COMP 7021 KNOWLEDGE REPRESENTATION AND REASONING

Credit Points 10

Legacy Code 301315

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

Description Knowledge representation and reasoning is one of the fundamental components of Artificial Intelligence. It studies ways to represent and reason about human knowledge effectively in formal computational models, and eventually to solve complex tasks using computer systems. This unit covers logic foundations of knowledge representation and reasoning, Answer Set Programming approaches for declarative problem solving, intelligent agent modelling, diagnostic and probabilistic reasoning. This unit is part of the important preparations for career paths to AI engineers, robotics engineers and intelligent software engineers.

School Computer, Data & Math Sciences

Discipline Artificial Intelligence

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 7 subject

Restrictions

Students must complete 60 credit points before enrolling into this Subject

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Critically analyse the logic foundations of knowledge representation and reasoning in Artificial Intelligence;
2. Apply knowledge of the essentials of non-monotonic reasoning and applications of knowledge graphs;
3. Implement Answer Set Programming as a declarative programming language and its applications in general problem solving and in modelling dynamic domains
4. Use formal languages based on Answer Set Programming to represent planning and diagnostic agents
5. Communicate the language of knowledge representation in a professional manner to diverse audiences

Subject Content

1. Logical Foundations for Knowledge Representation and Reasoning
2. Knowledge Representation and Non-monotonic Reasoning
3. Answer Set Programming: Syntax and Semantics
4. Declarative Problem Solving Using Answer Set Programming
5. Algorithms for Computing Answer Sets
6. Modelling Dynamic Domains
7. Planning and Diagnostic Agents
8. Probabilistic Reasoning

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.

Item	Length	Percent	Threshold	Individual/ Group Task
Quiz	1.5 hours	40	N	Individual
Practical	4 hours	30	N	Individual
Report	500 words + programming based demonstration (6 hours)	30	N	Individual

Prescribed Texts

- Gelfond, M., & Kahl, Y. (2014). Knowledge representation, reasoning, and the design of intelligent agents. New York, NY: Cambridge University Press.

Teaching Periods

Spring

Parramatta - Victoria Rd

Day

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

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=COMP7021_22-SPR_PS_D#subjects)