CS255-15 Artificial Intelligence

20/21

Department
Computer Science
Level
Undergraduate Level 2
Module leader
Nathan Griffiths
Credit value
15
Module duration
10 weeks
Assessment
Multiple
Study location
University of Warwick main campus, Coventry

Description

Introductory description

This module will introduce the foundational concepts in artificial intelligence and knowledge-based systems.
This module is only available to students in the second year of their degree and is not available as an unusual option to students in other years of study.

Module aims

This module will introduce the foundational concepts in artificial intelligence and knowledge-based systems. Specifically, it will provide a broad coverage of search, planning, adversarial search (games), constraint satisfaction problem solving, reinforcement learning, rational and logical agency, knowledge representation techniques, and Bayesian approaches to artificial intelligence.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

1. Introduction
2. Rational Agents
3. Agent Architectures and Hierarchical Control

4. Uninformed Search
5. Informed Search
6. Constraint Satisfaction Problems
7. Local Search
8. Adversarial Search
9. Planning
10. Knowledge Representation
11. Bayesian Al
12. Reinforcement Learning
13. Deliberative and Reactive Architectures
14. Agent Cooperation

Learning outcomes

By the end of the module, students should be able to:

- - Develop an appreciation for Knowledge Based Systems, Intelligent Agents and their architectures
- - Understand a wide variety of knowledge representation and artificial intelligence approaches to planning
- - Understand various methods for search (uninformed and informed), planning and reinforcement learning
- - Understand various methods for representing and reasoning under uncertainty.

Indicative reading list

Please see Talis Aspire link for most up to date list.

View reading list on Talis Aspire

Subject specific skills

develop an appreciation for Knowledge Based Systems, Intelligent Agents and their architectures,
understand a wide variety of knowledge representation and artificial intelligence approaches to planning,
understand various methods for search (uninformed and informed), planning and reinforcement learning, and
understand various methods for representing and reasoning under uncertainty.

Transferable skills

Programming
Communication skills (written)
Problem solving
Critical thinking

Study

Study time

Type	Required
Lectures	30 sessions of 1 hour (20%)
Seminars	7 sessions of 1 hour (5%)
Private study	113 hours (75%)
Total	150 hours

Private study description

Required reading (as identified in lectures)
Background reading
Exercise sheets
Revision
Coursework

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Students can register for this module without taking any assessment.

Assessment group D3

	Weighting	Study time
Coursework	20%	
CS255 exam	80%	
~Platforms - AEP		

- students may use a calculator

Assessment group R

	Weighting	Study time
CS255 resit exam	100%	
CS255 resit exam ~Platforms - AEP		

Feedback on assessment

Mark and written feedback returned via Tabula.

Past exam papers for CS255

Availability

Courses

This module is Optional for:

- Year 2 of UCSA-I1N1 Undergraduate Computer Science with Business Studies
- Year 2 of UCSA-G406 Undergraduate Computer Systems Engineering
- Year 2 of UCSA-G408 Undergraduate Computer Systems Engineering
- Year 2 of UCSA-G5N1 Undergraduate Computer and Management Sciences
- Year 2 of USTA-G302 Undergraduate Data Science
- Year 2 of USTA-G304 Undergraduate Data Science (MSci)

This module is Option list A for:

- Year 2 of UCSA-G400 BSc Computing Systems
- Year 2 of UCSA-G402 MEng Computing Systems
- Year 2 of UCSA-G500 Undergraduate Computer Science
- Year 2 of UCSA-G503 Undergraduate Computer Science MEng

This module is Option list B for:

- Year 2 of UCSA-GN51 Undergraduate Computer and Business Studies
- Year 2 of UCSA-G4G1 Undergraduate Discrete Mathematics
- Year 2 of UCSA-G4G3 Undergraduate Discrete Mathematics

This module is Option list C for:

- Year 2 of UCSA-G5N1 Undergraduate Computer and Management Sciences