

AI Debate

Con: AI Uncontrollable

August 27, 2014
Broomfield, Colorado

Weak vs. Strong AI

ALCHEMY AND ARTIFICIAL INTELLIGENCE

Hubert L. Dreyfus

December 1965

1965 Alchemy & AI

Early successes in programming digital computers to exhibit simple forms of intelligent behavior, coupled with the belief that intelligent activities differ only in their degree of complexity, have led to the conviction that the information processing underlying any cognitive performance can be formulated in a program and thus simulated on a digital computer. Attempts to simulate cognitive processes on computers have, however, run into greater difficulties than anticipated.

An examination of these difficulties reveals that the attempt to analyze intelligent behavior in digital computer language systematically excludes three fundamental human forms of information processing (fringe consciousness, essence/accident discrimination, and ambiguity tolerance). Moreover, there are four distinct types of intelligent activity, only two of which do not presuppose these human forms of information processing and can therefore be programmed. Significant developments in artificial intelligence in the remaining two areas must await computers of an entirely different sort, of which the only existing prototype is the little-understood human brain.

What is the Singularity?



1958

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The Coming Technological Singularity:
How to Survive in the Post-Human Era

Vernor Vinge
Department of Mathematical Sciences
San Diego State University

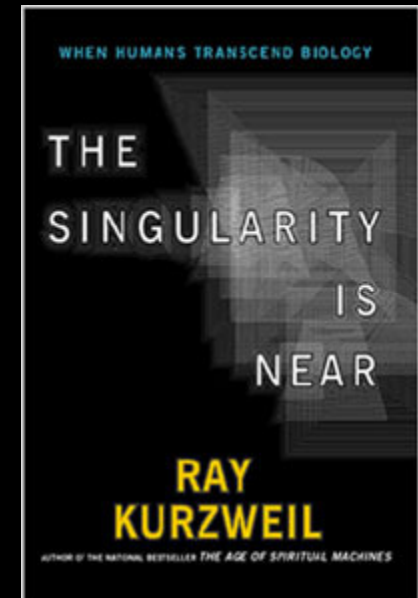
(c) 1993 by Vernor Vinge
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notice is preserved.)

This article was for the VISION-21 Symposium
sponsored by NASA Lewis Research Center
and the Ohio Aerospace Institute, March 30-31, 1993.
It is also retrievable from the NASA technical reports
server as part of NASA CP-10129.
A slightly changed version appeared in the
Winter 1993 issue of _Whole Earth Review_.

Abstract

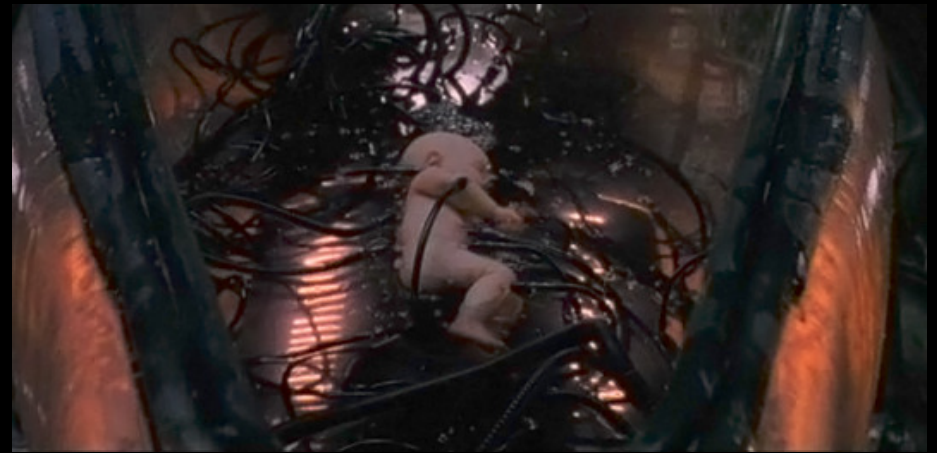
Within thirty years, we will have the technological
means to create superhuman intelligence. Shortly after,
the human era will be ended.

