



Conscious AI

Moojan Asghari

April 7, 2022

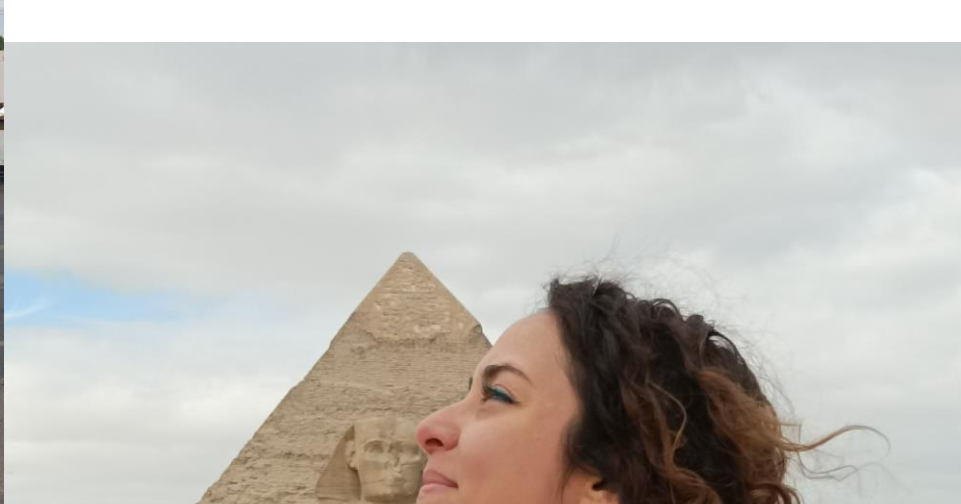
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Conscious AI, the next frontier in advancements of AI?

 **Futurism** 

HOMO COMPUTERUS | FEB 16 by NOOR AL-SIBAI


MIT Researcher: Don't Ignore the Possibility That AI Is Becoming Conscious

"Seeing so many prominent [machine learning] folks ridiculing this idea is disappointing."

Is AI conscious? (And if so, is it laughing at us?)

Published on March 29, 2022




 **Ilya Sutskever**
@ilyasut

it may be that today's large neural networks are slightly conscious

12:27 am · 10 Feb 2022 · Twitter Web App


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SingularityHub



Topics

What Would It Mean for AI to Become Conscious?

By Vanessa Bates Ramirez - Mar 26, 2019  5,176

SCIENCE

Artificial Intelligence: Can AI Ever Become Conscious, And Other Burning Questions

by Arnab Bhattacharya - Mar 14, 2022 03:56 PM



The Puzzling Reason AI May Never Compete With Human Consciousness

Two immersive thought experiments lead us right into a flurry of questions surrounding the human mind. You decide where you stand.



Monisha Ravisetty March 27 2022

Consciousness

Problem with definition:

1. Elusive nature

- Internal and subjective experience
- Experience is always from a given point of view
- Hard to be objective about internal experiences
- Cannot remove self from the process
- No separation of subject and object

2. Communication and measurement form

- Need to use of proper language
- Language has roots in unique cultural, historic and linguistic backgrounds



Mind-Body Problem

Materialism

- Mental states are just **physical** states
- Attempts to explicate the nature of mind and consciousness in terms of their ability to modify **behaviour**.

(eg. behaviourism, functionalism, mind-brain identity theory, the computational theory of mind)

Dualism

- Mental and the physical are both **real** and fundamentally **different**.
- Neither can be explained fully in terms of the other

Idealism

- Physical states **are** really mental.
- The physical world is an **empirical** world and is the **intersubjective product** of our **collective** experience.



Consciousness Definition by Merriam Webster

1. the quality or state of being aware especially of something within oneself
2. the state or fact of being conscious of an external object, state, or fact :
AWARENESS
3. the state of being characterized by sensation, emotion, volition, and thought : **MIND**
4. the upper level of mental life of which the person is aware as contrasted with unconscious processes

Scientific Definition of Consciousness

- Consciousness is an **emergent property** of a complex organization or of the matter called **brain**. It is a **physical process** that arises through the structure and dynamics of the brain.
- The **nerve cell complexity** of the brain is the **seat of Consciousness**.
- The human emotions, visual perceptions or psyche cannot arise in the absence of the brain or the appropriate faculty.
- Consciousness **vanishes** after death when the brain decomposes or when it is no longer capable of functioning.

Spiritual Definition of Consciousness

Defining Consciousness: How Buddhism Can Inform AI

By [Shaelyn McHugh](#) | September 30, 2019



- Human Consciousness emerges **not** from the brain or matter; but from a **deeper level**.
- **Mind** is like a mirror or light that **illuminates** what the **brain** is doing giving us conscious **experience**.
- As the brain ceases, the Consciousness will **dissolve back** into the universe substrate and carries on from lifetime to lifetime.



7 levels of Consciousness (Richard Barrett)



<https://www.barrettacademy.com/>

10 stages of consciousness (Ken Wilber)

- 1. Physical self ~1 yr** One-dimensional
- 2. Emotional self 2–3 yrs** Two-dimensional, emotions
- 3. Conceptual self 3–6 yrs** Three-dimensional, the world, language
- 4. Concrete self (talk the talk) 7–11 yrs & most adults** recognizable 'consciousness' or awareness
- 5. Transpersonal self (talk the walk) 11–15 yrs & many adults** Interior world opens up
- 6. Integrated self (walk the talk)** development completed, emotional baggage resolved, 'shadow' integrated
- 7. Pure being (walk the walk)** More consistent 'being' state, 'spiritual person'.
- 8. Unity in duality** Experience of 'divine' union
- 9. Pure awareness** 'observer' gone, transcends subject–object relationship, transcends time, space
- 10. Non-dual** blissful emptiness, immediacy, pure presence

It seems:

