Commercializing AI Research

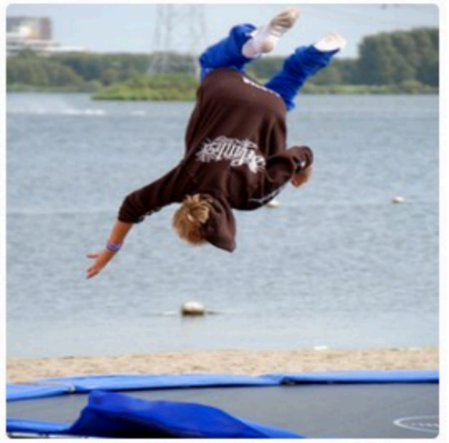
Kathryn Hume
VP Product & Strategy
@humekathryn

integrate.ai

"man in black shirt is playing guitar."

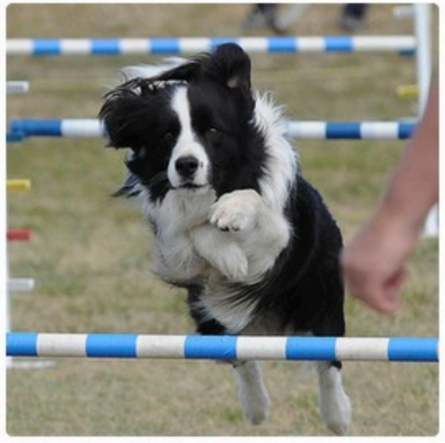
"construction worker in orange safety vest is working on road."

"two young girls are playing with lego toy."



"boy is doing backflip on wakeboard."

"girl in pink dress is jumping in air."

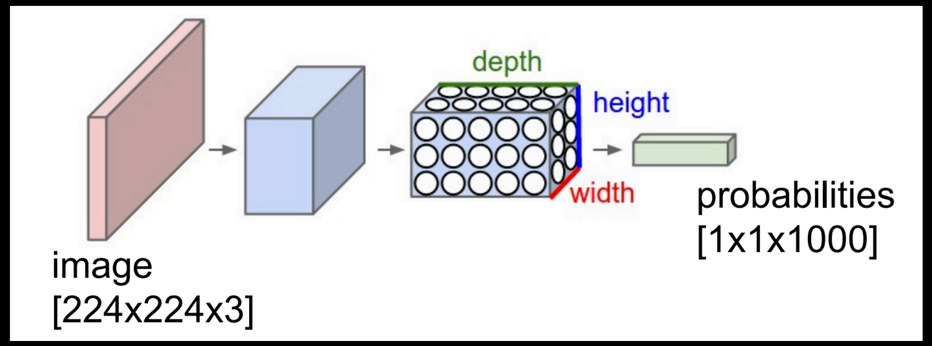


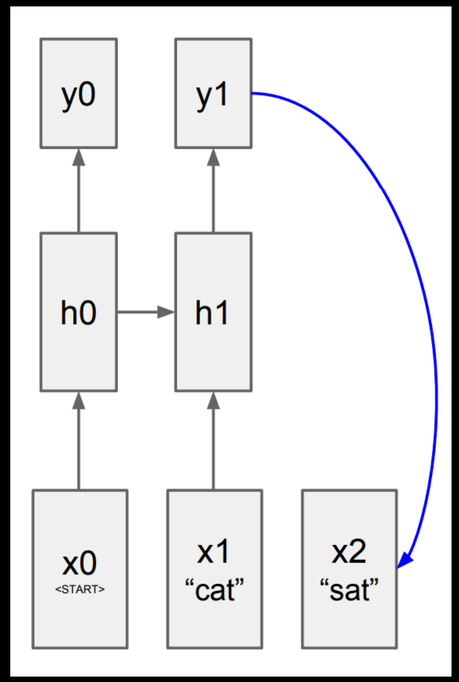
"black and white dog jumps over bar."

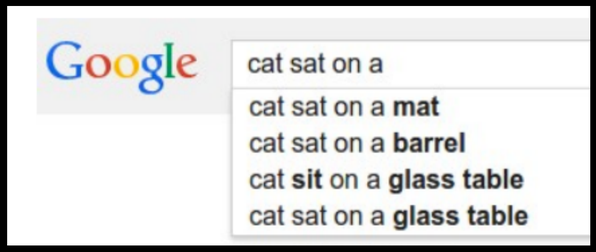
"young girl in pink shirt is swinging on swing."

"man in blue wetsuit is surfing on wave."

