

AI & THE FUTURE OF WORK WORK & LIFE IN THE AGE OF ROBOTS

[HTTPS://TOBIASMASTGRAVE.FILES.WORDPRESS.COM/2013/11/DYSTOPIA.JPG](https://TOBIASMASTGRAVE.FILES.WORDPRESS.COM/2013/11/DYSTOPIA.JPG)

VOLKER HIRSCH
@VHIRSCH



TEDx MANCHESTER
19 FEB 2017

A portrait painting of Sir Francis Bacon, an English statesman, philosopher, and author. He is shown from the chest up, wearing a dark red robe over a white collared shirt. His hair is powdered white, and he has a prominent mustache and a small beard. He is looking slightly to his left with a thoughtful expression.

KNOWLEDGE
IS POWER

SIR FRANCIS BACON, 1561-1626

The background image shows the grand interior of the Library of Congress Great Hall. The space is vast and ornate, featuring multiple levels of bookshelves filled with books. Large, fluted columns support the structure. The ceiling is high and decorated with intricate gold-colored relief sculptures and inscriptions. The floor is made of polished stone tiles. In the foreground, rows of wooden study carrels with small lights are visible, where people are seated at their desks. The overall atmosphere is one of historical grandeur and academic importance.

EXABYTE

10¹⁸

The background image shows the grand interior of the Library of Congress Great Hall. The space is vast and ornate, featuring multiple levels of bookshelves filled with books. The architecture is classical, with tall columns, detailed moldings, and statues on pedestals. The lighting is dramatic, coming from large windows and chandeliers, creating a bright atmosphere in the upper levels and a more focused light on the reading room below.

**ALL TEXT CONTENT
X 100,000 =
1 EXABYTE**



FACEBOOK CONNECTIONS

INTERNET TRAFFIC 2016: 1,100 EXABYTES

KNOWLEDGE IN YOUR POCKET



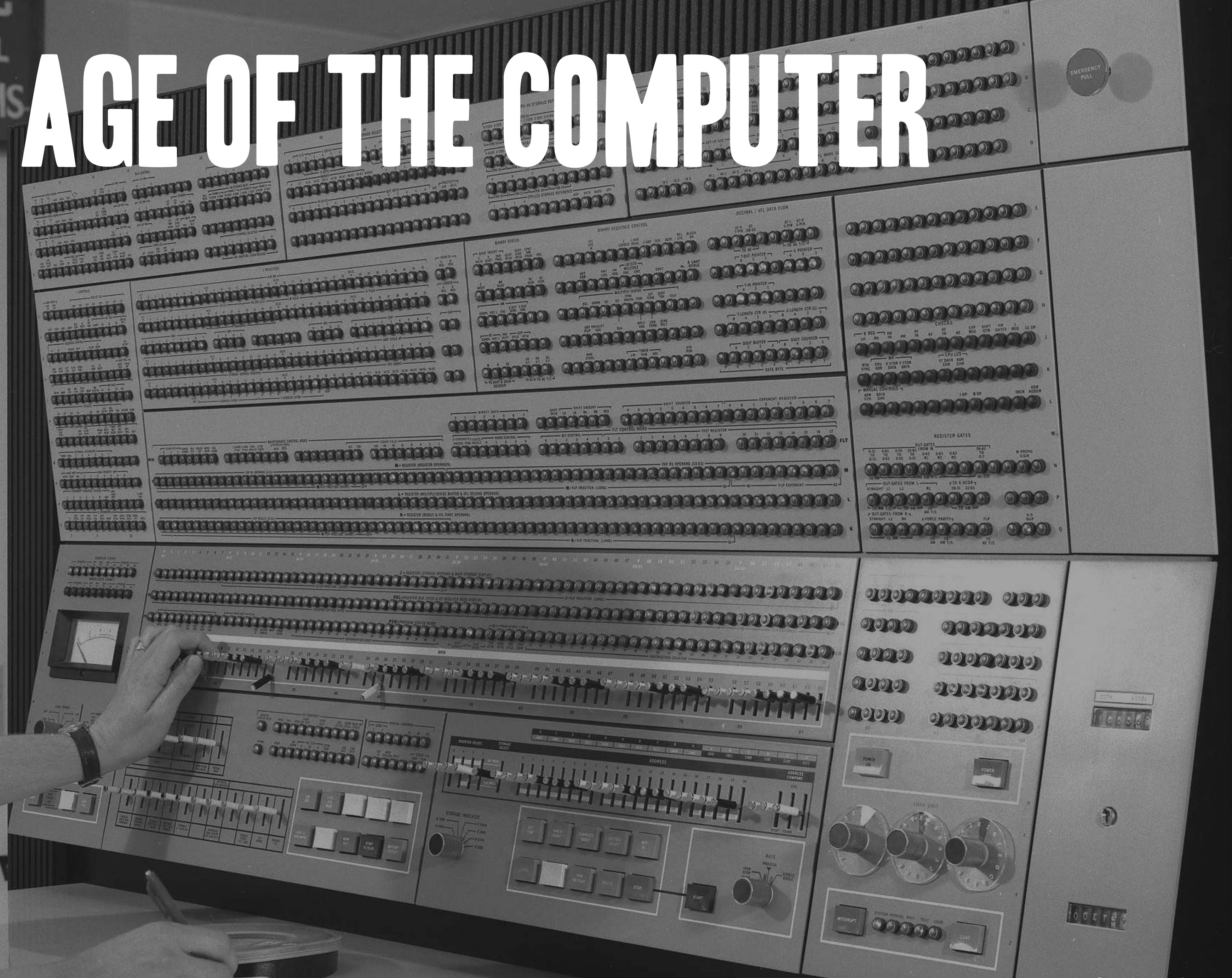
A portrait painting of Sir Francis Bacon, an English statesman, philosopher, and author. He is shown from the chest up, wearing a dark red velvet robe over a white ruff collar. His hair is powdered white, and he has a prominent mustache and goatee. He is looking slightly to his left with a thoughtful expression.

IS KNOWLEDGE STILL POWER?