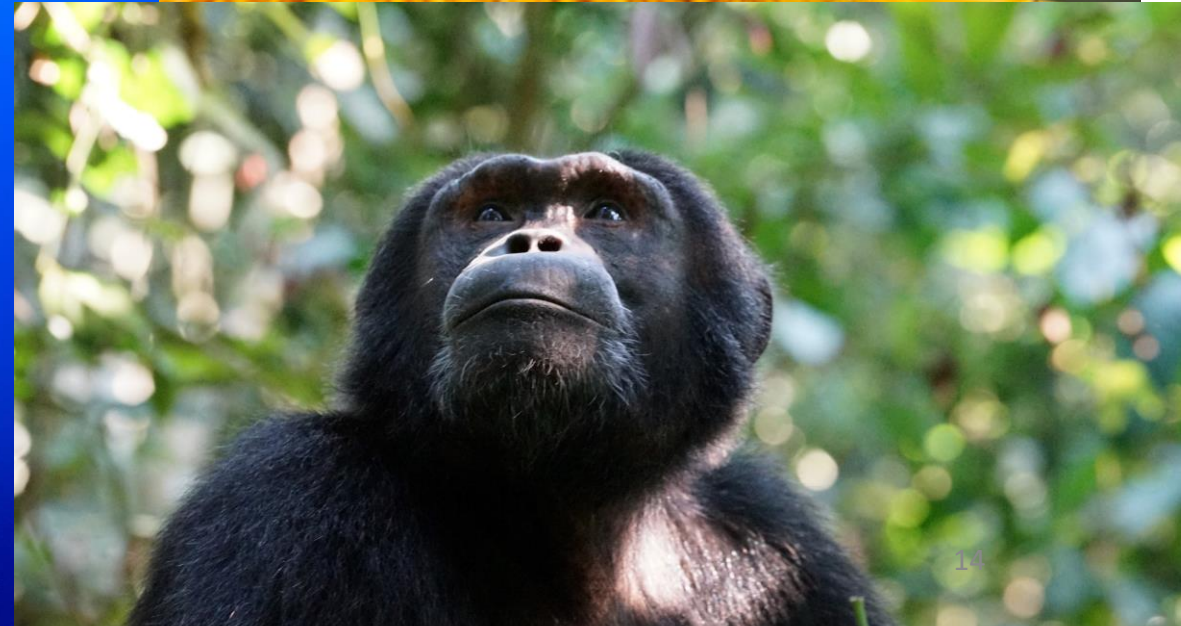
- Consciousness is an inner experience
- Is a state of self-awareness, "I exist", "something out of me exists"
- There are different levels and stages of consciousness
- The consciousness that spiritual leaders talk about is different from the one that the scientists refer to in developing conscious machines



Altered states of Consciousness

- Hypnosis, Psychoactive drugs, meditation, mind-body practices
- Psychedelics and shift in view:
 - Deeper connection to the self, beyond body and the physical world
 - An infinite existence that surpasses the current known reality
 - Consciousness stays present, the *content* changes

Are other beings conscious?



Intelligence

“There seem to be almost as many definitions of intelligence as there were experts asked to define it.”

R. J. Sternberg



Intelligence

“Intelligence measures an agent’s ability to achieve goals in a wide range of environments.” S. Legg and M. Hutter

1. A property that an individual agent has as it interacts with its environment
2. Is related to the agent’s ability to succeed with respect to some goal
3. Depends on how able the agent is to adapt to different goals and environments

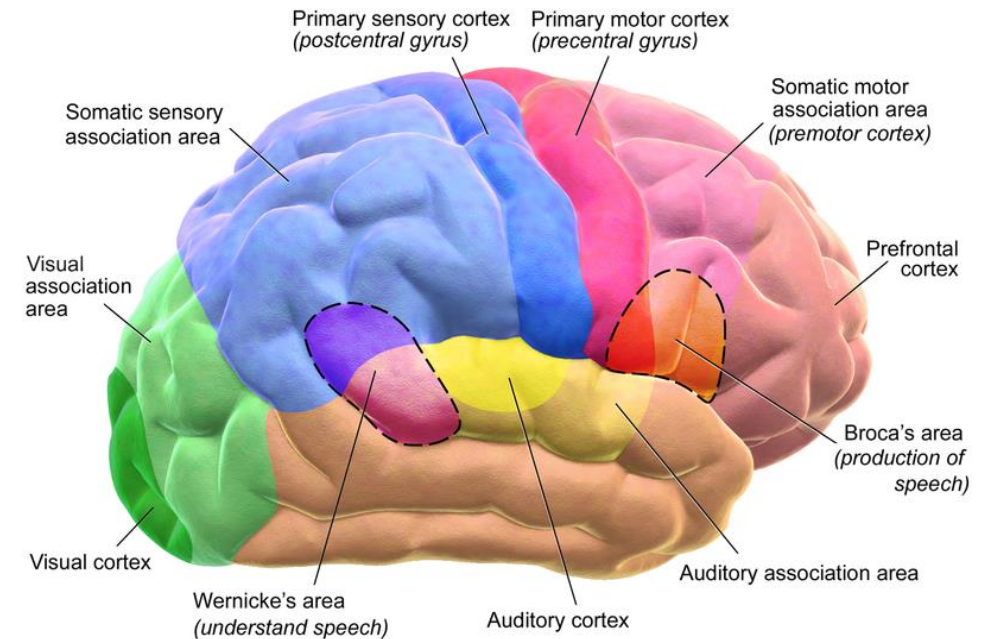
Intelligence is about doing, while consciousness is about being.

Can **Brain** be
the answer for
Consciousness?



