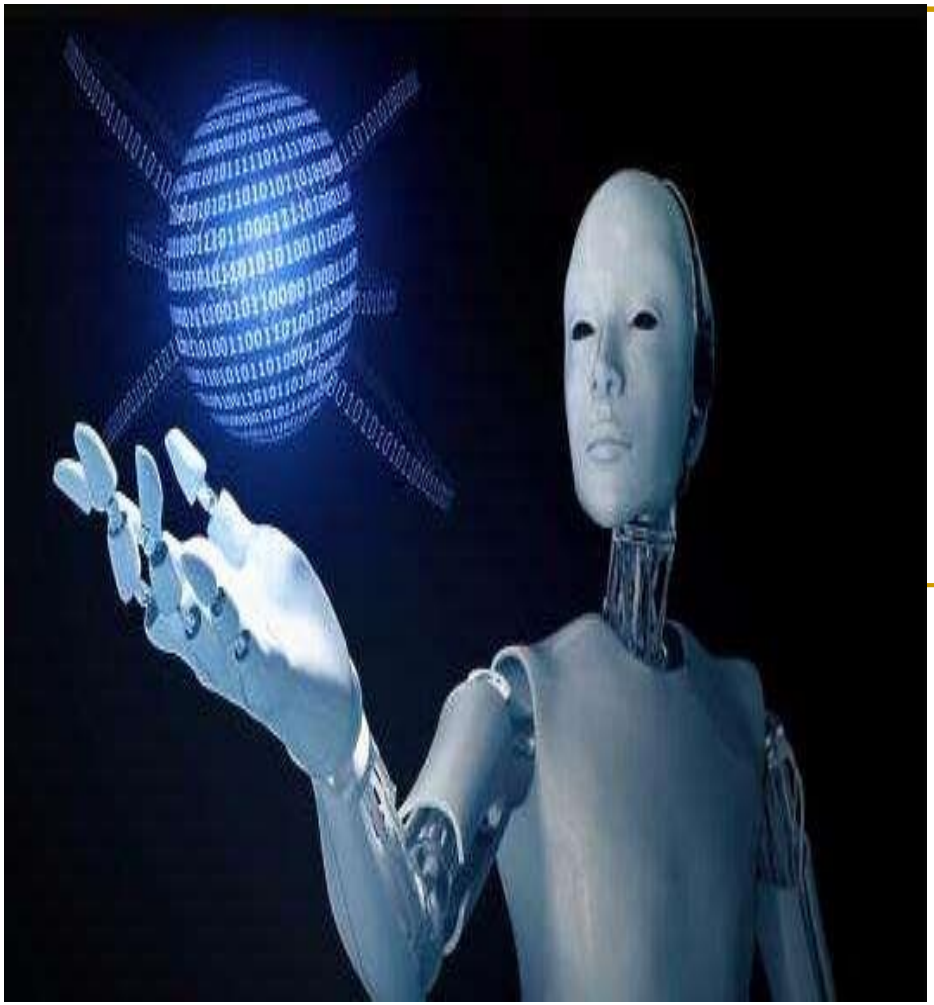
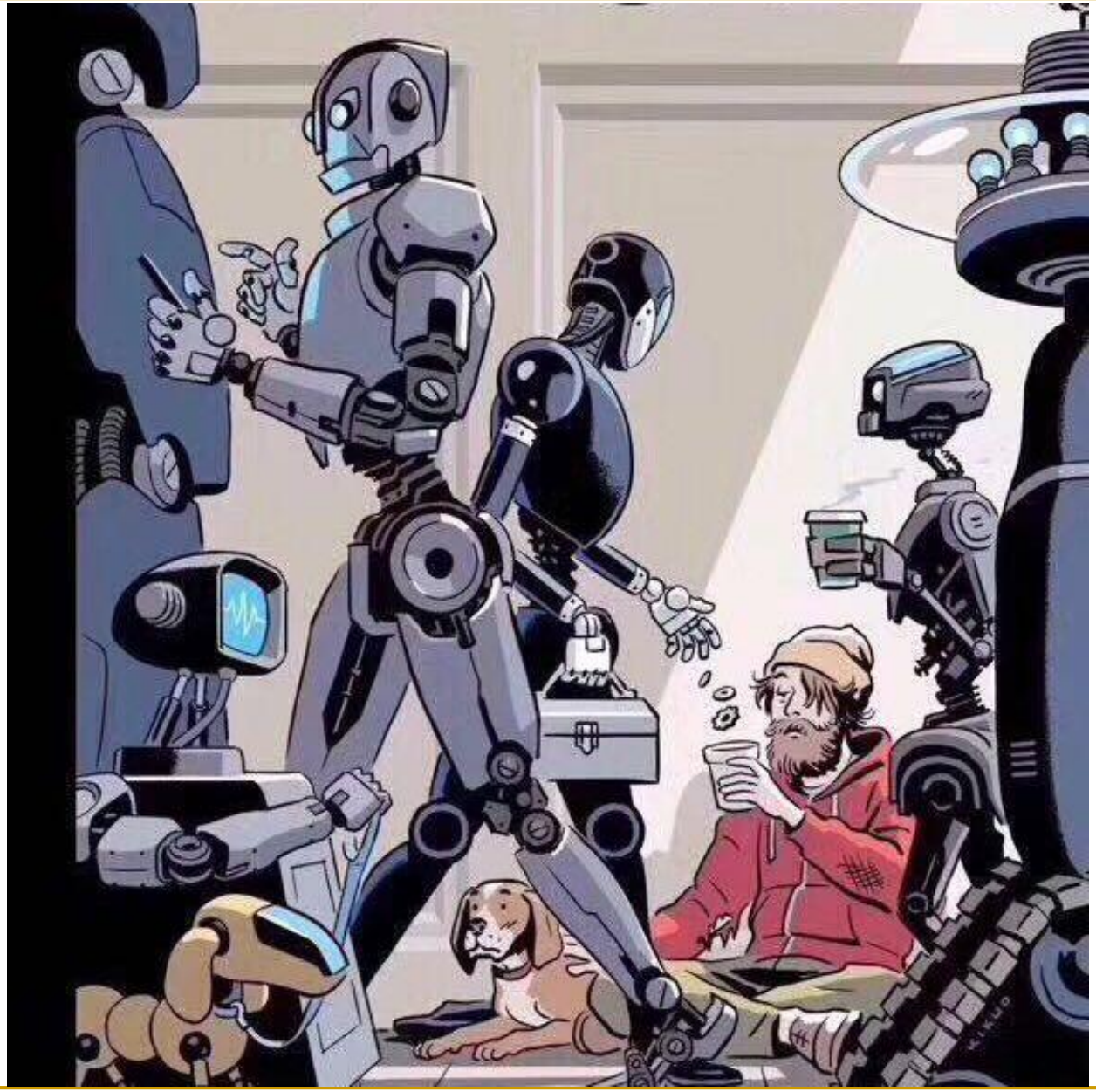


