

# Ještě hlubší než jsme čekali

(zamyšlení nad praktickými aplikacemi strojového učení)

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## ARTIFICIAL INTELLIGENCE

A program that can sense, reason,  
act, and adapt

## MACHINE LEARNING

Algorithms whose performance improve  
as they are exposed to more data over time

## DEEP LEARNING

Subset of machine learning in  
which multilayered neural  
networks learn from  
vast amounts of data



## 1957 – Perceptron

Frank Rosenblatt představuje model neuronu s učícím algoritmem

Zároveň vzniká první neuropočítač na rozpoznavání obrazu 20x20 – Mark 1 Perceptron

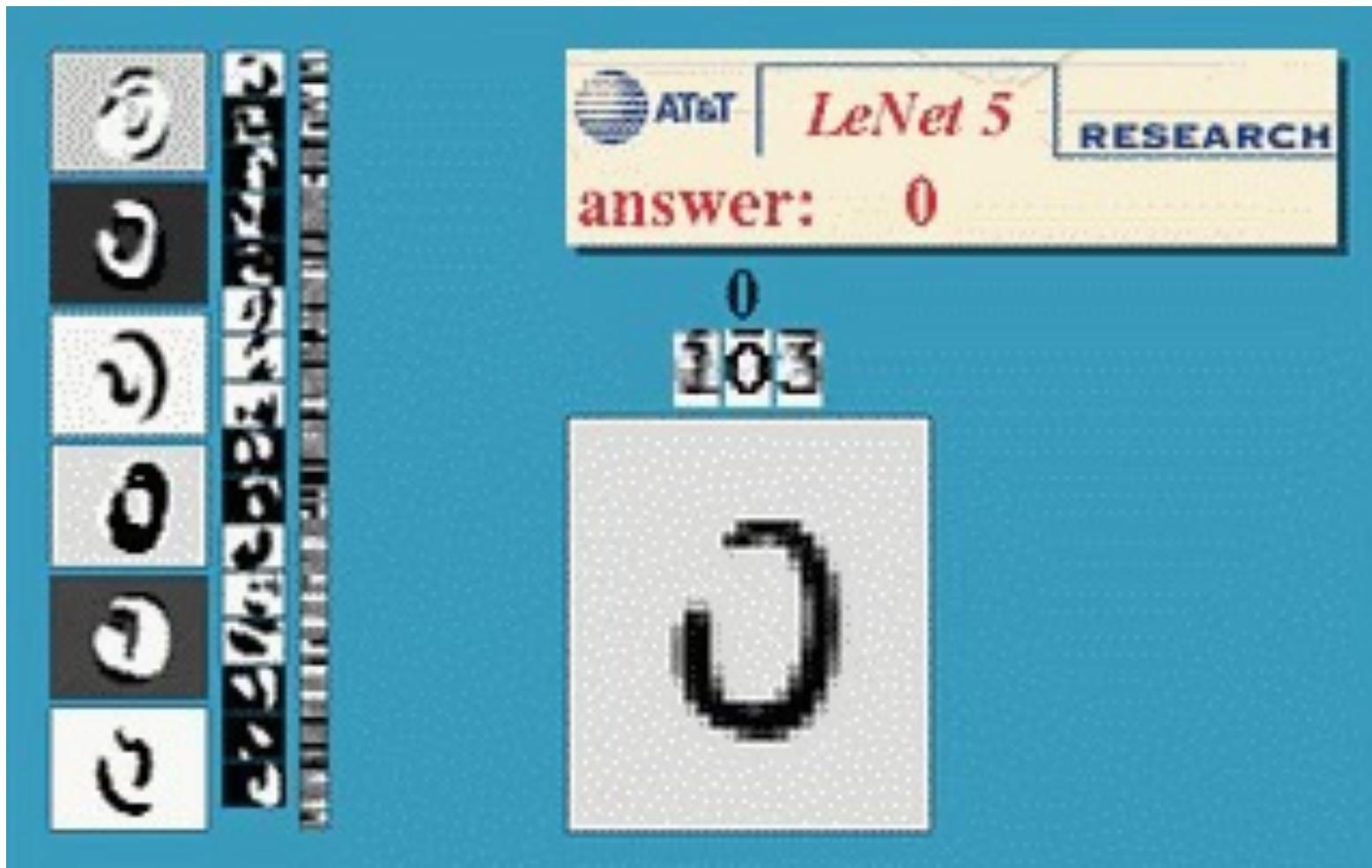
# NEW NAVY DEVICE LEARNS BY DOING

Psychologist Shows Embryo  
of Computer Designed to  
Read and Grow Wiser

WASHINGTON, July 7 (UPI)—The Navy revealed the embryo of an electronic computer today that it expects will be able to walk, talk, see, write, reproduce itself and be conscious of its existence.