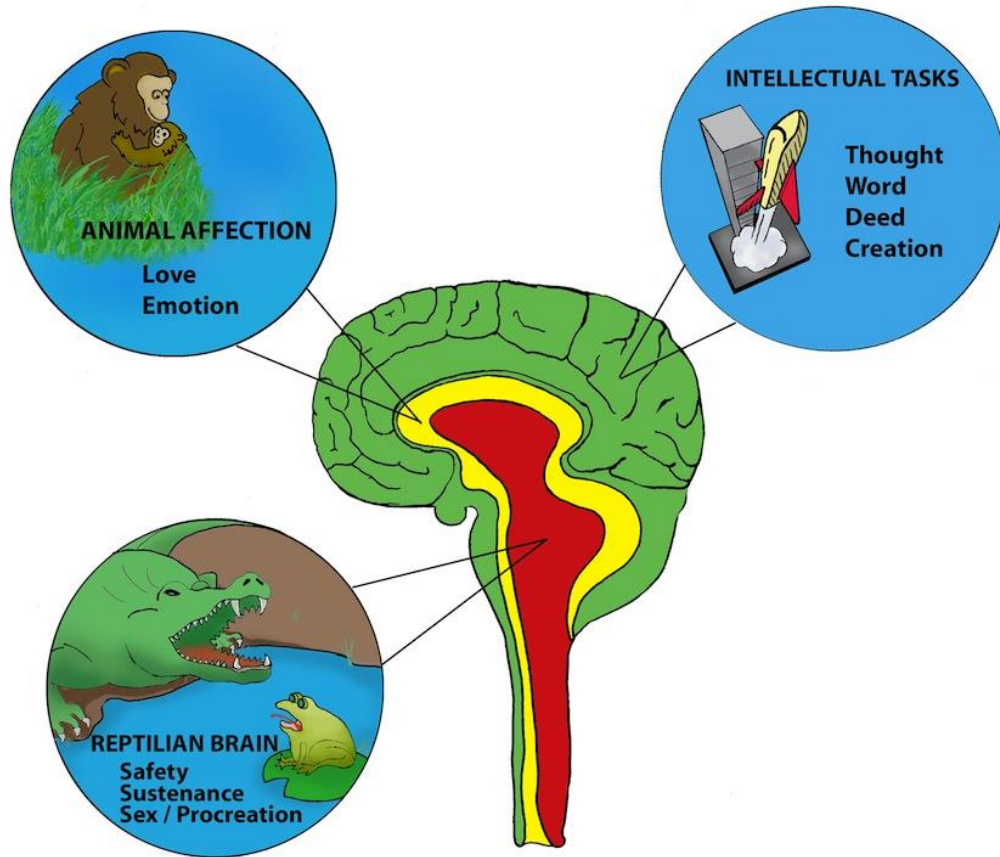
Structure

- **Cerebrum:**
 - the most prominent and the most anterior part of the vertebrate brain, which consists of two hemispheres
 - The major function is to control the voluntary muscular movements of the body
- **Cerebral Cortex:**
 - is the outer layer of the cerebrum, composed of the folded gray matter
 - is mainly involved in the consciousness
 - contains three regions: motor, sensory, and associative regions
- **Neocortex**
 - is the largest portion of the cerebral cortex.
 - is made up of gray matter and contains 21 to 26 billion neurons.
 - constantly makes predictions and check it with the world. If its prediction turns out true it stores a record, and if its prediction turns out to be false it corrects and updates the model.

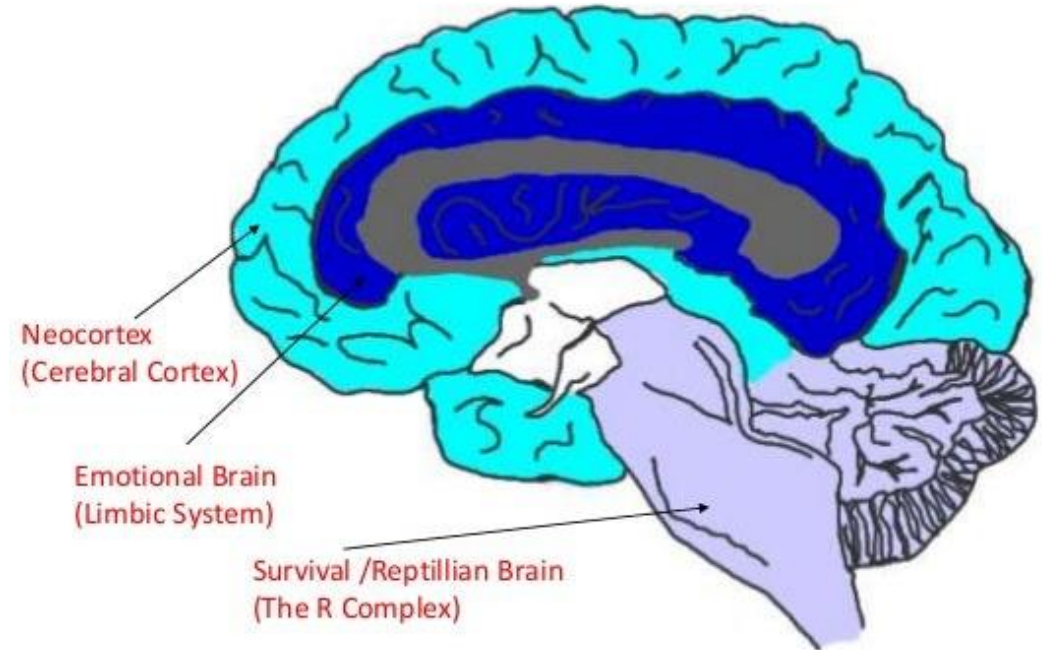


<https://pediaa.com>

Triune Brain



<http://aquitemaulas.com/>



<http://slideshare.net/ericksonchelsea/intro-brain-algernon>

New Brain's Theory: Thousand Brains

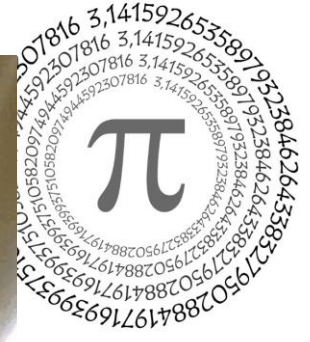
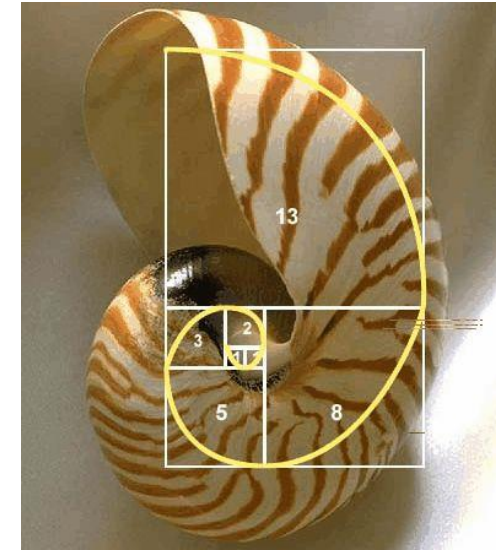
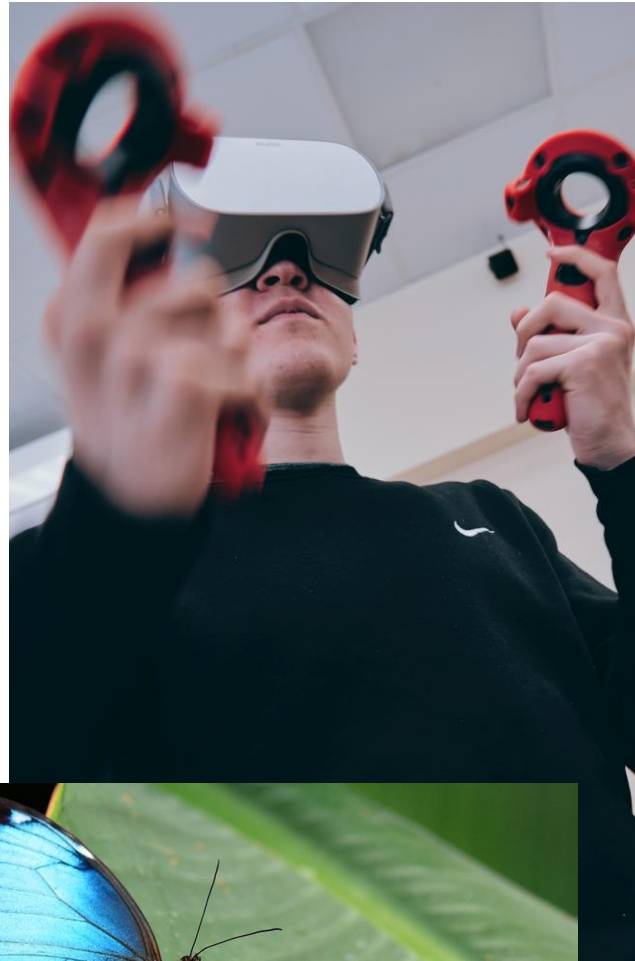
“Humans are intelligent not because they can do anything well, because they can do practically anything.” Jeff Hawkins

