COMP8420

Advanced Natural Language Processing

Session 1, In person-scheduled-weekday, North Ryde 2024

School of Computing

Contents

Disclaimer

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

General Information

Unit convenor and teaching staff
Greg Baker
greg.baker@mq.edu.au

Qiongkai Xu
qiongkai.xu@mq.edu.au

Credit points
10

Prerequisites
COMP6420

Corequisites

Co-badged status

Unit description
Human communication, with humans and virtual agents alike, is done in a natural language such as English. Humans have the amazing ability to learn, process and use natural languages. However, for machines it is difficult. This unit aims to familiarise students with the fundamental concepts and ideas in natural language processing (NLP) and Natural Language Understanding (NLU). It will help students develop a deeper appreciation of both algorithms for processing linguistic information and the underlying computational properties of natural languages, as well as their applications.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

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

ULO1: Identify the key natural language processing applications that match current and emerging industry needs.

ULO2: Explain the main techniques that are used to develop and implement natural language processing applications.

ULO3: Implement natural language processing applications using common tools and libraries used in industry.

ULO4: Design natural language processing applications using advanced deep learning techniques.

ULO5: Apply natural language processing methods and techniques to industry applications using real data.

ULO6: Apply good practice in the development, monitoring, and deployment of natural language processing systems

General Assessment Information

Requirements to Pass this Unit

To pass this unit you must:

1. Attempt all assessments, and

2. Achieve a total mark equal to or greater than 50%

Late Assessment Submission Penalty

Unless a Special Consideration request has been submitted and approved, a 5% penalty (of the total possible mark of the task) will be applied for each day a written report or presentation assessment is not submitted, up until the 7th day (including weekends). After the 7th day, a grade of '0' will be awarded even if the assessment is submitted. The submission time for all uploaded assessments is 11:55 pm. A 1-hour grace period will be provided to students who experience a technical concern. For any late submission of time-sensitive tasks, such as scheduled presentations, please apply for Special Consideration.

Assessments where Late Submissions will be accepted are Assignments 1 and 2. Late Submission of programs for the Main Project will be accepted, but note that it may not be possible to reschedule the presentation of your Main Project.

Special Consideration

The Special Consideration Policy aims to support students who have been impacted by short-term circumstances or events that are serious, unavoidable and significantly disruptive, and which may affect their performance in assessment. If you experience circumstances or events that affect your ability to complete the assessments in this unit on time, please inform the convenor and submit a Special Consideration request through ask.mq.edu.au.

Assessment Tasks

Name	Weighting	Hurdle	Due
Main project	40%	No	Tuesday 28th May 2024 (Week 13)
Assignment 1	30%	No	Tuesday March 12th 2024 (Week 4)

Name	Weighting	Hurdle	Due
Assignment 2	30%	No	Tuesday April 23rd 2024 (during the holidays)

Main project

Assessment Type [1]: Project
Indicative Time on Task [2]: 35 hours
Due: **Tuesday 28th May 2024 (Week 13)**
Weighting: **40%**

Design, implement, deploy, evaluate and monitor an industrial grade natural language processing application that uses realistic data and requires advanced deep learning techniques.

On successful completion you will be able to:
- Identify the key natural language processing applications that match current and emerging industry needs.
- Explain the main techniques that are used to develop and implement natural language processing applications.
- Implement natural language processing applications using common tools and libraries used in industry.
- Design natural language processing applications using advanced deep learning techniques.
- Apply natural language processing methods and techniques to industry applications using real data.
- Apply good practice in the development, monitoring, and deployment of natural language processing systems

Assignment 1

Assessment Type [1]: Programming Task
Indicative Time on Task [2]: 25 hours
Due: **Tuesday March 12th 2024 (Week 4)**
Weighting: **30%**

Implement a natural language processing application using industry tools.

On successful completion you will be able to:

- Identify the key natural language processing applications that match current and emerging industry needs.
- Explain the main techniques that are used to develop and implement natural language processing applications.
- Implement natural language processing applications using common tools and libraries used in industry.

Assignment 2

Assessment Type [1]: Programming Task
Indicative Time on Task [2]: 25 hours
Due: **Tuesday April 23rd 2024 (during the holidays)**
Weighting: **30%**

Implement a practical natural language processing application using deep learning techniques.

On successful completion you will be able to:

- Identify the key natural language processing applications that match current and emerging industry needs.
- Explain the main techniques that are used to develop and implement natural language processing applications.
- Implement natural language processing applications using common tools and libraries used in industry.
- Apply natural language processing methods and techniques to industry applications using real data.

---

[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

Week 1

Lectures and practicals will commence in Week 1.

Attendance at Lectures and Practicals

Attendance in person is encouraged, but not enforced.

Methods of Communication

We will communicate with you via your university email and through announcements on iLearn. Queries to convenors can either be placed on the iLearn discussion board or sent to the unit convenor via the contact email on iLearn.

COVID Information

Please refer to https://www.mq.edu.au/about/coronavirus-faqs

Unit Schedule

Weeks 1 - 6: Introduction and Foundations of Modern NLP

Weeks 7 - 13: Advanced NLP and its Applications

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Assessment Procedure
- Complaints Resolution Procedure for Students and Members of the Public
- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity
- Complete the Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study

- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues
- Student Advocacy provides independent advice on MQ policies, procedures, and processes

Student Enquiries

Got a question? Ask us via AskMQ, or contact Service Connect.

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.

Changes from Previous Offering

This is the first time this unit has been offered.

Unit information based on version 2024.03 of the Handbook