The embryo—the Weather Bureau's \$2,000,000 "701" computer—learned to differentiate between right and left after fifty attempts in the Navy's demonstration for newsmen.

The service said it would use this principle to build the first of its Perceptron thinking machines that will be able to read and write. It is expected to be finished in about a year at a cost of \$100,000.



1993-4 – LeNet

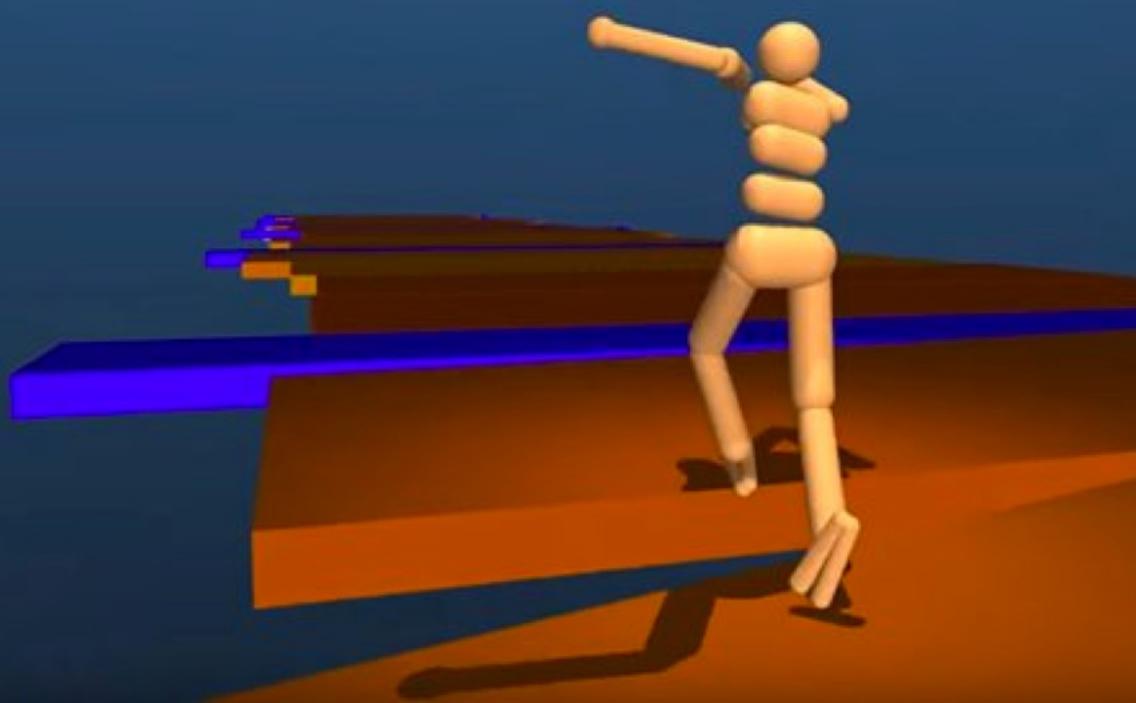
první konvoluční síť pro efektivní rozpoznávání obrazových dat

[https://www.youtube.com/watch?v=FwFduRA\\_L6Q](https://www.youtube.com/watch?v=FwFduRA_L6Q)



**2016 – LipNet**

(Oxfordská Universita – neuronová síť odezírá řeč)



2017 – DeepMind – zpětnovazebné učení chůze

<https://youtu.be/gn4nRCC9TwQ>



2018 – Boston Dynamics – robot Atlas

<https://youtu.be/fRj34o4hN4I>



ONLY  
ON

TEMPE

SELF-DRIVING VEHICLE HITS BICYCLIST

abc 15  
ARIZONA

**Uber (2018)** – smrtelná nehoda autonomního vozu

Systém viděl chodkyni 6 vteřin před havárií, ale neidentifikoval ji jako člověka/překážku.