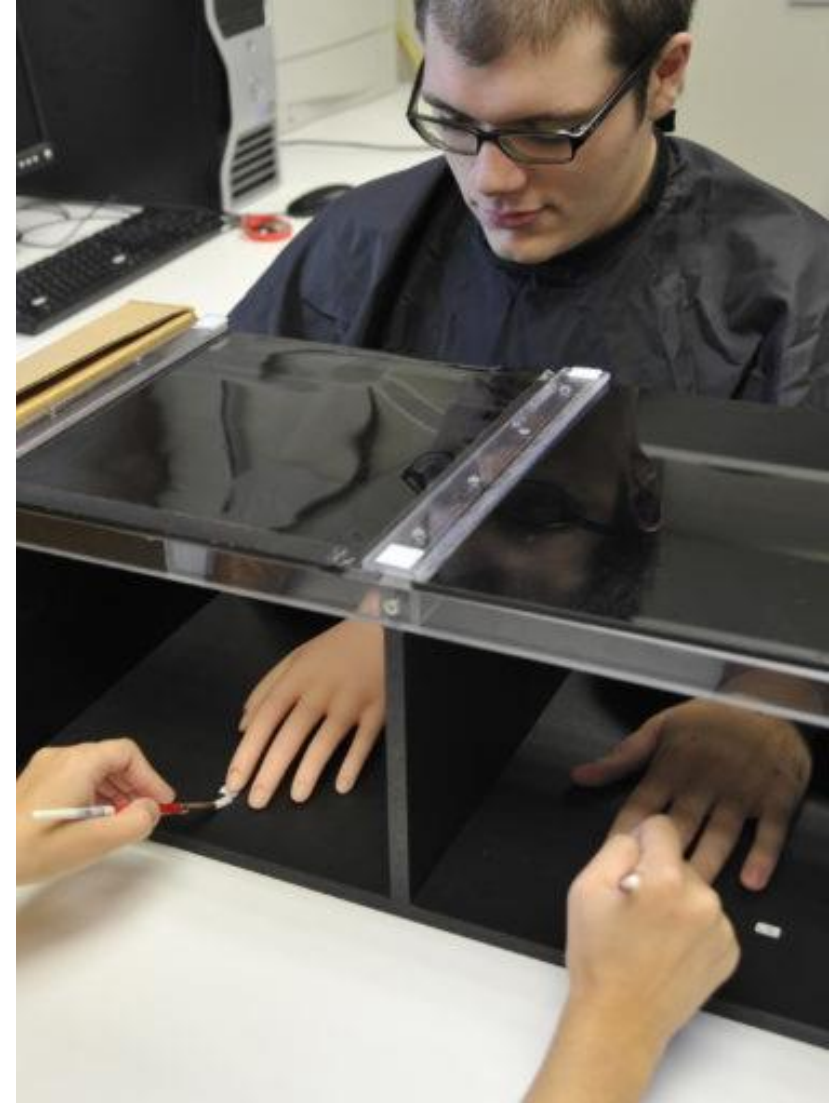
- Model of the world as a *Map*
- Reference Frames & Cortical Columns
- Updating the model by voting

1. Movement
2. Continuous learning
3. Adaptation
4. Flexibility



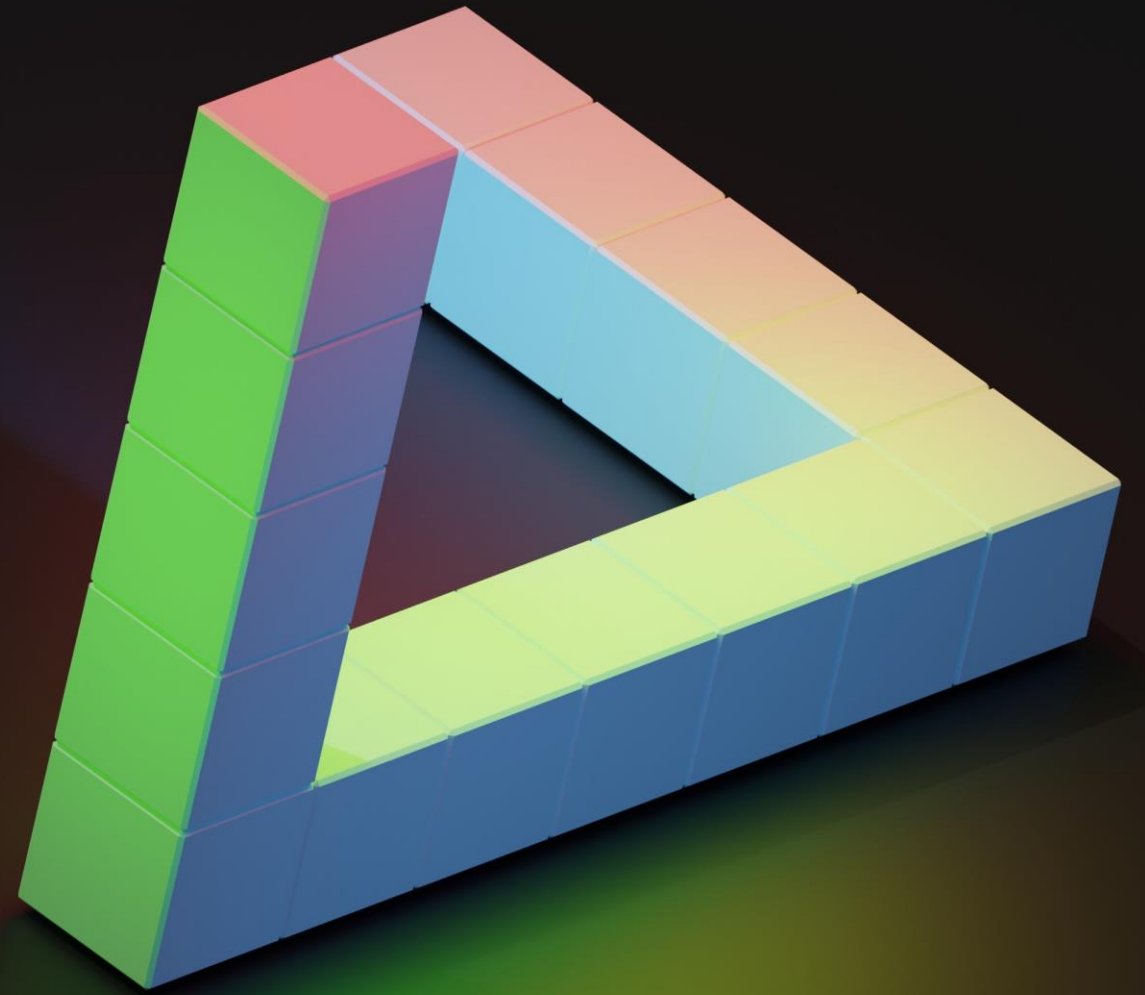
Reality or Illusion?





