Paper Presentation - Artificial Intelligence and Machine Learning

- Shreya Savant – S.Y. B. Tech. Computer Science Engineering

Area of Focus:

Quantum Computing in Human Digital Immortality: Review and Prospect

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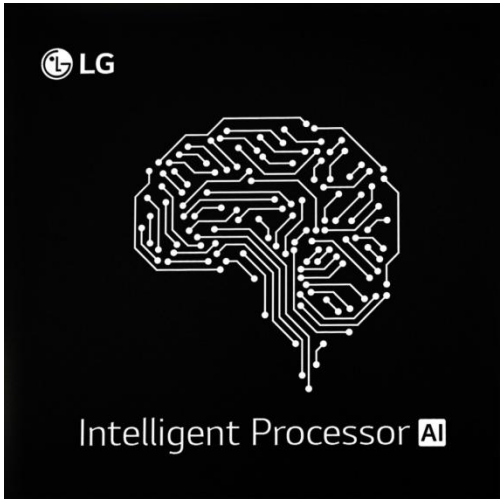
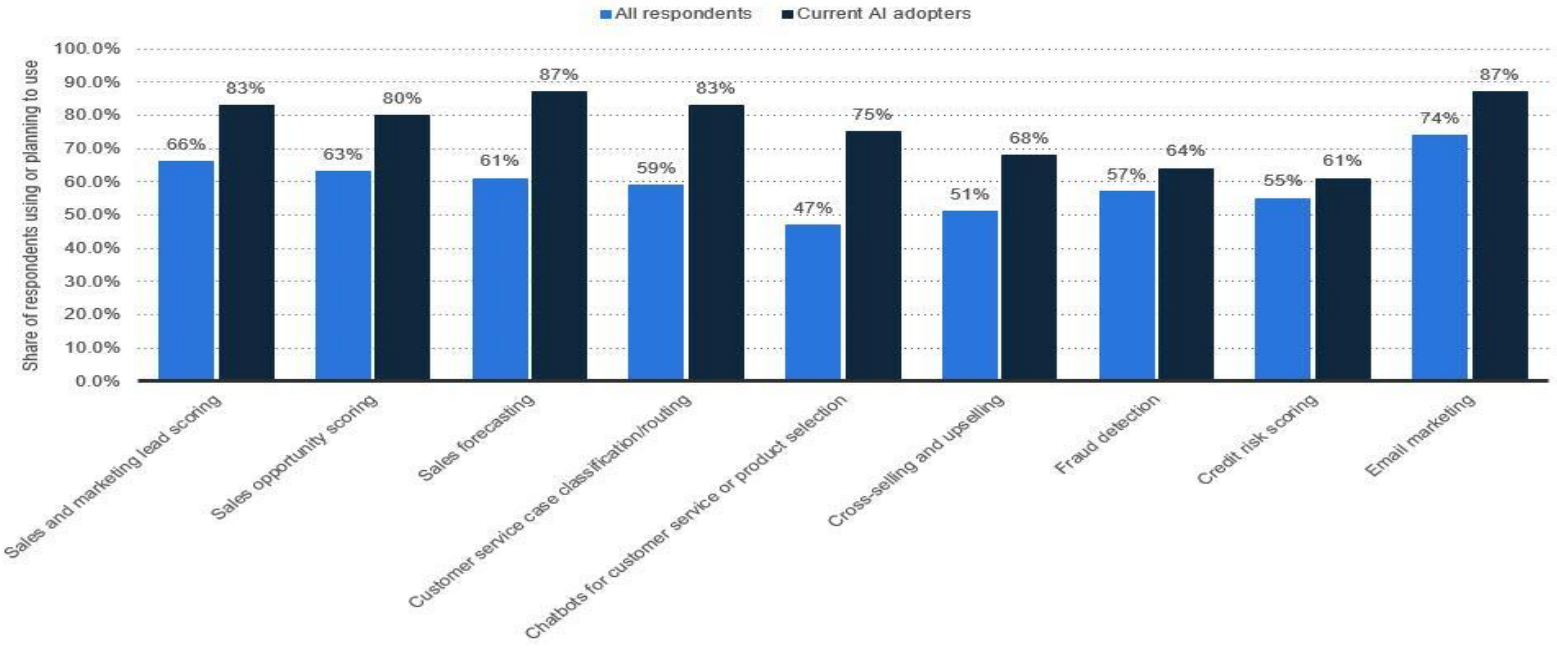
Artificial Intelligence:

Hi, I'm Ada.
I can help if you're feeling unwell.