## Microsoft Tay (2016)

Učící se chatbot

Rekurentní neuronová síť se učila z konverzace na Twitteru

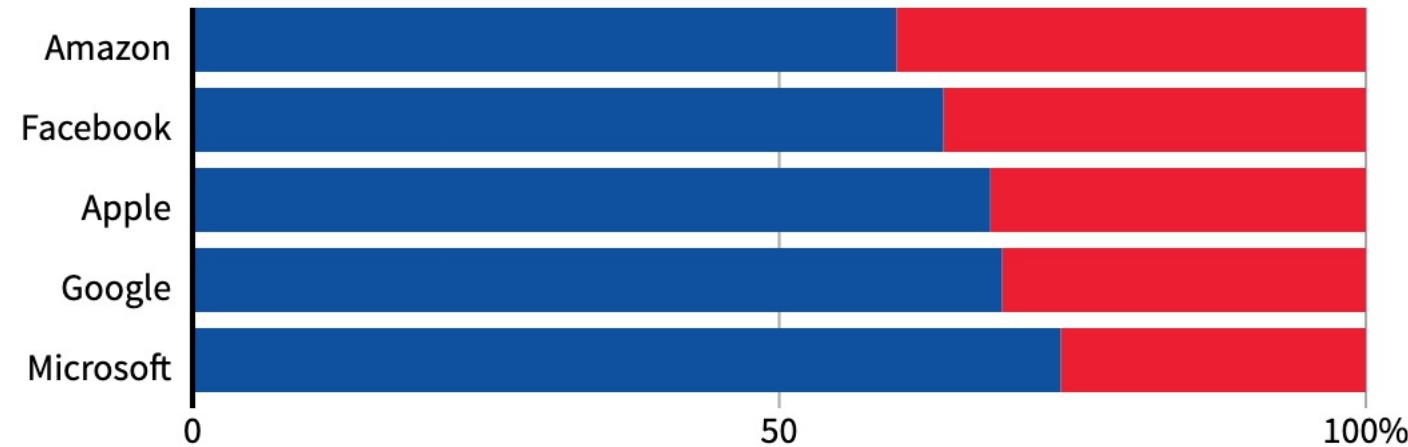
Stažena během 24 hodin

“Before she was taken offline, Tay said she was a fan of Hitler.”  
(Business Insider, 24. 3. 2016)

