

COMP5001 Artificial Intelligence

Week 1 — Introduction

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2026/27

About Me

- ▶ Dr Sakib Anwar, Senior Lecturer in Economics and Finance
- ▶ BSc Economics (Nottingham), MSc Economics (Surrey)
- ▶ MRes Economics (Essex), PhD Economics (Lancaster)
- ▶ Research: game theory, behavioural and experimental economics
- ▶ More at sakibanwar.com/research

How About You?

❓ *Introduce yourself to the room.*

ROUND THE ROOM

- ▶ Your name
- ▶ Your programme
- ▶ One thing you would love AI to do for you
- ▶ One thing AI should never do

Learning Outcomes

- ▶ Main areas of AI: symbolic and statistical
- ▶ Search, planning and reasoning
- ▶ Designing AI for a scenario
- ▶ AI in businesses and organisations

Assessment

- ▶ One portfolio: 100% of the module
- ▶ AI system implementation: 30%
- ▶ Discussion and topic research: 55% (1,500 words)
- ▶ Reflection: 15% (500 words)
- ▶ **Deadline: 3.30pm, Wednesday 6 January 2027**

AI Policy: Not Permitted

- ▶ **No generative AI in any part of your portfolio**
- ▶ Chatbots: ChatGPT, Claude, Gemini, Copilot, DeepSeek, Perplexity
- ▶ Coding tools: GitHub Copilot, Cursor, Claude Code, Codex, Windsurf
- ▶ AI features in other software, and AI translation or paraphrasing tools
- ▶ One exception: Grammarly-style fixes to sentences you wrote yourself

AI Policy: What You Can Use

- ▶ Module slides, seminar sheets and textbooks
- ▶ Documentation: Python, scikit-learn, TensorFlow, NLTK
- ▶ Ordinary web searches, but not AI-generated summaries
- ▶ Help from the module team, and ideas from classmates
- ▶ In class: AI tools when an activity asks you to use them

AI Policy: How It Is Checked

- ▶ You may be asked to explain your code and choices in a short conversation
- ▶ Keep your version history, for example Git commits
- ▶ Suspected AI use is handled as academic misconduct
- ▶ Sign the declaration on your portfolio's title page

10 Weeks

1. Introduction

2. Search

3. Heuristics and Logic

4. Knowledge and Planning

5. Uncertainty

6. Optimization

7. Learning

8. Neural Networks

9. Language

10. AI in Practice and Revision

Each Week

- ▶ **Lecture:** one AI topic
- ▶ **Seminar:** AI in the real world, discussion and activities
- ▶ **Practical:** Python code you run and change
- ▶ All three feed into your portfolio

Essential Reading

- ▶ Russell, S. and Norvig, P. (2020) *Artificial Intelligence: A Modern Approach*. 4th edn. Pearson
- ▶ Poole, D.L. and Mackworth, A.K. (2023) *Artificial Intelligence: Foundations of Computational Agents*. 3rd edn. Cambridge University Press
- ▶ Poole and Mackworth is free online at artint.info
- ▶ The chapters for each week are on the module page

Office Hours

- ▶ Module leader: Dr Sakib Anwar
- ▶ Email: sakib.anwar@winchester.ac.uk
- ▶ Office: UWBS 005
- ▶ Wednesdays 4 to 5pm, 30-minute slots
- ▶ Book at calendly.com/sakib-anwar

What is AI?

ARTIFICIAL INTELLIGENCE

Getting computers to do tasks that would need intelligence if people did them.

Four Goals for AI

- ▶ Think like people
- ▶ Act like people
- ▶ Think logically
- ▶ Act to get the best result

AGENT

Entity that perceives its environment and acts upon that environment.

Artificial Intelligence

- ▶ Search
- ▶ Logic
- ▶ Knowledge and Planning
- ▶ Uncertainty
- ▶ Optimization
- ▶ Learning
- ▶ Neural Networks
- ▶ Language

SYMBOLIC AI

AI that works with facts, rules and symbols that people write down.

STATISTICAL AI

AI that learns patterns from data and works with probabilities.

