

AI, Healthcare, and the Sopranos test



Presentation at 2017 Southern California Big Data Discovery Summit

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Alternative title:

Grey goo or the Self-replicating spacecraft

"I don't think any physician today should be practicing without artificial intelligence assisting in their practice. It's just impossible (otherwise) to pick up on patterns and trends and to really monitor care"

Bernard Tyson

CEO, Kaiser Permanente





Healthcare Domains

- Preventive care - preventing disease through lifestyle
- Curative care - curing the disease
- Palliative care - reducing the severity of symptoms
- Rehabilitative care
- Drug discovery (clinical trials)
- Security and privacy

Applications

- Surgeries
- Nursing
- Admin
- Fraud
- Drug dosage accuracy and compliance
- Clinical trial participant identifier
- Diagnosis
- Sleeptech
- Personalized health and data
- Behavioral health and patient engagement

AI Research

- Productivity
- Vision
- Dialog
- Emotion
- Memory
- Intelligence

Drug Discovery

Novartis Uses AWS to Conduct 39 Years of Computational Chemistry In 9 Hours

Drug Discovery

Unsupervised Representation Learning with Deep Convolutional
Generative Adversarial Networks

"There are many interesting recent development in deep learning. The most important one, in my opinion, is adversarial training (also called GAN for Generative Adversarial Networks). This, and the variations that are now being proposed is the most interesting idea in the last 10 years in ML, in my opinion."

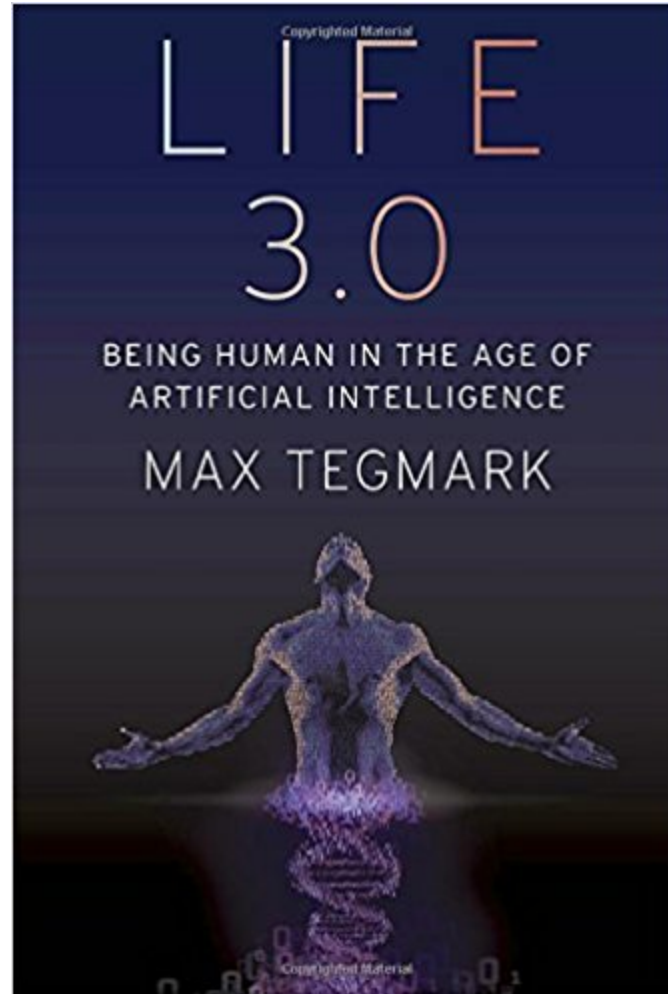
Yann LeCun,
Director of AI research at Facebook

Problems with AI

- Managing AI bias
- Economic impact of automation
- The need to ensure that any intelligent systems we develop share our ethical and moral values

AI Aftermath Scenarios

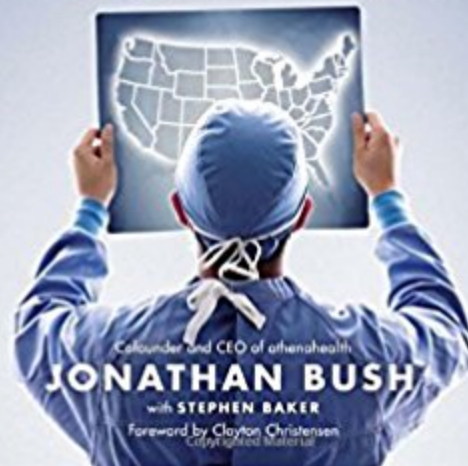
The Von Neumann probe



NEW YORK TIMES BESTSELLER

Where Does It Hurt?

An Entrepreneur's Guide to Fixing Health Care



Co-founder and CEO of athenahealth

JONATHAN BUSH

with **STEPHEN BAKER**

Foreword by Clayton Christensen

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Media

- Her
- Ghost in the shell
- Black Mirror, episode: White Christmas

Thank you!