AI - Lecture 1a: Introduction to the Field

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The fascination of artificial intelligence

It is not known who attempted to create the first artificially intelligent agent. But there is evidence that automata of some sort were being construted in ancient Greece.

From Pindar's seventh Olympic Ode:

> *The animated figures stand*
> *Adorning every public street*
> *And seem to breathe in stone,*
> *or move their marble feet.*

The Antikythera Mechanism

A complex, geared device constructed around 125 BC and used for calculating positions of astronomical objects.

17th and 18th century automata

As clockwork engineering skills advanced in the 17th and 18th centuries, automata such as de Vaucanson's mechanical duck (which could eat and defecate) became more common.

The idea of the 'artificial being' became an increasing fascination.

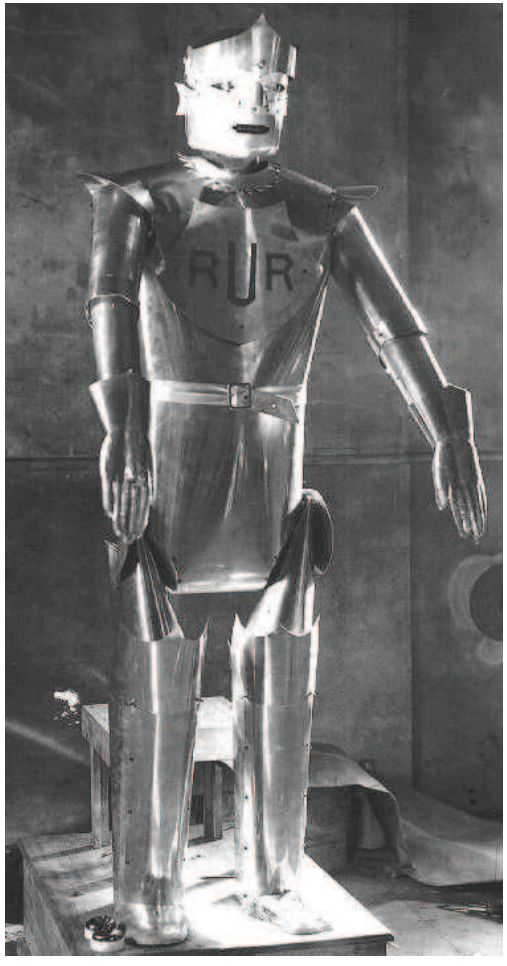
Mary Shelley's 'Frankenstein' reflects this trend.

The mechanical trumpetteer

Constructed by Friedrich Kaufmann in 1810, this used a ‘program’ (stepped drum) mounted internally to play a tune. The notes mounted on the drum activated valves that let the air pass by 12 ‘tongues’.

Enter the robot

First robot from the 1921 play ‘R.U.R.’



Derivation of the word

The word ‘Robot’ comes from the 1921 play ‘R.U.R.’ (Rossum’s Universal Robots) by the Czech writer Karel Capek (pronounced ‘chop’ek’). ‘Robot’ comes from the Czech word ‘robota’, meaning ‘forced labor.’

The word ‘robotic’ also comes from science fiction - it first appeared in the short story ‘Runaround’ (1942) by Isaac Asimov. This story was later included in Asimov’s famous book ‘I, Robot.’

Fantasy robots

HAL 9000 computer from '2001': fantasy robot with human-level skills of language and thought.

¡http://www.youtube.com/embed/MzIQUDQO-ag

Also, the child-robot in Spielberg's 'Articial Intelligence'

The 'emotional' robot in 'I, Robot'.

etc. etc.

The real state-of-the-art in AI/robotics

Asimo (Honda) and QRIO (Sony)

Asimo

Qrio

¡http://news.bbc.co.uk/1/hi/magazine/7779093.stm

Chess

In May 1997, an IBM machine known as ‘Deep Blue’ defeated chess grandmaster Garry Kasparov.

Robot football 2011

¡http://www.youtube.com/embed/XLKKbz2mNyo

Humanoid robot football 2011

¡http://www.youtube.com/embed/llfYoFG7WrY

Google driverless car

¡http://www.youtube.com/embed/YaGJ6nH36uI

How google car works

(From 3:15)

¡http://www.youtube.com/embed/YXylqtEQ0tk

Mesh sensor data with GPS coords + google maps.

Passive walking

¡http://www.youtube.com/embed/_2pAMe_5VeY

Boston Dynamics BigDog

¡http://www.youtube.com/embed/3gi60hnp9x8

Asimo falling down stairs (circa 2006)

¡http://www.youtube.com/embed/_PMw023nS48

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