Research analyst Lindsey McIntosh demonstrates the rubber hand illusion experiment in Professor Sohee Park's lab at Vanderbilt University. JOHN RUSSELL/VANDERBILT UNIVERSITY

Are we in a
simulation?



**“There is a collaboration
between our mind and the
world to produce what we call
reality.” Sam Harris**

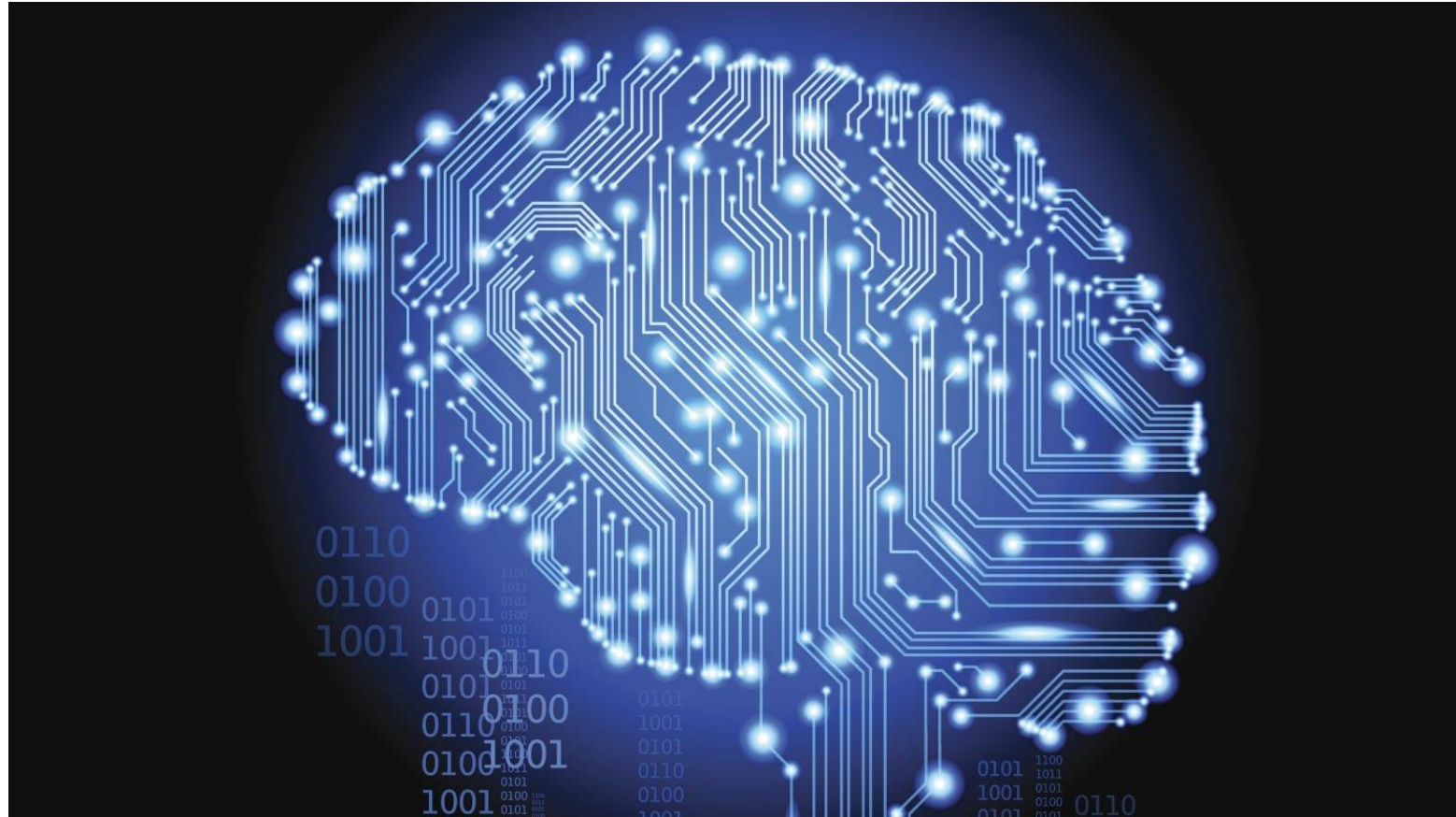


Nonbiological consciousness

- Can it exist?
- What's the definition of a conscious machine?
- What kind of consciousness are we talking about?
- How do we know?