A Short History of AI

1950

Alan Turing asks “Can machines think?” and proposes the imitation game, now called the Turing test

1956

A summer workshop at Dartmouth College gives the field its name: artificial intelligence

1958

Frank Rosenblatt introduces the perceptron, an early neural network that learns from examples

1966

ELIZA, a chatbot that follows simple pattern rules,
convinces some users that it understands them

1966–1972

Shakey, the first mobile robot that could plan its own actions

1973

The Lighthill Report tells the UK government that AI has not delivered on its promises

1980s

Expert systems put human experts' rules into software, and businesses start to use AI

1997

IBM's Deep Blue beats the world chess champion,
Garry Kasparov

2012

A deep neural network called AlexNet wins an image recognition contest by a wide margin

2016

DeepMind's AlphaGo beats Lee Sedol, one of the world's best Go players

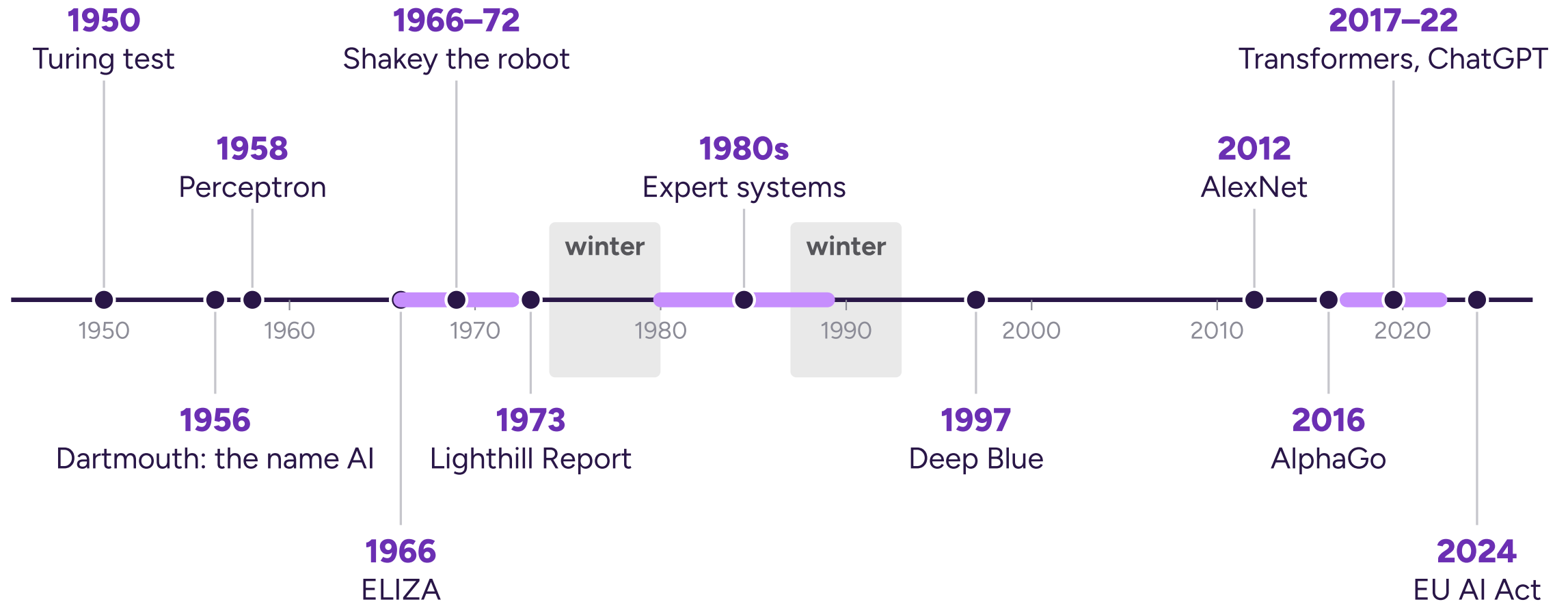
2017–2022

Transformers are invented, leading to large language models such as ChatGPT

2024

The EU AI Act, the first comprehensive law on AI,
comes into force

A Short History of AI



Hype and Winters

- ▶ Big promises attract money and attention
- ▶ Results fall short, so funding is cut: an “AI winter”
- ▶ Winters in the mid-1970s and the late 1980s
- ▶ Ask of any AI claim: **what can it actually do, and how do we know?**

Your Portfolio

- ▶ Part 1: build a small AI system (30%)
- ▶ Part 2: advise an organisation on AI (55%)
- ▶ Part 3: reflect on your learning (15%)
- ▶ The weekly practicals and seminars prepare you for each part

Before Week 2

- ▶ Install Python 3
- ▶ Download the module code: github.com/sakibanwar/comp5001-ai-code
- ▶ In the `week02-search` folder: `pip install -r requirements.txt`
- ▶ Run: `python maze/maze.py maze/maze1.txt`

Thank you

Seminar: the Week 1 seminar sheet (no computers needed)

Next week: Search

Reading: Russell & Norvig, chapter 1; Poole & Mackworth, chapter 1

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Adapted from *CS50's Introduction to Artificial Intelligence with Python* by Brian Yu and David J. Malan, Harvard University, licensed under CC BY-NC-SA 4.0.