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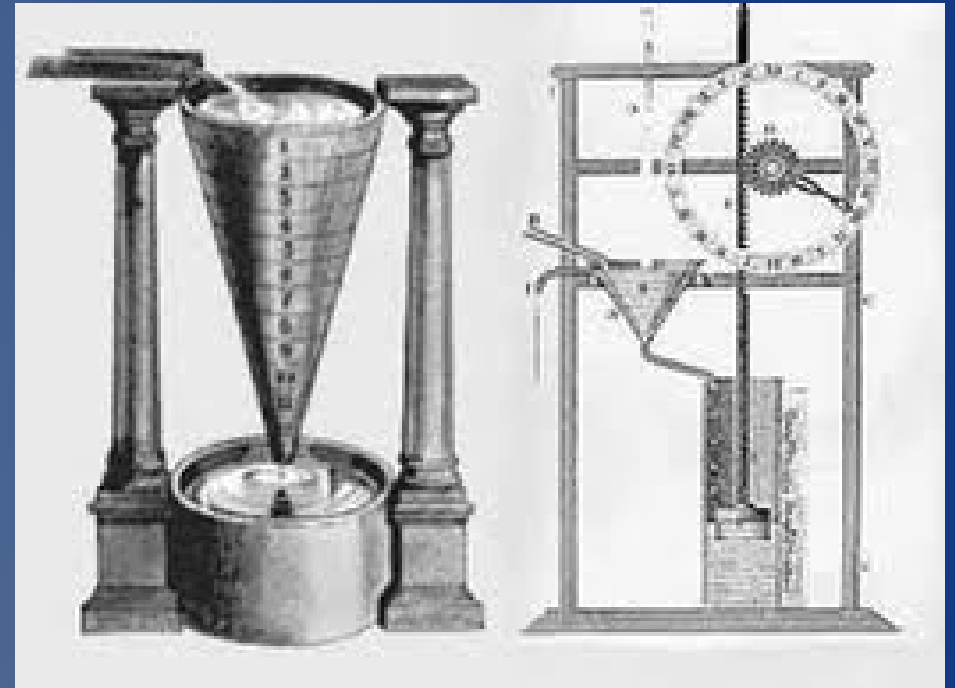
A (very) Short (and by no means complete) History of Robotics

“If every tool, when ordered, or even of its own accord, could do the work that befits it... then there would be no need either of apprentices for the master workers or of slaves for the lords.”

-Aristotle (322 BC)

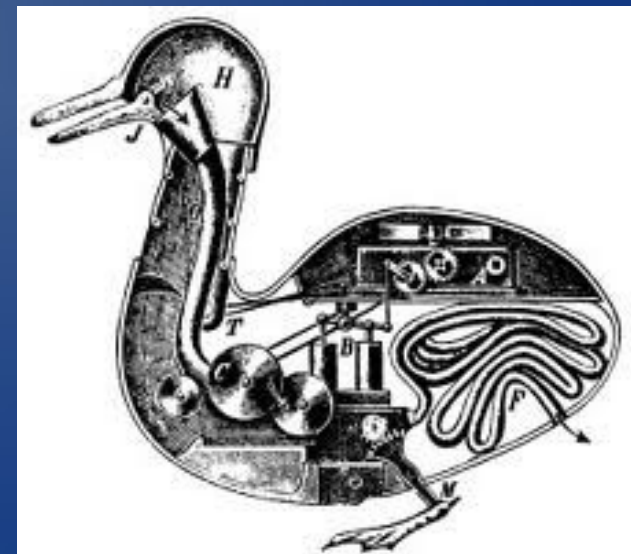
To begin...

- Ancient Greeks
 - Archytas of Tarentum
 - mechanical, steam-powered bird
 - Ctesibus of Alexandria
 - water clock
- Leonardo DaVinci
 - mechanical knight plans



Jacques de Vaucanson 1790-1782

- Gifted French artist and inventor
- Aspired to be a clock-maker. Tried to become a priest but was thrown out for making mechanical flying angels.
- 1727-1743 – Created a series of mechanical automations (“automatons”) that simulated life.
- Best remembered is the “Digesting Duck”, which had over 400 parts.
- Also worked to automate looms, creating the first automated loom in 1745.