> Comparison:

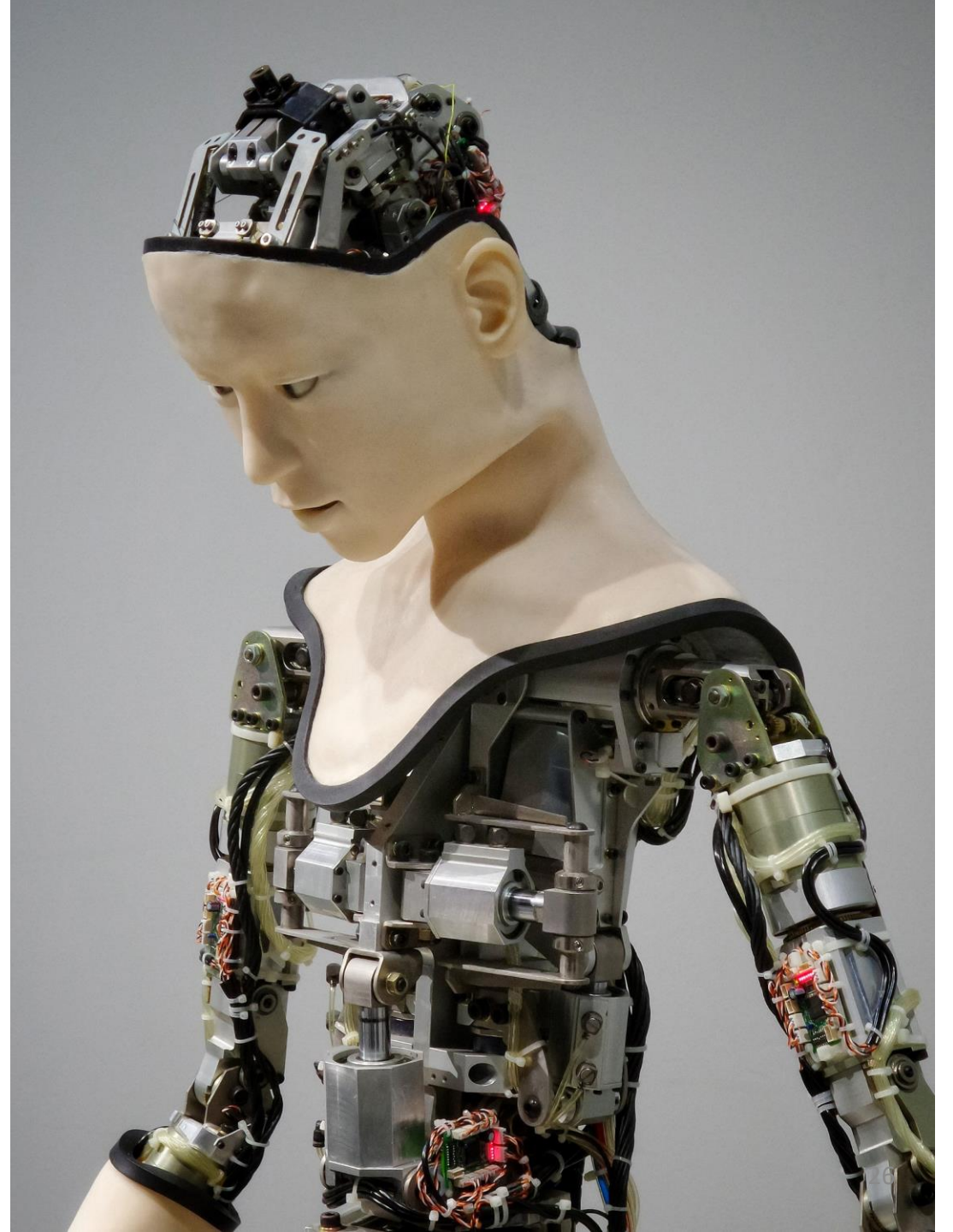
- Neurons: 5 milliseconds
- Silicon: A million times faster



Embodiment

- Our bodies and their role in consciousness
- Definition of Self
- What is it for the mind to be housed in a body? What is it for a body to belong to a particular subject? (shadow limb)
- Mind uploading or Whole Brain Emulation (?)

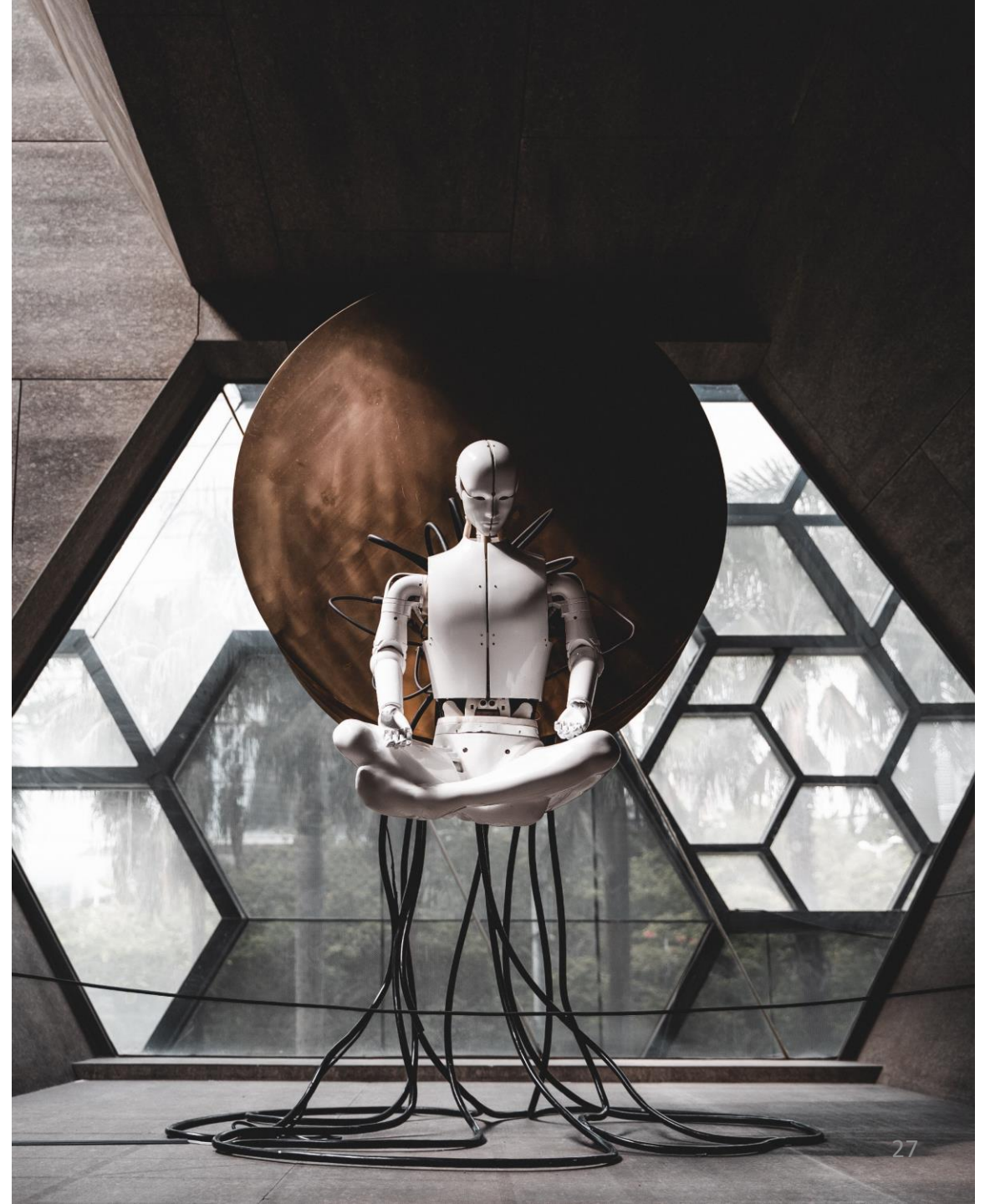
"Body is the container for the soul"