1993



2005

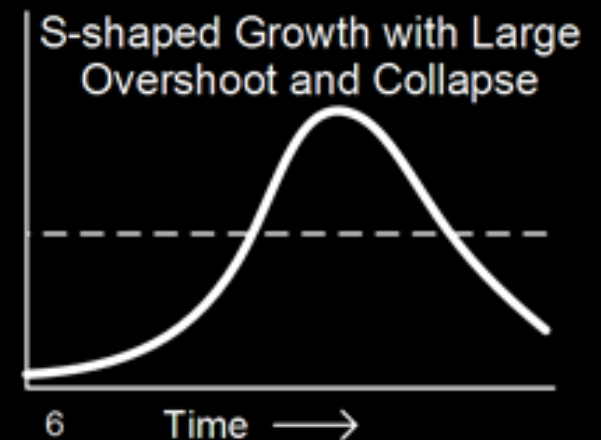
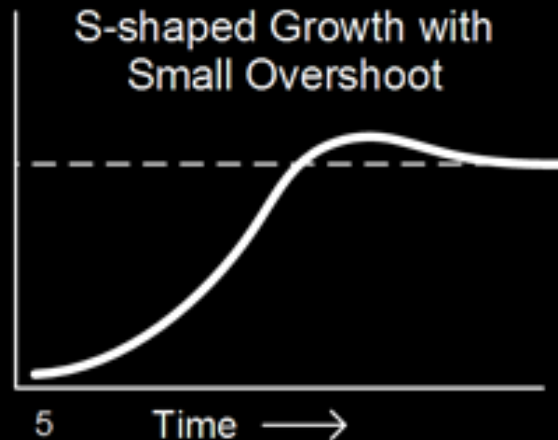
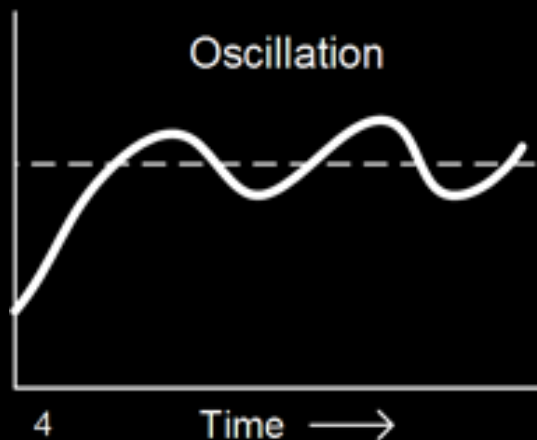
What happens at the Singularity?



Feedback Loops & Chain Reactions



The Skynet Funding Bill is passed. The system goes on-line August 4th, 1997. Human decisions are removed from strategic defense. Skynet begins to learn at a geometric rate. It becomes self-aware at 2:14 a.m. Eastern time, August 29th. In a panic, they try to pull the plug.



Human Brain Equivalent

- 1 Exaflop
- 80 billion neurons

1 Exaflop

- 200,000 GPU cards (2500 racks)
- All of Amazon
- All of Microsoft
- All of Facebook
- The NSA Utah Data center
- 10% of Google