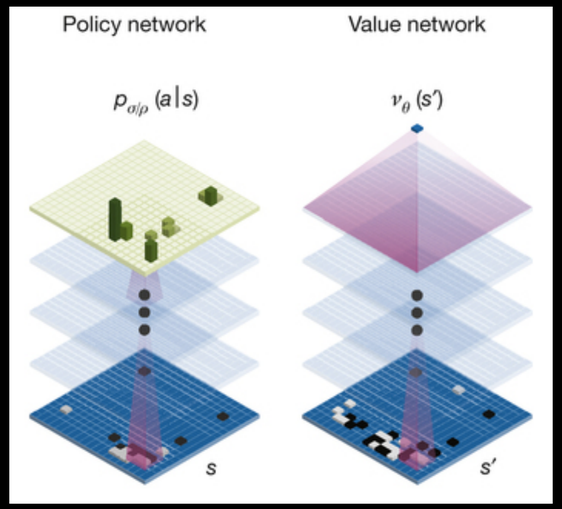
Andrej Karpathy & Fei-Fei Li, 2015







Andrej Karpathy & Fei-Fei Li, 2015

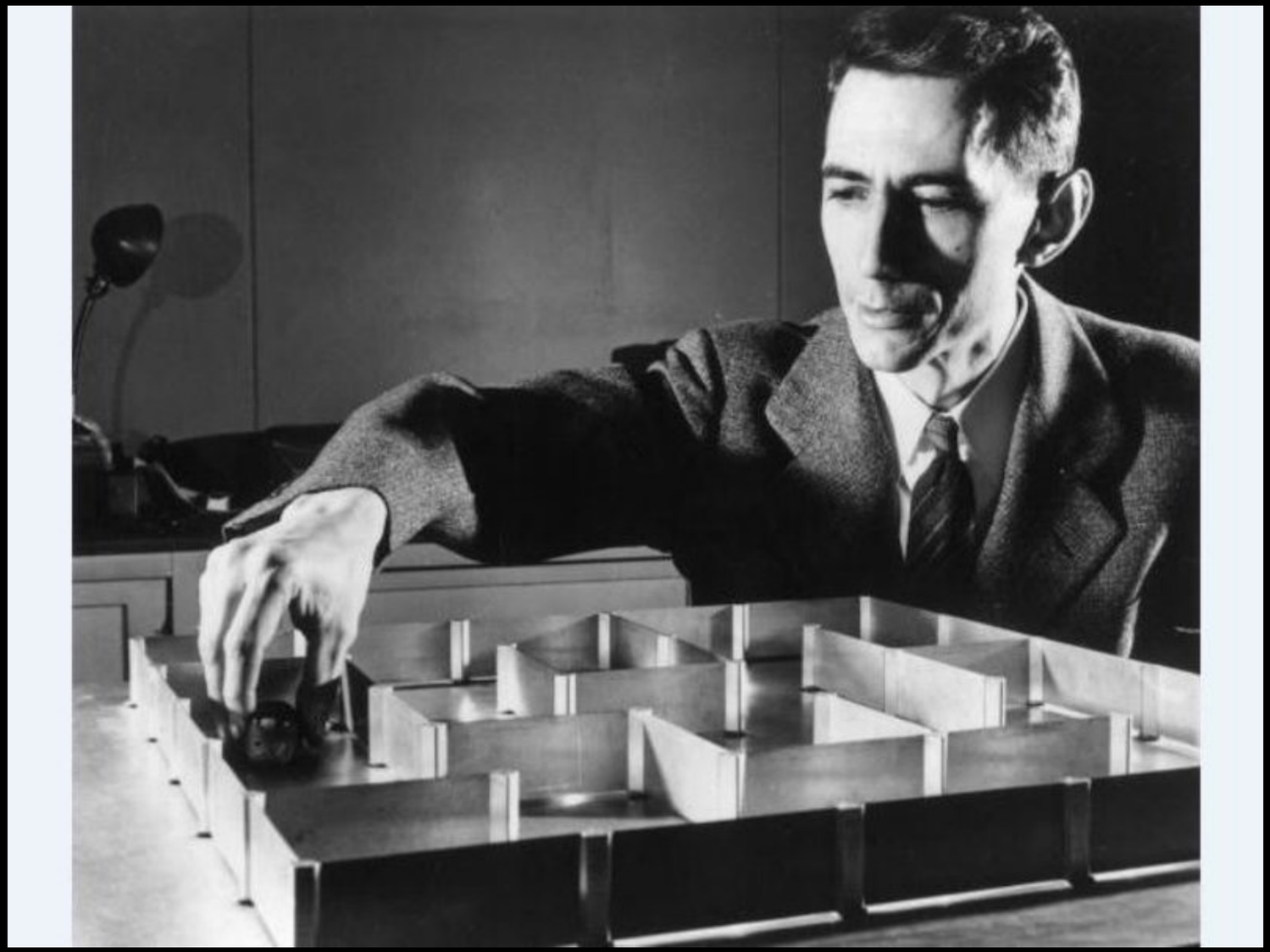

Policy network
Value network
$p_{\sigma/\rho}(a|s)$
$v_\theta(s')$
s
s′

Academic Data
(Canadian Politics)

Enterprise Data
(American Politics)

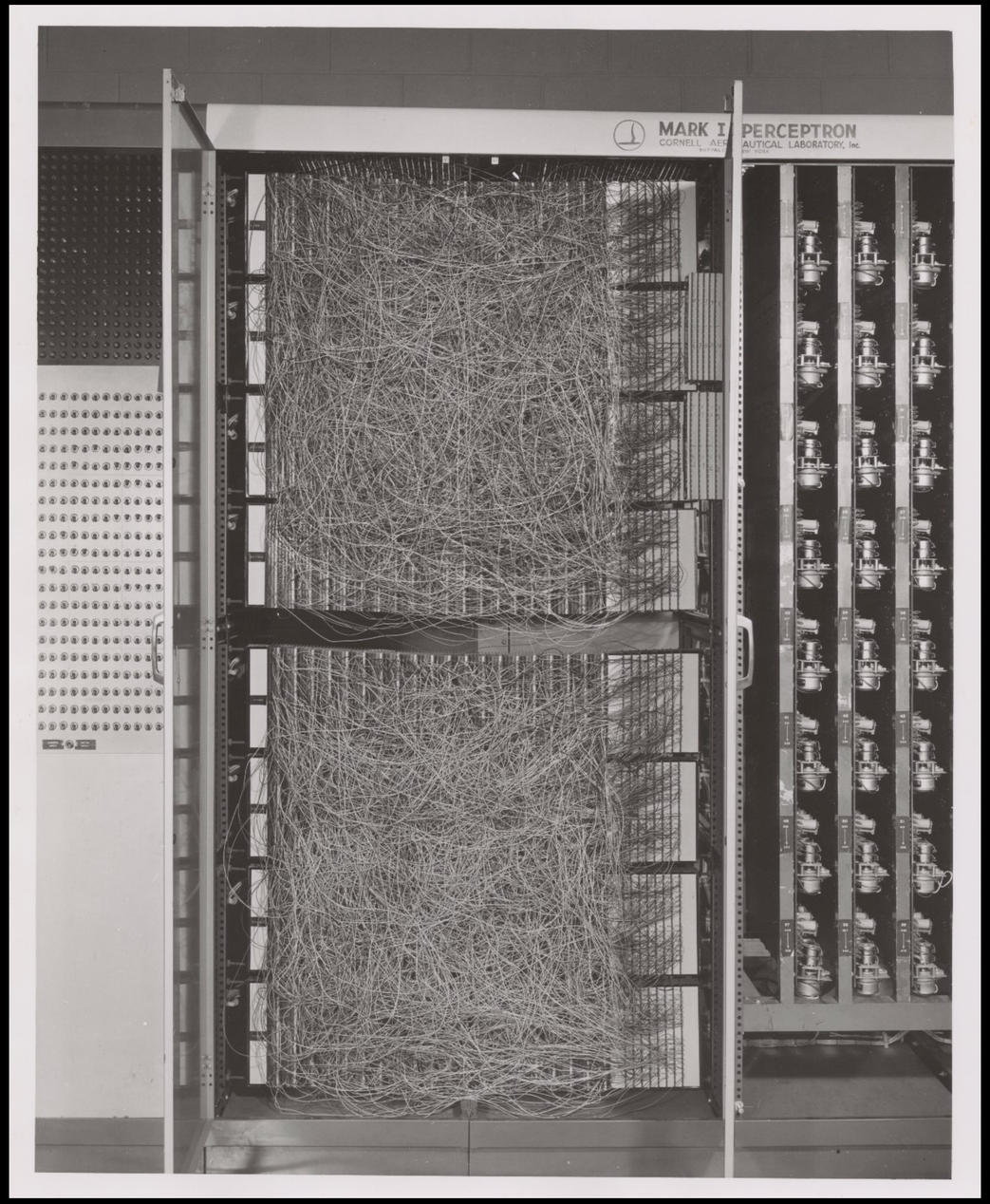
?!?!?!

Why now?