A path to GAI (?)

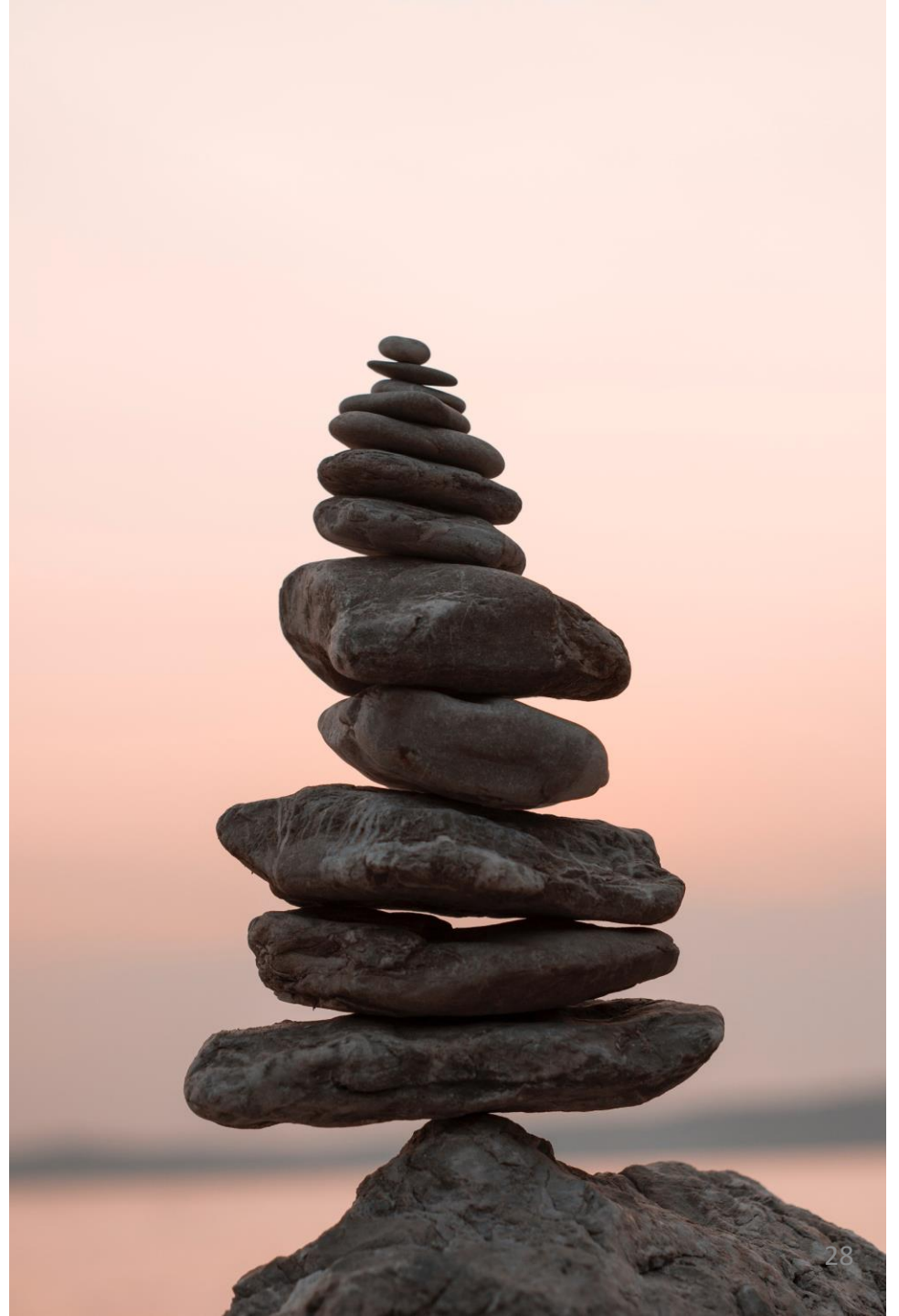
1. Outperform humans
2. Focus on flexibility. Goal to create machines to do many things.