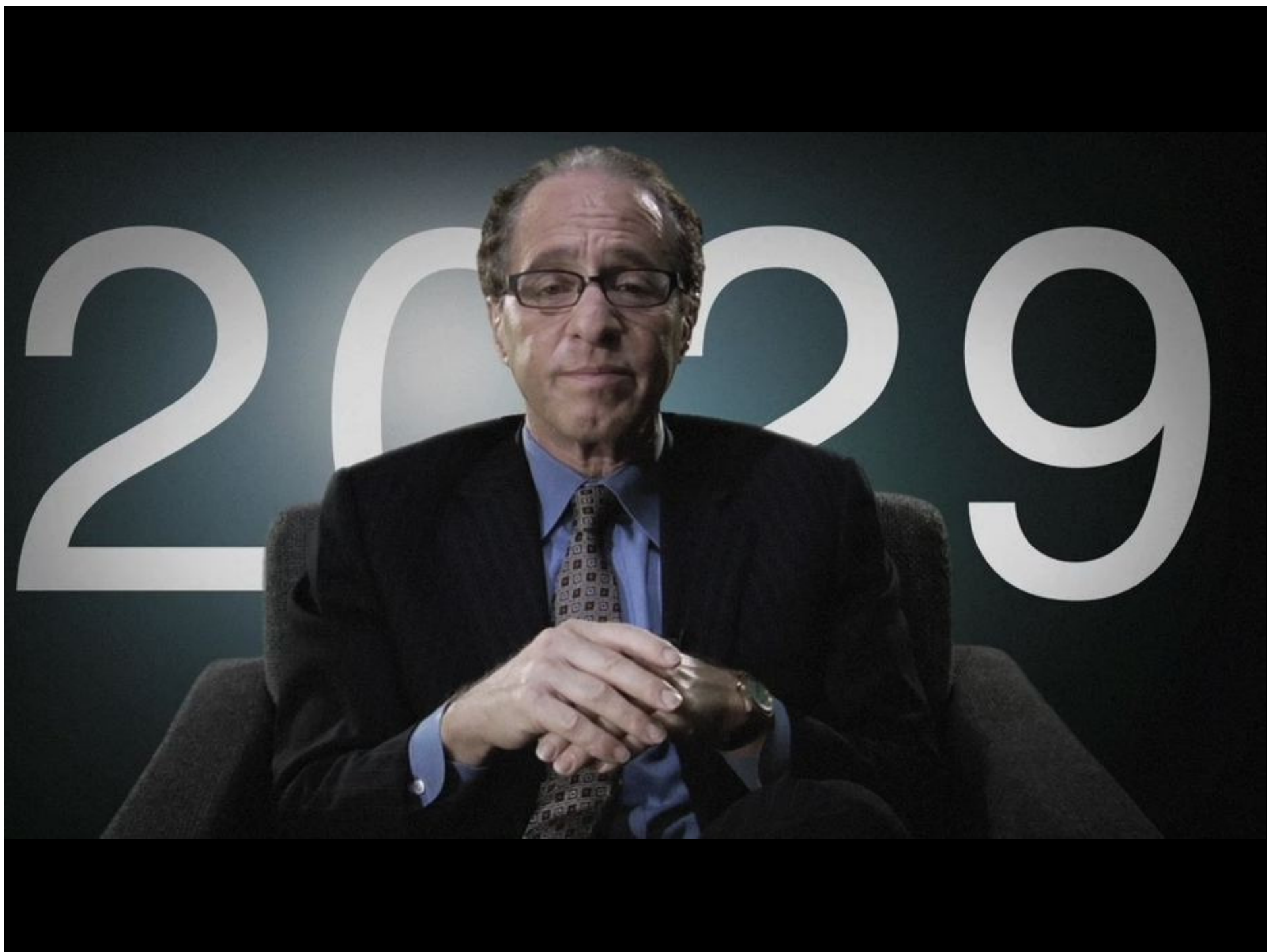
80 Billion Neurons

- Recent Stanford Webinar: “10 Billion Parameter Neural Networks in your Basement”
 - 12 GPU cards
 - 3 Computers (4 GPU cards/computer)
 - 12U (4U/computer) – quarter rack!
- At 5:1 connection:neuron ratio, 2 billion neurons
- Conclusion: 480 GPU cards for 80 Billion Neurons

