In Progress

Please note that this Unit Profile is still in progress. The content below is subject to change.

COIT29225 *Neural Networks and Deep Learning*

Term 2 - 2022

Profile information current as at 14/12/2025 03:42 pm

All details in this unit profile for COIT29225 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student).The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

General Information

Overview

Artificial Intelligence (AI) is becoming an important part of software development. Neural networks and Deep Learning are the main contributors to the recent advances in applications of Artificial Intelligence. Deep Learning enables computers to learn complicated concepts by building them out of a hierarchy of simpler ones. Deep Learning techniques have been successfully applied to a broad field of applications such as computer vision, image and video recognition, natural language processing, and medical diagnosis. This unit introduces you to the fundamentals of Deep Learning and how it can solve problems in many areas. In this unit, you will learn the architecture of neural networks and algorithms, including the latest Deep Learning techniques. You will learn to develop conventional neural networks such as multilayer perceptrons, and convolutional neural networks. You will use software to train and deploy neural networks. You will also identify practical applications of Deep learning by exploring recent case studies.

Details

Career Level: *Postgraduate*
Unit Level: *Level 9*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites

Pre-requisite: COIT20277 Introduction to Artificial Intelligence
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the Assessment Policy and Procedure (Higher Education Coursework).

Offerings For Term 2 - 2022

No offerings for COIT29225

Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website

This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Postgraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

Regional Campuses
Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

Metropolitan Campuses
Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the University's Grades and Results Policy for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the CQUniversity Policy site.
You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the CQUniversity Policy site.

Previous Student Feedback

Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

Feedback from Unit Coordinator

Feedback
Students wish to study basic techniques about the computer vision.

Recommendation
Add OpenCV basic tutorial materials and exercise.

Unit Learning Outcomes

On successful completion of this unit, you will be able to:

1. Formulate a neural network and deep learning problem applying the concepts and theory of classical and deep learning techniques
2. Design deep learning solutions to problems in pattern recognition and image analysis
3. Build a software application implementing neural networks using a high level programming language
4. Evaluate the performance of the deep learning techniques used in the software application
5. Investigate the application of intelligent systems in socially innovative applications.

The Skills Framework for the Information Age (SFIA) standard covers the skills and competencies related to information and communication technologies. SFIA defines levels of responsibility and skills. SFIA is adopted by organisations, governments and individuals in many countries. SFIA is increasingly being used when developing job descriptions and role profiles. SFIA can be used by individuals for creating personal skills profile. The Australian Computer Society (ACS) recognises the SFIA and provides MySFIA for ACS members to build a skills profile.
This unit contributes to the following workplace skills as defined by SFIA 7 (the SFIA code is included):
Software design (SWDN)
Programming/software development (PROG)
Testing (TEST)
Application Support (ASUP).

Alignment of Learning Outcomes, Assessment and Graduate Attributes

— N/A Level ∘ Introductory Level • Intermediate Level • Graduate Level ∘ Professional Level ∘ Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Practical Assessment - 30%	•	•			
2 - Practical Assessment - 35%	•	•	•		•
3 - Project (applied) - 35%			•	•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
1 - Knowledge	∘	∘	∘		
2 - Communication		∘			∘
3 - Cognitive, technical and creative skills		∘	∘	∘	
4 - Research			∘	∘	∘
5 - Self-management				∘	

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
6 - Ethical and Professional Responsibility			◦		
7 - Leadership			◦		
8 - Aboriginal and Torres Strait Islander Cultures					

Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes							
	1	2	3	4	5	6	7	8
1 - Practical Assessment - 30%	◦	◦	◦					
2 - Practical Assessment - 35%	◦	◦	◦	◦		◦	◦	
3 - Project (applied) - 35%	◦		◦	◦	◦	◦	◦	

Textbooks and Resources

Textbooks

COIT29225

Prescribed

Neural Networks and Deep Learning - A Textbook
Edition: 1st (2018)
Authors: Charu C. Aggarwal
Springer
Gewerbestrasse , Cham , Switzerland
ISBN: 978-3-319-94462-3, 978-3-319-94463-0(eBook)
Binding: Paperback

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

Referencing Style

Information for Referencing Style has not been released yet.
This unit profile has not yet been finalised.

Teaching Contacts

Information for Teaching Contacts has not been released yet.
This unit profile has not yet been finalised.

Assessment Tasks

Information for Assessment Tasks has not been released yet.
This unit profile has not yet been finalised.

Academic Integrity Statement

Information for Academic Integrity Statement has not been released yet.
This unit profile has not yet been finalised.