Theseus, 1952

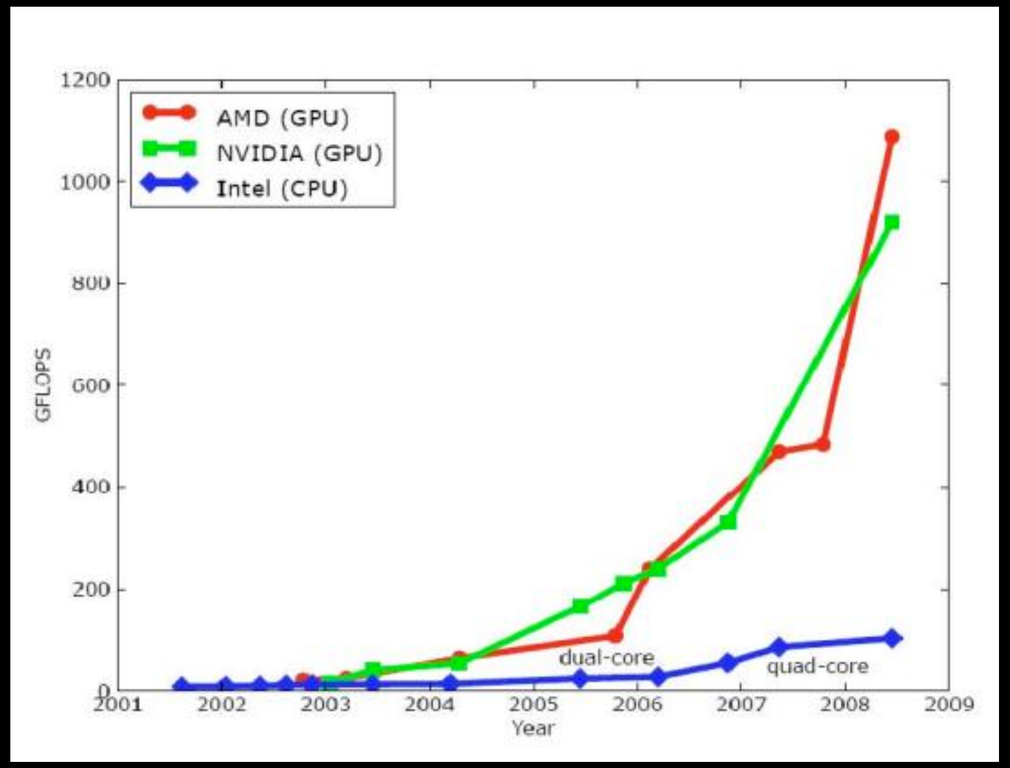
Desk Set, 1957



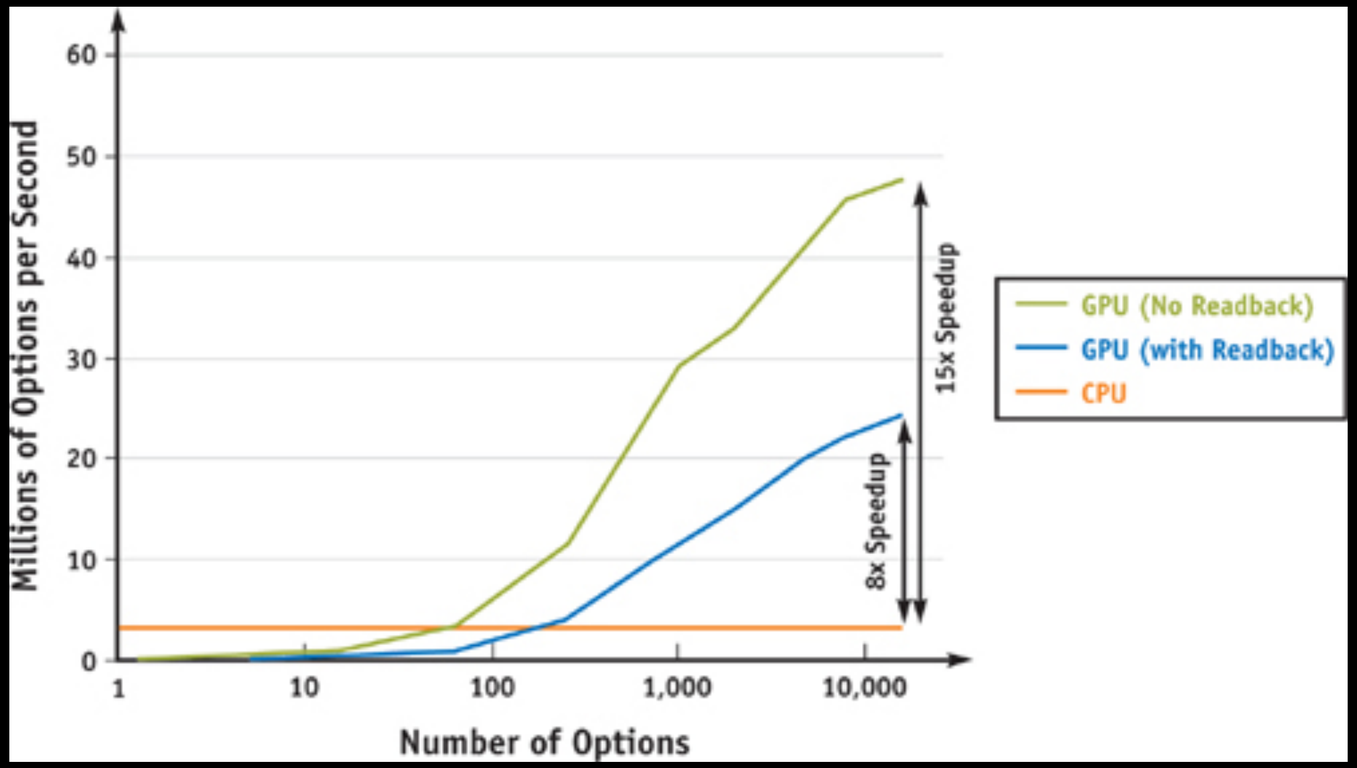
Rosenblatt’s Mark I Perceptron
Cornell University, 1957

