COMP 6003 COMPUTER VISION

Credit Points 10

Coordinator Yan Zhang (https://directory.westernsydney.edu.au/search/name/Yan Zhang/)

Description Computer vision uses artificial intelligence to train computers to interpret and understand visual images. Through the information that is derived, computer systems can make decisions and take actions. The amount of visual information today from digital devices and cameras along with improved technology has enabled considerable advances in automated image interpretation. In this subject students learn the state-of-the-art technologies of image processing and computer vision through practical activities. Computer vision is used, and has the potential to be used, in a range of industries, in novel ways. This presents a unique opportunity to students completing this subject.

School Computer, Data & Math Sciences

Discipline Computer Science, Not Elsewhere Classified.

Student Contribution Band HECS Band 2 10cp

Check your HECS Band contribution amount via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Postgraduate Coursework Level 6 subject

Assumed Knowledge

Students should have general background in programming, computing, and/or statistics.

Learning Outcomes

1. Apply knowledge, theories and methods in image processing and computer vision.
2. Articulate the kinds of problems found in image processing and computer vision.
3. Evaluate existing computer vision systems.
4. Demonstrate effective communication and collaboration skills to develop a functional computer vision system.
5. Implement designs to develop practical and innovative image processing and computer vision applications or systems using various deep learning based technologies.
6. Work professionally and responsibly in solving problems in image processing and computer vision.

Subject Content

- Image formation
- Image processing
- Model fitting and optimization
- Recognition
- 3D reconstruction
- Deep learning for vision systems (1): foundations
- Deep learning for vision systems (2): image classification and detection
- Deep learning for vision systems (3): transfer learning
- Deep learning for vision systems (4): generative models and visual embeddings

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task
Practical	2 hours (per task)	30	N	Individual
Quiz	2 hours	30	N	Individual
Report	1000 words	30	N	Group/ Individual
Presentation	20 minutes	10	N	Group/ Individual

Prescribed Texts

Szeliski, R. (2022). *Computer Vision: Algorithms and Applications*. Springer.

Teaching Periods

Spring (2023)
Parramatta - Victoria Rd
On-site
Subject Contact Yan Zhang (https://directory.westernsydney.edu.au/search/name/Yan Zhang/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=COMP6003_23-SPR_PS_1#subjects)