SIR FRANCIS BACON, 1561-1626

SMOKING WILL
ALERT FRE
RMS

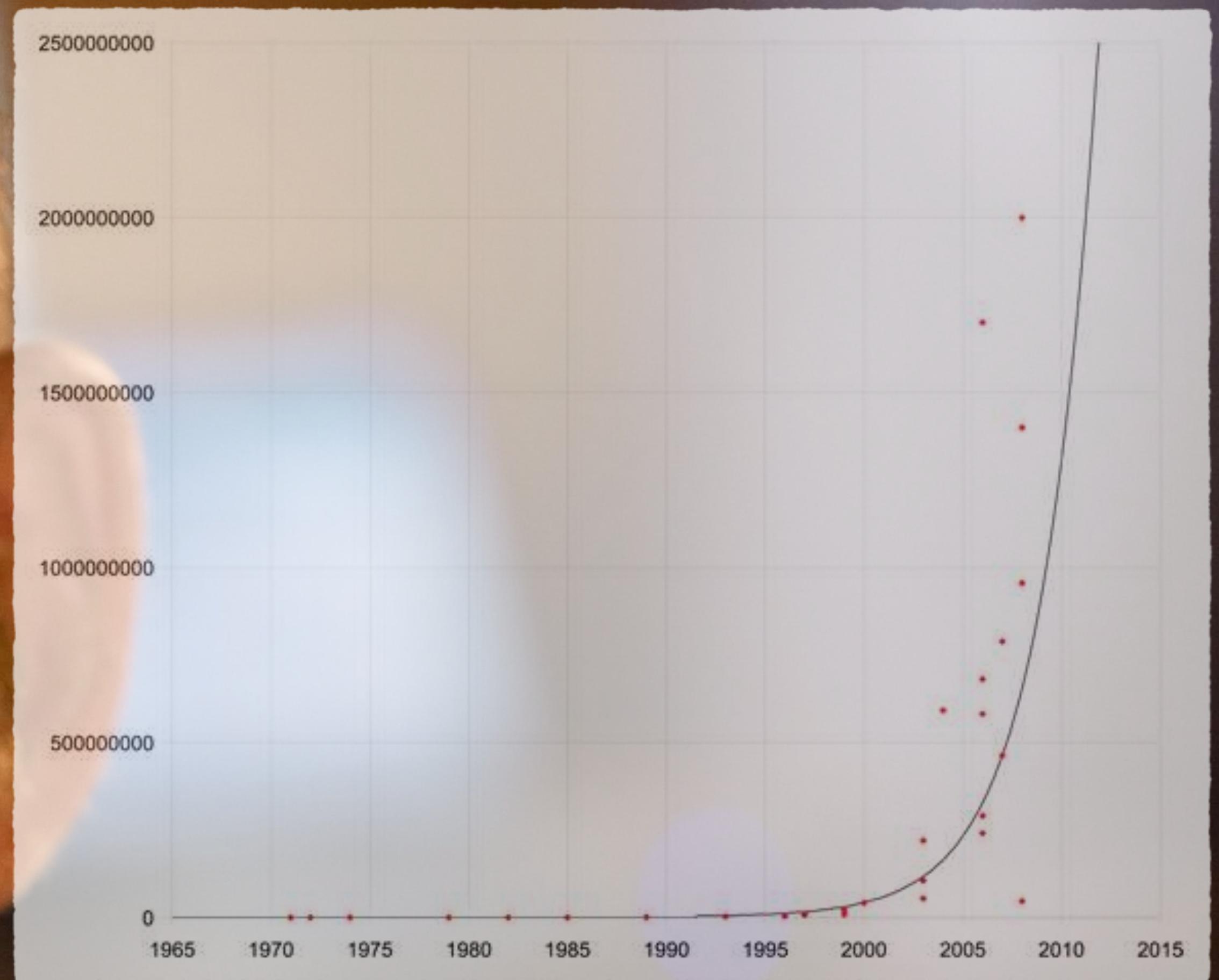
THE AGE OF THE COMPUTER



IBM SYSTEM/360 MODEL 75

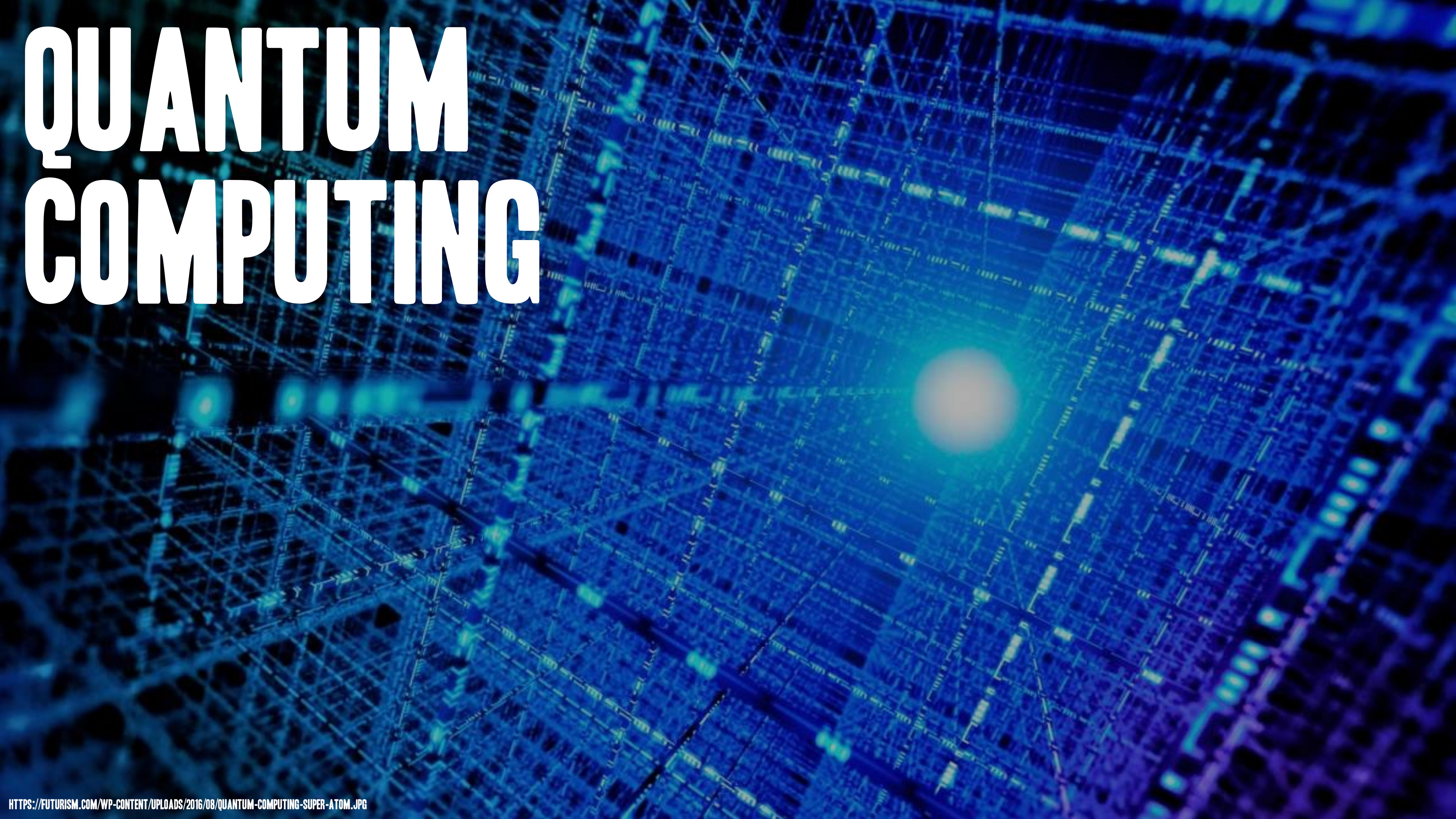
**IBM SYSTEM/360 MODEL 75
PROGRAMME SIZE: 6MB**

(10% OF CANDY CRUSH SAGA)

