CONSCIOUSNESS

demystified

Vedic Vision
In 1750 the French physician de La Mettrie wrote, “Let us conclude boldly then, that man is a machine.”

Richard Dawkins proclaiming, “We are survival machines—robot vehicles blindly programmed to preserve the selfish molecules known as genes.”
A leader in computer research, Marvin Minsky of M.I.T., believes that a machine will soon be created with “the general intelligence of an average human being. … The machine will be able to educate itself. … In a few months it will be at genius level. … A few months after that its power will be incalculable.” Then Minsky adds, “If we are lucky, they might decide to keep us as pets.”
Professor Arthur Harkins, director of the Graduate Futures Program at the University of Minnesota, shows that by the year 2000, people will be getting married to robots and society will begin to ponder the definition of “human.”
Two Approaches

- Software simulation with supercomputers
- Real ASIC hardware
Software simulation
Today, it is theoretically possible to test any model of neural function if it can be described by a mathematical formalism and if the resulting equations can be solved numerically. While this is in principle true for nearly all existing models, the computing time needed for this calculations becomes the limiting factor.

in the human nervous system, where 100 billions of neurons and about $10^{16}$ synapses operate in parallel in continuous time

Source: Facets group
$14.1$ million

15 scientific communities

7 countries

www.facets-project.org
There is an enormous gap between nature and simulation, which reaches a complexity in the order of $10^3$ neurons in real-time with a simple integrate-and-fire model and conductance based synapses on the fastest available microprocessors.

Source: Facets group
Seeing through our Eyes

- Image on the retina of the eye.
- Optic nerve transmits this image to a screen in the brain (visual cortex).
- V.S. Ramachandran from UCSD: “Inside the brain there really is no replica of the external world. Rather, there is an abstract symbolic description of that world.”
Seeing through our Eyes

- 3 separate (functionally and anatomically distinct) visual systems in the brain –
  - parvo-interblob-pale-stripe system (color)
  - blob-thin-stripe-V4 system (shape)
  - magno-4B-thick-stripe-MT system (motion)

- Illustration: A tube (containing 1-10 balls) with 10 photoelectric cells which detect the balls
Just as the brain has different subsystems for recognizing different patterns, so this simple network has three subsystems for recognizing the factors 2, 3, and 5. We would not expect this network to be conscious, and similarly we cannot account for consciousness in terms of the neural networks of the brain.

The essence of the network lies in the pattern of logic gates, not in the substance making up these gates.
A machine can easily be built that responds to red light with the statement, "I see a red light." but does the experience of seeing red light accompany this mechanical response?
Can human mind be simulated by a computer?

An accurate simulation of a human mind is actually a mind.
– Strong AI proponents
Central Processing Unit

Memory

Input-output devices
1. Write 0 in (2).
2. Increment (2).
3. Write 0 in (3).
4. Copy (2) into (4).
5. If (4) equals 0, go to step 12.
6. Decrement (4).
7. Copy (2) into (5).
8. If (5) equals 0, go to step 5.
9. Decrement (5).
10. Increment (3).
12. If (3) is not greater than (1),
    go to step 2.
13. Decrement (2).
1. Find the square root of X.
2. The square root of X is one less than the first number Y with Y squared greater than X.
3. Y squared is the sum of Y copies of Y.
4. The sum of Y and another number is the result of incrementing that number Y times.
1. Recognize the highly abstract patterns of organization in arrangements of matter.
2. Modify the content of conscious experience in accord with the changes these abstract properties undergo as time passes and matter is transformed.
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2. Modify the content of conscious experience in accord with the changes these abstract properties undergo as time passes and matter is transformed.
Conscious awareness of the plot and imagery of the story
Turing Test

- The ability to accurately imitate the human linguistic behavior should be accepted as the proper test of thinking capacity.
- Searle’s experiment.
- Latest language translators.
Most Modern Linguistic Test

“Out of sight, out of mind”

English to Russian

Russian to English

“Invisible Idiot”