More Data

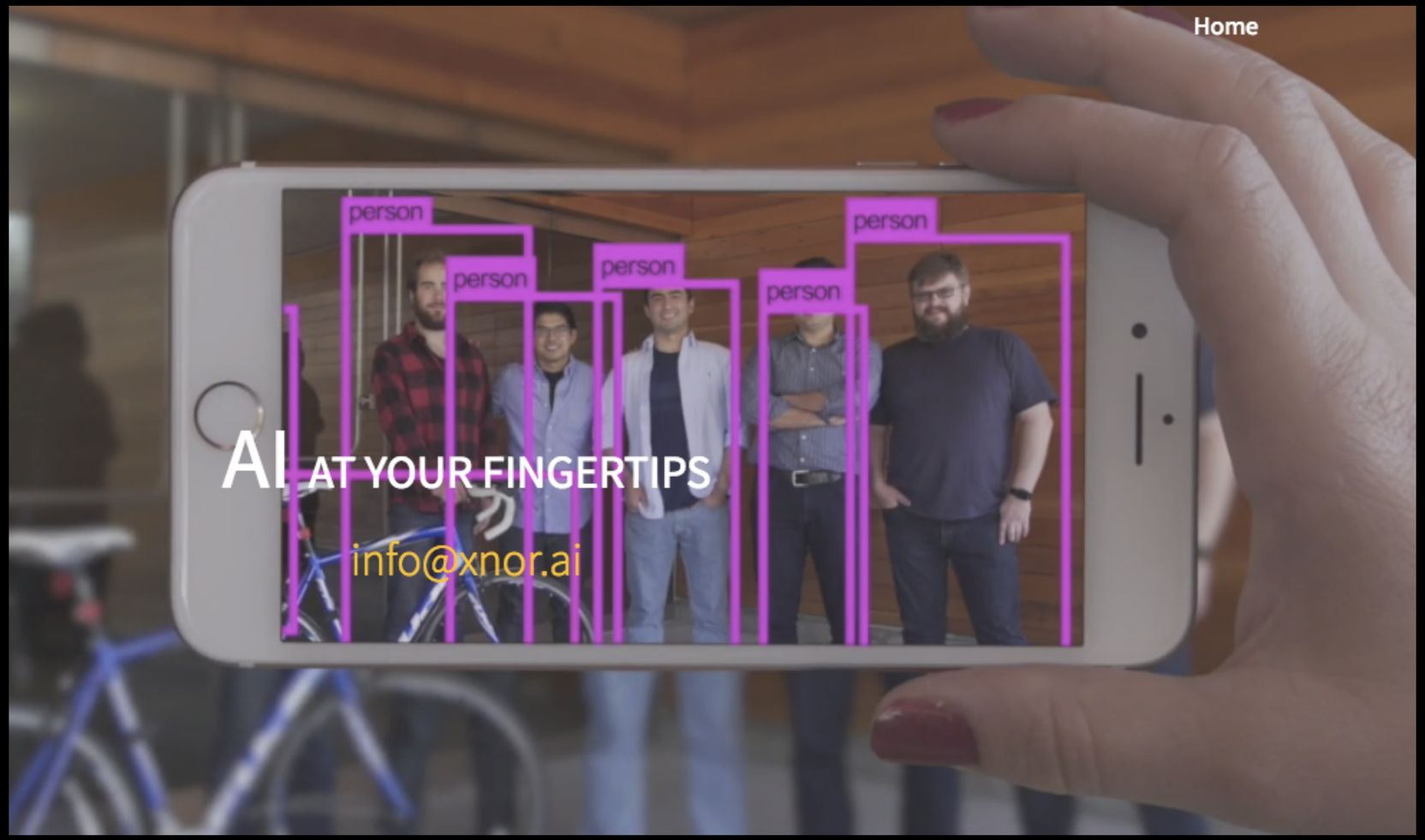
Performance of GPUs over time



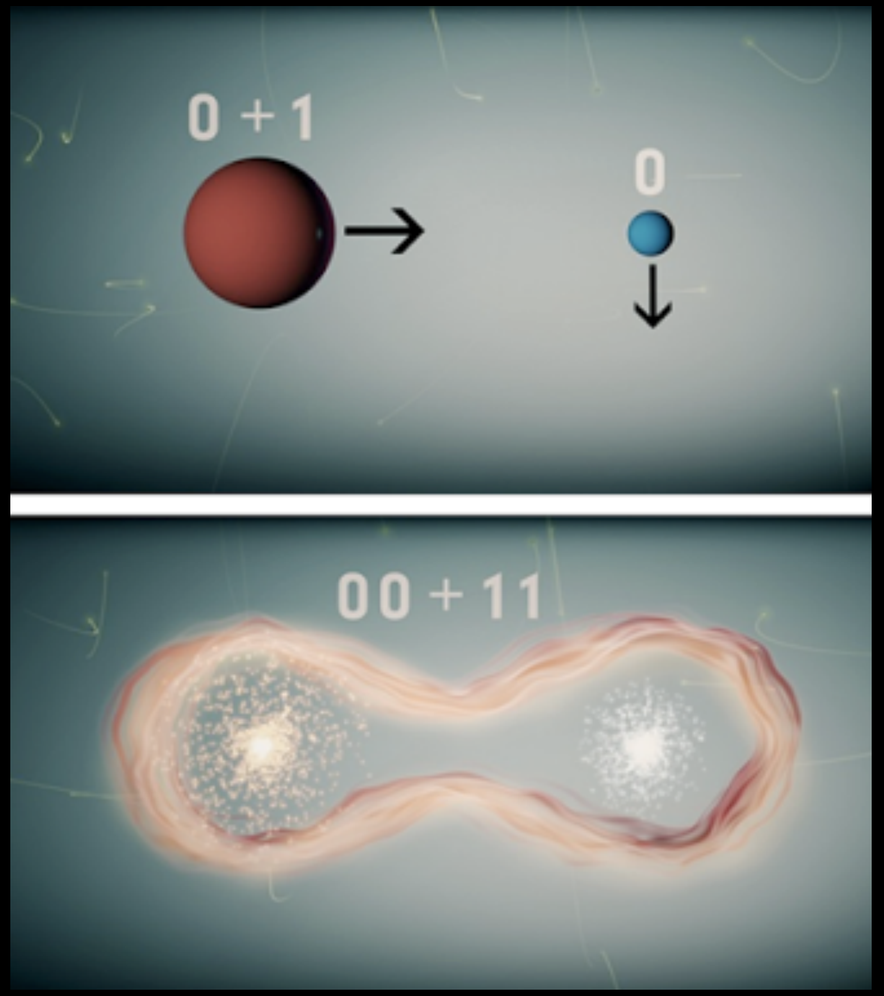
GPU vs. CPU Performance of Black-Scholes Option Pricing



Next Generation Hardware



Next Generation Hardware

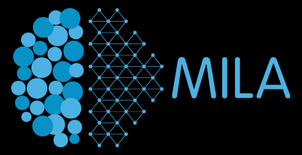


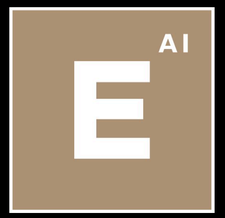
Open Source & Commoditization

Google open-sources mobile-first computer vision models for TensorFlow

BLAIR HANLEY FRANK @BELRIL JUNE 14, 2017 11:09 AM

What are the models?





Pure research	Whole ecosystem	IP and incubation	Tons of data and cash	Solve real business problems
IP and talent drain	Politics and complexity	No single product focus	Hog talent Opensource	Research a luxury

What makes a good enterprise AI startup?

1. Full stack products
2. Subject matter expertise
3. Proprietary data
4. AI delivers core value

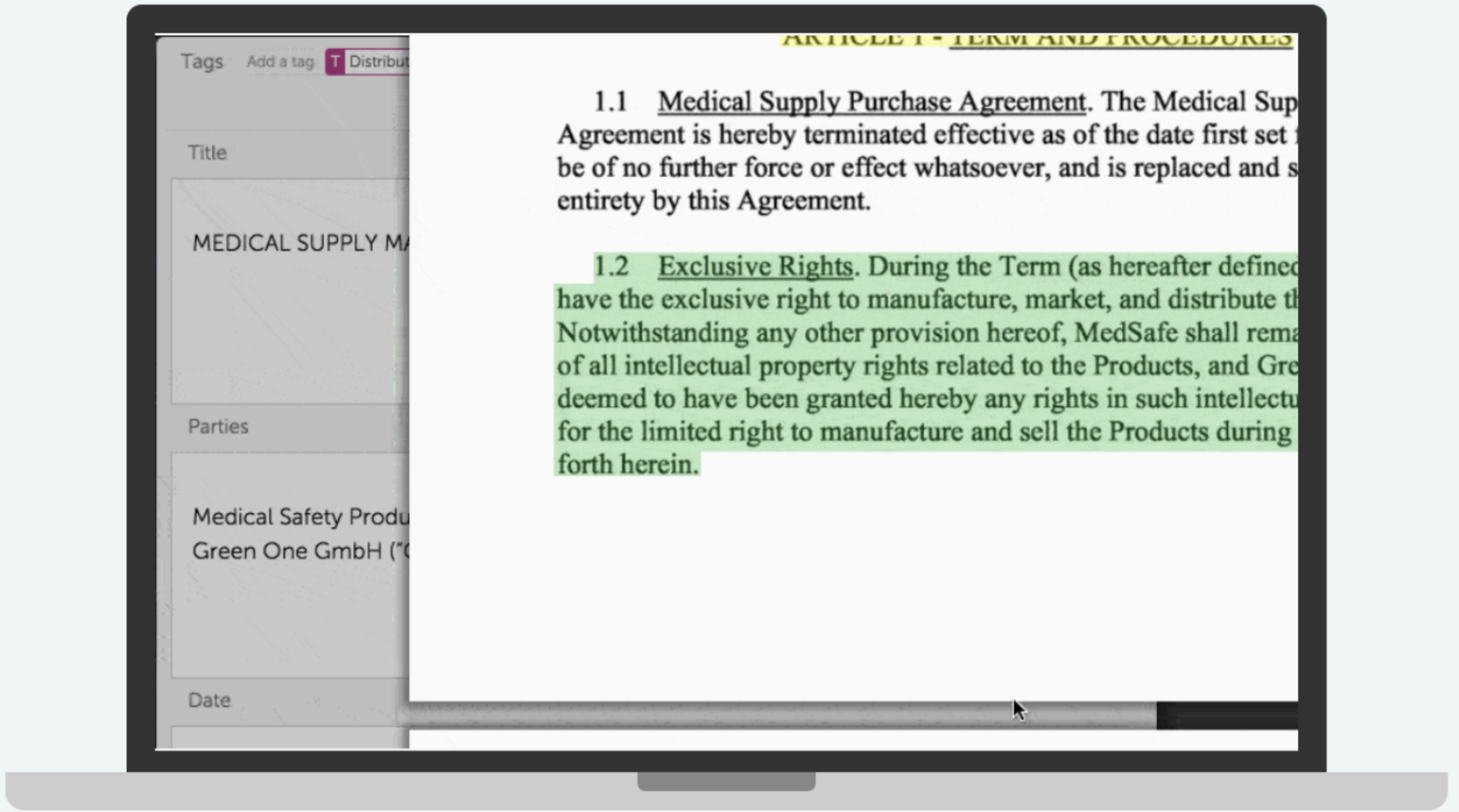
Vertical AI Startups: Solving Industry-specific Problems by Combining AI and Subject Matter Expertise