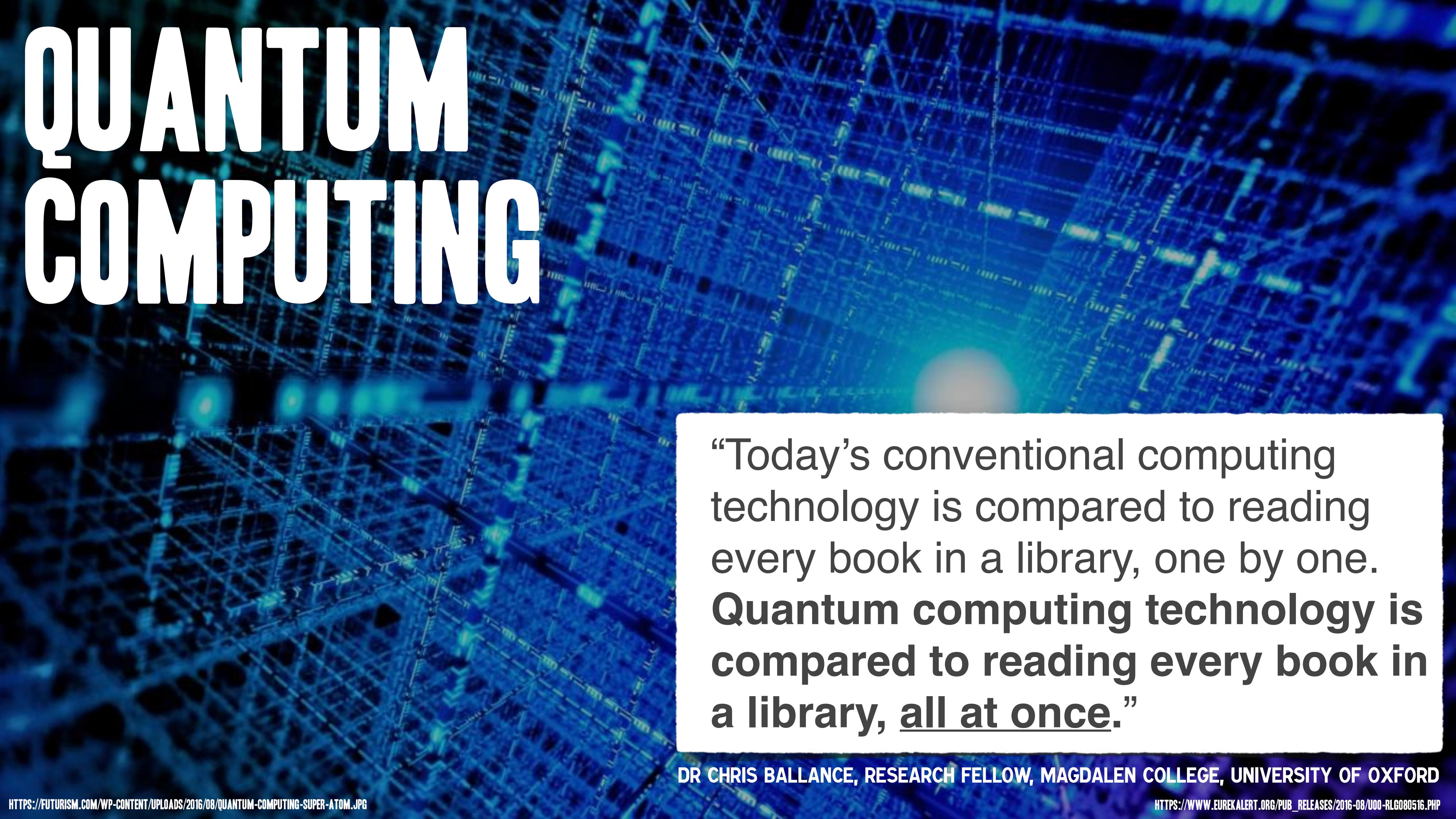


**MOORE'S 'LAW'
(IT'S DYING...)**

QUANTUM COMPUTING



QUANTUM COMPUTING

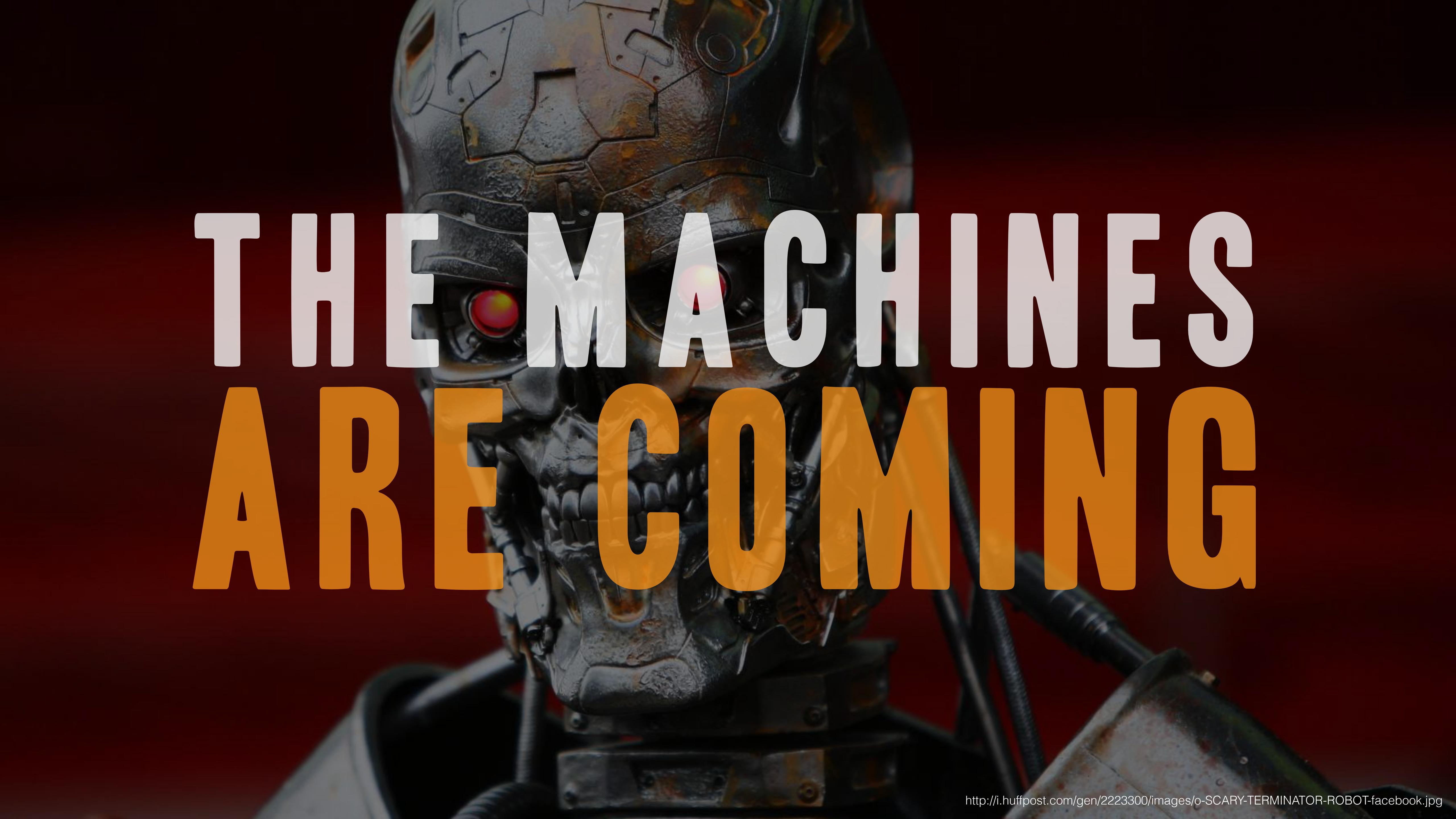


“Today’s conventional computing technology is compared to reading every book in a library, one by one. **Quantum computing technology is compared to reading every book in a library, all at once.**”

DR CHRIS BALLANCE, RESEARCH FELLOW, MAGDALEN COLLEGE, UNIVERSITY OF OXFORD

ARTIFICIAL INTELLIGENCE

ARTIFICIAL INTELLIGENCE MACHINE LEARNING

A close-up, high-angle shot of a Terminator robot's head. The robot has a metallic, weathered appearance with visible circuitry and mechanical components. Its iconic red glowing eye is prominent. The background is dark and out of focus.

THE MACHINES
ARE COMING

FACTORY WORKER

TESLA FACTORY, FREMONT, CALIFORNIA



[Lifestyle](#) › [Tech](#) › [News](#)

Apple supplier Foxconn replaces 60,000 workers with robots at China factory

Employee numbers at the Foxconn factory in Kunshan were slashed from 110,000 to 50,000

Doug Bolton | [@DougieBolton](#) | Wednesday 25 May 2016 |  1 comment





[Lifestyle](#) › [Tech](#) › [News](#)

Apple supplier Foxconn replaces 60,000 workers with robots at China factory

Employee numbers at the Foxconn factory in Kunshan were slashed from 110,000 to 50,000

Doug Bolton | [@DougieBolton](#) | Wednesday 25 May 2016 |  1 comment

WAREHOUSE LOGISTICS



AMAZON AUTOMATED WAREHOUSE

SHIPPING LOGISTICS



KALMAR AUTOMATED VEHICLES, PORT OF LOS ANGELES, CALIFORNIA

POLICEMAN

Cheetah Robot runs 28.3 mph; a bit faster than Usain Bolt



Boston Dynamics

Subscribe

376,741

9,821,055 views

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More

16,229

1,889

BOSTON DYNAMICS WILDCAT

SECURITY GUARD

JUL 5, 2016 @ 03:55 PM 1,468 VIEWS

Knightscope Security Robots Spotted On Uber Parking Lot And Mall Patrol



Curtis Silver, CONTRIBUTOR

Applying the dark arts of satire, cynicism & humor to consumer tech. [FULL BIO ▾](#)

Opinions expressed by Forbes Contributors are their own.

