

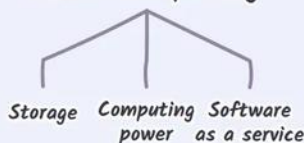
Trends in Computing and Ethical Issues

what computing is moving toward, and the responsibility that comes with building it

Cloud computing *

- cloud computing delivers storage and computing power over the internet, from a provider's data centre rather than a machine sitting in front of the user
- it is billed roughly by what is actually used, so a project can start small and scale up without buying hardware in advance
- the data and the processing live somewhere else, which is convenient, but it also means the provider's security and uptime become the user's own risk
- everyday examples include storing photos in an online drive, or a website that runs entirely on rented cloud servers

Cloud computing



three things cloud computing typically delivers over the internet, none of them needing hardware owned by the user

AI, machine learning, and the internet of things

- artificial intelligence broadly means a program performing a task normally thought to need human judgement, like recognising a face or translating a sentence
- machine learning is a specific approach to that, where the program improves its behaviour from examples in data instead of being told every rule directly
- the internet of things is ordinary objects, like a thermostat or a doorbell, connected to a network so they can be sensed or controlled remotely
- all three raise the same underlying question: how much decision making and how much data collection should be handed to a system with limited human oversight

Artificial intelligence against machine learning

Artificial intelligence

- the broad goal, a system behaving as if it had human-like judgement
- can be built from fixed rules alone, with no learning involved at all

Machine learning

- one common way to build toward that goal
- learns its behaviour from examples in data rather than from rules written by hand

every machine learning system is a form of AI, but plenty of AI is built with no learning involved at all