Bradford Cross, June 14 2017

Machine Radiologists

Machine Due Diligence

Trusted on hundreds of billions of dollars of transactions to date, Kira automates the extraction and analysis of key provisions from across your contracts.



Probabilistic Endpoint Security

integrate.ai

More value in consumer internet companies than just advertising.

Aggregate data will boost model performance.

There are multiple trust issues to exploit and resolve.

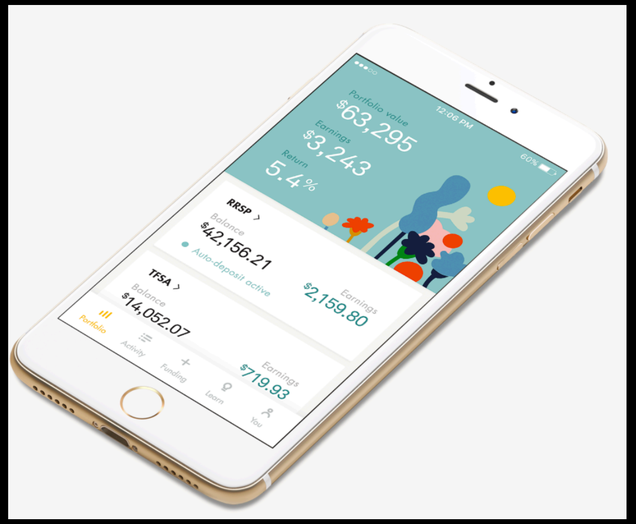
Usage Metrics | User Growth | Startup Traction | Growth Hacking | +6

Growth Hacking: How do you find insights like Facebook's "7 friends in 10 days" to grow your product faster?

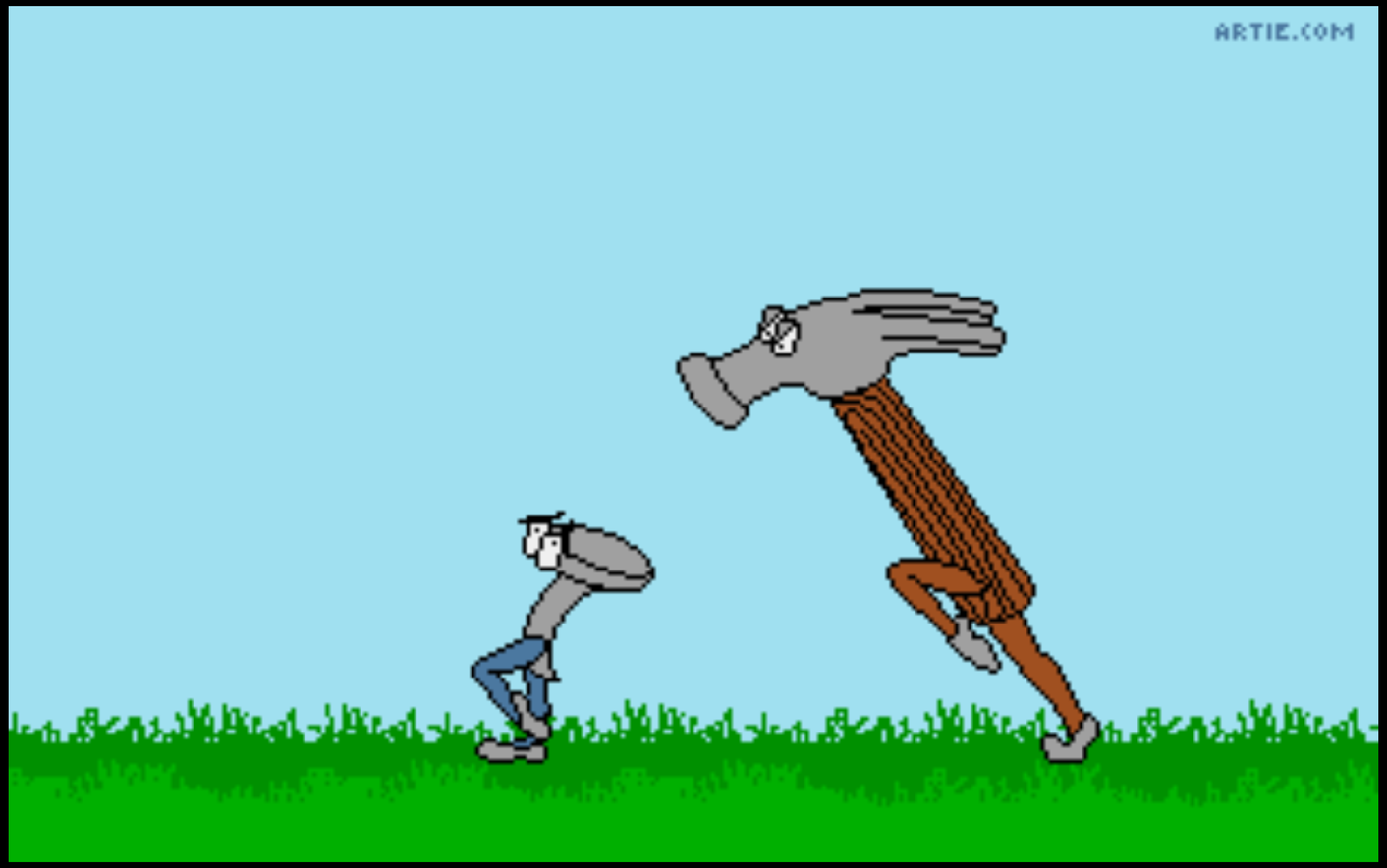
Assuming one tracks core product engagement actions and has data scale, how does one (having SQL chops) uncover tipping points like these for a (generic) Web app?