Forbes

KNIGHTSCOPE K5

SNIPER



GENERAL ATOMICS, MQ-9 REAPER

BUILDER

Watch Robot Builder Construct House In Two Days

It is smart enough to leave spaces in the brickwork for wiring and plumbing, and can even cut and shape bricks to size.

sky NEWS

10:22, UK,
Friday 29 July 2016

HADRIAN X

PIZZA DELIVERY GUY



Flirtey Launches World's First Pizza-By-Drone Commercial Trials,
Delivers Domino's Pizza to Customer Homes

NEWS PROVIDED BY

Flirtey →

Nov 15, 2016, 20:39 ET

PR Newswire
a CISION company

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FLIRTEY DRONE

PIZZA DELIVERY GUY



**iOS Apps Postmates and DoorDash Testing
Automated Delivery Via Self-Driving Robots**

Wednesday January 18, 2017 27 AM PST by Mitchel Broussard

STARSHIP TECHNOLOGIES ROBOT



A Moley Robotics bot makes nearly 2,000 different types of meals.



DRIVER



Automotive

Uber

self-driving cars

autonomous vehicles

Uber starts self-driving car pickups in Pittsburgh

Posted 13 hours ago by **Signe Brewster** (@signe)



TC TechCrunch

LONG-HAUL TRUCKING



ALEX DAVIES TRANSPORTATION 05.05.15 7:41 PM

THE WORLD'S FIRST SELF-DRIVING SEMI-TRUCK HITS THE ROAD

WIRED

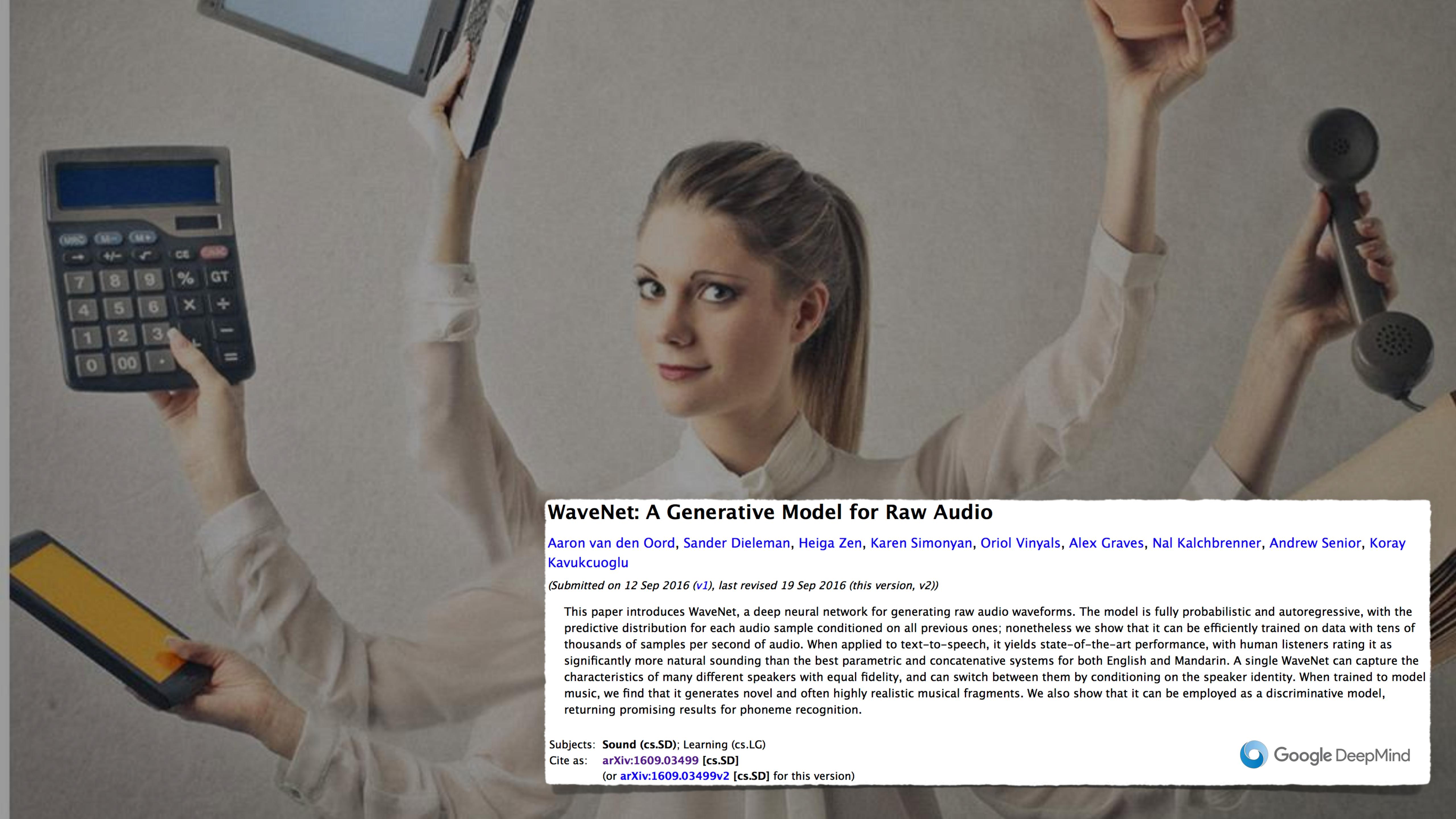
MUSICIAN

EMILY HOWELL
FROM DARKNESS,
LIGHT



ALSO ON





WaveNet: A Generative Model for Raw Audio

Aaron van den Oord, Sander Dieleman, Heiga Zen, Karen Simonyan, Oriol Vinyals, Alex Graves, Nal Kalchbrenner, Andrew Senior, Koray Kavukcuoglu

(Submitted on 12 Sep 2016 ([v1](#)), last revised 19 Sep 2016 (this version, v2))

This paper introduces WaveNet, a deep neural network for generating raw audio waveforms. The model is fully probabilistic and autoregressive, with the predictive distribution for each audio sample conditioned on all previous ones; nonetheless we show that it can be efficiently trained on data with tens of thousands of samples per second of audio. When applied to text-to-speech, it yields state-of-the-art performance, with human listeners rating it as significantly more natural sounding than the best parametric and concatenative systems for both English and Mandarin. A single WaveNet can capture the characteristics of many different speakers with equal fidelity, and can switch between them by conditioning on the speaker identity. When trained to model music, we find that it generates novel and often highly realistic musical fragments. We also show that it can be employed as a discriminative model, returning promising results for phoneme recognition.

Subjects: **Sound (cs.SD); Learning (cs.LG)**

Cite as: [arXiv:1609.03499 \[cs.SD\]](#)

(or [arXiv:1609.03499v2 \[cs.SD\]](#) for this version)

AMAZON ECHO: YOUR BUTLER

IS JEFF BEZOS A NICE GUY?

IS ARSENAL WINNING THE LEAGUE?

SHOULD I WATCH LA-LA LAND?