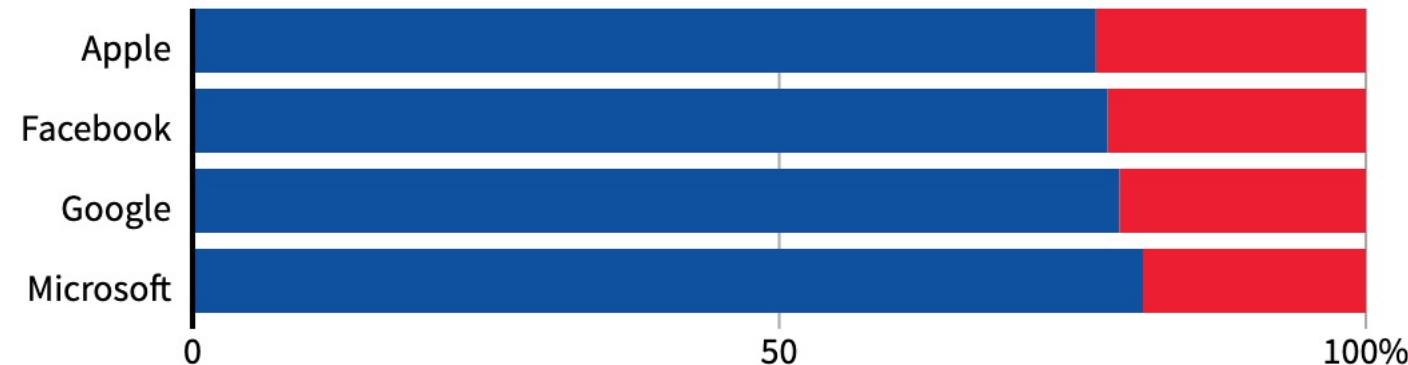


## GLOBAL HEADCOUNT

■ Male ■ Female



## EMPLOYEES IN TECHNICAL ROLES



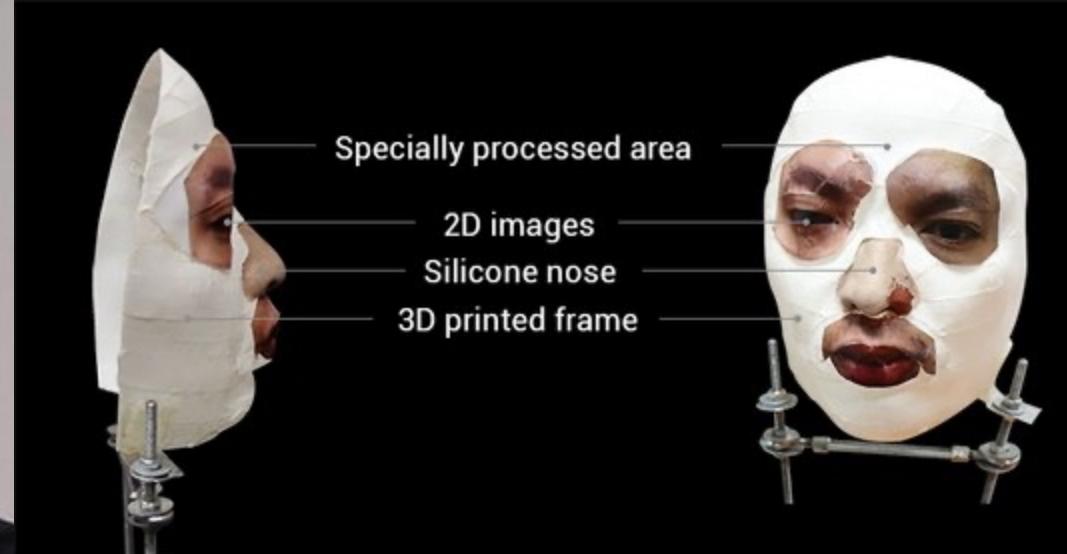
### Amazon (2018)

Projekt umělé intelligence procházel CV uchazečů a doporučoval "vhodné" kandidáty.

Učil se na desetileté historii uchazečů

Zjistilo se, že do technických oborů upřednostňoval muže.

SAN FRANCISCO (Reuters) - Amazon.com Inc's machine-learning specialists uncovered a big problem: their new recruiting engine did not like women.