Prescriptive Marketing

- Find small action to serve as proxy for a long-term goal
- Find correlations between successful customers and new prospects
- Drive behaviour on highest likely LTV during tight window of opportunity
- Collect feedback and measure success



Watch out for…


ARTIE.COM

Google open-sources mobile-first computer vision models for TensorFlow

BLAIR HANLEY FRANK @BELRIL JUNE 14, 2017 11:09 AM

CHALLENGERS
LEADERS
Epiq Systems
Kroll Ontrack
AccessData
Symantec
kCura
FTI Technology
Recommind
ZyLAB
Nuix
HP
Exterro
LexisNexis
Xerox
Ubic
Driven
CommVault
Guidance Software
IBM
Catalyst
Microsoft
NICHE PLAYERS
VISIONARIES

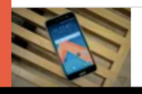
Fast Forward Labs

FF

Natural Language Generation

A Report on the Possibilities

THE VERGE



TRENDING NOW
HTC 10 announced: a modern phone with familiar design

LOG IN | SIGN UP LONGFORM REVIEWS VIDEO TECH SCIENCE ENTERTAINMENT CARS DESIGN US & WORLD FORUMS

PREVIOUS STORY
The FCC has changed the definition of broadband

NEXT STORY
The FCC just closed its biggest wireless spectrum auct
history

ENTERTAINMENT TECH WEB REPORT ROBOT

AP's 'robot journalists' are writing their own stories now

Forbes / Investing

AUG 31, 2015 @ 02:00 PM 247 VIEWS

J.M. Smucker EPS Expectations Down Over Past Month

Narrative Science

Narrative Science

Over the past three months, the consensus estimate has sagged from $1.25. For the fiscal year, analysts are expecting earnings of $5.75 per share. A year after being $1.37 billion, analysts expect revenue to fall 1% year-over-year to $1.35 billion for the quarter. For the year, revenue is expected to come in at $5.93 billion.

A year-over-year revenue decrease in the fourth quar
consecutive quarters of revenue increases.

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NEWS

Home Video World US & Canada UK Business Tech Science Ma

Technology

Robo-journalism: How a computer describes a sports match

Hilary Mason
Fast Forward Labs

The real impact lies in making complex data simple.

11374,73.25165072760954
11375,76.02168800410799
11377,81.22613070574234
11378,76.68755893219648
11379,72.43703076239288
11385,81.37809552925839
7302,82.04176470588239
11411,65.26092268715267
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11413,52.38190997811611
11414,66.1278529660406
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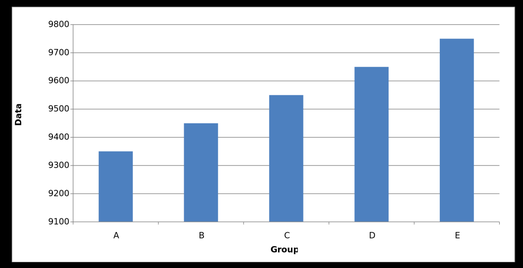
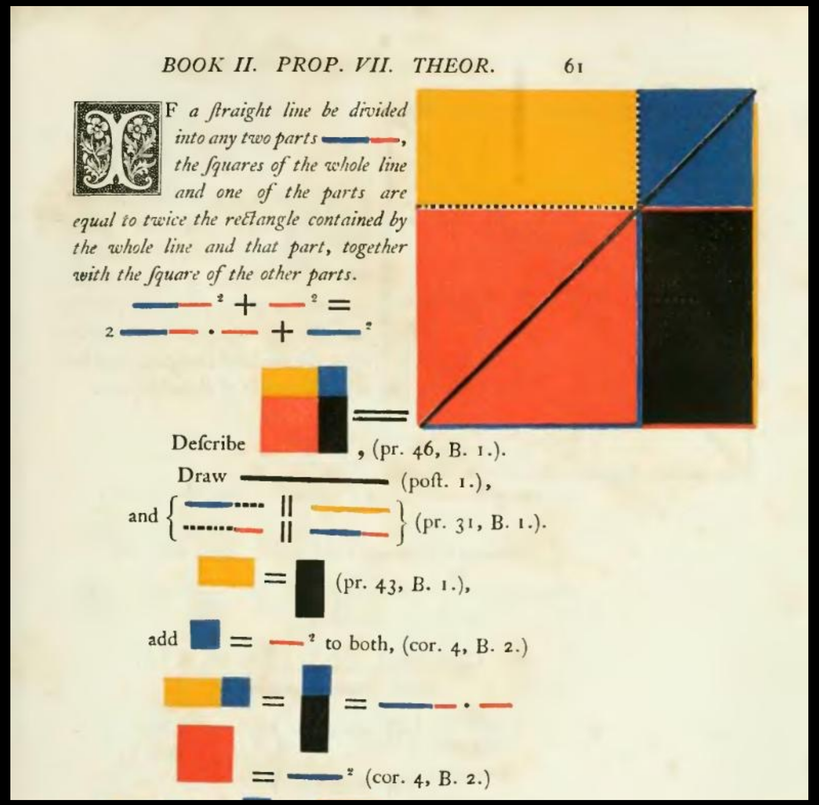


There’s been an increase in sales!

Do not underestimate cultural barriers to innovation



BOOK II. PROP. VII. THEOR. 61

IF *a ſtraight line be divided into any two parts* —, *the ſquares of the whole line and one of the parts are equal to twice the rectangle contained by the whole line and that part, together with the ſquare of the other parts.*

—² + —² =
2 — · — + —²

Deſcribe , (pr. 46, B. 1.).

Draw (poſt. 1.),

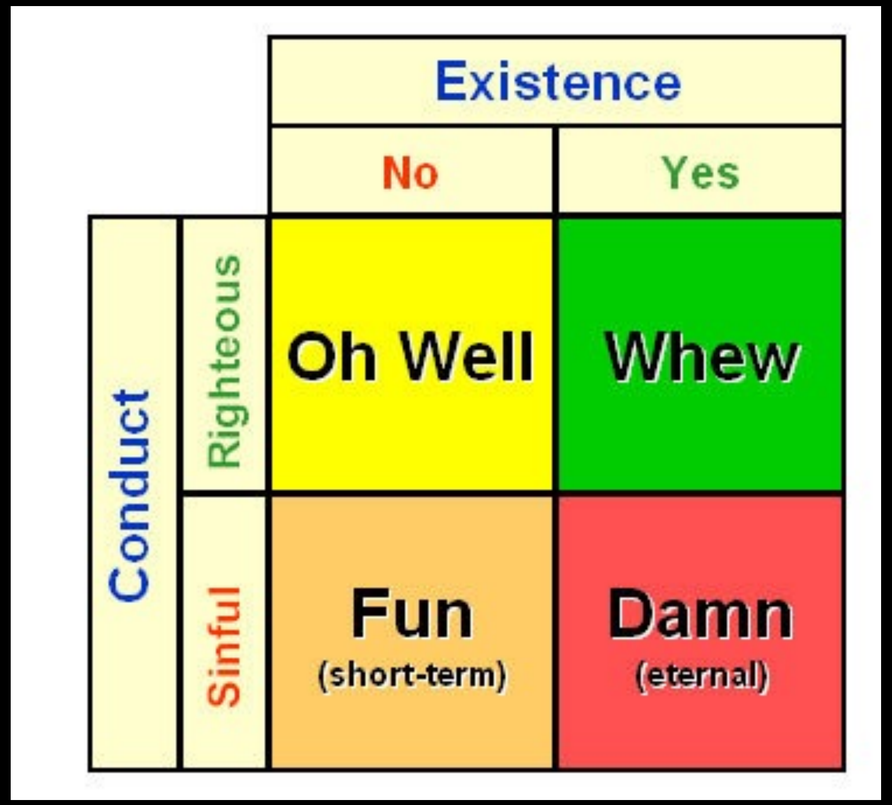
and { — ‖ — , — ‖ — } (pr. 31, B. 1.).

= (pr. 43, B. 1.),

add = —² to both, (cor. 4, B. 2.)

= = — · —

= —² (cor. 4, B. 2.)



Deterministic Thinking

Probabilistic Thinking

Approaches to Managing Risk

Lawyering

Iterating

Experimenting

Data Product Lifecycle

Design
What problem are we solving?