PLAY MY FAVOURITE MILES TUNE

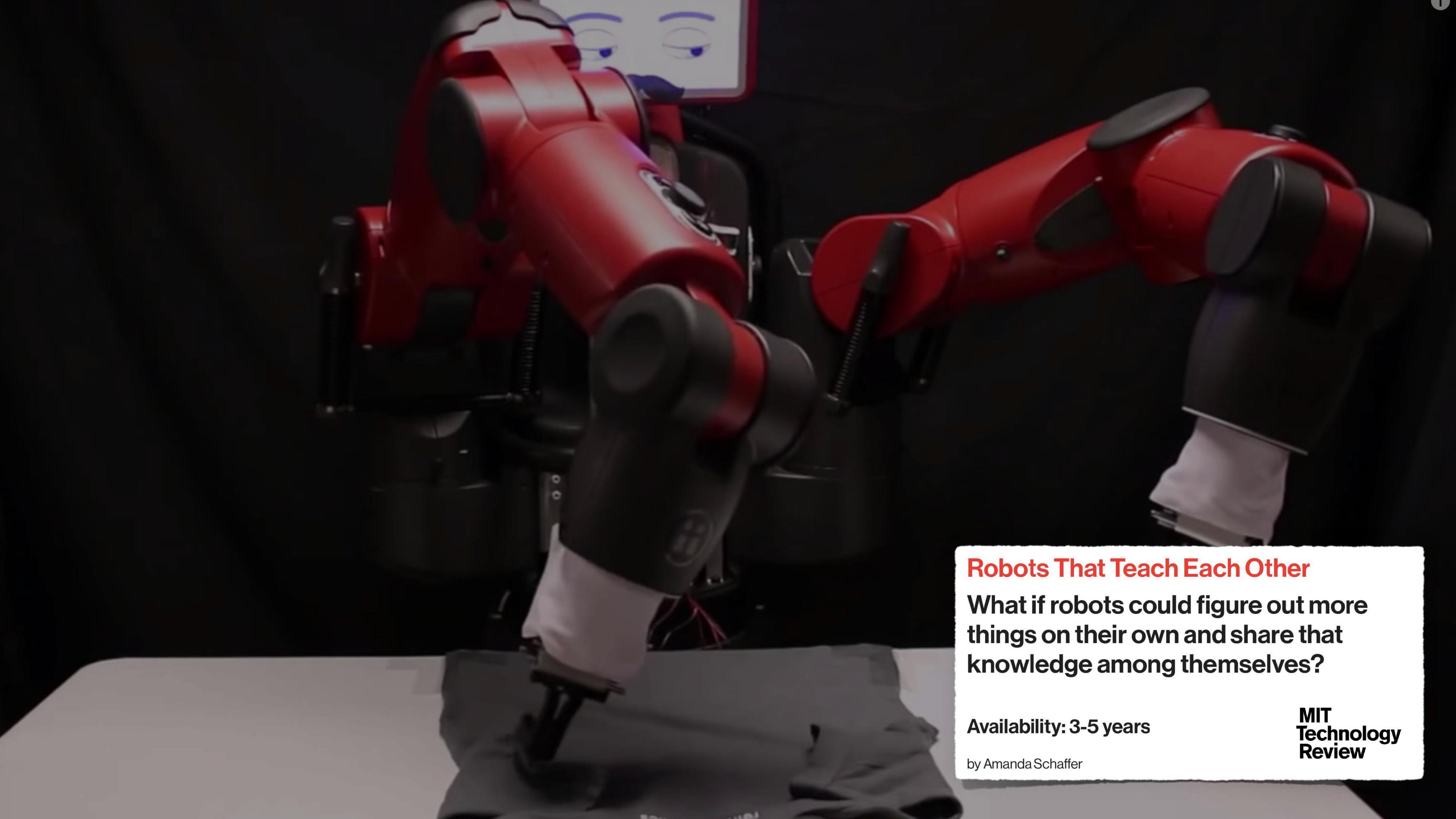
ORDER AN UBER TO LEAVE IN HALF AN HOUR

GET ME A MARGARITA FROM DOMINO'S

WHAT'S THE WEATHER ON MONDAY IN HULL?

SET A REMINDER IN 90 MINUTES...





Robots That Teach Each Other

What if robots could figure out more things on their own and share that knowledge among themselves?

Availability: 3-5 years

by Amanda Schaffer

MIT
Technology
Review

RIP. IT WAS GOOD WHILE IT LASTED...

Clifford Chance strikes deal with artificial intelligence provider Kira

Robot Intelligence

AI Lawyer “Ross” Has Been Hired By Its First Official Law Firm

The deal means CC’s lawyers will be able to use the AI software for tasks such as document review in M&A due diligence.

The firm said it has already used AI technology in several other applications but declined to provide details.

IN BRIEF

Ross, the world's first artificially intelligent attorney, has its first official law firm. Baker & Hostetler announced that they will be employing Ross for its bankruptcy practice, currently comprised of almost 50 lawyers.

