

IM354-15 Generative AI: Histories, Techniques, Cultures, and Impacts

26/27

Department

Centre for Interdisciplinary Methodologies

Level

Undergraduate Level 3

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

This module provides a general, hands-on, and critical introduction to recent developments in the field of contemporary artificial intelligence (AI) research, specifically focusing on the use of multilayered or “deep” artificial neural networks for productive or “generative” systems which create new artifacts, such as text, images, music, and speech; examples of these proliferating interactive artifacts include ChatGPT, which deploys generative text models in a dialogical mode and has gained widespread use for applications in communication, marketing, business, and e-learning; and StableDiffusion, which can generate an expansive variety of digital art given textual descriptions. Instead of treating these systems as radically novel inventions, students will learn to place them in their historical, philosophical, political, and ethical contexts of North American, European, and now global scientific and commercial research cultures as well as in cultural imaginaries of AI in popular literature and film; and while there are no prerequisites, students will have the opportunity to experiment with these models directly in an interactive environment, and thus gain a deeper—and increasingly crucial—technical understanding of both their powers and limitations. Finally, because the impact of Generative AI is an ongoing and evolving issue, the module will engage with up-to-date news media and political/regulatory developments in order to help students develop their ability to produce novel assessments and critiques of Generative AI-related impacts and controversies as they emerge and unfold.

Module aims

In this module, students gain both conceptual and methodological knowledge and practical experience of the theoretical, technological, and social aspects of generative systems and models for images, text, and signal forms, with a specific focus on those using contemporary artificial intelligence (AI) techniques. The module will enable students to develop general knowledge of the past, present, and potential future impacts of such systems at cultural, political, social, and philosophical levels. While there are no mathematical or programming prerequisites, the module provides opportunities to gain hands-on experience with generative AI models, both as an end-user and at the level of the beginner, open-source hobbyist. Students will also learn to address, debate, and explain present-day generative AI controversies through a group media analysis and presentation. The overall module aim is to enable students to be better equipped to engage and intervene in a world in which these technologies are the subject of intense debate as well as being increasingly embedded in everyday life.

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.

- Mechanical Production and Reproduction: Introduction to the Module plus a History of Generative Art, Language, and Music to the 1950s.
- From ELIZA to AARON: A History of Generative Art, Language and Music, Part II: 1950s—2000s.
- Artificial Neural Networks from the Perceptron to the Deep Learning Era.
- Early Neurography: The ImageNet Dataset, Convolutional Neural Networks, and Creative AI.
- Signals, Music, and Text: Wavenet, Jukebox, and Generative Pre-trained Transformers (GPTs).
- Presentation and Discussion Week for Generative AI Controversies.
- Multimodal Neurography: Text-to-Image Models (DALL-E, StableDiffusion).
- Instruction Tuning, Human Feedback, and the Dialogical Transformer: Deconstructing ChatGPT.
- Multimodal Dialogical Models: Consequences and Futures for Politics, Education, and Culture.

Learning outcomes

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

- Demonstrate in-depth knowledge of the conceptual foundations, cultural background, and historical impacts of generative systems for various forms of image/text/signal media
- Demonstrate a critical understanding of the assumptions and present-day limitations of contemporary generative artificial intelligence (AI) models
- Demonstrate a practical ability to interact with these systems in a hands-on and exploratory manner to help answer questions about generative AI
- Demonstrate an appreciation and deeper understanding of the social, ethical, cultural, and

philosophical implications and impacts of recent developments in generative AI

- Demonstrate skill in analysis and interpretation of various media content around subjects in generative AI

Indicative reading list

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

Research element

- Exhibiting the capacity for critical thinking, methodological reflection and analysis;
- Being able to apply critical research and enquiry skills;
- Taking responsibility for one's own learning and development;
- Effectively use research tools and resources

Interdisciplinary

- To appreciate the value of understanding different disciplinary approaches and perspectives;
- Leverage a confidence and competence in interdisciplinarity specifically in relation to understanding the variety of ways that Generative AI and societies interact at various political, philosophical, and ethical levels;
- Communicating ideas effectively in different ways and to people with different disciplinary backgrounds.

International

- To appreciate the local, regional, national, and global issues that permeate the topic of Generative AI;
- To appreciate the global reach that technological developments in Generative AI have in different parts of different societies.

Subject specific skills

- Methodological skills in analysing and interpreting media controversies on the topic of Generative AI;
- Practical skills in using, interacting, and experimenting with Generative AI tools and software directly;
- Conceptual and methodological skills in combining different disciplinary approaches to Generative AI in contemporary society;
- Conceptual skills in combining different disciplinary approaches and perspectives on Generative AI in society in relation to their subject specialism.

Transferable skills

- The ability to communicate with peers and academics within and outside of one's primary discipline;
 - The practical and technical ability to use and critically engage with new forms of software and digital resources;
 - Collaborative skills to work in mixed-competency teams to complete methodological and practical exercises;
 - Academic writing skills and the ability to account for individual and group-based analytical processes;
 - Skills to articulate arguments orally, in writing and visually, supported by reading and research;
 - Practical skills to manage time to meet deadlines as an individual and team member;
 - Analytical skills to connect theoretical ideas with methodological and practical applications;
 - Ability to solve problems creatively, specifically as these relate to the benefits and limitations of Generative AI;
 - Being a self-motivated and independent learner.
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Study

Study time

Type	Required
Lectures	9 sessions of 1 hour (6%)
Seminars	9 sessions of 1 hour (6%)
Practical classes	9 sessions of 1 hour (6%)
Private study	123 hours (82%)
Total	150 hours

Private study description

Independent learning throughout the term.

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 A

	Weighting	Study time	Eligible for self-certification
Assessment component			
Presentation	35%		No
In a small group of 2-4 students, choose a recent controversy in the news media relating to Generative AI and perform an analysis and interpretation of the controversy, portraying the various actors and stakeholders and providing suggestions for possible resolutions.			
Reassessment component			
Individual reflection on group project topic			Yes (extension)
Individual reflection on group project topic/controversy			
Assessment component			
Essay	65%		Yes (extension)
Select a topic (either from the given list or of the student's own choosing, in consultation with and approved by the module convenor) and critically analyse a recent technological development in Generative AI and its current and potential impacts, with an emphasis on one or more of the following aspects: political, philosophical, ethical, legal, and social.			
Reassessment component is the same			

Feedback on assessment

Written feedback on summative work.

Availability

There is currently no information about the courses for which this module is core or optional.