7 Ethics and Ownership – Part 2

Name: _____ Class: _____ Date: _____

Vocabulary

Write each word three times.

English	Write it 3 times (English)		
Artificial intelligence			
machine learning			
neural networks			
speech recognition			
image recognition			
machine translation			
optical character recognition			
text-to-speech			
bias			

Recall

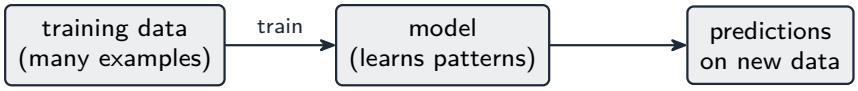
In **Part 1** you met ethics, privacy, intellectual property (copyright and patents), the kinds of software licence, and artificial intelligence with its risk of bias. Part 2 goes deeper into AI – how it learns, what it is used for, and its benefits and dangers.

New ideas

Read these first. Each idea has a short worked example. Then do the Practice.

1 How modern AI learns

Artificial intelligence builds systems that do tasks once thought to need human intelligence. Most modern AI uses **machine learning** – the system **learns patterns from large amounts of data** instead of being programmed step by step. The leading method today is deep learning, built on **neural networks** (many connected layers, loosely inspired by the brain).

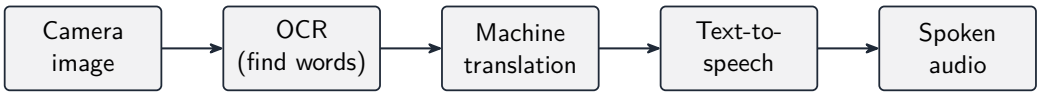


Worked example. To recognise cats, a model is shown thousands of labelled photos and learns the patterns itself – nobody writes a rule like "a cat has pointed ears".

2 What AI is used for

- *Understanding input:* **speech recognition** (turning speech into text) and **image recognition** (finding objects or faces in a picture).
- *Producing output or decisions:* **machine translation**, product recommendations, and self-driving cars.

A common chain: a phone reads a foreign label – **optical character recognition** finds the words, machine translation converts them, and **text-to-speech** reads the result aloud.



Worked example. A "recommended for you" list comes from a model that learned which items people with similar tastes also liked.

3 Benefits and concerns

- **Benefits:** accessibility (helping people with impairments), productivity (automating dull tasks), spotting patterns in huge datasets, and being always available.
- **Concerns: bias** (unfair training data → unfair decisions), job loss, privacy (training uses personal data), "black-box" decisions that are hard to explain, and accountability when AI gets it wrong.



Worked example. A bank's AI trained on past loans may reject a fair applicant because the old data was biased – a fast decision, but an unfair one.

Watch out: an AI is only as fair as its training data – "the computer decided" does not make a decision correct or unbiased.

Practice

7.1 Give one example of an AI task that *understands input* and one that *produces an output*. [2]

7.2 Explain what "machine learning" means, and how it differs from ordinary step-by-step programming. [2]

7.3 A phone reads a foreign sign aloud. Name the three AI steps it uses, in order. [3]

7.4 Explain what is meant by bias in an AI system, and where it comes from. [2]

7.5 Give one benefit and one concern of using AI. [2]

7.6 Explain *why* a "black-box" AI decision (one that cannot be explained) is a problem when the AI makes an important choice. [2]

7.7 Challenge. A company replaces its customer-service staff with an AI chatbot. Give one benefit to the company and one risk to its customers. [2]