COMP250: Artificial Intelligence

1: AI Architectures

FALMOUTH
UNIVERSITY

What is AI?

What is AI?

- ▶ Socrative FALCOMPED
- ▶ Discuss for **5 minutes**
- ▶ Suggest a **one sentence** definition of artificial intelligence (AI)

What is AI?

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- An AI is a **machine** (or piece of **software**) which performs tasks requiring **intelligence**
- Intelligence is making **decisions** to achieve **goals** — roughly, what brains do

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- ▶ AI is **not necessarily** about:
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  - ▶ General intelligence
  - ▶ Learning
- ▶ ... although these are all important sub-fields of AI

Computers vs brains

Discuss:

Computers vs brains

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- ► For what kinds of tasks are digital computers "better" than human brains?

Computers vs brains

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Computers vs brains

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- ► For what kinds of tasks are digital computers "better" than human brains?
- ► For what kinds of tasks are human brains "better" than digital computers?
- ► For what kinds of tasks are both "good", but approach the task in different ways?

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Discuss: are these examples of AI?

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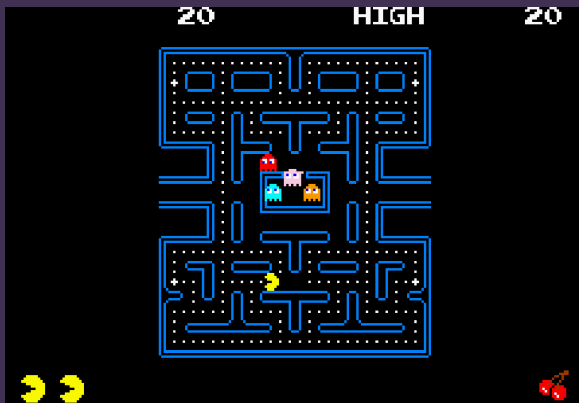- C++ compiler
- Robot

AI in games

Nimrod (Ferranti, 1951)
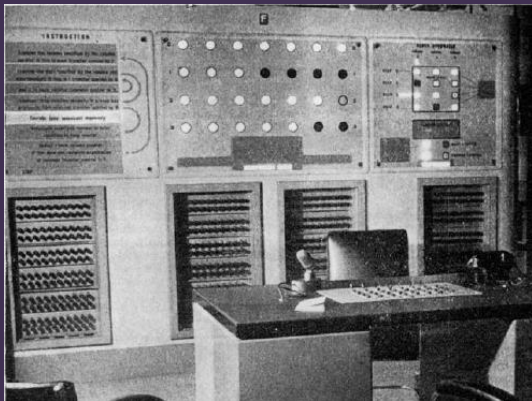
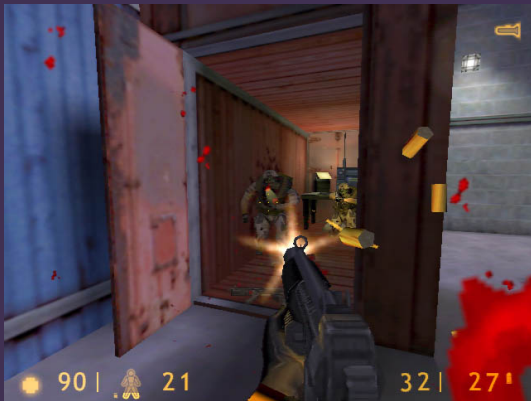# Samuel's Checkers program (IBM, 1962)

Galaxian (Namco, 1979)

Pac-Man (Namco, 1980)

Deep Blue (IBM, 1997)

Half-Life (Valve, 1998)

The Sims (Maxis, 2000)

Black & White (Lionhead, 2001)

Façade (Mateas & Stern, 2005)

Chinook (Schaeffer et al, 2007)
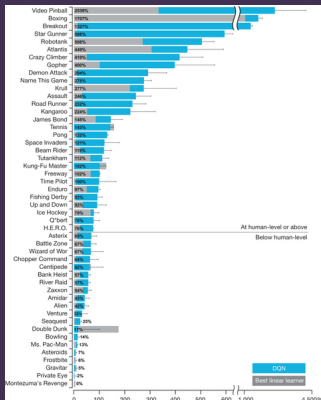
Left 4 Dead (Valve, 2008)

Watson (IBM, 2011)

Deep learning for Atari games (DeepMind, 2013)

AlphaGo (Google DeepMind, 2016)

Applications of AI in games

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Design considerations

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► A common (and difficult) challenge: creating AI
  which is **imperfect**, but not obviously **stupid**

Assignments

COMP250 assignments

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Similar to COMP220:

COMP250 assignments

Similar to COMP220:

- ▶ Portfolio task (90%)

COMP250 assignments

Similar to COMP220:

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- ▶ Research journal (10%)

COMP250 portfolio task

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► Assignment brief on LearningSpace

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- Not sure what's technically feasible? **Ask me!**