity
- Mark Type: Score
- There are 10 subtasks
- 10 subtasks will contribute towards the overall mark

Specific Learning Outcomes:

1: Appraise the scope, approaches, limitations, and applications of computer vision algorithms

2: Create suitable data representations for machine visual perception

3: Assess the suitability of features for specific computer vision applications

4: Apply machine visual perception methods to create computer vision software systems

5: Evaluate the performance of computer vision algorithms

Assessment name	Type	Weighting	Due date
Milestone: Individual Project	Written assignment	30%	Week 7, Sun

This assessment item:
- Individual activity
- Mark Type: Score

Specific Learning Outcomes:

1: Appraise the scope, approaches, limitations, and applications of computer vision algorithms

2: Create suitable data representations for machine visual perception

3: Assess the suitability of features for specific computer vision applications

Team Project	Written assignment	60%	Week 11, Sun

This assessment item:

- Group activity
- Has a mandatory pass component
- Requires submission to pass this course
- Requires a minimum percentage mark to pass this course
- Mark Type: Score

Mandatory Pass Component:
To pass this course, students must achieve a passing grade, and:
achieve a minimum percentage mark of 40

Specific Learning Outcomes:

1: Appraise the scope, approaches, limitations, and applications of computer vision algorithms

2: Create suitable data representations for machine visual perception

3: Assess the suitability of features for specific computer vision applications

4: Apply machine visual perception methods to create computer vision software systems

5: Evaluate the performance of computer vision algorithms

If you are not sure which week we are in, check out the academic calendar at www.griffith.edu.au/academic-calendar-key-dates

Learning Outcomes

After successfully completing this course you should be able to:

1: Appraise the scope, approaches, limitations, and applications of computer vision algorithms

2: Create suitable data representations for machine visual perception

3: Assess the suitability of features for specific computer vision applications

4: Apply machine visual perception methods to create computer vision software systems

5: Evaluate the performance of computer vision algorithms

Assurance of Learning

Course Program learning outcomes:

- A broad and coherent body of knowledge in the area of computer science and computer programming. They will have depth in the underlying principles and concepts in computer science and professional standards and practice as a basis for independent lifelong learning.
- The cognitive skills to review critically, analyse, consolidate and synthesise knowledge in the area of computer science
- Cognitive and technical skills to demonstrate a broad understanding of knowledge with depth in the areas of software and application development, computer algorithms, data science and artificial intelligence
- Cognitive and creative skills to exercise critical thinking and judgment in identifying and solving computational problems with intellectual independence
- Skills to comprehend written and verbal communication and present a clear, coherent and independent exposition of software designs, specifications, algorithms, technologies and ideas to a range of audiences both writing and orally.

Australian Computer Society (ACS) Accreditation Course status

- ACS Core Body of Knowledge Mappings: Bloom's Levels
- ICT Ethics (Bloom Level 2), Impacts of ICT (Bloom Level 2), Working Individually and team work (Bloom Level 3), Professional Communication (Bloom Level 2), The Professional Practitioner (Bloom Level 2), Information & Data Science & Eng (Bloom Level 2), Computational science & Eng (Bloom Level 2), ICT Project Management (Bloom Level 2)
- SFIA8 Skill
- Machine learning (MLNG) (Skill Level 3), Programming/software development (PROG) (Skill Level 3)

ACS Complex Computing Characteristics

- involves wide-ranging or conflicting technical, computing, and other issues;
- identification of a requirement or the cause of a problem is ill defined or unknown;
- has no obvious solution, and requires conceptual thinking and innovative analysis to formulate suitable abstract models;
- a solution requires the use of in-depth computing or domain knowledge and an analytical approach that is based on well-founded principles

Course Contacts

Trimester 2 2026, Online

Dr Lei Wang

Campus convenor

Email: l.wang4@griffith.edu.au

Dr Xuefei Yin

Campus: Gold Coast

Email: x.yin@griffith.edu.au

Important information

The published online version of the Course Profile is the authoritative version and by the publication of the Course Profile online, the University deems the student has been notified of and read the course requirements. Assessment is subject to change up until the Start Date of the course. Please recheck the website for updates.

Disclaimer:

This document has been auto-generated, please refer to the website (https://my.griffith.edu.au/programs-courses) for current and up to date information.