Data Exploration
What does the data look like?

Data Processing
Is our data ready for use?

Model Prototyping
Will this work? Should we pivot?

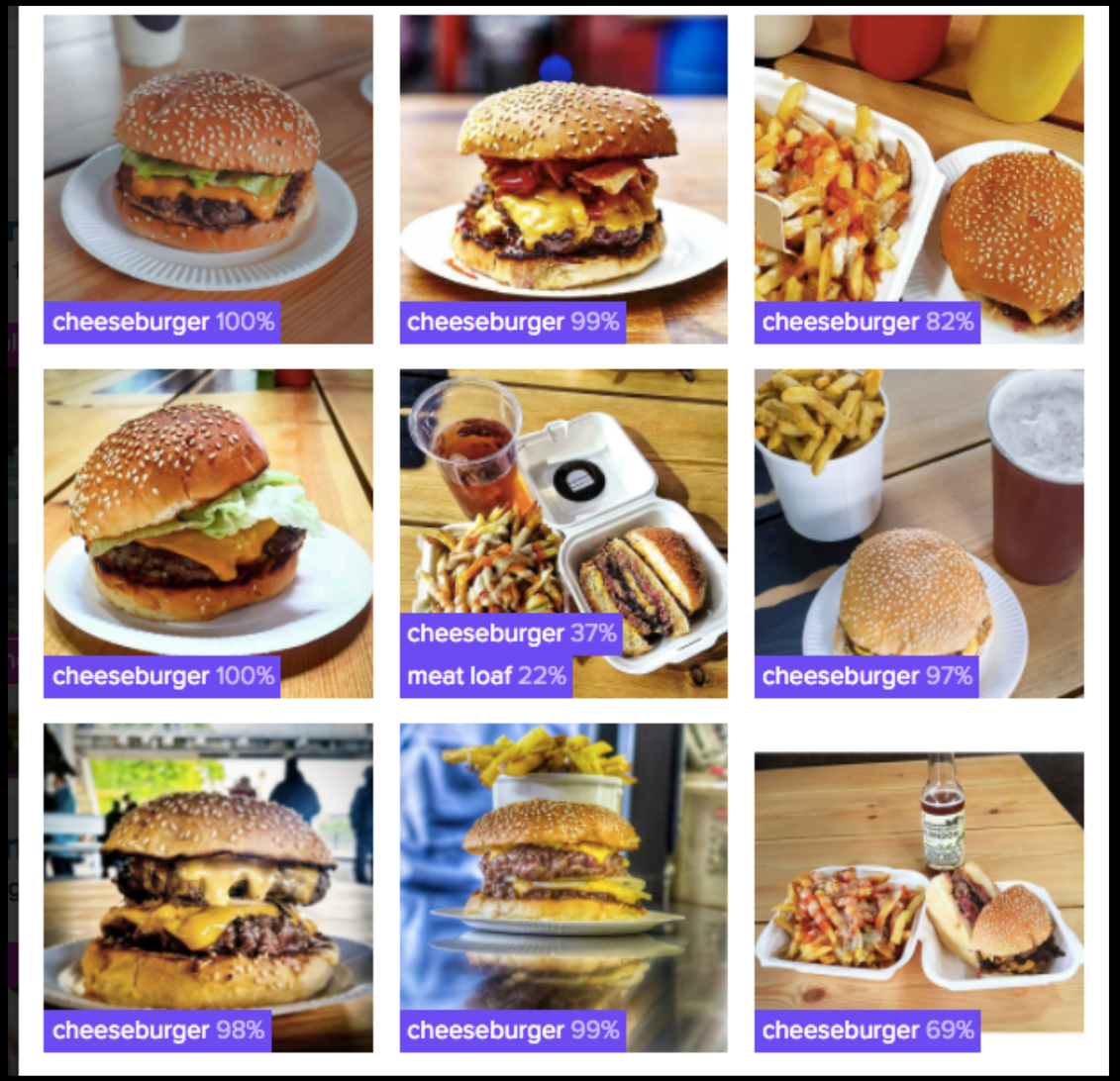
Production
Can we harden and scale the model?

Maintenance
How to update as data changes?