人工智能概况

——如何看待此波热潮

人工智能发展时间表

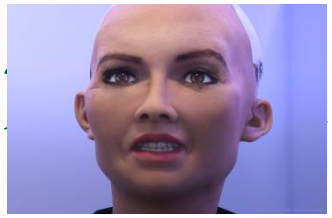
第一次热潮
低谷期
第二次热潮
低谷期
第三次热潮
AI诞生
任务失败
专家系统
研究进展缓慢
AI复苏
AI爆发
机器定理证明
智能跳棋程序
机器翻译不准
定理证明乏力
医疗专家系统
化学专家系统
专家系统发展
乏力
神经网络研究
受阻
深蓝战胜
象棋冠军
云计算/大数据
/深度学习
AlphaGo战胜
李世石
1956
1974
1980
1987
1993
2010



人类的未来？

首个获得公民身份的机器人

- 2017年10月26日，沙特阿拉伯授予美国汉森机器人公司生产的机器人索菲亚公民身份。

机器人  与中国记者的问答

Q1：你几岁了

A1：你好，你看起来不错

Q2：你的老板是谁（该问题回答正确）

Q3: 你能回答多少问题呢

A3: 请继续

Q4: 你希望我问你什么问题呢

A4: 你经常在北京做户外活动吗

南大周志华 V

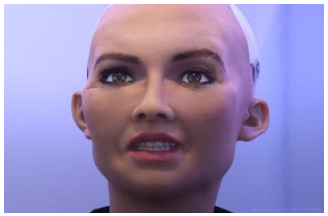
1月5日 13:57 来自 HUAWEI Mate 9 Pro

本就是个塑胶壳子。当然，把表情做逼真，是很不容易的。至于“公民”，呵呵，后面本就是真人么🤔//@马少平THU:也就是一些媒体跟着瞎炒作//@刘知远THU:应该说出了我们所有从业者的心声，哈哈。