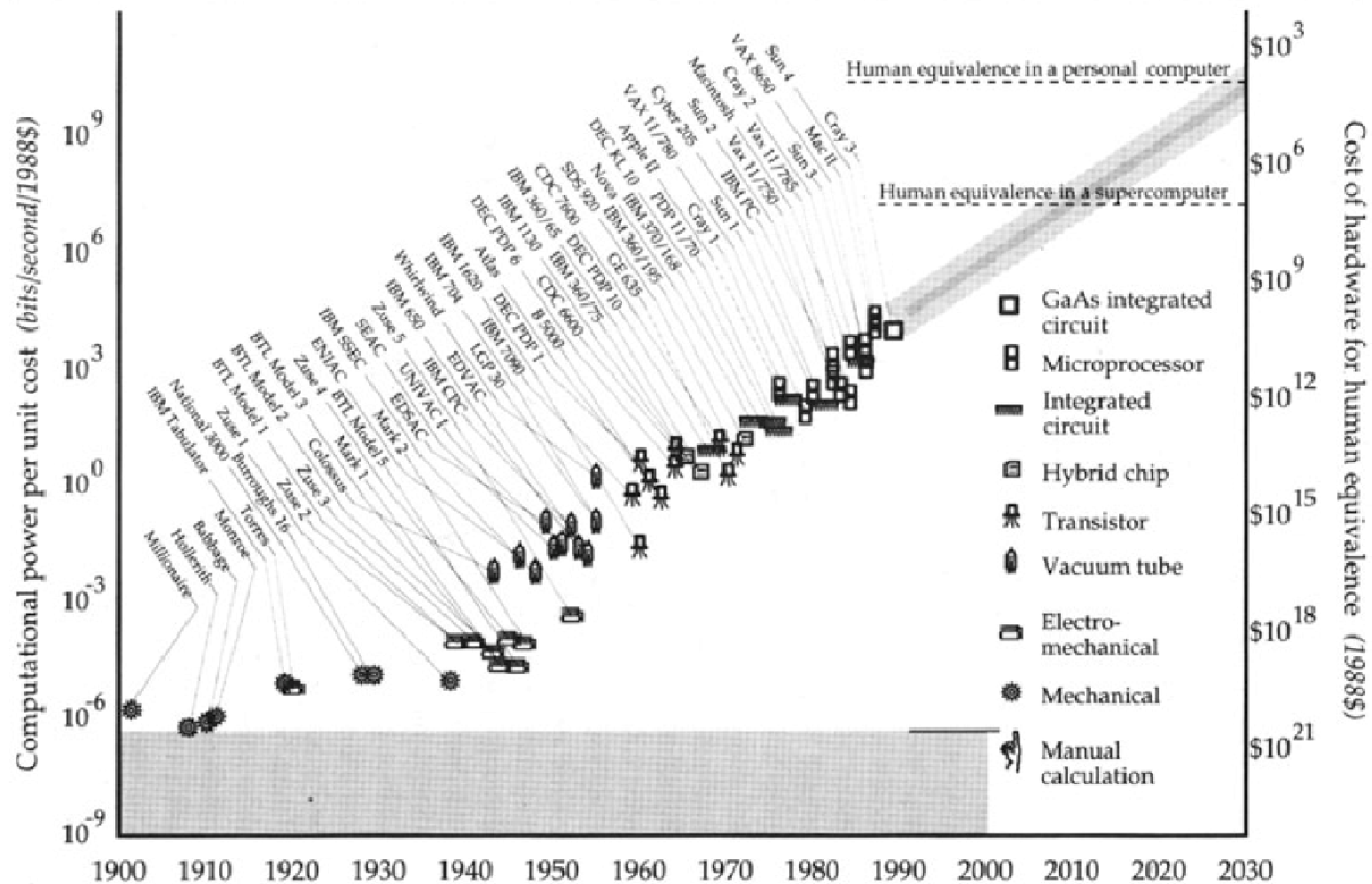
Andrew Ng



“He ordered 1,000 GPUs [graphics processing units] and got them within 24 hours,” Adam Gibson, co-founder of deep-learning startup Skymomd, told VentureBeat. “At Google, it would have taken him weeks or months to get that.”