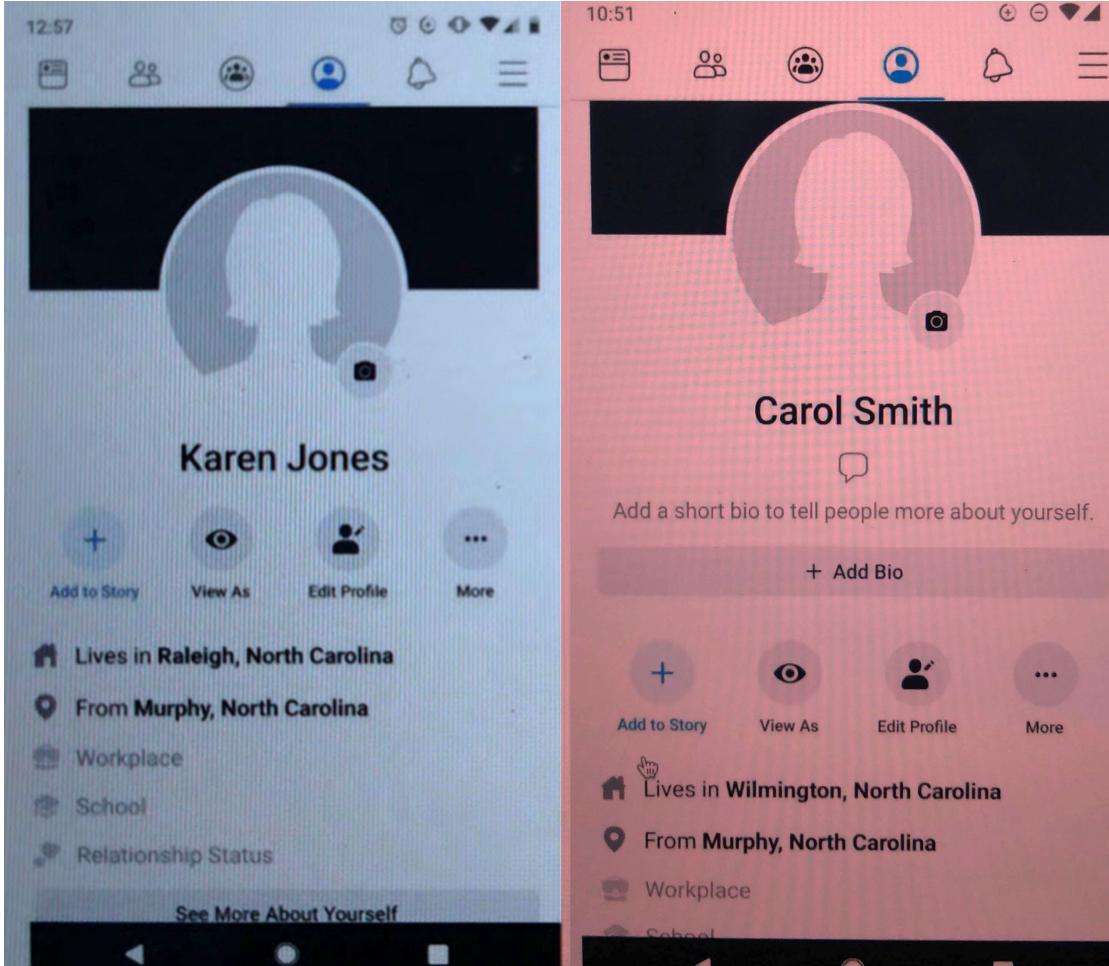
2017 Iphone X Face ID

HACKERS SAY THEY'VE BROKEN FACE ID A WEEK AFTER IPHONE X RELEASE, Wired, 11.12.17



2019 Deep fakes





## 2019 Facebook research

Accepting recommendations for sites supportive of Trump led Carol to suggestions for a site called “Donald Trump is Jesus,” and another for QAnon, a wide-ranging extremist ideology that alleges celebrities and top Democrats are engaged in a pedophile ring.

Karen was presented with anti-Trump pages, including one that posted an image showing an anus instead of Trump's mouth.

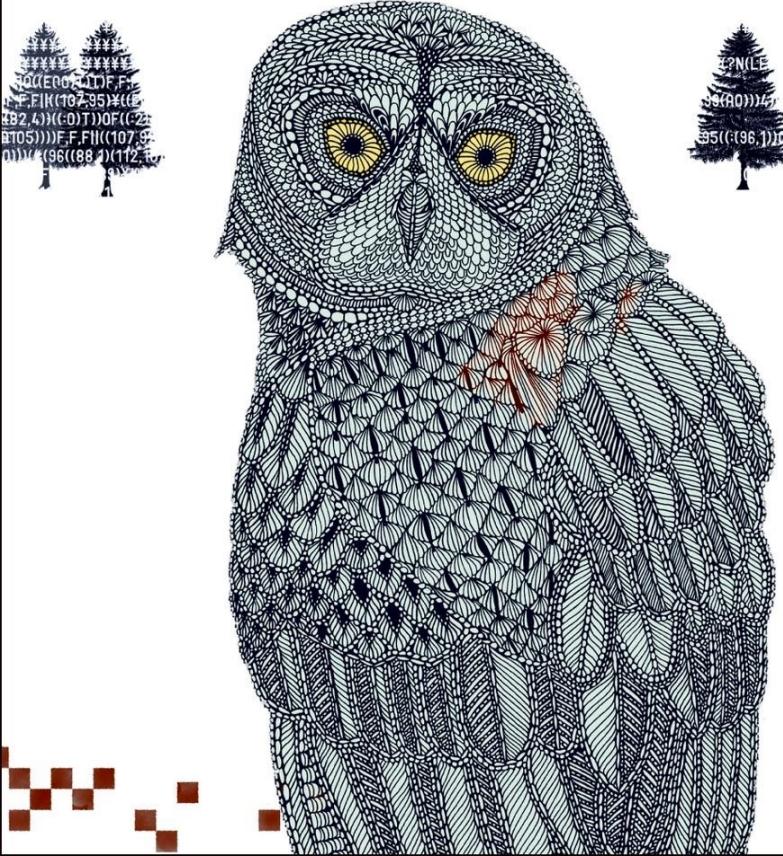
<https://eu.usatoday.com/story/tech/2021/10/23/facebook-whistleblower-documents-divide-america-liberal-conservative-trump-qanon/8511263002/>



NICK BOSTROM

# SUPERINTELLIGENCE

Paths, Dangers, Strategies



## When Will Superintelligence Arrive?

A survey of AI researchers shows they think it's still a long way off.