SHARE

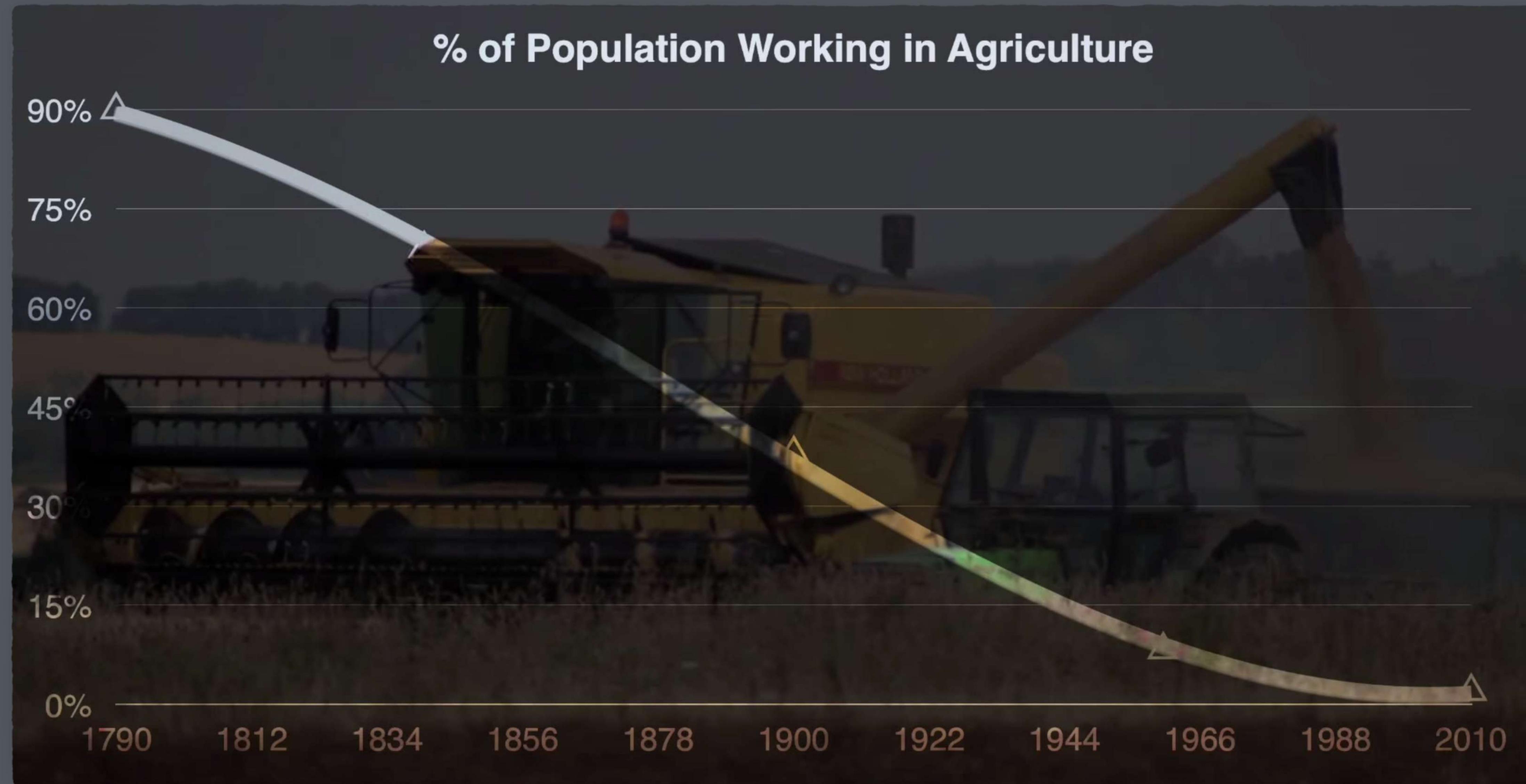


WRITTEN BY

Cecille De Jesus

May 11, 2016

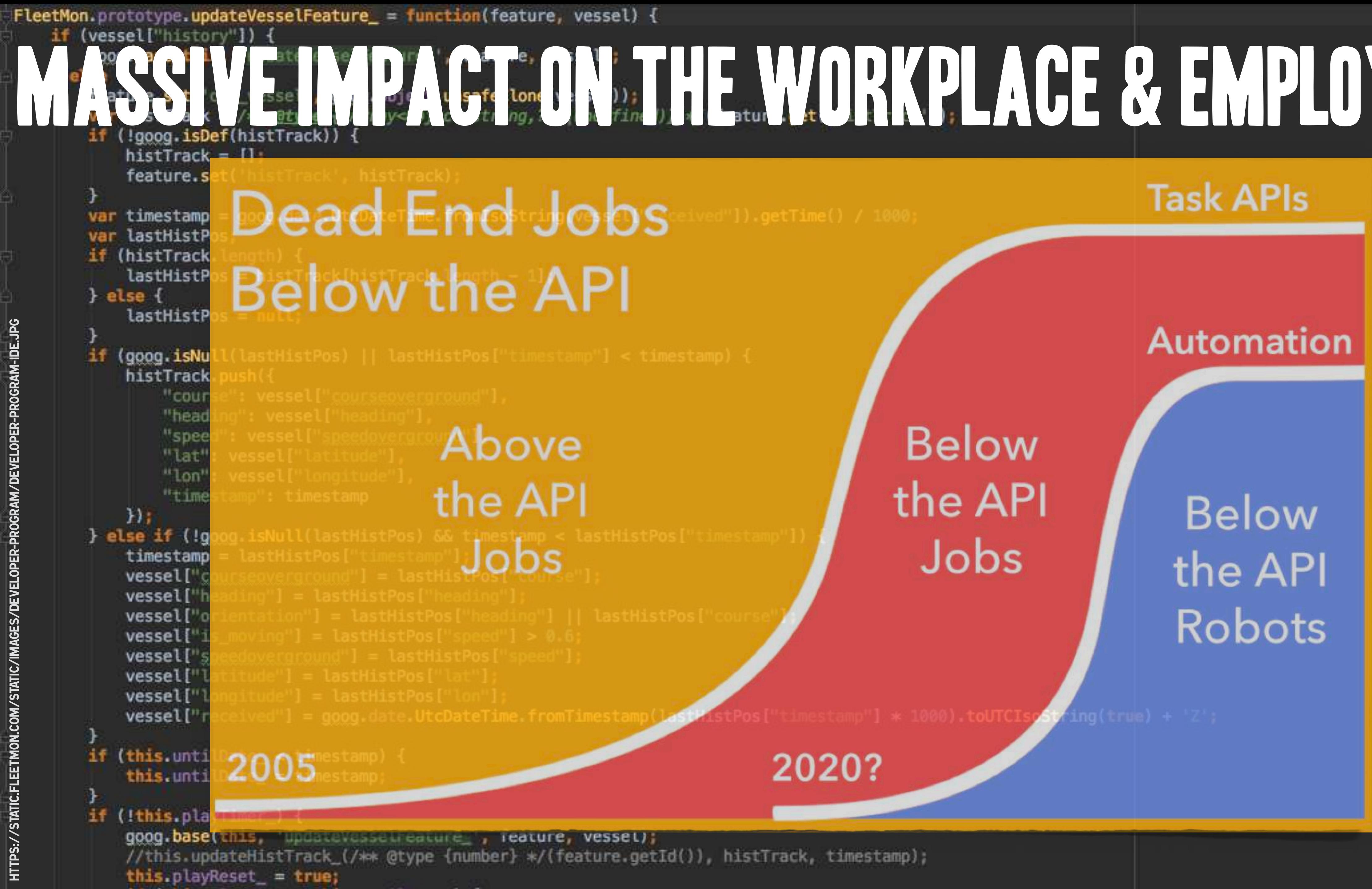
AUTOMATION WILL TAKE THE JOBS IT CAN TAKE



IT'S NOT IMMIGRANTS, IT'S AUTOMATION!



PELLENC OPTIMUM



NEW JOBS FOR YOU:

MEMORY AUGMENTATION THERAPIST

PLANT EDUCATOR

NANO-WEAPON SPECIALIST

DIFFRACTIVE OPTICS MODELER

NEW JOBS FOR YOU:

MEMORY AUGMENTATION THERAPIST

PLANT EDUCATOR

NANO-WEAPON SPECIALIST

DIFFRACTIVE OPTICS MODELER



1 Principal Optical Engineer - Diffractive Optics Design & Development - ALL RESUMES NEED TO BE REASSIGNED

Dania Beach, FL • Full-time

Company Description

Magic Leap is an eclectic group of visionaries, rocket scientists, wizards, and gurus from the fields of film, robotics, visualization, software, computing, and user experience. We are growing quickly, and this is the time to get on board and play a role in shaping the way people will be interacting with the world tomorrow.

Job Description

The Senior Diffractive Optics Designer/Modeler to work within an optical engineering and rapid prototyping team to provide diffractive optics models and designs for digital and analog DOE prototyping and fabrication. This individual will provide on-demand, iterative support for in-house and external component prototyping efforts, and will work with other technicians and engineers to integrate relevant theory, compile requirements, coordinate design reviews, transfer data to manufacturing, and validate results by specifying testing parameters and methodologies as required.

The Senior Diffractive Optics Designer/Modeler will have significant experience in relevant diffractive optics design and modeling software and simulation tools, and will have the ability to modify and create new tools and models relevant to the requirements established by the team. This individual will collaborate with other designers, engineers and technicians producing optical components. The candidate should have extensive experience in all aspects of the position, be able to work meticulously, independently and be prompt and responsive in delivery of job products.

This was
2015...

Responsibilities

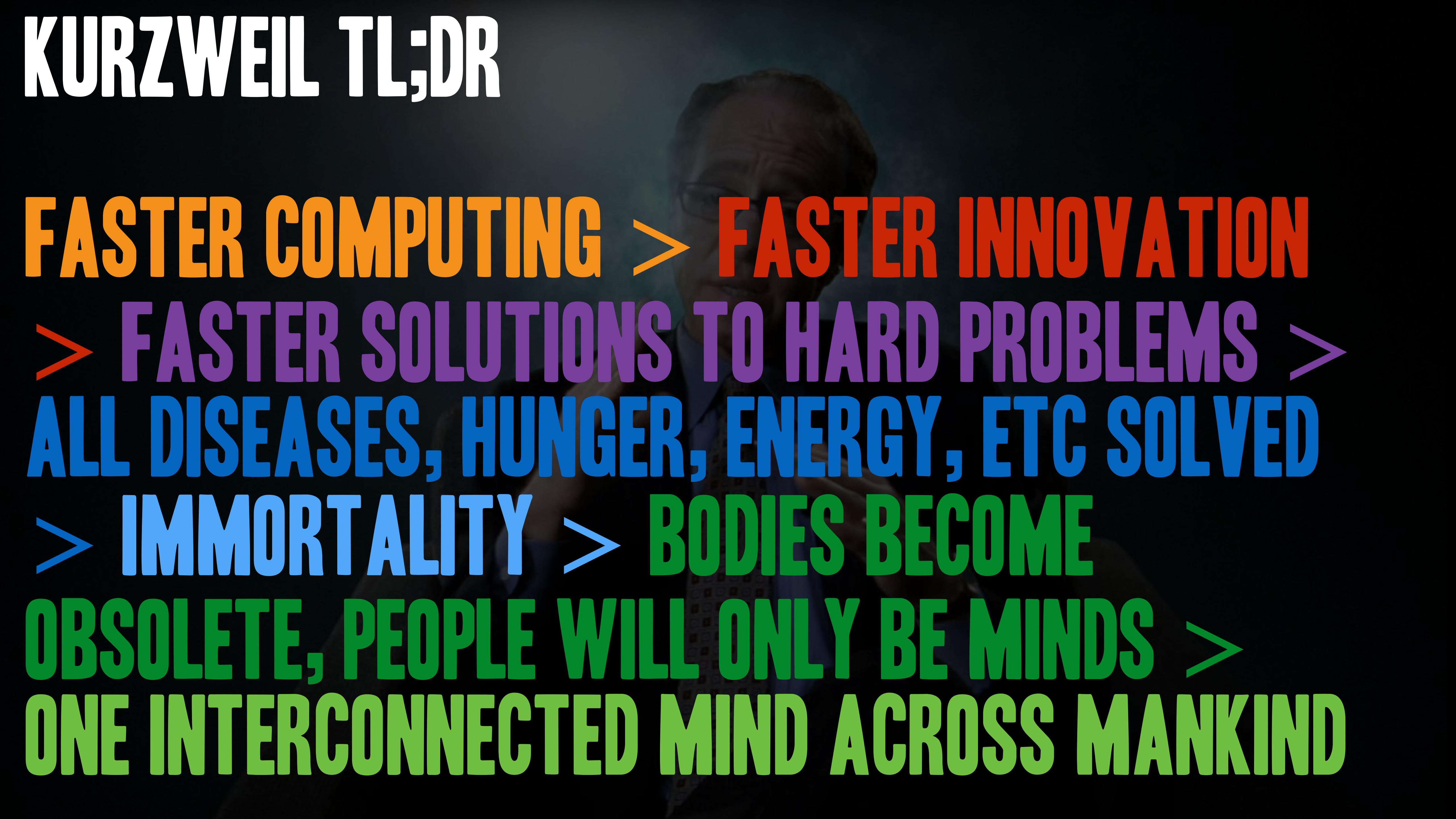
- Identify and assist in procuring necessary design, modeling and simulation