A Century of Computing



From "Mind Children" by Hans Moravec, 1988, page 64

2020 Supercomputer

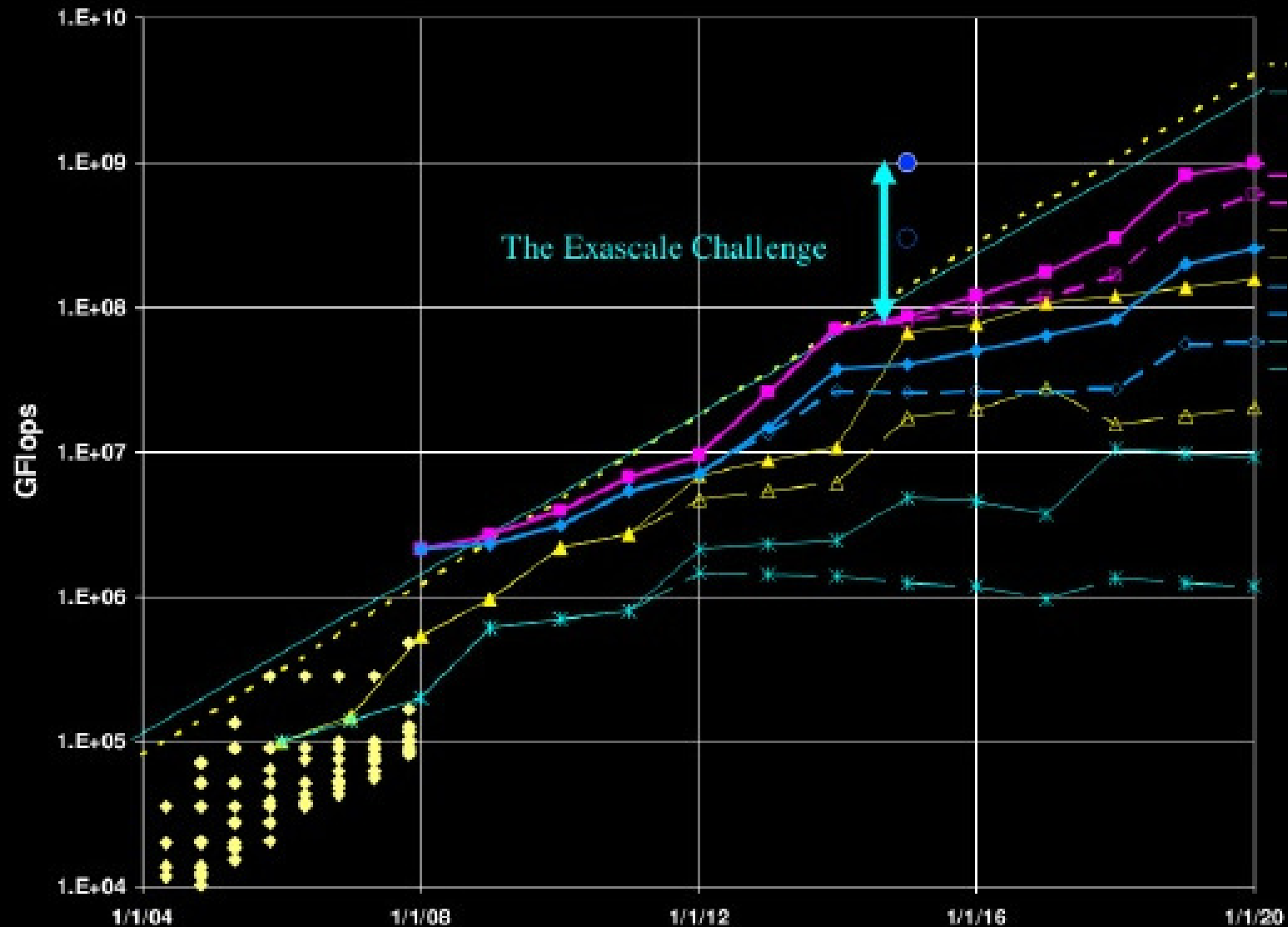


Chart from <http://www.slideshare.net/seekerwj/exaslop-in-2018-hardware>

Proliferation

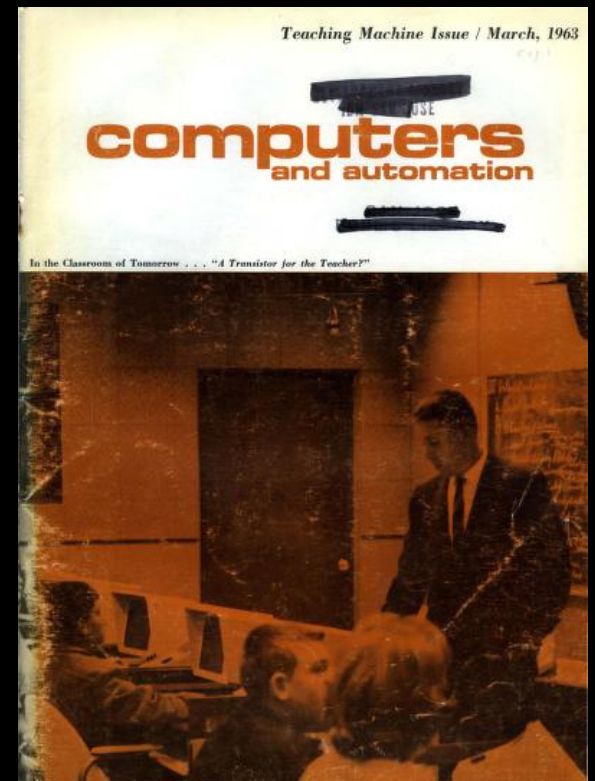
“I'm sure that in 1985, plutonium is available in every corner drugstore, but in 1955, it's a little hard to come by.”



Elements Needed

1. Computational Substrate in Existence
 - Time (if not now)
2. Self-Learning Algorithm
 - A computer that can program itself
3. Someone reckless

2. Self-Learning Algorithm



3. Someone reckless



“It’s all still there”

