

IM931-15 Introduction to Contemporary AI: Techniques and Critiques

26/27

Department

Centre for Interdisciplinary Methodologies

Level

Taught Postgraduate Level

Module leader

Michael Castelle

Credit value

15

Module duration

10 weeks

Assessment

100% coursework

Study location

University of Warwick main campus, Coventry

Description

Introductory description

N/A.

[Module web page](#)

Module aims

This module serves as an interdisciplinary introduction to contemporary machine learning research and applications, specifically focusing on the techniques of deep learning which use convolutional and/or recurrent neural network structures to both recognize and generate content from image, text, signals, sound, speech, and other forms of predominantly unstructured data. Using a combination of theoretical/conceptual/historical analysis and practical programming projects, the module will teach both the basic application of these techniques while also conveying the historical origins and ethical implications of such applications.

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.

- Week 01. Introduction: A Social History of Machine Learning.
- Week 02. Table to Symbol: Structured Data, Unsupervised Classification, and Organizations.
- Week 03. Sequence to Symbol: Text, Entextualization, and Contextualization.
- Week 04. Image to Symbol: Convolutional Neural Networks (CNNs), Supervised Classification, and Iconicity.
- Week 05. Image to Image: CNNs (con't.); DeepDream, Style Transfer, and Theories of Aesthetics.
- Week 06. Generative Adversarial Networks, Creative Ai, and the Habitus.
- Week 07. Sequence to Sequence: Recurrent Neural Networks (RNNs), Machine Translation, Structuralism and Poetics.
- Week 08. Signals: Speech, Sound, and Temporality.
- Week 09. Agency: Reinforcement Learning, Autonomous Agents, and Theories of Action.

Learning outcomes

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

- By the end of the module, students should be able to understand the methodology of machine learning and its techniques as applied to different forms of data.
- By the end of the module, students should be able to be able to critically evaluate claims regarding machine learning and artificial intelligence (AI).
- By the end of the module, students should be able to explain how and why different machine learning methods can be applied in different disciplines, and to understand the technical and ethical challenges within those different fields.
- By the end of the module, students should be able to apply those methods to basic deep-learning tasks like object recognition, text-based recommendation systems, and generative art.

Indicative reading list

[Reading lists can be found in Talis](#)

Interdisciplinary

One of the primary aims of the module is to enable students to develop an appreciation of multi-disciplinary approaches to machine learning, and to critically appraise these approaches using methods drawn from a range of different disciplines.

Subject specific skills

- Demonstrate an appreciation of multi-disciplinary approaches to machine learning;
- Understand why particular machine learning methods are applied to particular forms of data in particular contexts;
- Discuss the ethical implications of the use of machine learning techniques and methodologies as applied to different fields;

- To innovatively extend knowledge and techniques to novel settings as they emerge.

Transferable skills

- Think critically and creatively;
 - Meet regular deadlines;
 - Demonstrate time-management skills;
 - Demonstrate problem solving skills;
 - Demonstrate independent learning skills;
 - Participate in class discussions;
 - Demonstrate and practice presentation skills;
 - Present and report on group discussions;
 - Experience and participate in both individual and team-based activities.
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Study

Study time

Type	Required
Lectures	9 sessions of 2 hours (12%)
Other activity	9 hours (6%)
Private study	123 hours (82%)
Total	150 hours

Private study description

Prescribed reading and self-directed study for assessments.

Other activity description

Labs.

Costs

No further costs have been identified for this module.

Assessment

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

Assessment group A2

Weighting Study time Eligible for self-certification

Assessment component

Laboratory Assignment and Report 2000 words.	40%	Yes (extension)
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Reassessment component is the same

Assessment component

Group Presentation Group presentation	20%	No
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Reassessment component is the same

Assessment component

Final Project and Report 2000 words.	40%	Yes (extension)
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Reassessment component is the same

Feedback on assessment

Laboratory Assignment/Report (Summative)\r\nWritten feedback.\r\n\r\nFinal Project Proposal (Formative)\r\nWritten feedback.\r\n\r\nFinal Project Report and Group Presentation (Summative)\r\nWritten feedback.\r\n

Availability

Courses

This module is Optional for:

- Year 2 of TIMS-L990 Postgraduate Big Data and Digital Futures
- TIMA-L995 Postgraduate Taught Data Visualisation
 - Year 1 of L995 Data Visualisation

- Year 2 of L995 Data Visualisation
- TIMA-L99A Postgraduate Taught Digital Media and Culture
 - Year 1 of L99A Digital Media and Culture
 - Year 2 of L99A Digital Media and Culture
- Year 1 of TMAA-G1PF Postgraduate Taught Mathematics of Systems

This module is Core option list A for:

- Year 1 of TPSS-C803 Postgraduate Taught Behavioural and Data Science

This module is Core option list C for:

- Year 1 of TPSS-C803 Postgraduate Taught Behavioural and Data Science

This module is Option list A for:

- Year 1 of TIMS-L990 Postgraduate Big Data and Digital Futures