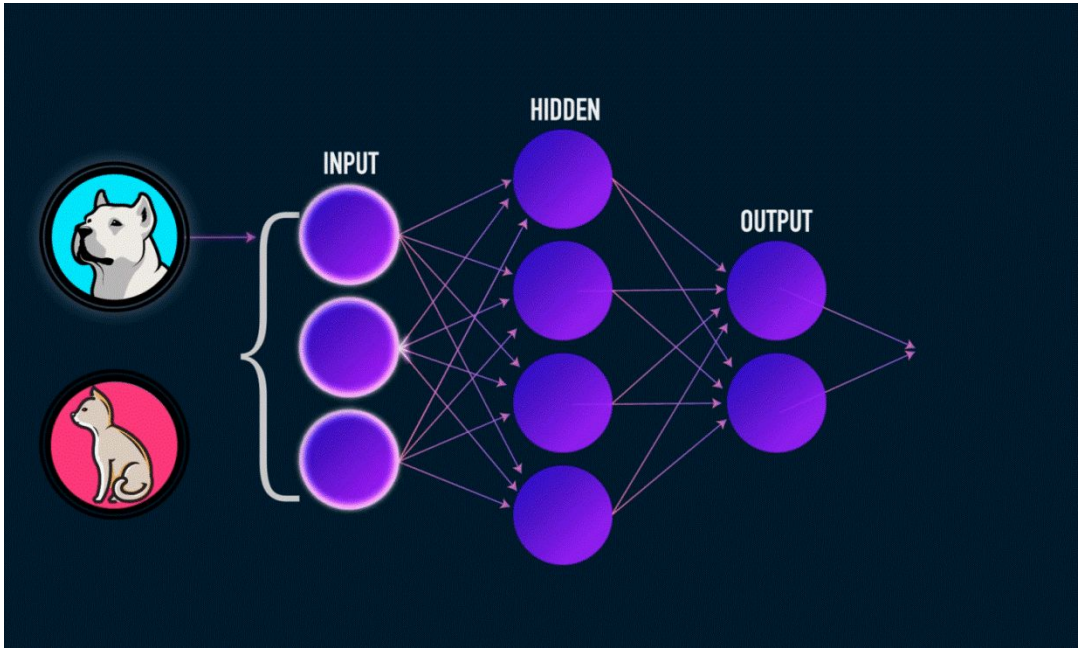


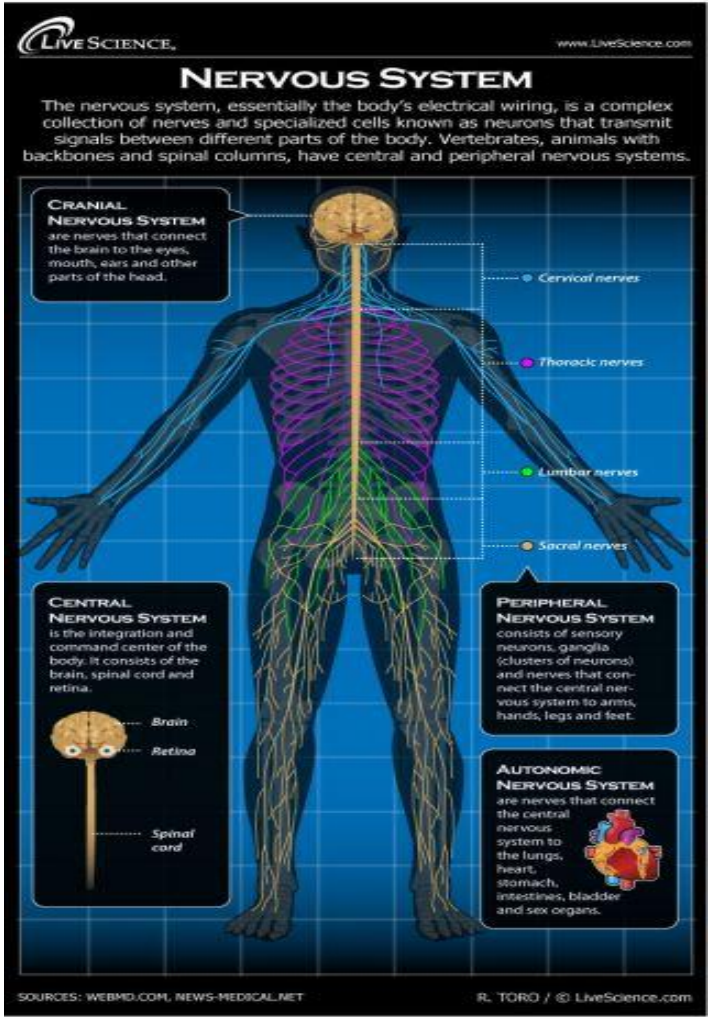
Specific AI use case adoption worldwide 2017