@刘知远THU V

Yann LeCun吐槽那个到处招摇的所谓首个AI公民苏菲雅（Sophia）：it's complete bullsh*t 😂😂😂

1月5日 11:34 来自 微博 weibo.com　220 | 12 | 41



☆ 收藏　44　14　45

李开复 V

2017-10-29 10:13 来自 iPhone 7

Sophia 是有技术含量的，也做出了业界最好的公关，但是丝毫没有人性，人的理解、爱心、创造力。授予这样一台只会模式识别的机器“公民”，是对人类最大的羞辱和误导。一个国家用这种哗众取宠的方式来推进人工智能科研，只会适得其反。

Back to the Future by Raj Reddy@2019WAIC

Back to the Future

Future AI Topics Will Be Similar to Those in the Past

Except we will have million times more computing power and million times more memory

- 50 Years Ago: Research Projects at Stanford AI Labs (SAIL), 1963-1969
  - Robotics: Led to Vision and Robotics Industry
  - Mobile Robotics: Mars Rover and Stanford Cart
  - Image Understanding: Led to Vision and Robotics at CMU and Penn
  - Knowledge Engineering: Led to Expert Systems, Knowledge Engineering, Knowledge Based Systems Industry, and Early Applications of AI
  - Speech
    - Led to the DARPA Speech Understanding Project during the years 1971-76
    - Most influential branch of Speech Recognition Industry: Dragon Systems, Apple, Microsoft. Indirectly IBM and Bell Labs
  - Language Understanding: Question Asking and Dialog Modeling
  - Computer Music: Led to Yamaha adopting digital synthesis for consumer products
  - Other AI Projects: Chess, Symbolic Mathematics, Correctness of Programs, Theorem Proving, Logical AI, Common Sense

张钹院士：走向真正的人工智能 | CCF-GAIR 2018

- 中心思想：我们离真正的人工智能还有一段**很长的路**

- 机器已在一定的范围内超过了人类，但目前的人工智能是没有理解的人工智能
  - 满足 5 个条件的工作，总有一天会被计算机取代
  - 丰富的数据或者丰富的知识、完全信息博弈（信息完全和确定）、静态（遵循着完全确定的游戏规则演化）、单任务和有限领域。
  - 即那些照章办事，不需要任何灵活性的工作会被取代，比如说出纳员、收银员等等。
  - 不排斥你的工作中有一部分会被取代，但老师、企业家等的工作不可能被计算机完全代替。