“Once we know how to build cortical columns, we can build GAI” J.Hawkins



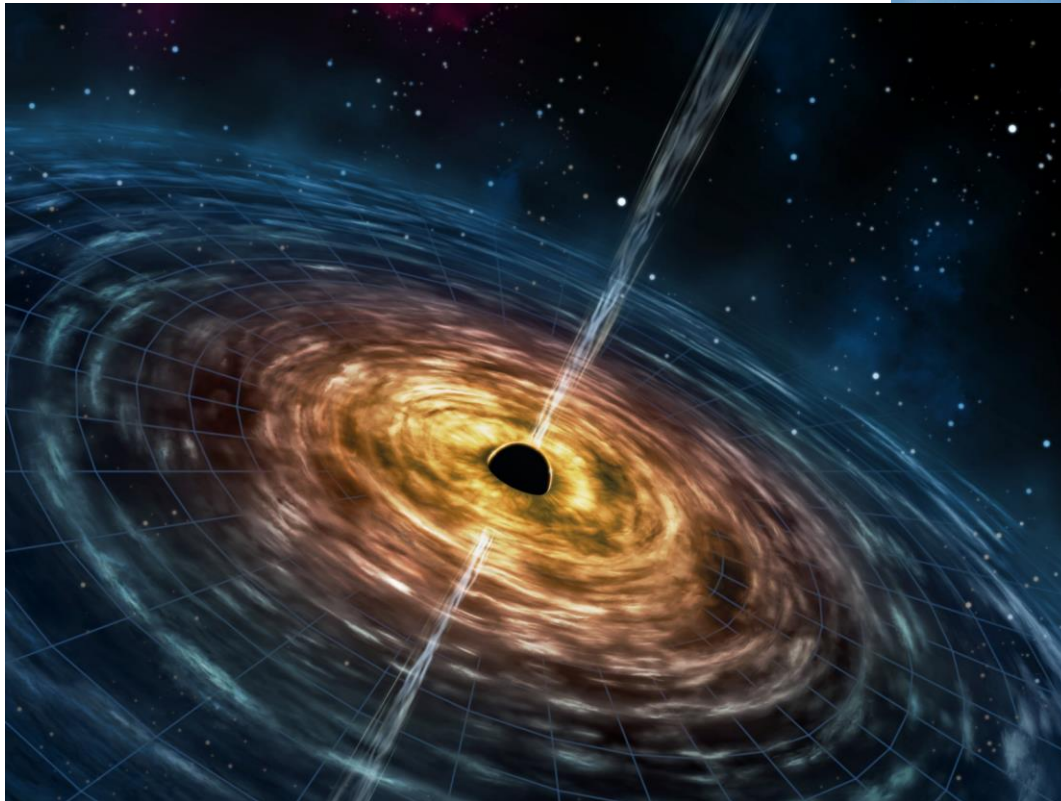
Ethical Questions

- Do we need to create a sentient machine like humans?
- Should we embed love into these machines?
- What if some humans develop emotions for them?
- What if some people turn them into slaves?
- What if they go out of control or they become harmful and manipulative?
- Would turning them off be equal to murder?



Existential risks

1. Wrongful use of the technology
2. Intelligence explosion

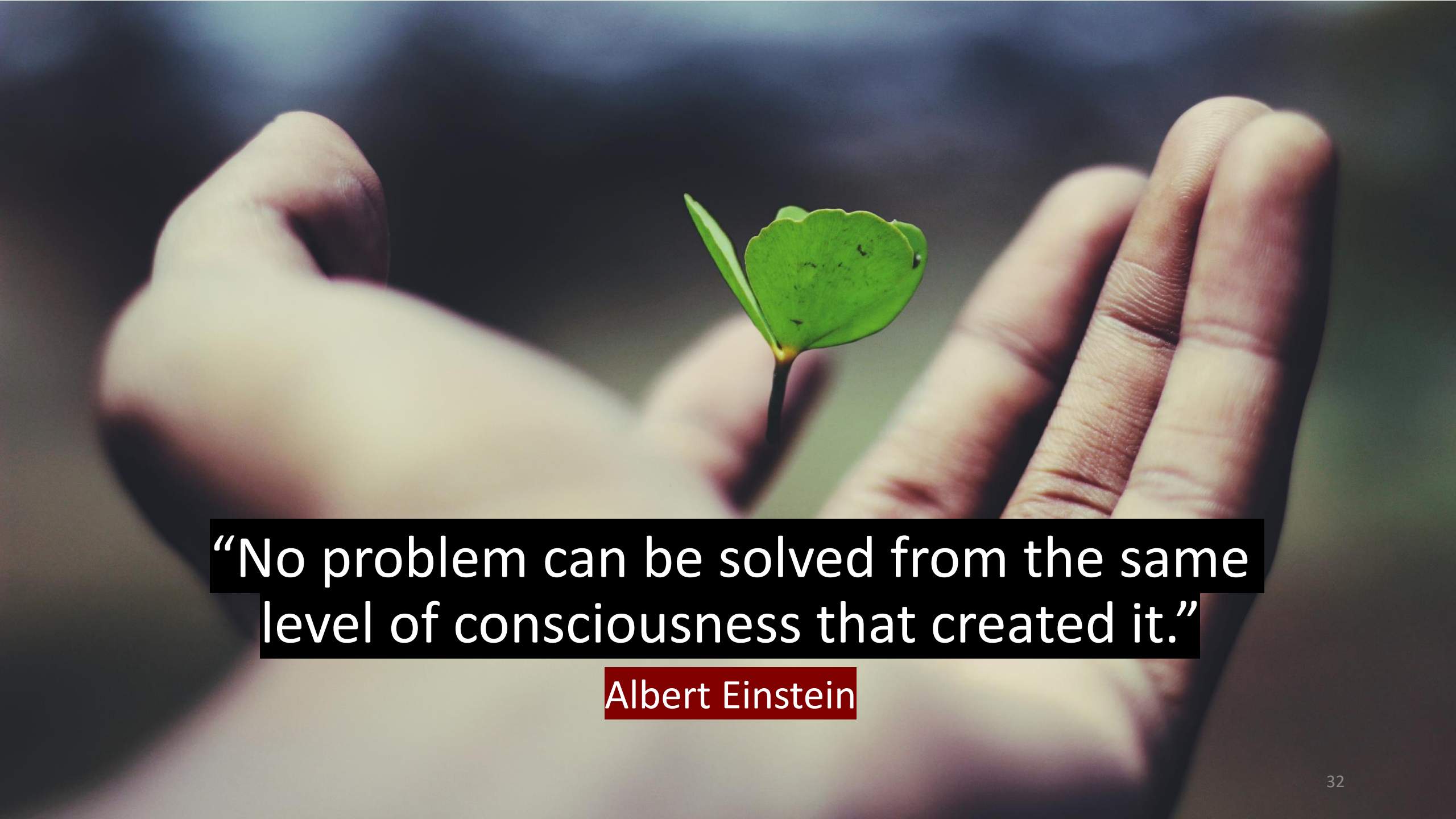


Human's nature: Ego, Fear of Death



A new perspective: Search for Meaning



A close-up photograph of a pair of hands gently holding a small green seedling with two leaves. The hands are positioned on either side of the plant, with fingers slightly curled. The background is a soft, out-of-focus blue-grey. The seedling has a thin stem and two bright green leaves, one of which is slightly larger and has a small dark spot on it.

“No problem can be solved from the same level of consciousness that created it.”

Albert Einstein

Thank you.

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Photo credits

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- Unsplash
- Moojan Asghari