

About i10



HCI, i10 success Computer Science CHI'19 Glasgow biggest CHI ever, over 3800 attendees



Talk about communicating with AI today But wrong picture of AI = robots So start with clearing up AI But will come back to this conflict later



First message: AI is not magic, far from it

AI = development of computational systems to imitate human behavior.

Intelligent systems: practical implementation of AI for useful stuff



1959 Dartmouth Summer Conference, organizer John McCarthy.

LEFT: Marvin Minsky: top-down (symbolic)

RIGHT: Others: bottom-up (neural networks) - this will give us problems

- Machine learning is learning from data. Example: Training a spam filter (supervised learning). Spam tends to have more misspellings, more complex URLs, and less personal addressing.

- Unsupervised: Given lots of information, system has to find patterns without any feedback. Typical mode of Deep NNs. Can discover patterns (create new knowledge) that the trainer did not know.



To explain rule-based system:

Bruce Willis and Samuel L Jackson in "Die Hard With A Vengeance": 5 gal and 3 gal jugs, measure 4 gal (to defuse a bomb)



- June 2012: Stanford and Google publish unsupervised learning based on deep neural network with **1 billion connections.** This avoided the task of manually labeling data for machine learning.

- Generative Adversarial Networks (2014). thispersondoesnotexist.com

A generative adversarial network (GAN) is a class of machine learning systems invented by Ian Goodfellow and his colleagues in 2014.[1] Two neural networks contest with each other in a game (in the sense of game theory, often but not always in the form of a zero-sum game). Given a training set, this technique learns to generate new data with the same statistics as the training set. For example, a GAN trained on photographs can generate new photographs that look at least superficially authentic to human observers, having many realistic characteristics. Though originally proposed as a form of generative model for unsupervised learning, GANs have also proven useful for semi-supervised learning,[2] fully supervised learning,[3] and reinforcement learning.[4] In a 2016 seminar, Yann LeCun described GANs as "the coolest idea in machine learning in the last twenty years".[5]



- 2015 Machines "see" better than humans. The annual ImageNet challenge (algorithms compete in recognizing and describing images from large library), now at >90%.



- 2018 self-driving cars (suggested by GM at the 1939 World's Fair), 2018 Google spinoff Waymo self driving taxi service launched in Phoenix. Human driver still behind wheel for emergencies.



- 2019 designer Philippe Starck and Kartell unveil the A.I. Chair, using Autodesk generative design software.
 Software learns from each iteration about the designer's intent.
- The Turing test was passed about 5 years ago... with few people noticing, because it does not seem that all encompassing anymore.



XAI example (2014)





XAI is not enough.

What is a useful explanation?



Back to communicating with AI

Key Message 2: We don't know how we even want to communicate with AI.



For the last 40 years, HCI used to consider the computer as a tool. Human initiative, predictable,... Guidelines. Human-Centered, not Human.

But: Doesn't work with autonomous systems.



But people treat computers as social actors anyway, so...?



Treat AI as human?

No. It's superhuman in some respects (patience). Should we thank it? Diminishing your own contribution to a task (unlike tool). Should also be able to reprogram quickly.



Is this OK? Story of little girl & Alexa



Augmenting Human Senses and Cognition



Weird fact. Ask anybody to imagine a future with AI...



- they always imagine evil overlords. Why? Only movies?



Today, Narrow AI already sociopathic.

With what kind of AI do we want to live?

I want at least *pleasant* entities to interact with. Honest, supportive,...

CHI'19 MSR Guidelines



A Call to Arms

References

- Martin Maguire (U Loughborough): History of Al
- Marc Hassenzahl (U Siegen): How to perceive Al
- Albrecht Schmidt (TU Munich): Human Augmentation vs. Al
- Amershi et al. (Microsoft Research): Guidelines for Interacting with AI (CHI'19)

RWTHAACHEN UNVERSITY

23 Name: Topic