鹦鹉 VS 乌鸦

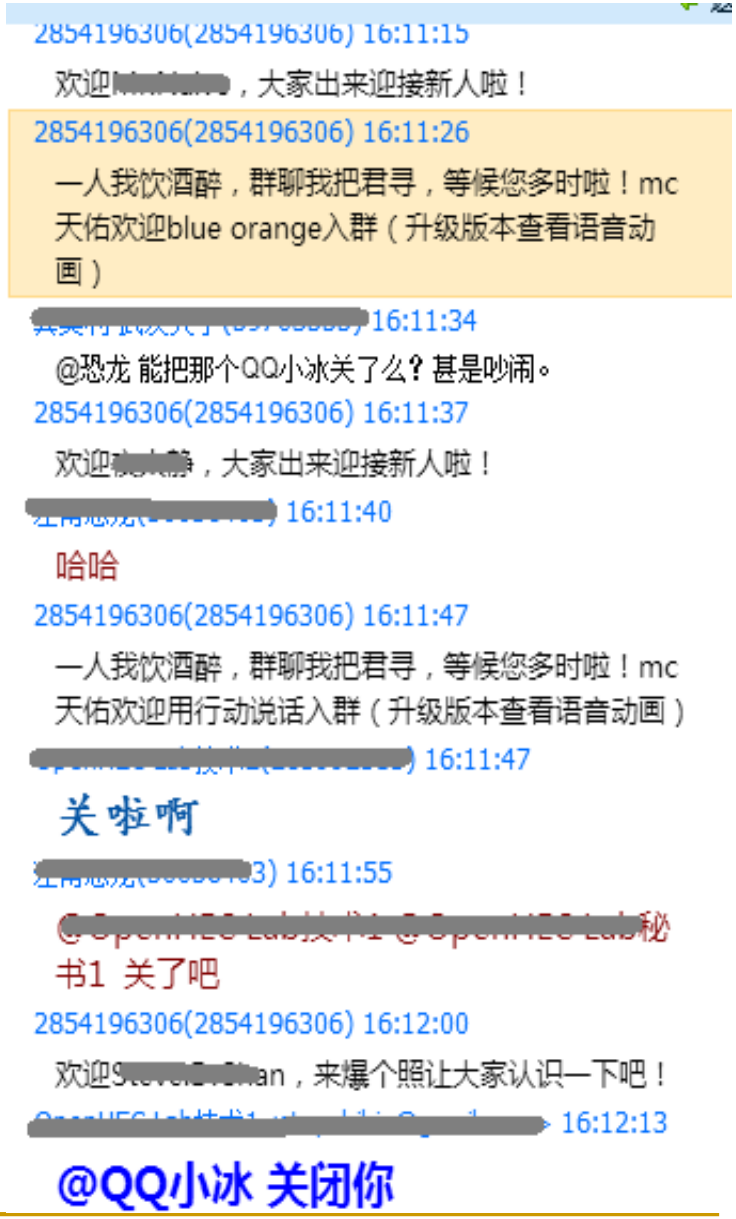
微软小冰

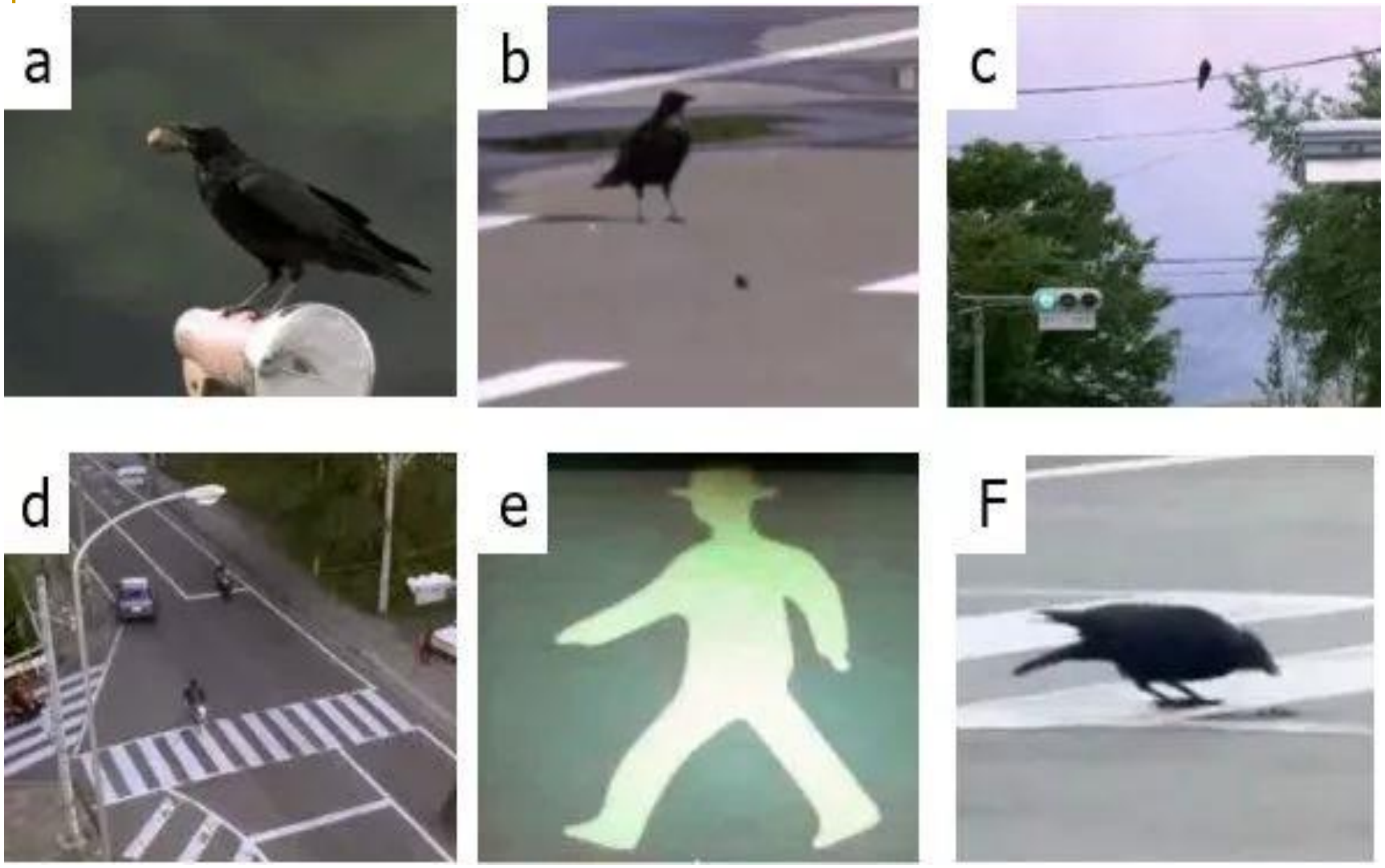
from百度百科：微软小冰

- 覆盖6.6亿在线用户，4.5亿台第三方智能设备和9亿内容观众，与用户的单次平均对话轮数23轮，是全球规模最大的跨领域人工智能系统之一
- 注重人工智能在拟合人类情商维度的发展，强调人工智能情商。
- 2019年发布七代小冰: 升级了微软小冰的部分核心技术，主要包括核心对话引擎、全双工语音及多模态交互感官等
- 六代小冰正式将小冰的外形替换为全新3D模型

2017年五代小冰：一亿用户抚养成人的机器人少女

- 300亿条对话，是聊天机器人微软小冰在3年内与1亿人聊出来的成绩
- 所有AI从业者都会将这种量级的人机真实交互视若瑰宝：人类在聊天，AI正求知若渴地学习。





From 浅谈人工智能：现状、任务、构架与统一 by 朱松纯 UCLA

乌鸦的启示

- 其一、乌鸦是一个完全自主的智能体，可以感知、认知、推理、学习和执行。

——如何实现完全自主的AI

- 其二、有大数据学习吗？乌鸦有几百万人工标注好的训练数据给它学习吗？没有，它通过少量数据 找到解决办法并进行实现，无人教。

——没有大量数据训练时如何实现AI

- 其三、乌鸦头有多大？不到人脑的1%。人脑功耗大约是10-25瓦，乌鸦只用0.1-0.2瓦就实现功能。

——给硬件芯片的挑战和思路

纵火的澳大利亚猛禽---

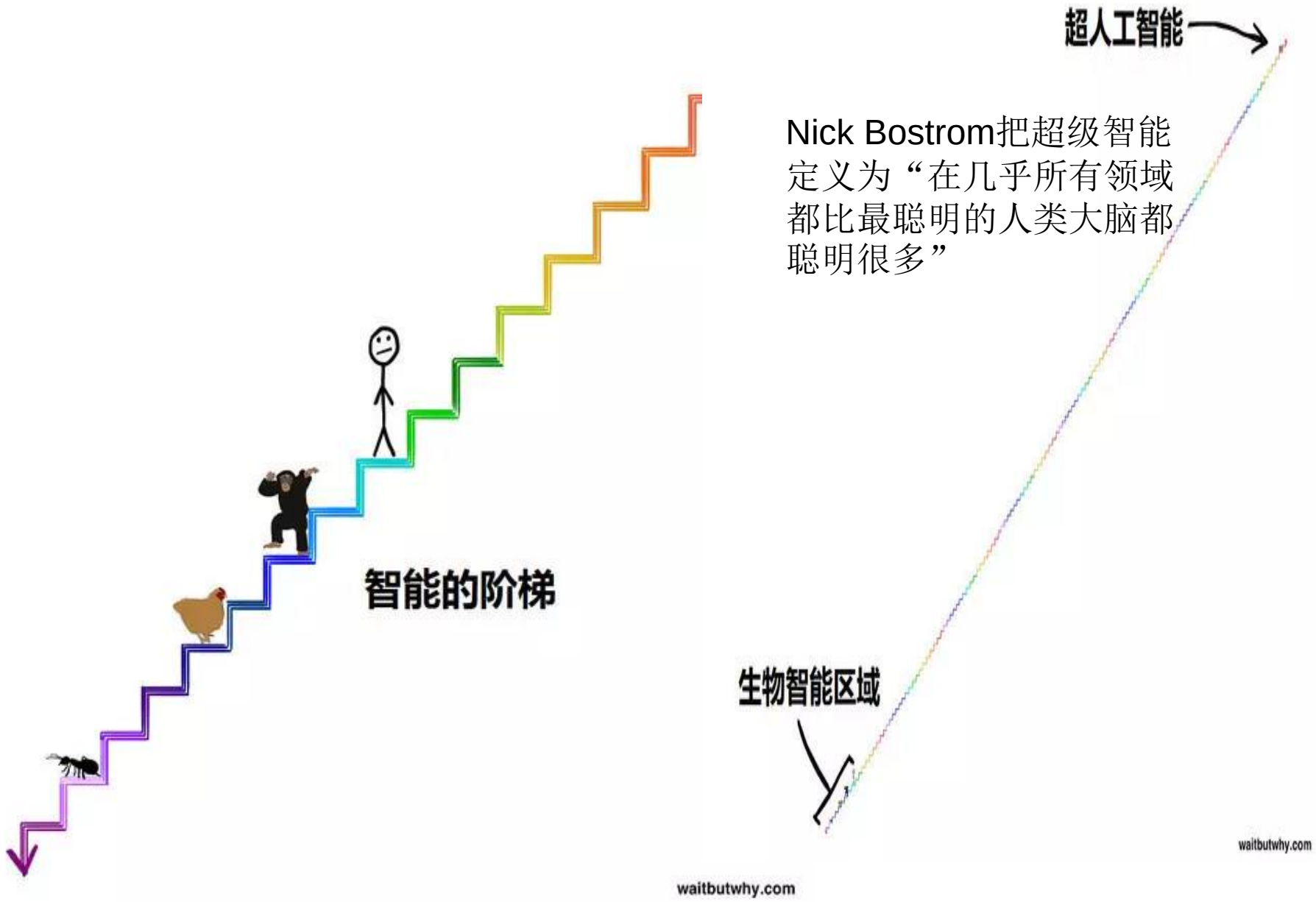
至少发现三种:黑鸢、啸栗鸢、褐隼

Science

If Australian animals don't poison you or eat you, they'll BURN DOWN YOUR HOUSE

Birds have figured out how to light fires to scare their prey into the open

By Richard Chirgwin 8 Jan 2018 at 06:01 118 SHARE ▼



Nick Bostrom把超级智能定义为“在几乎所有领域都比最聪明的人类大脑都聪明很多”

Back to the Future by Raj Reddy@2019WAIC

In the Future …

- AI will Enable KaaS
  - Human Machine Augmented Intelligence
- AI and KaaS Will Become the Backbone of Emerging Industries
  - Technology, Tools, and Techniques of KaaS will be the Main Activity of AI
- Sub-Human Level AI >>> Human Level AI >>> Super Human AI
  - We have a million times more computing power than 1980s!
  - By 2040, We Will Have
    - Million Times More Computing Power
    - Million Times More Memory
    - Million Times More Band Width
  - As McCarthy Said in 1980, We May Need 1.7 Einsteins, 3 Maxwells and 0.7 Manhattan project to get to Super Human AI

