COMP3160
Artificial Intelligence
Session 2, Special circumstances 2021
Department of Computing

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Notice
Some on-campus classes have moved online for the first two weeks of Session, before returning to campus in Week 3. If you are studying a unit outside of the primary Session 2 timetable, please contact your teaching staff team for further details.

Some classes/teaching activities cannot be moved online and must be taught on campus. To find out if you are enrolled in one of these classes/teaching activities, you can check to see if your unit is on the list of units with mandatory on-campus classes/teaching activities.

Your Unit Convenor will provide more information via an iLearn announcement when your iLearn unit becomes available.

https://unitguides.mq.edu.au/unit_offerings/129567/unit_guide/print 1
General Information

Unit convenor and teaching staff
Convenor and Lecturer
Abhaya Nayak
abhaya.nayak@mq.edu.au
Contact via Email
BD Building, Level 3, Office 357
Fri 12:00 - 13:00 (or by appointment)

Lecturer
Rolf Schwitter
rolf.schwitter@mq.edu.au
Contact via Email
BD Building, Level 3, Office 359
Wed 15:00 - 16:00

Tutor
Abdus Salam
abdus.salam@mq.edu.au
Contact via Email
See HELP101 schedule/by appointment

Tutor
Manas Patra
manas.patra@mq.edu.au
Contact via Email
See HELP101 schedule/by appointment

Credit points
10

Prerequisites
130cp at 1000 level or above including COMP2000 or COMP229 or COMP2010 or COMP225 or COMP2110 or COMP249 or COMP2160

Corequisites

Co-badged status
Unit description
人工智能（AI）是一个成熟的领域，研究计算机和计算机软件如何能表现出智能行为。在本单元中，学生将被介绍到AI的基本概念，如代理架构、知识表示、规划和搜索，以及在一些相关主题领域中的应用。在完成本单元后，学生将能够应用解决问题所需的策略，以建立智能系统。

Important Academic Dates
信息关于重要学术日期，包括从单元中退学的截止日期，可以在https://students.mq.edu.au/important-dates上找到。

Learning Outcomes
在成功完成此单元后，你将能够：

ULO1: 描述各种搜索技术在AI中的角色，并使用合适的工具来实现它们。
ULO2: 解释并实施监督机器学习算法的基础。
ULO3: 解释生物启发算法及其在AI中的角色，并在不同上下文中实现一些这样的算法。
ULO4: 描述不确定性在AI中的作用，并展示从不确定知识中进行推理的能力。

General Assessment Information
本单元的评估形式包括一次诊断测试，两次作业和一次期末考试。

Late Submission
没有延期申请，除非有特别考虑。每延迟24小时或部分，提交的作业将从总分中扣除10%。例如，提交一份价值10分的作业，25小时后，将扣除2分或20%的总分。

Supplementary Exam
在一般情况下，如果你获得特别考虑，期末考试的补充考试将在正常考试期结束后安排，根据成绩的公布。通过特别考虑申请期末考试，你同意在补充考试期间参加重考，且不再有资格申请第二特别考虑。

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approval based on pre-existing commitments. Please ensure you are familiar with the policy prior
to submitting an application. Approved applicants will receive an individual notification one week
prior to the exam with the exact date and time of their supplementary examination.

Assessment Standards

COMP3160 will be assessed and graded according to the University assessment and grading
policies.

The following general standards of achievement will be used to assess each of the assessment
tasks with respect to the letter grades.

**Pass:** Can correctly reproduce facts and definitions across a breadth of concepts, but lacks
depth of understanding. Can describe and/or employ search techniques in ways that are close to
those discussed in lectures or notes. Can employ AI techniques to build a basic learning
machine. Has basic understanding of biologically inspired algorithms and adversarial games.
Has demonstrated some ability for sound reasoning in an uncertain domain.

**Credit/Distinction:** As for Pass plus: Exhibits breadth and depth of understanding of concepts.
Can proficiently describe and/or employ search techniques going beyond how they were
discussed in lectures or notes. Can employ AI techniques to a build very good learning
machine. Has excellent understanding of biologically inspired algorithms and adversarial games,
and can easily employ the former to develop strategies for the latter. Has excellent
understanding of the role uncertainty plays in AI and demonstrated excellence for sound
reasoning in uncertain domains.

**High Distinction:** As for Credit/Distinction plus: Is aware of the context in which the concepts
are developed and their limitations. Can cogently describe in their own words and efficiently
employ search techniques, going well beyond how they were discussed in lectures or
notes. Can employ AI techniques to build an excellent learning machine. Has outstanding
understanding of biologically inspired algorithms and adversarial games, and can easily employ
the former to develop and evaluate strategies for the latter. Has excellent understanding of the
role uncertainty plays in AI and has outstanding ability for sound reasoning in uncertain domains.

Assessment Process

These assessment standards will be used to give a numeric mark to each assessment
submission during marking. The mark will correspond to an appropriate letter grade when
relevantly weighted. The final mark for the unit will be calculated by combining the marks for all
assessment tasks according to the percentage weightings shown in the assessment summary.