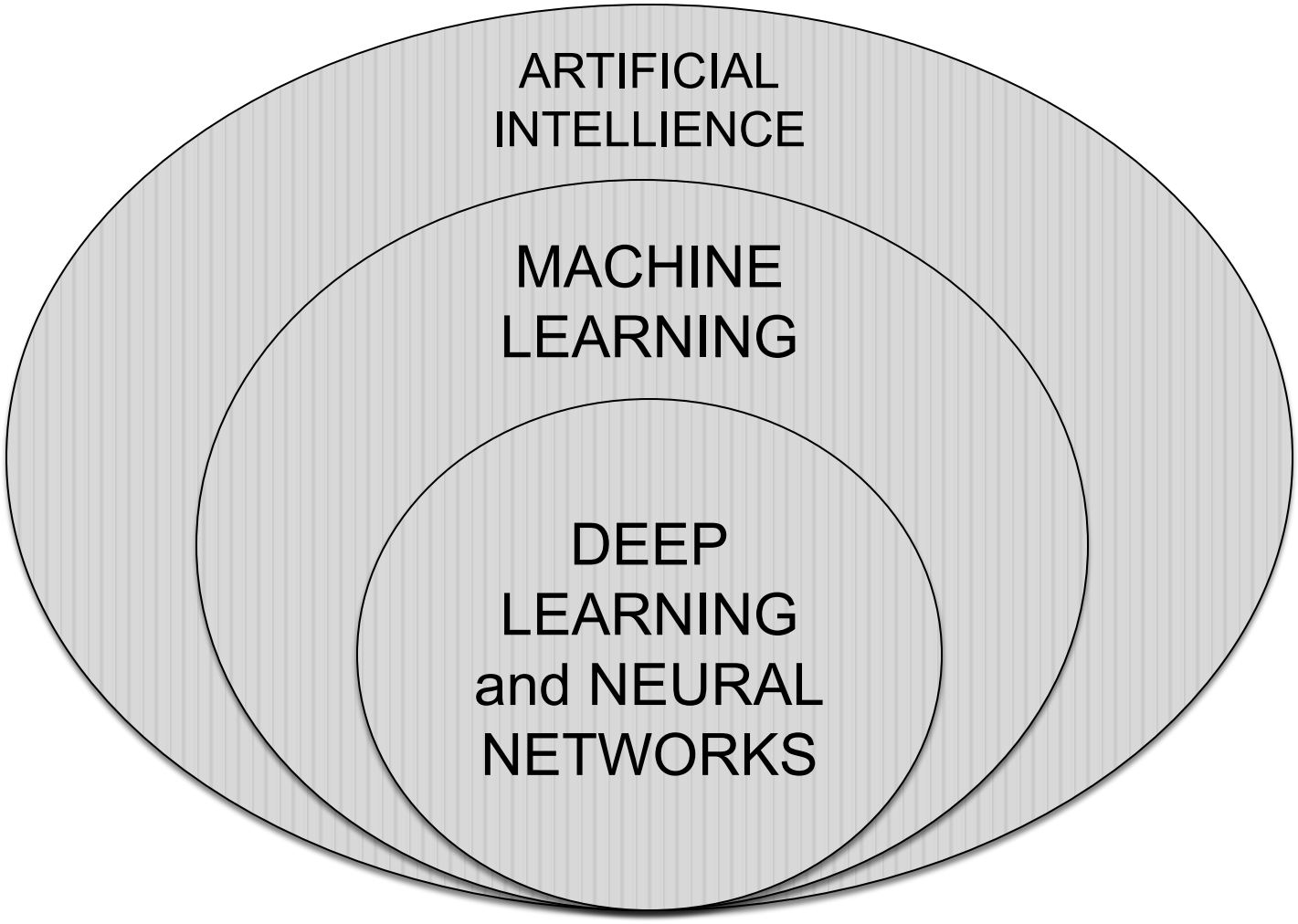
Adoption of specific artificial intelligence (AI) use cases in 2017, by category

