

Summary Information

Module Code	5174CSD
Formal Module Title	AI and Machine Learning
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 5
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

Learning Methods

Learning Method Type	Hours
Lecture	22
Practical	22
Tutorial	11

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-CTY	CTY	January	12 Weeks

Aims and Outcomes

Aims	Artificial intelligence as a concept has been around for many years but more recently has become a very prominent and socially acceptable technology. From self-driving vehicles, healthcare and medical diagnosis, through to robot manufacture, intelligent machines and Amazon Echo, Apple Homepod or Google Home. AI and machine learning is the technology of the moment and this module will explore the underlying technology and how it is changing our lives.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Apply AI and knowledge based systems to design technology applications.
MLO2	2	Apply simulation tools to develop a realistic small fuzzy logic system.
MLO3	3	Apply the fundamental principles of evolutionary computation to develop machine learning and AI systems.

Module Content

Outline Syllabus	Introduction to AI including definitions. Knowledge based systems: knowledge acquisition and representation, construction, operation, forward and backward chaining. Neural nets: overview of network architectures and learning schemes, perceptron learning, multi-layer perceptron and backpropagation, implementation. Evolutionary Computing (introduction), principles, data coding, fundamental operations, Basic GA, Bee Algorithm, etc. Case studies will illustrate the application and performance of AI methods in Engineering and technology, e.g. modelling of systems and signals; pattern recognition; image processing.
Module Overview	
Additional Information	A range of artificial intelligence (AI) techniques will be studied. Case studies will illustrate the application of AI to technology and engineering problems. Students will gain hands on use of implementing AI methods using computer software packages.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	Report 1	50	0	MLO1, MLO2
Report	Report 2	50	0	MLO1, MLO3

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Karl Jones	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings