Strong vs. Weak AI

Strong vs. Weak AI

Strong A: There is no fundamental difference between man and machine

Weak AI: Only people can think, machines cannot

- Central question:
  Is there a fundamental difference between man and machine, or is it only a difference in computing power?

Strong vs. Weak AI

- Weak AI is the thinking focused on the development of technology capable of carrying out pre-planned moves based on some rules and applying these to achieve a certain goal.

- Strong AI is developing technology that can think and function similar to humans, not just mimicking human behavior in a certain domain.

In favor of "Strong AI"

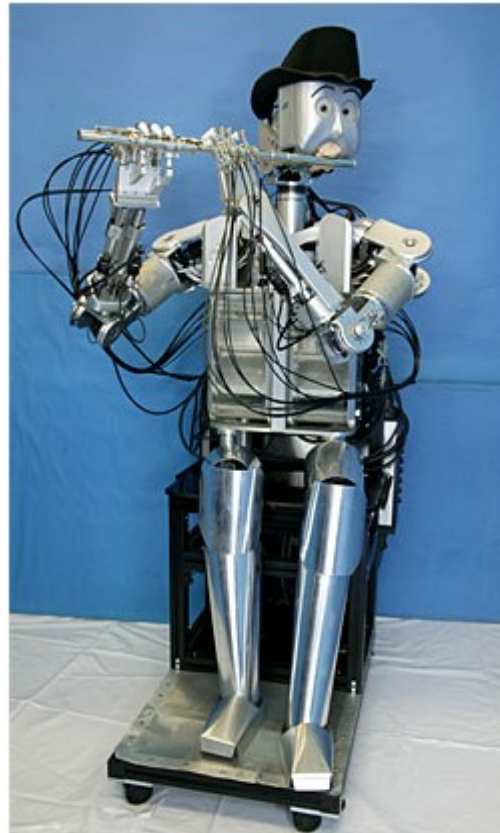- Strong AI argument #1: Look at what machines can do

play soccer
(Robocup)

clean
(Roomba vaccuum cleaner)

They play music

organ
(Ichiro Kato's WABOT II
reads music and
plays the organ 1984)

flute
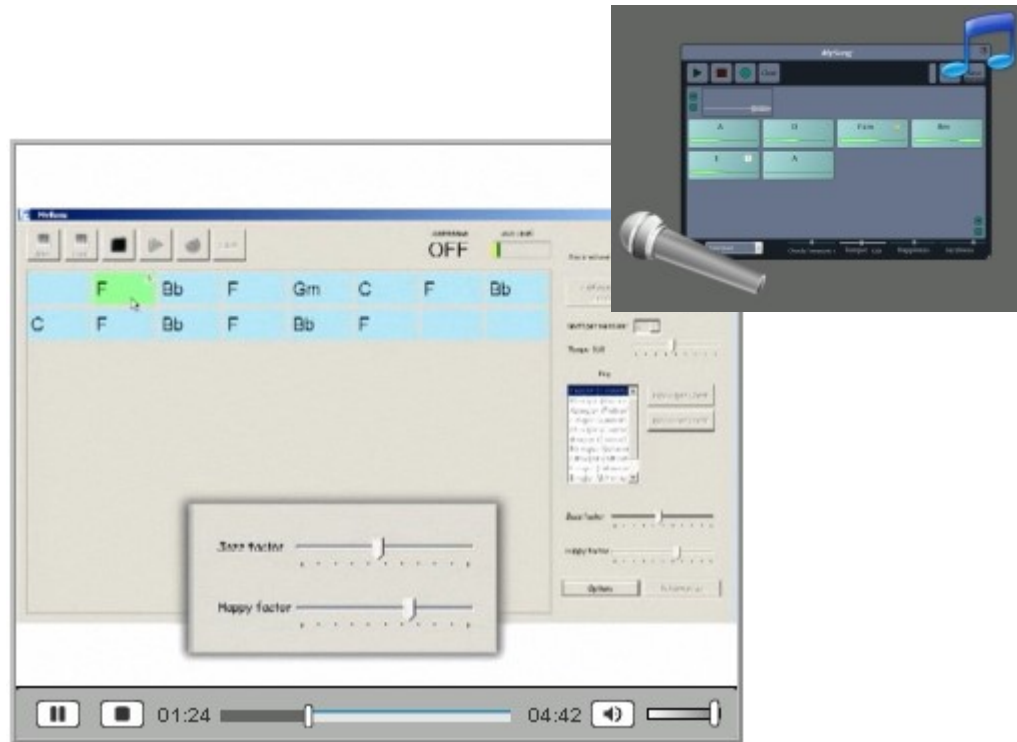(Atsuo Takanishi's flute-playing robot)

trumpet
(Toyota's trumpet-playing robot 2008)
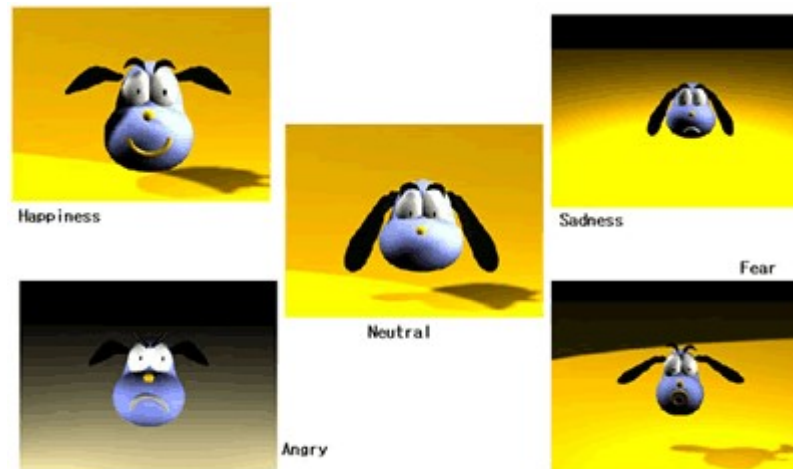

conductor
(Honda's Asimo robot conducts
Detroit Symphony Orchestra 2008)

They even compose music

MySong: http://research.microsoft.com/~dan/mysong/

… and have emotions

Rity sobot
(from Kim Jong-Hwan at Korea's Institute of
Advanced Science and Technology)

In favor of "Strong AI"

- Strong AI argument #2: Look at what people said machines will never do

Hubert Dreyfus, Berkeley philosopher:
  No computer will ever beat me at chess

1967: Richard Greenblatt's MacHack's
  program beat him

Then **Dreyfus**:
  Well, no computer will beat a nationally
  ranked player

But it did

Then **Dreyfus**:
  Well, no computer will beat a world
  champion

1997: Deep Blue beat Garry Kasparov

Kasparov vs.   Deep Blue

The clincher

- Many people are fond of saying,

  "They will never make a machine to replace the human mind --- it does many things which no machine could ever do."

"Weak AI" responses

- *Hubert Dreyfus, Berkeley philosopher:*
  Nonformal aspects of thinking cannot be reduced to mechanized processes

- *John Searle, Berkeley philosopher:*
  Chinese room experiment – blindly translating is not the same as thinking

- *Thomas Ray, Oklahoma zoologist:*
  carbon medium and silicon medium are fundamentally different

- *Roger Penrose, British physicist and mathematician:*
  Consciousness arises from mysterious force of quantum effects

- *David Chalmers, UC Santa Cruz philosopher:*
  Basis of consciousness may be mysterious new type that has not yet been observed

An alternative view

Thesis:

- "Strong AI" is fundamentally wrong
  - There is a fundamental difference
  - Machines can never be equivalent to humans in all respects

- "Weak AI" arguments are – well – *weak* because they all assume *materialism* in their foundation

- The dilemma is solved by recognizing the role of the *spirit (or soul)*

Example

- Personal assistants like Google Assistant, Siri, and Alexa are considered weak AI programs because they operate within a limited pre-defined set of functions.

- Machines with the mind of their own which can make independent decisions without human interference. These programs could be considered strong AI.

- sci-fi movies like "Her", "The Terminator", "I-Robot", "WALL-E"and more

Strong vs Weak AI

Comparison Chart

Weak AI	Strong AI
Weak AI is simply the view that intelligent behavior can be modeled and used by computers to solve complex problems.	Strong AI refers to a hypothetical machine that exhibits human cognitive abilities.
Weak AI refers to systems that are programmed to accomplish a wide range problems but operate within a pre-defined range of functions.	Strong AI refers to machines with the mind of their own and which can think and accomplish complex tasks on their own.
Weak AI-powered machines do not have mind of their own.	Strong AI-powered machines can exhibit strong human cognitive abilities.
Alexa and Siri are the best examples of weak AI programs.	Strong AI is a hypothetical concept which does not exist yet in its true form.