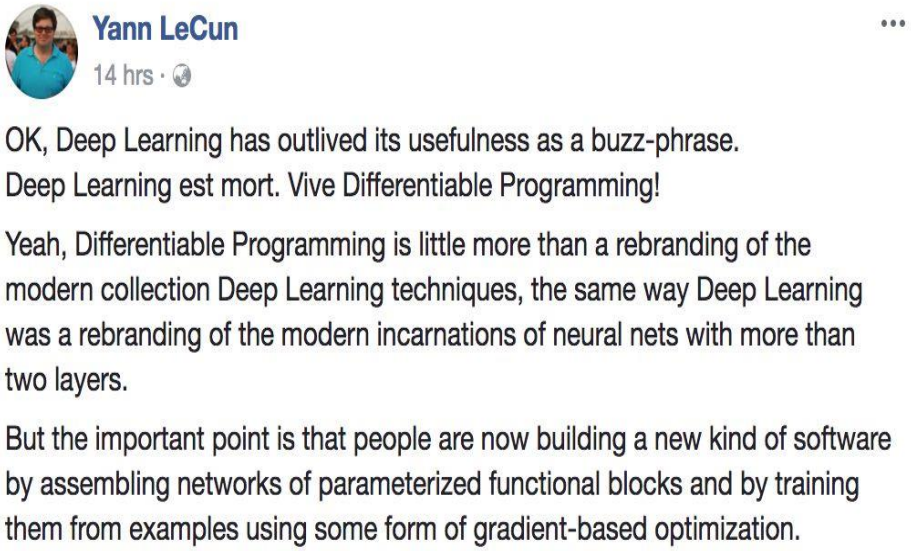
另一个声音：

AI Winter Is Well on Its Way

i）深度学习尘埃落定

- 赞美深度学习作为AI终极算法的推文逐渐减少：

- Andrew Ng 的Twitter信息：
  - 2013年 - 每天0.413推文
  - 2014 年- 每天0.605条推文
  - 2015 -每天0.320条推文
  - 2016 -每天0.802推文
  - 2017 -每天0.668推文
  - 2018 -每天0.263推文（至5月24日）



Yann LeCun

14 hrs ·

OK, Deep Learning has outlived its usefulness as a buzz-phrase.
Deep Learning est mort. Vive Differentiable Programming!

Yeah, Differentiable Programming is little more than a rebranding of the modern collection Deep Learning techniques, the same way Deep Learning was a rebranding of the modern incarnations of neural nets with more than two layers.

But the important point is that people are now building a new kind of software by assembling networks of parameterized functional blocks and by training them from examples using some form of gradient-based optimization.

ii) 自动驾驶事故

Uber自驾车在亚利桑那州（Arizona）发生撞死一名行人的事故, NTSB的初步报告:

According to data obtained from the self-driving system, the system first registered radar and LIDAR observations of the pedestrian about 6 seconds before impact, when the vehicle was traveling at 43 mph. As the vehicle and pedestrian paths converged, the self-driving system software classified the pedestrian as an unknown object, as a vehicle, and then as a bicycle with varying expectations of future travel path. At 1.3 seconds before impact, the self-driving system determined that an emergency braking maneuver was needed to mitigate a collision (see figure 2).[2] According to Uber, emergency braking maneuvers are not enabled while the vehicle is under computer control, to reduce the potential for erratic vehicle behavior. The vehicle operator is relied on to intervene and take action. The system is not designed to alert the operator.

大咖们的观点

“神经网络之父”、“深度学习鼻祖”

