



FALMOUTH  
UNIVERSITY

# COMP250: Artificial Intelligence

## 1: AI Architectures

# What is AI?



# What is AI?

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

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- ▶ Intelligence is making **decisions** to achieve **goals** — roughly, what brains do

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  - ▶ Learning
- ▶ ... although these are all important sub-fields of AI

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- ▶ 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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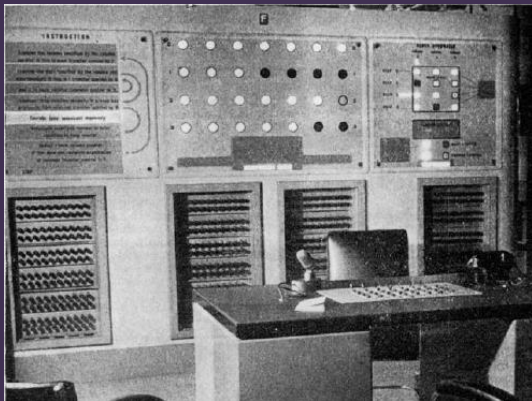
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- ▶ C++ compiler
- ▶ Robot



# AI in games



# Nimrod (Ferranti, 1951)



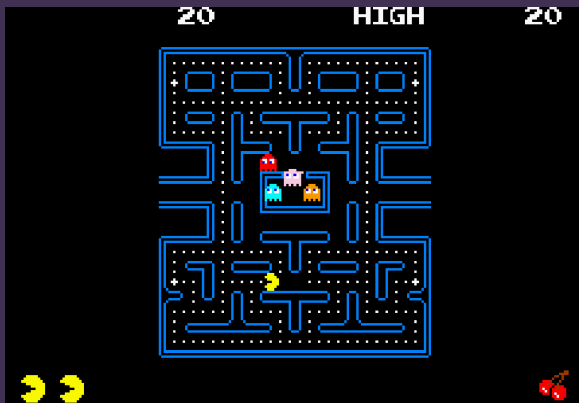
# Samuel's Checkers program (IBM, 1962)



# Galaxian (Namco, 1979)



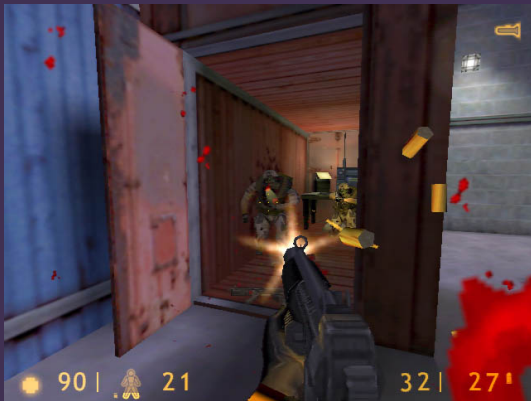
# Pac-Man (Namco, 1980)



# 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)

PIENSE THINK SMOCHIS KEWOY DENKE PENSER

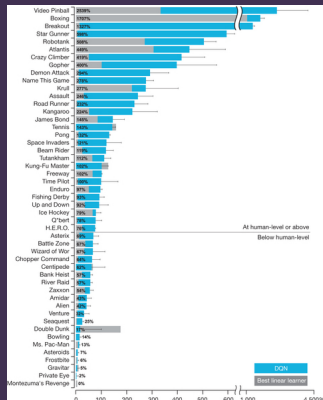
**\$200**  
*Ken*

**\$4,000**  
**WATSON**

**\$600**  
*BRAD*

**Maxwell's silver hammer** 96%  
**FRANK SINATRA** 11%  
**Brown** 7%

# Deep learning for Atari games (DeepMind, 2013)



# AlphaGo (Google DeepMind, 2016)



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        AIM AT(player.head)

        SHOOT( )

**end while**

**end procedure**

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    while player.isAlive do
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    end while
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**end procedure**

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

# Assignments



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- ▶ Portfolio tasks (90%)



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