1801-1805: Jacquard Loom

- Joseph Jacquard
- Fully programmable
- Used punch cards to “program” the pattern woven into cloth
- Precursor of modern computers



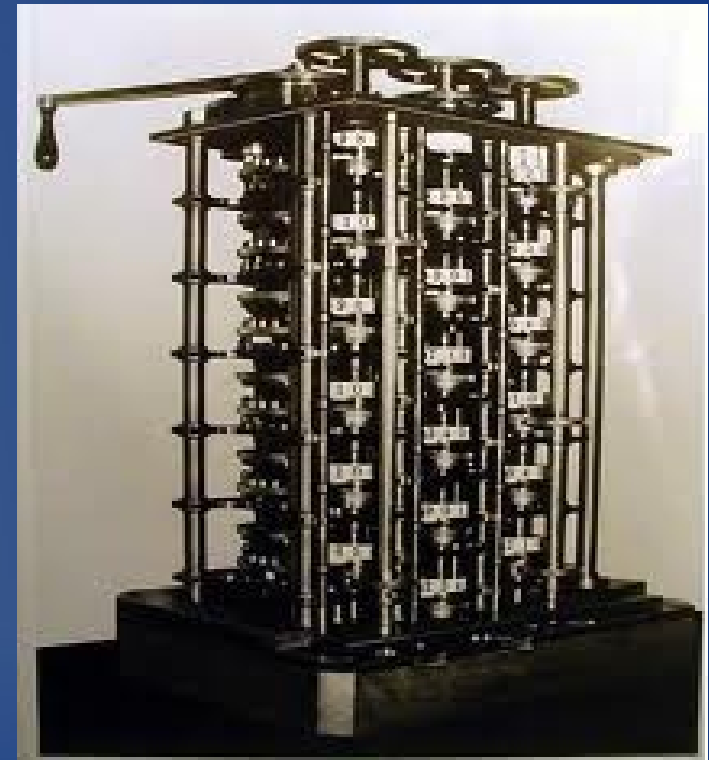
Charles Babbage 1791-1871

- English mathematician, philosopher, and inventor
- Originated concept and design of programmable, mechanical computer.



1822: Babbage's Difference Engine

- Numerical tables were constructed by hand using large numbers of human “computers”
- Annoyed by the many human errors, Charles Babbage designed a “difference engine” that could calculate values of polynomial functions.
- Follow-on: more generalized “analytical engine”



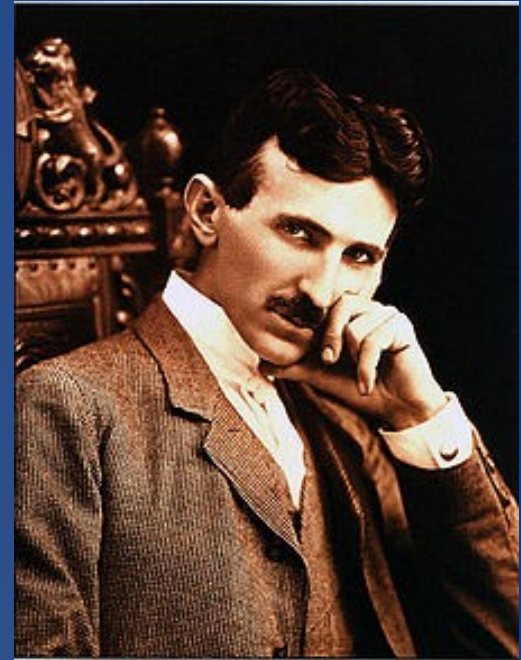
Hisashige Tanaka: 1799-1881

- “Japan's Edison”
- Complex mechanical toys/automata
- “Karakuri”
 - served tea
 - painted Japanese characters
 - fired arrows



1898: Nicola Tesla

- Demonstrated a radio-controlled boat to the US military,
- "Art of Telautomatics"
- Demonstrated a radio-controlled boat to the public during an electrical exhibition at Madison Square Garden. Tesla called his boat a "teleautomaton".



1921: Karel Capek

- Czech playwright
- Introduced word “robot” in his play *R.U.R* (*Rossum's Universal Robots*)
- Comes from Czech word “robota” meaning “serf labor” and implying drudgery.

1920s-30s: Westinghouse Electric Corp.

- 1926 - Televox
 - First robot to do “useful” work
- Katrina von Televox
 - electric maid
- 1930s - Elektro
 - Created for exhibition at World's Fair
 - Accompanied by mechanical dog Sparko



Miss
Katrina Van Televox
Mechanical Maids Maid

**The Westinghouse
\$22,000
Robot Servant**
invites you to her
**Housework
Demonstration**



Katrina will... answer the phone... open a vacuum cleaner... wash with hot and suds... turn the lights on and off and does it all willingly as commanded from Mr. T. Howard the Westinghouse Electric & Manufacturing Engineer who is accompanying her on her tour. The audience will also find Mr. Howard in making Katrina work the apparatus here at The American Legion Home in her first in Allentown and women of this city are cordially invited by the Penn Central Light & Power Co., sponsors of her visit, to attend her program at 7:30 p.m.

Katrina is the Westinghouse of the Great Westinghouse Electric Co. and will be the star of the Televox Housework Demonstration at the Penn Central Light & Power Co. office in Allentown, Pa. on October 7th, 8th, 9th and 10th. The Penn Central Company will also hold in this city their evening demonstrations at 7:30 p.m. on Oct. 7th, 8th, 9th and 10th.

OCTOBER 7th, 8th, 9th and 10th
AMERICAN LEGION HOME 7:30
Admission Free
PENN CENTRAL



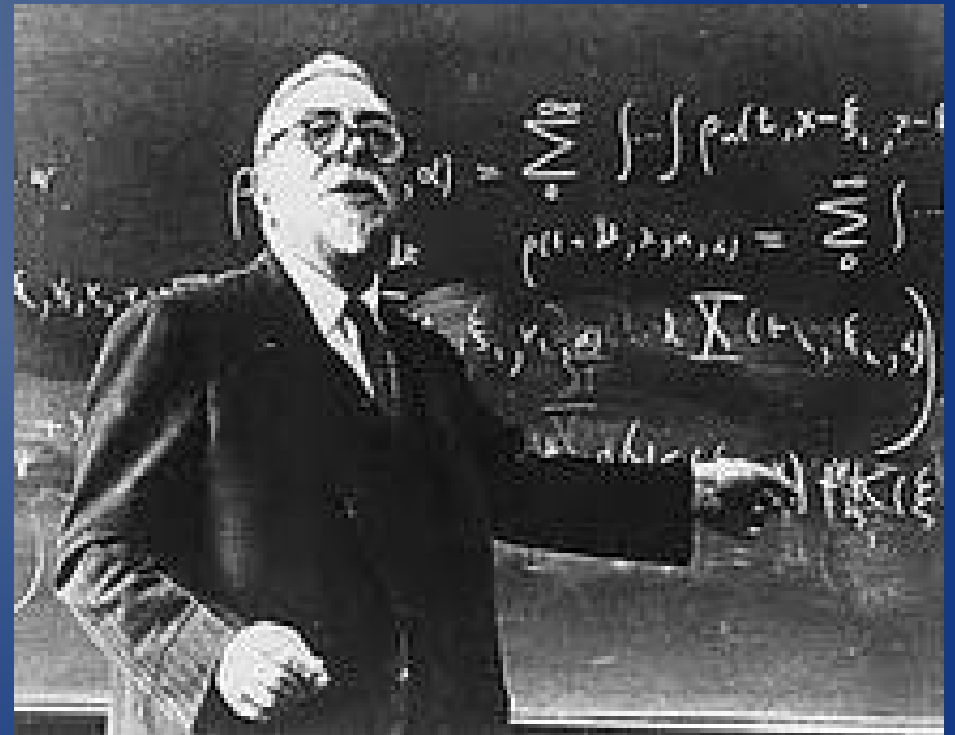
1926: First Robot in Movies

- Appeared in *Metropolis* which was produced in Germany by Fritz Lang
- “Maria” - transformed into a “man-machine” and causes chaos
- Restored in '01 and '10
- ** *Screening: Wed. Sept. 12 - White 208 - 7:30pm*



Norbert Wiener: 1894-1964

- Child prodigy
- Originated “cybernetics” which formalized notion of “feedback”
- Believed automation could improve standard of living



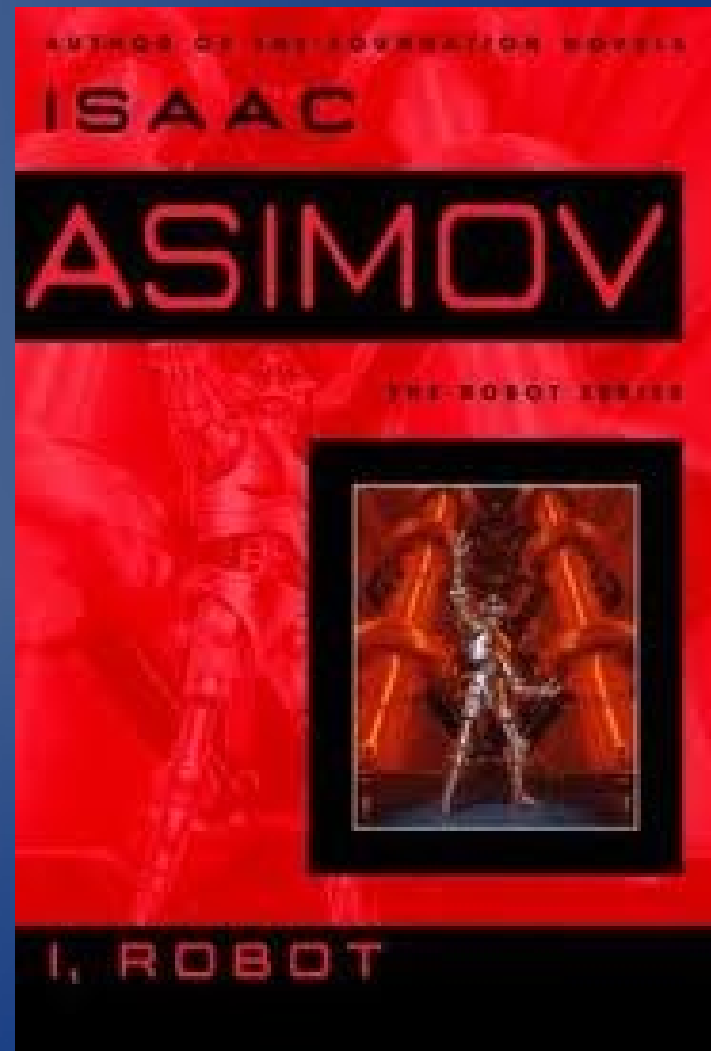
1948-49: Tortises/Turtles

- Electronic Autonomous Robots
- Created by William Grey Walter in England
- Elmer and Elsie
- Could sense light and contact with objects, navigate



Isaac Asimov: 1920-1992

- Popularizes robots and “robotics” with series of sci-fi short stories from 1940-50
- Published as I, Robot in 1950
- Three laws of robotics (later in course)



1960-61: Unimate

- Developed by George Devol and sold to General Motors
- Regarded as first industrial robot
 - digitally operated
 - programmable
- Lifted pieces of metal from machine and stack them



Now:



08/28/12