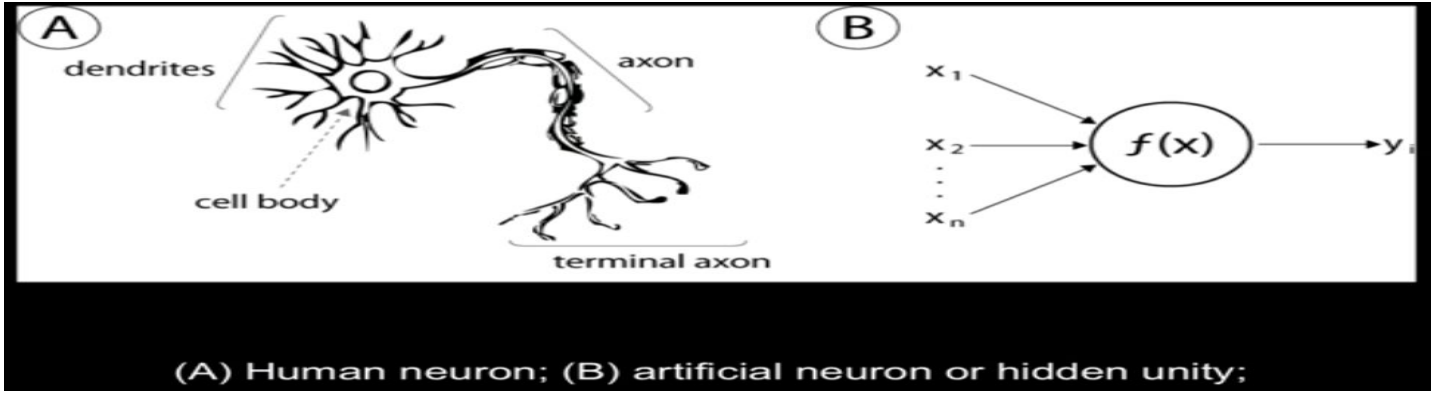


- Machine Learning:






ARTIFICIAL
INTELLIENCE
MACHINE
LEARNING
DEEP
LEARNING
and NEURAL
NETWORKS



(A) Human neuron; (B) artificial neuron or hidden unity;

(C) biological synapse; (D) Artificial Neuron Network synapses.

