

## Artificial Intelligence (Machine Learning)

### Programme Information

2022.01, Approved

#### Overview

Programme Code	36223
Programme Title	Artificial Intelligence (Machine Learning)
Awarding Institution	Liverpool John Moores University
Programme Type	Masters

#### Awards

Award Type	Award Description	Award Learning Outcomes
Target Award	Master of Science - MS	N/A
Alternative Exit	Postgraduate Diploma - PD	For the award of Postgraduate Diploma, in addition to the outcomes for Postgraduate Certificate, students will be capable of taking an innovative and informed position in relation to Machine Learning. Students will be capable of identifying and applying appropriate research methodologies as well as plan relevant research and/or development projects. Students will also be able to demonstrate creativity in critical analysis, reflection and contextual awareness in a wide range of topics associated with Machine Learning.

Alternate Award Names	
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#### External Benchmarks

Subject Benchmark Statement	
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## Programme Offering(s)

Mode of Study, Mode of Delivery	Intake Month	Teaching Institution	Programme Length Programme Length Unit
Full-Time, Face to Face	September	LJMU Taught	1 Years

## Aims and Outcomes

Educational Aims of the Programme	<p>The two principal themes in the programme are the development of machine learning skills relating to data science and deep learning, and the associated software engineering, management and analysis skills required to enact successful enterprise machine learning projects. This is underpinned by themes of computing, networking and software engineering. The main aims are: - To provide students with the technical skills required for the development of enterprise machine learning software solutions. - To enable the student to acquire the skills needed in the investigation of user requirements and the development of a suitable software design using the appropriate specifications and design methodologies. - To prepare students with the management skills required to implement enterprise machine learning. - To provide students with the knowledge of the wide range of issues involved in the implementation of enterprise machine learning. - To encourage students to engage with the development of employability skills by completing a self-awareness statement. - To provide students with a comprehensive understanding, critical awareness and ability to conduct evaluation of enterprise machine learning research issues. - To further develop students' originality in applying analytical, creative, problem solving and research skills. - To provide advanced, conceptual understanding, underpinning career development, innovation and further study such as PhD in the area of enterprise machine learning.</p>
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## Learning Outcomes

Code	Number	Description
PLO1	1	Apply advanced enterprise level machine learning programming to enterprise systems.
PLO2	2	Demonstrate the skills necessary to plan, conduct and report a research project.
PLO3	3	Specify, design and construct programs to be used for the purpose of machine learning and deployment.
PLO4	4	Analyse data and results for a variety of machine learning solutions.
PLO5	5	Evaluate different machine learning models and methodologies in terms of general attributes.
PLO6	6	Depending upon the task, students to work effectively as individuals or as part of a team.
PLO7	7	Identify appropriate tools and techniques to be used for a machine learning problem.
PLO8	8	Conduct research into machine learning and related topics.
PLO9	9	Use information technology, e.g. Web and internet, for effective information retrieval.
PLO10	10	Apply numerical skills to cases involving a quantitative dimension.
PLO11	11	Communicate effectively by written or verbal means.
PLO12	12	Creatively and effectively use enterprise machine learning development processes.
PLO13	13	Plan and manage learning and development.

PLO14	14	Engage with complex debates around legal, ethical, social and professional issues regarding Machine Learning.
PLO15	15	Critically use algorithms and high performance concepts to solve problems and perform machine learning investigations.
PLO16	16	Be innovative when using IT infrastructure: hardware / network configurations, communication, system development tools, developing technologies.
PLO17	17	Demonstrate knowledge of machine learning: Traditional and current machine learning models, hosting, deployment, evaluation, and ongoing refinement.
PLO18	18	Apply advanced knowledge and demonstrate understanding of facts, concepts, principles and theories relating to machine learning.
PLO19	19	Collect and synthesise information from a variety of sources.
PLO20	20	Utilise relevant methods and skills to solve well-defined machine learning-based problems.
PLO21	21	Critically reflect on the impact of new technologies / standards / legal requirements in the area.

## Course Structure

Programme Structure Description	For an MSc award, students are required to attain 180 credits at Level 7. 120 credits from taught modules, and 60 credits from the project dissertation; For a PG Diploma award, 120 credits of taught modules at Level 7 are required; For a PG Certificate award, 60 credits of taught modules at Level 7 are required. 7101COMP Research Methods must be passed prior to the submission of the Project Dissertation (7136COMP Project Dissertation).
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<b>Programme Structure - 180 credit points</b>	
<b>Level 7 - 180 credit points</b>	
<b>Level 7 Core - 180 credit points</b>	CORE
[MODULE] 7101COMP Research Methods Approved 2022.01 - 20 credit points	
[MODULE] 7136COMP Project Dissertation Approved 2022.01 - 60 credit points	
[MODULE] 7143COMP Foundations of Machine Learning Approved 2022.01 - 20 credit points	
[MODULE] 7144COMP Deep Learning Concepts and Techniques Approved 2022.01 - 20 credit points	
[MODULE] 7145COMP Accelerated Machine Learning Approved 2022.01 - 20 credit points	
[MODULE] 7146COMP Advanced Topics in Deep Learning Approved 2022.01 - 20 credit points	
[MODULE] 7147COMP Enterprise Machine Learning Approved 2022.01 - 20 credit points	
<b>Level 7 Optional - No credit points</b>	OPTIONAL

## Teaching, Learning and Assessment

Teaching, Learning and Assessment	Acquisition of 1 - 8 is through a combination of lectures, tutorials, practical sessions and laboratory work. Throughout the learner is encouraged to undertake independent reading both to supplement and consolidate what is being taught/learnt and to broaden their individual knowledge and understanding of the subject. Assessment methods are specified in module specifications. Each module is assessed by one or more pieces of coursework. Specifically the assessment takes the form of laboratory work, coursework reports and presentations. Skills 9 - 13 are taught through lectures and developed through tutorial and lab work throughout the course. Cognitive skills are partly assessed mainly through coursework assessment. The Level 7 projects allow a student to demonstrate his/her cognitive skills. Practical skills 14-18 are developed throughout the programme. Coursework and projects are designed to provide practical opportunities for students to work independently and in groups. Specialist software is available in School labs or from specified PCs in the Learning Resource Centres. Assessment is normally by coursework and projects. Key skills 19-21 are developed throughout the programme in a variety of forms. Specifically through a combination of research related coursework, guided independent study and projects, group work and presentations. Key skills are assessed as part of coursework, projects and presentations
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## Opportunities for work related learning

Opportunities for work related learning
Professional networking skills, during school research seminars; Coursework based on real-world industrial case studies/applications; Industrial guest speakers; Learning about Intellectual Property and Copyright, with real-world industrial and academic case studies, during Research Methods.

## Entry Requirements

Type	Description
Alternative qualifications considered	Applicants should normally have one of the following qualifications: Degree, not necessarily in Computing, when the applicant has relevant skills, or Degree equivalent professional qualifications, e.g. BCS Professional Graduate Diploma in IT. DipHE or HND plus a minimum of 3 years relevant professional experience. Students with non-standard entry qualifications, relevant industry experience or certification are also encouraged to apply. Admission for these candidates will be at the discretion of the Programme Leader. Applicants with non-standard qualifications may be required to submit a CV and references.
Other international requirements	Where candidate's first degree was not taught and assessed in English, a minimum IELTS 6 is required (with a minimum of 5.5 on each component) or equivalent.

## Programme Contacts

### Programme Leader

Contact Name
Rubem Pereira

### Link Tutor

Contact Name
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