**Assessment Tasks**

<table>
<thead>
<tr>
<th>Name</th>
<th>Weighting</th>
<th>Hurdle</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1</td>
<td>20%</td>
<td>No</td>
<td>Week 8</td>
</tr>
<tr>
<td>Final Examination</td>
<td>55%</td>
<td>No</td>
<td>TBA</td>
</tr>
</tbody>
</table>

https://unitguides.mq.edu.au/unit_offerings/129567/unit_guide/print
Assignment 1

Assessment Type 1: Programming Task
Indicative Time on Task 2: 15 hours
Due: Week 8
Weighting: 20%

The first assignment will require students to demonstrate their skills in employing their knowledge of machine learning, and programming in Python.

On successful completion you will be able to:
- Describe the roles of various search techniques in AI and use appropriate tools to implement them.
- Explain and implement basics of supervised machine learning algorithms

Final Examination

Assessment Type 1: Examination
Indicative Time on Task 2: 35 hours
Due: TBA
Weighting: 55%

The final examination will assess all the four learning outcomes. With regards to learning outcomes #1, #2 and #3, it allows to accurately assess the appreciation of good programming and problem solving skills. With regards to learning outcome #2, #3 and #4, it will assess students' understanding of fundamental concepts such as different types of search, games and inferences.

On successful completion you will be able to:
- Describe the roles of various search techniques in AI and use appropriate tools to implement them.
- Explain and implement basics of supervised machine learning algorithms
Explain biologically inspired algorithms and their roles in AI, and implement some such algorithms in different contexts including adversarial games.

Describe the role that uncertainty plays in AI, and demonstrate ability for sound reasoning of different sorts from uncertain knowledge.

Assignment 2
Assessment Type ¹: Programming Task
Indicative Time on Task ²: 20 hours
Due: Week 13
Weighting: 20%

This assignment will require students to demonstrate their skills in employing their knowledge of biologically inspired algorithms to develop strategies for adversarial games (#3), and programming in Python (#1).

On successful completion you will be able to:

• Describe the roles of various search techniques in AI and use appropriate tools to implement them.
• Explain biologically inspired algorithms and their roles in AI, and implement some such algorithms in different contexts including adversarial games.

Diagnostic Test
Assessment Type ¹: Quiz/Test
Indicative Time on Task ²: 5 hours
Due: Week 4
Weighting: 5%

This diagnostic test will give early feedback on students' understanding of basic AI concepts (in particular search) and Python programming skills (#1).

On successful completion you will be able to:

• Describe the roles of various search techniques in AI and use appropriate tools to implement them.

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

https://unitguides.mq.edu.au/unit_offerings/129567/unit_guide/print
Delivery and Resources

Classes
Each week you should attend three hours of lectures, a tutorial class and a practical session. For details of days, times and rooms consult the timetables webpage. Students are urged to actively participate in the tutorials; this helps enhancing the understanding by students.

Note that practicals and tutorials commence in week 2. You should have selected a practical session and a tutorial session during enrolment. You should attend the sessions you are enrolled in.

Texts
There is no set textbook for the unit. The following are recommended readings. Lecturers may recommend other references.


Poole, D. and Mackworth, AK. Artificial Intelligence - Foundations of Computational Agents. Cambridge University Press 2017. (Available free of charge at: https://artint.info/2e/html/ArtInt2e.html under a Creative Commons Attribution-Noncommercial-No Derivative Works 2.5 Canada License.)

For some parts of learning, the necessary reading (book chapters, software documentation, papers, etc.) will be made available on iLearn.

Unit Webpage and Technology Used and Required
COMP3160 uses iLearn for delivery of class materials, discussion boards, submission of assessment tasks and access to marks and comments. Students should check the iLearn site regularly for unit updates.

Questions that are of potential interest to other students in this unit, such as queries regarding the content of this unit, its tutorials or practicals, should be posted on discussion forum on iLearn.

The practical work in this unit mostly involves programming in Python3, and will require some packages relevant to AI. Instructions will be provided on how to use Python3 and these packages on the laboratory machines and how to download them for use on your own computer.

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

Tentative Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Reading Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Unit Organisation and Introduction to AI</td>
<td>Lecturer Supplied</td>
</tr>
<tr>
<td>2-4</td>
<td>Search in AI</td>
<td>Lecturer Supplied</td>
</tr>
<tr>
<td>5-6</td>
<td>Supervised Machine Learning</td>
<td>Lecturer Supplied</td>
</tr>
<tr>
<td>7-8</td>
<td>Evolutionary Algorithms</td>
<td>Lecturer Supplied</td>
</tr>
<tr>
<td>9-10</td>
<td>Adversarial Games and Multi-Agent Systems</td>
<td>Lecturer Supplied</td>
</tr>
<tr>
<td>11-12</td>
<td>Uncertainty in AI</td>
<td>Lecturer Supplied</td>
</tr>
<tr>
<td>13</td>
<td>Revision</td>
<td></td>
</tr>
</tbody>
</table>

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). 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
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy (Note: The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)

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

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).
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](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](http://ask.mq.edu.au) or if you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

Student Support

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

Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- Getting help with your assignment
- Workshops
- StudyWise
- 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 Enquiry Service

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

Equity Support

Students with a disability are encouraged to contact the [Disability Service](mailto:) who can provide appropriate help with any issues that arise during their studies.

IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/](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](mailto:).
The policy applies to all who connect to the MQ network including students.

**Changes from Previous Offering**

The duration of the Final Exam will be 2 hours. There does not seem to be a proper place to mention it...