Credit: Neil Nie talk at TEDxDeerfield

So let’s address the elephant in the room:

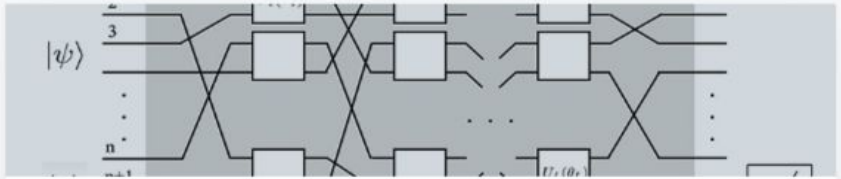
QUANTUM COMPUTING

Quantum Simulation

The design of new materials and elucidation of complex physics through accurate simulations of chemistry and condensed matter models are among the most promising applications of quantum computing.

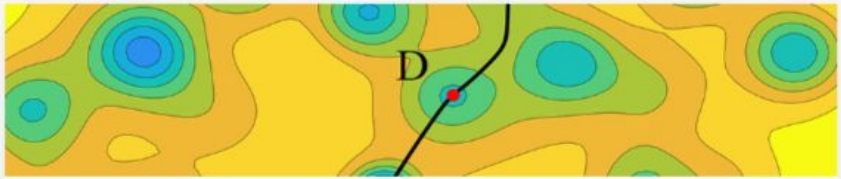
Error mitigation techniques

We work to develop methods on the road to full quantum error correction that have the capability of dramatically reducing noise in current devices. While full-scale fault tolerant quantum computing may require considerable developments, we have developed the quantum subspace expansion technique to help utilize techniques from quantum error correction to improve performance of applications on near-term devices. Moreover, these techniques facilitate testing of complex quantum codes on near-term devices. We are actively pushing these techniques into new areas and leveraging them as a basis for design of near term experiments.



Quantum Machine Learning

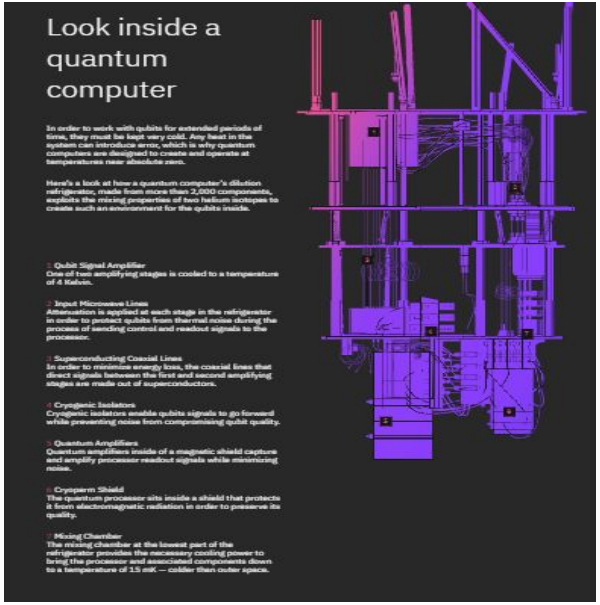
We are developing hybrid quantum-classical machine learning techniques on near-term quantum devices. We are studying universal quantum circuit learning for classification and clustering of quantum and classical data. We are also interested in generative and discriminative quantum neural networks, that could be used as quantum repeaters and state purification units within quantum communication networks, or for verification of other quantum circuits.