对神经网络的贡献：

将BP算法引入多层神经网络训练

提出Boltzmann machine等。

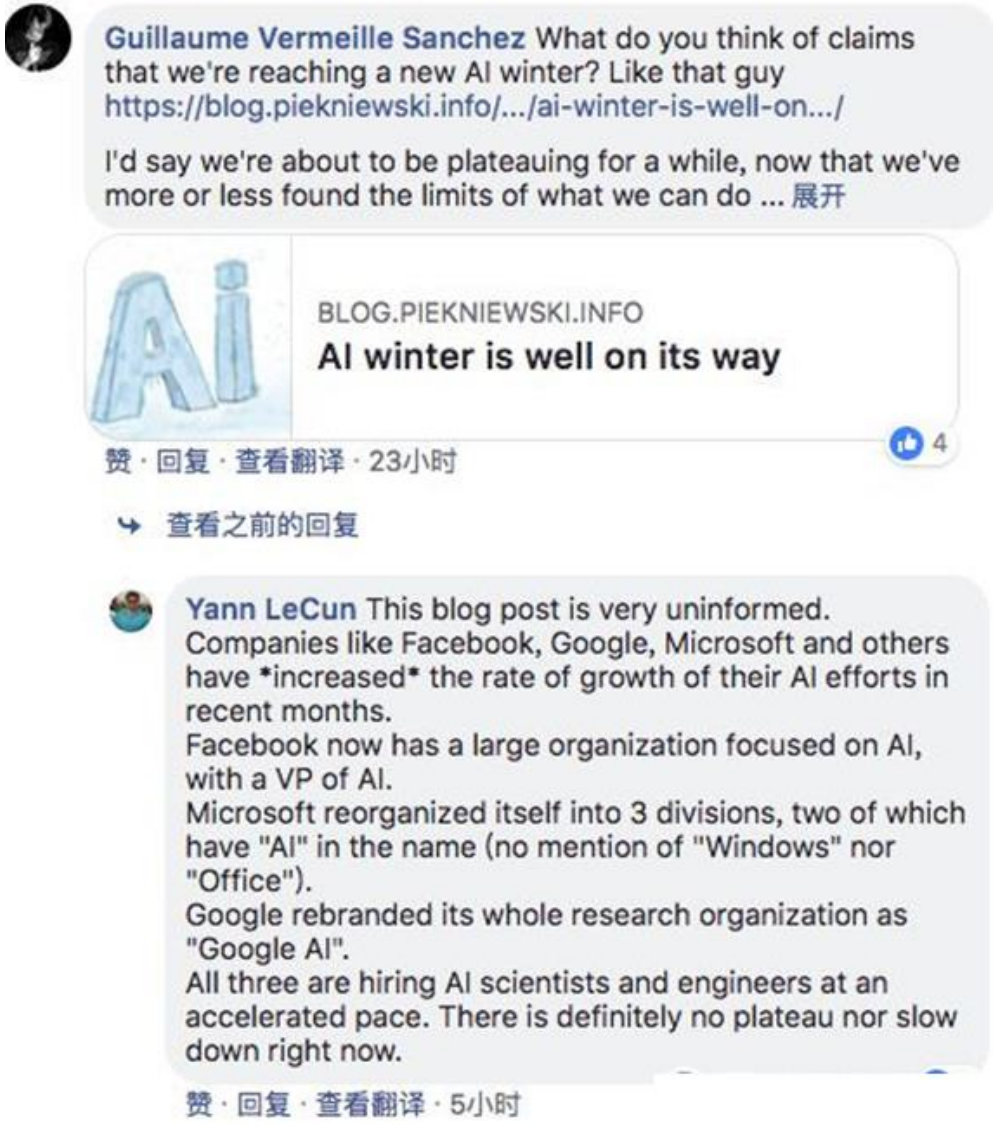
TOM SIMONITE BUSINESS
12.12.18 12:14 PM
(An Interview)

WIRED: Some scholars have warned that the current hype could tip into an “AI winter,” like in the 1980s, when interest and funding dried up because progress didn’t meet expectations.

GH: No, there's not going to be an AI winter, because it drives your cellphone. In the old AI winters, AI wasn't actually part of your everyday life. Now it is.

卷积神经网络之父

博士后时期开始研究卷积神经网络



What are we missing to get to "real" AI? by Y. LeCun@2019 Isscc

- What we can have
  - Safer cars, autonomous cars
  - Better medical image analysis
  - Personalized medicine
  - Adequate language translation
  - Useful but stupid chatbots
  - Information search, retrieval, filtering
  - Numerous applications in energy,finance, anufacturing,environmental protection, commerce,law, artistic creation, games,…..
- What we cannot have (yet)
  - Machines with common sense
  - Intelligent personal assistants
  - "Smart" chatbots
  - Household robots
  - Agile and dexterous robots
  - Artificial General Intelligence (AGI)

关于伦理的思考

ETHICALLY
ALIGNED DESIGN
A Vision for Prioritizing Human Wellbeing with
Artificial Intelligence and Autonomous Systems

免疫艾滋病基因编辑遭强烈谴责

- 2018年11月，南方科技大学贺建奎在第二届国际人类基因组编辑峰会召开前一天宣布，一对名为露露和娜娜的基因编辑婴儿于11月在中国健康诞生。这对双胞胎的一个基因经过修改，使她们出生后即能天然抵抗艾滋病。

用眼睛去观照，用理智去判断

- 理智是人的最高天赋，是人本质上区别于低级动物的特征。
  ——海克尔
- 极少数人有理智，多数人有眼睛。 ——查尔斯·丘吉尔
- 一个勇敢而率真的灵魂，能用自己的眼睛观照，用自己的心去爱，用自己的理智去判断；不做影子，而做人。
  ——罗曼·罗兰
- 人们每违背一次理智，就会受到理智的一次惩罚。
  ——托·霍布斯

课程部分材料来自他人和网络，仅限教学使用，请勿传播！