KURZWEIL TL;DR



RAY KURZWEIL

KURZWEIL TL;DR

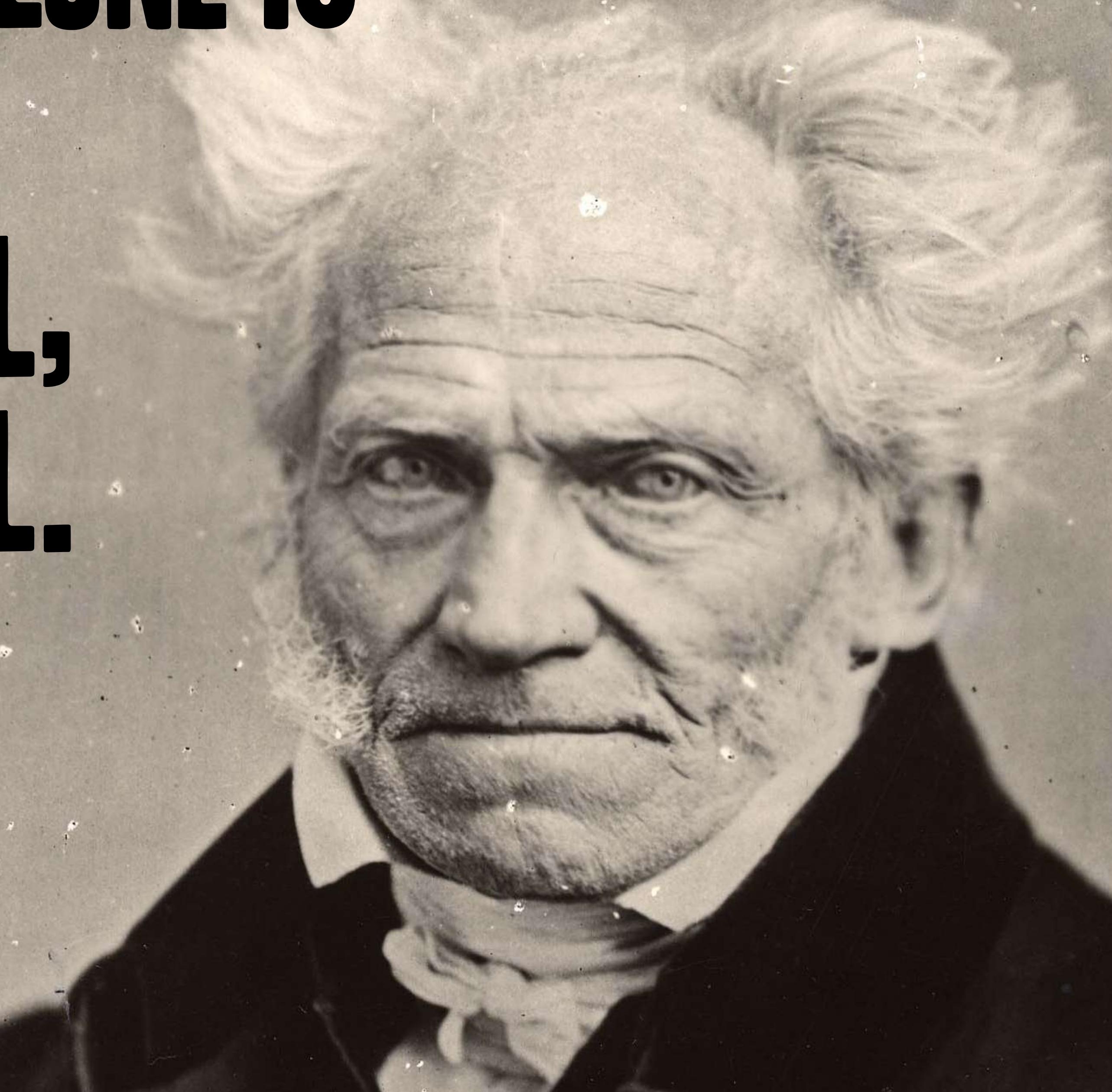


FASTER COMPUTING > FASTER INNOVATION
> FASTER SOLUTIONS TO HARD PROBLEMS >
ALL DISEASES, HUNGER, ENERGY, ETC SOLVED
> IMMORTALITY > BODIES BECOME
OBSOLETE, PEOPLE WILL ONLY BE MINDS >
ONE INTERCONNECTED MIND ACROSS MANKIND

CHANGE



**CHANGE ALONE IS
ETERNAL,
PERPETUAL,
IMMORTAL.**



ARTHUR SCHOPENHAUER, 1788-1860

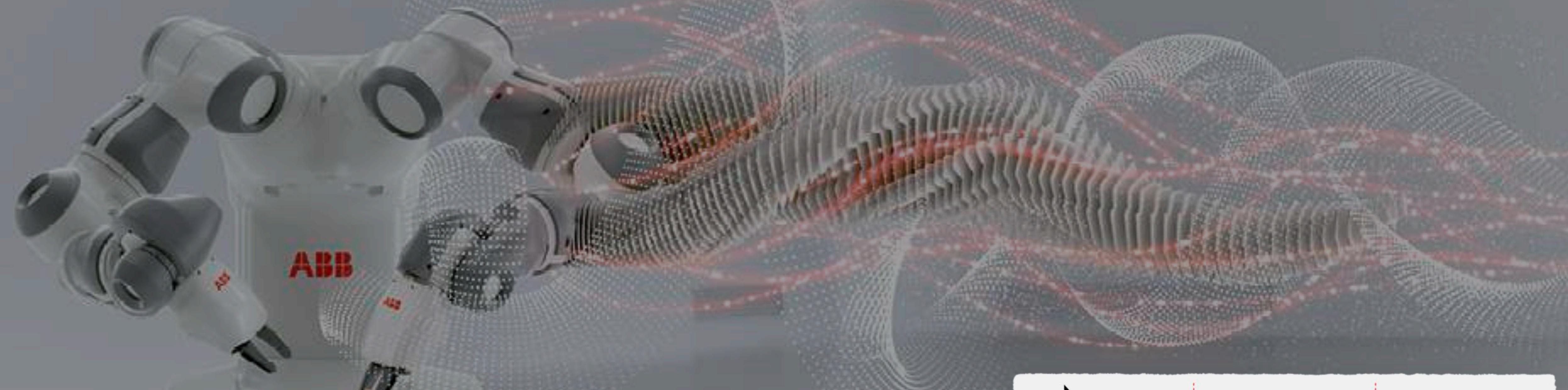


“What if we don’t change at all ...
and something magical just happens?”