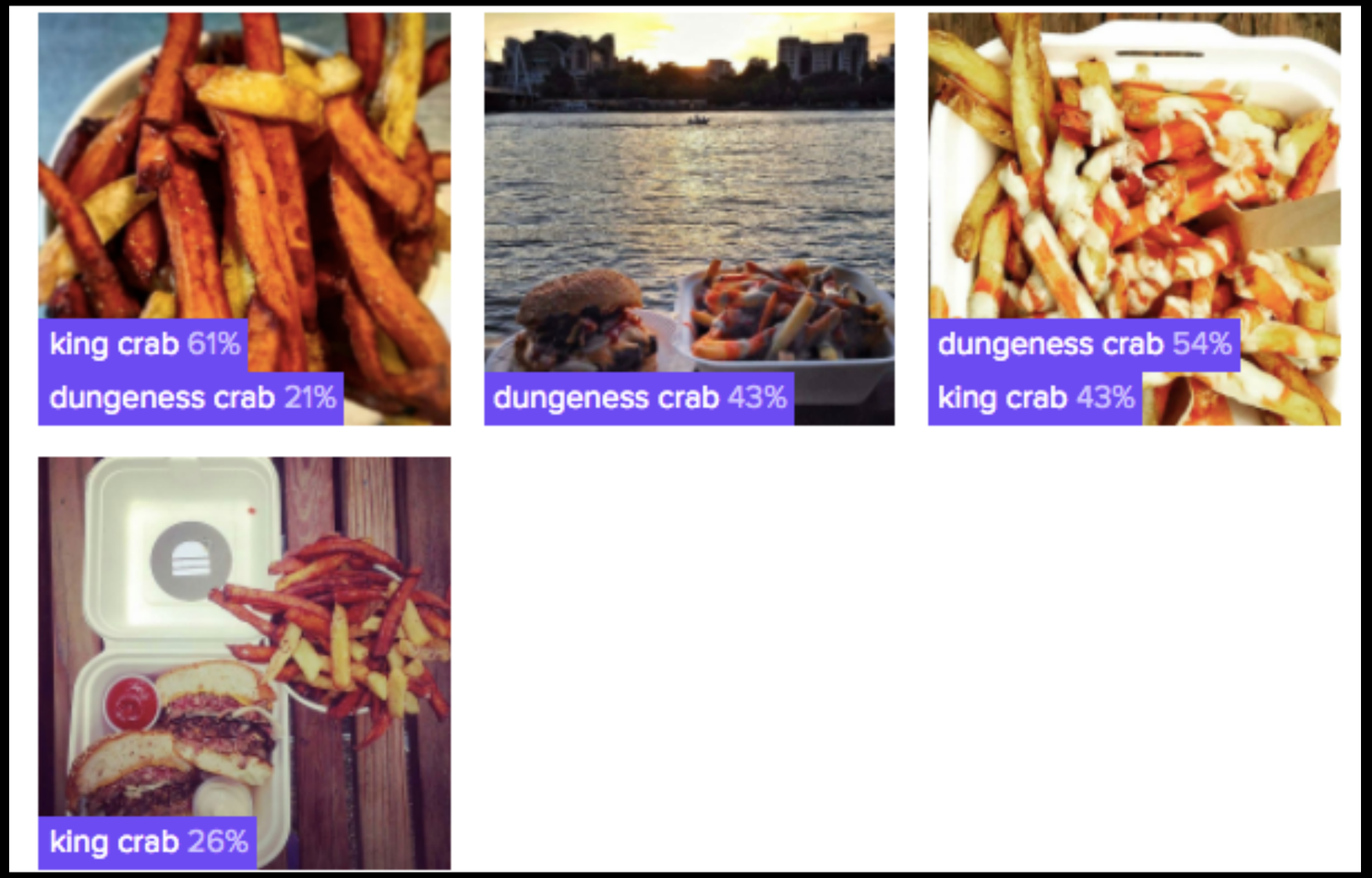
Data Engineering

NESPRESSO
NEW ZEALAND
CAMPER
OMEGA
NESPRESSO
NEW ZEALAND
CAMPER
OMEGA
NESPRESSO
NEW ZEALAND
OMEGA
NESPRESSO

Set Risk Thresholds & Put Humans in the Loop



Be Prepared for Unanticipated Edge Cases

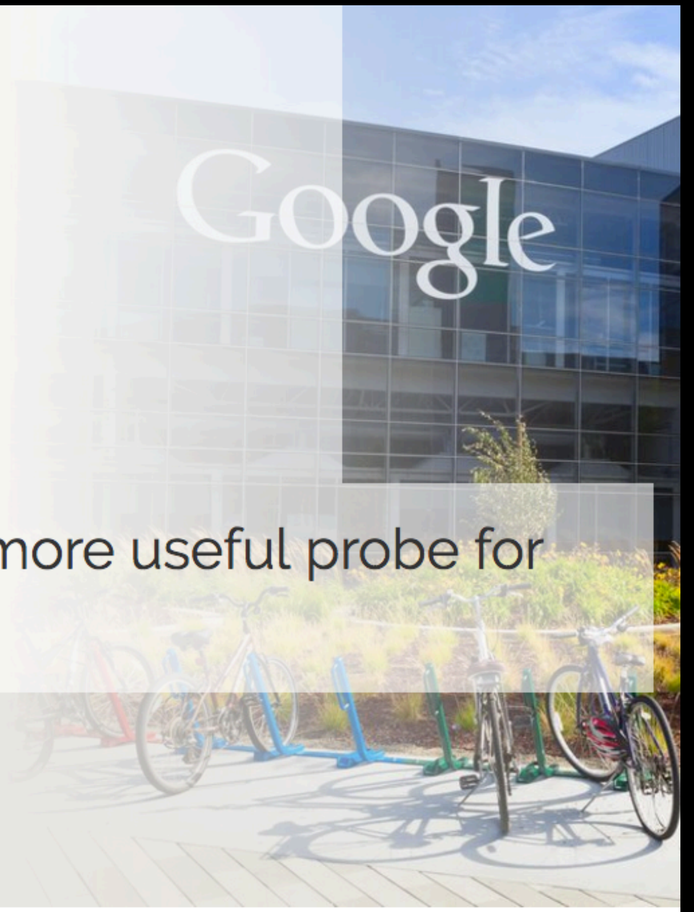


Be Mindful of Interpretability

Wow. EU citizens will soon have a "right to explanation" regarding algorithmic decisions: https://t.co/m9FE3uwEHP pic.twitter.com/19bH2Fw9Ty

— Robin Sloan (@robinsloan) July 1, 2016

Google's research chief questions value of 'Explainable AI'



Peter Norvig says output of machine learning systems a more useful probe for fairness

George Nott (Computerworld)

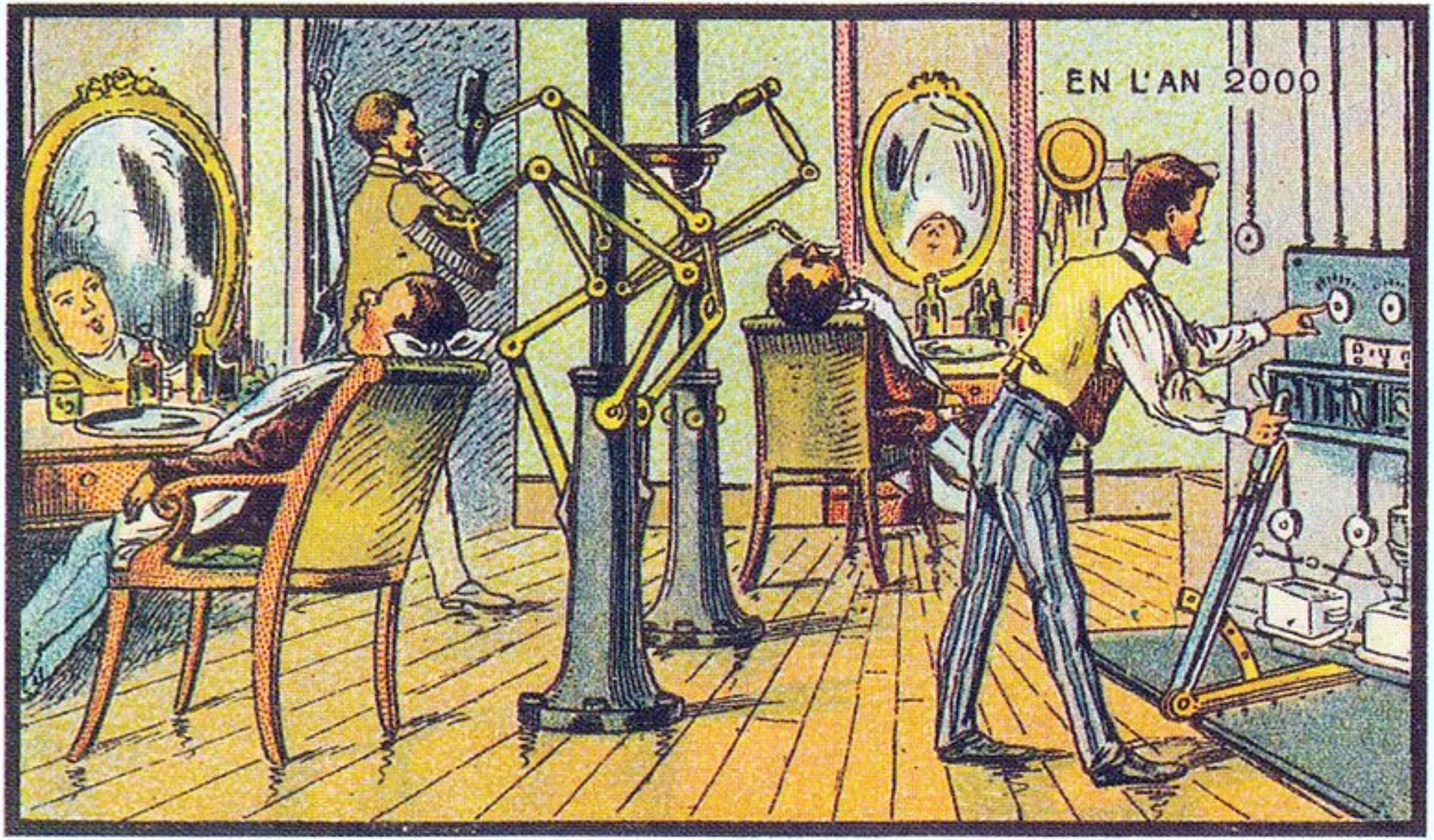
23 June, 2017 11:53

f 782 in 551

Steve Jobs: “Technology Alone is Not Enough”

The more questions and interactions
I have, the smarter I become.

Client and customer demand are
the most powerful drivers of change



The New-Fangled Barber

Thank you!

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kathryn@integrate.ai

@humekathryn

quamproxime.com