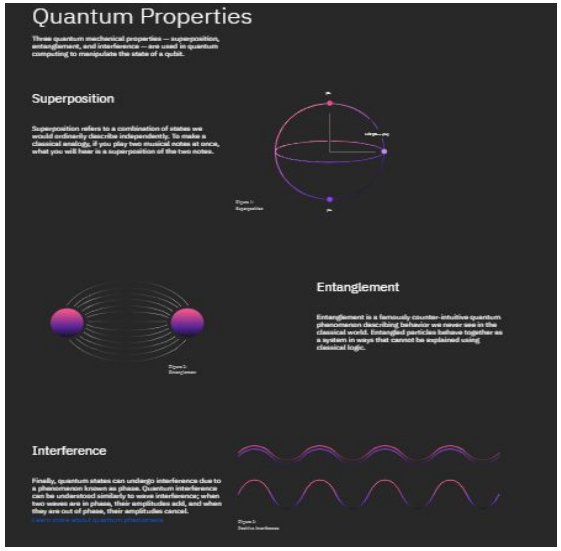


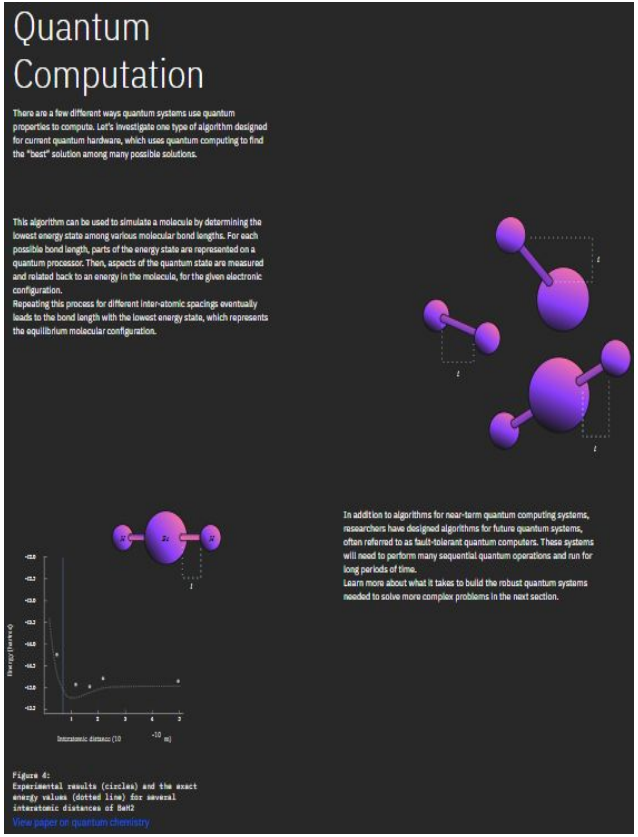
Quantum Optimization

Discrete optimizations in aerospace, automotive, and other industries may benefit from hybrid quantum-classical optimization, for example simulated annealing, quantum assisted optimization algorithm (QAOA) and quantum enhanced population transfer may have utility with today's processors.

SOURCE: GoogleAI

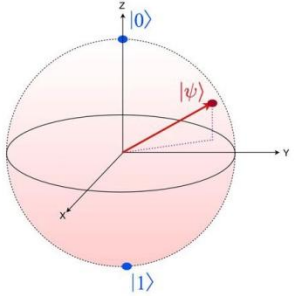






8 Bits

V.S.



1 Qubit

Why Quantum Computing??

$$2^{53} = 9007199254740992$$

A New 53 Qubit Quantum Computer Announced By IBM

By Editor — Last updated Oct 1, 2019

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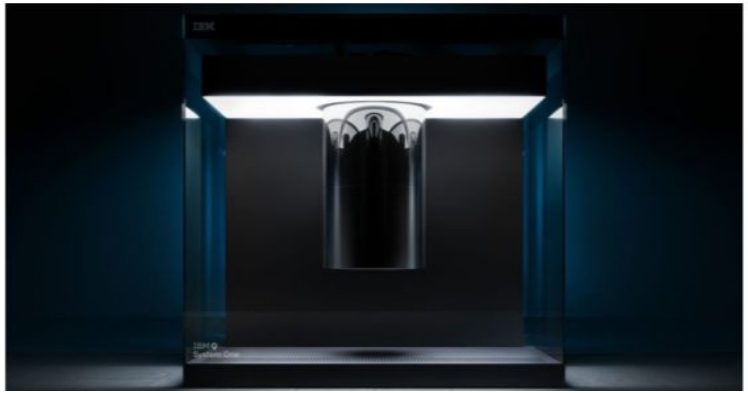
Quantum computing is still one of the most potential techs that have a long way to go before it can be discovered properly. We do understand that it has huge possibilities and in the future, we will see it more and more work for humans. Maybe the future is now as we are getting closer to a bigger part of Quantum computing. IBM has been working with quantum computers for some while now and it has just announced that another step has been taken. After the 13th it's their 14th of quantum computers while it also is the first of 53 qubits by them.