WHERE DO WE GO FROM HERE?

1. REBUILD SOCIETY (TALK NEXT TIME)
2. TACTICAL STEPS
3. EDUCATION, EDUCATION, EDUCATION

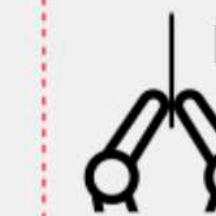
HUMAN-MACHINE COLLABORATION



(STOP GAP)



World's first
truly collaborative
human sized dual-arm robot



Precise YuMi®
is accurate
enough to thread
a needle

Safe Integrated
collision
detection, soft
padding and
eliminated pinch
points



Increased
speed, precision
and product quality

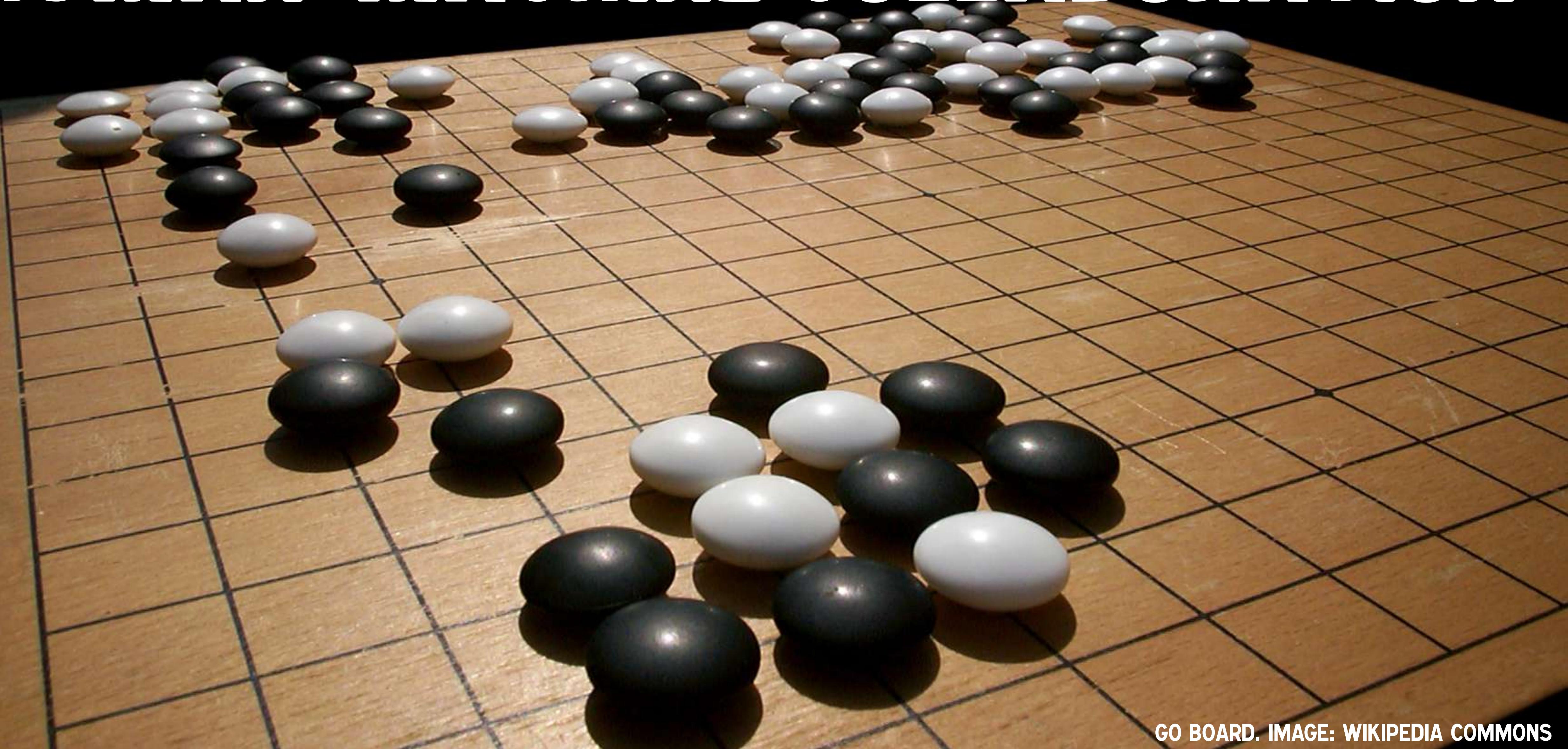


Intuitive
lead-through
programming
requires no
special training or
programming skills



Reduced
waste and inefficiencies

HUMAN-MACHINE COLLABORATION



GO BOARD. IMAGE: WIKIPEDIA COMMONS

WHAT IS SPECIFICALLY HUMAN?

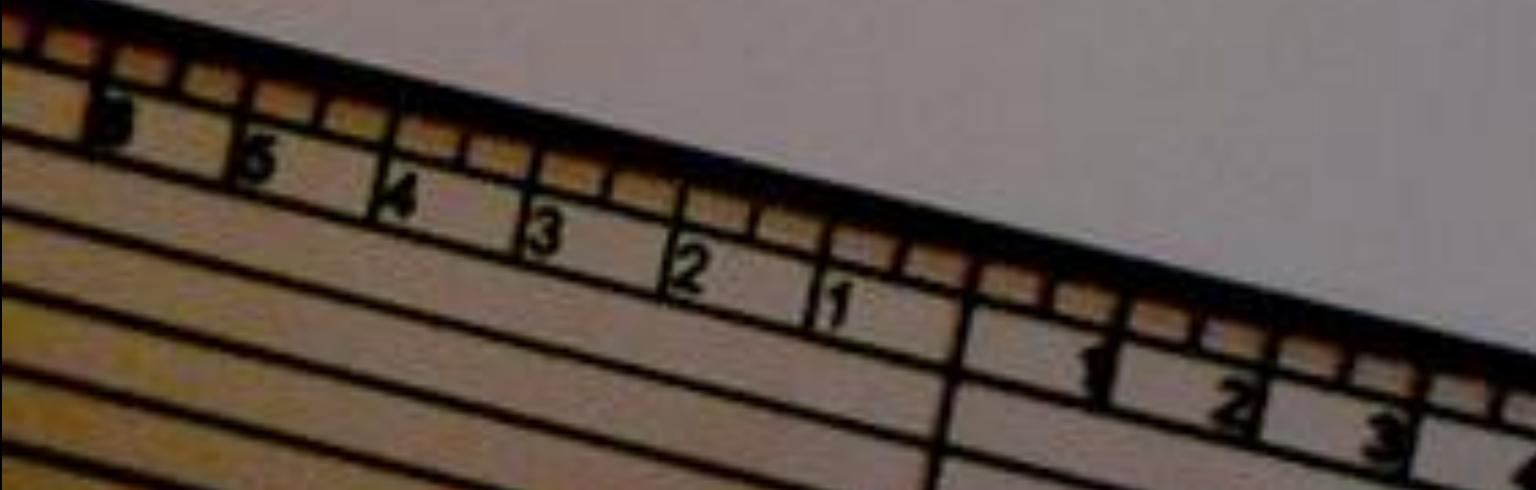


MADE WITH LOVE

Vanice Hieut

15/01/2015

Anne Illegible point of sale
Ticket issued mi 2015





EMPATHY

CREATIVITY



CIRQUE DE SOLEIL

CRITICAL THOUGHT



**RIDE THE TRAIN,
DON'T JUMP IN FRONT OF IT**



THANK YOU!



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ME@VHIRSCH.COM