

GAME: Machine Learning for Games

Module Title: Language of In		Machine Learning for Games		
Language of In	4 41			
	istruction:	English		
Credits:	5			
NFQ Level:	8			
Module Deliver	red In	1 programme(s)		
Teaching & Learning Strategies:		Traditional lectures are used to convey knowledge from teacher to student, and students are actively encouraged to engage in discussion during class. During the practical sessions, students will undertake various laboratory exercises implementing and exploring a variety of algorithms. Group learning is also utilised via a module group project and also a cross-module group project as possible. A term paper wil involve a more in-depth study of the topics raised.		
Module Aim:		To immerse students in the formal theory, and the application of contemporary techniques in Machine Learning for computer games development.		
Learning Outco	omes			
On successful c	completion of th	nis module the learner should be able to:		
LO1 D	Demonstrate an excellent understanding of non symbolic approaches to Artificial Intelligence			
	Understand, evaluate and communicate the key principles, theories and techniques specific to the training of Machine Learning models.			
	Apply key principles, theories and techniques (particularly Machine Learning technologies) with respect to computer gam development.			
Pre-requisite le	earning			
Module Recom This is prior lear		ctical skill) that is recommended before enrolment in this module.		
No recommenda	ations listed			
Incompatible N These are modu		e learning outcomes that are too similar to the learning outcomes of this module.		
No incompatible modules listed				
Co-requisite M	lodules			
No Co-requisite	e modules listed	1		
Requirements This is prior lear		ctical skill) that is mandatory before enrolment in this module is allowed.		
No requirements listed				



GAME: Machine Learning for Games

Module Content & Assessment

Indicative Content				
Introduction to Machine Learning Probability, Inference, Clustering, N-Gram Prediction				
Artificial Neural Networks Perceptron, Multilayer Networks, Backpropagation, Simmulated Annealing				
Genetic Algorithms Genetic encoding, Genetic Operators, Selection, Mutation, Combining GAs and Neural Networks				
Agent Based Systems and Reinforcement Learning ABS concepts, Reinforcement Learning, q-Learning, DQN				
Assessment Breakdown %				
Continuous Assessment			30.00%	
Project			20.00%	
End of Module Formal Examination			50.00%	
Continuous As	sessment			
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Case Studies	Students are required to implement specific algorithms within a gaming context	1,2,3	30.00	n/a

Project				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Intended as a cross-module project	2,3	20.00	n/a

No Practical

End of Module Formal Examination				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	A written assessment of student's understanding and ability to conceptually apply the course material appropriately.	1,2,3	50.00	End-of- Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment



GAME: Machine Learning for Games

Module Workload

Workload: Full Time			
Workload Type	Frequency	Average Weekly Learner Workload	
Lecture	12 Weeks per Stage	2.00	
Laboratory	12 Weeks per Stage	2.00	
Estimated Learner Hours	15 Weeks per Stage	5.13	
	Total Hours	125.00	

Module Delivered In					
Programme Code	Programme	Semester	Delivery		
CW_KCCGD_B	Bachelor of Science (Honours) in Computer Games Development	8	Group Elective 1		