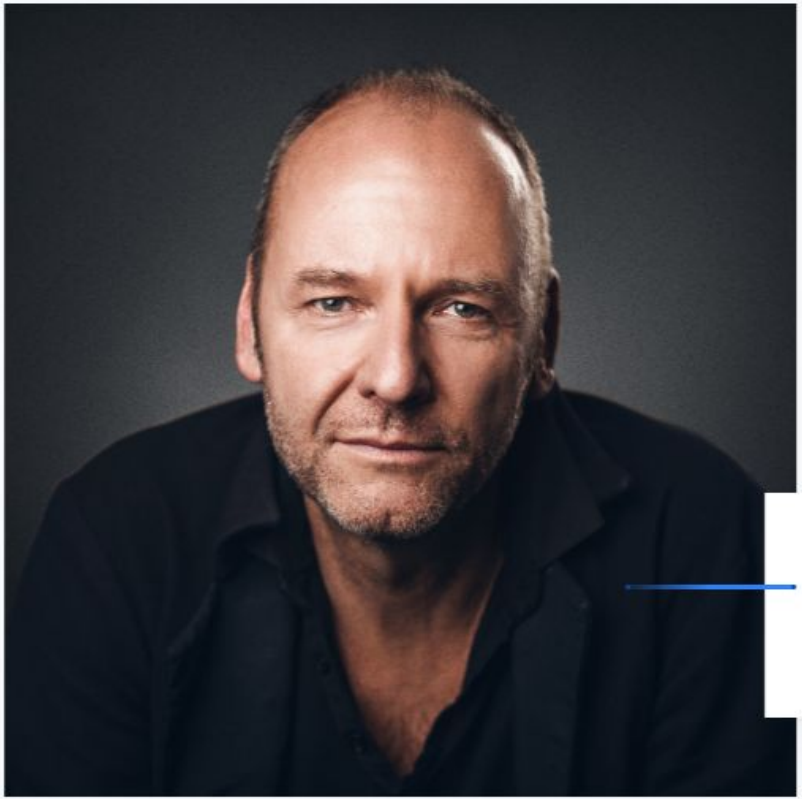
sciencealert Trending

(ankarb/iStock)

HUMANS

Are We All Quantum Computers? Scientists Are Conducting Tests to Find Out

DAVID NIELD 29 MAR 2018



"Quantum Artificial Intelligence will enhance the most consequential of human activities, explaining observations of the world around us."

Hartmut Neven
Engineering Director
Google AI

DIGITAL IMMORTALITY, MIND UPLOADING, AVATAR CREATION, INFINITE AGE

New Blockchain Platform to Provide Digital Immortality

By **Tim Copeland** - July 18, 2018

“ As a hopefully minimalistic definition then, digital immortality can be roughly considered as involving a person-centric repository containing a copy of everything that a person sees, hears, says, or engenders over his or her lifespan, including photographs, videos, audio recordings, movies, television shows, music albums/CDs, newspapers, documents, diaries and journals, interviews, meetings, love letters, notes, papers, art pieces, and so on, and so on; and if not everything, then at least as much as the person has and takes the time and trouble to include. The person’s personality, emotion profiles, thoughts, beliefs, and appearance are also captured and integrated into an artificially intelligent, interactive, conversational agent/avatar.
This avatar is placed in charge of (and perhaps "equated" with) the collected material in the repository so that the agent can present the illusion of having the factual memories, thoughts, and beliefs of the person him/herself. ”

—Susanne Asche, Kulturelles Gedächtnis im 21. Jahrhundert: Tagungsband des internationalen Symposiums, Digital Immortality & Runaway Technology


The future is fundamentally uncertain, and to me that is certainly exciting.
Thank You!