

# AI & The Courts

(Briefing for NASEM Workshop on Emerging Areas of Science,  
Engineering & Medicine for the Courts)

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# No mention of AI in the 2011 Reference Manual!

- ..and now it is hard to get through a day without mentions of AI everywhere..
  - Including at courts..
- What changed?
  - Major progress in perceptual intelligence (machines that can hear, see, speak etc.)
- Two broad consequences for the courts
  - Automated decision liability issues
  - Evidence admissibility issues

## Amazon's Alexa may have witnessed alleged Florida murder, authorities say

Adam Reechard Crespo is charged with murder in connection to the July death of his girlfriend, Silvia Galva, in Hallandale Beach.



### AI Hiring Could Mean Robot Discrimination Will Head to Courts

Nov. 12, 2019, 4:01 AM

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PRO CYBER NEWS

## Fraudsters Used AI to Mimic CEO's Voice in Unusual Cybercrime Case

Scams using artificial intelligence are a new challenge for companies



## Wrongfully Accused by an Algorithm

In what may be the first known case of its kind, a faulty facial recognition match led to a Michigan man's arrest for a crime he did not commit.

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## Tesla Lawsuit Over Autopilot-Engaged Pedestrian Death Could Disrupt Automated Driving Progress



Lance Elliot Contributor @

Transportation

Dr. Lance B. Elliot is a world-renowned expert on Artificial Intelligence (AI) and Machine Learning (ML).

## Machine Bias

There's software used across the country to predict future criminals. And it's biased against blacks.

by Julia Angwin, Jeff Larson, Surya Mattu and Lauren Kirchner, ProPublica

May 23, 2016


# What Changed with AI?





- Significant progress into systems with perceptual intelligence capabilities
  - Improved ability to
    - See, hear, read
    - Show, say, write
- Enablement and Deployment of such systems with the ubiquitous Web/Internet/Cellphone technologies

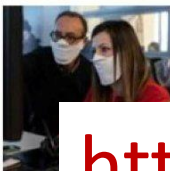
subbarao kambhampati

5 RESULTS SORT BY: NEWEST OLDEST RELEVANCE


 **What just happened? The rise of interest in artificial intelligence**  
TECHNOLOGY — 08/11/2019 145

 **Perception won't be reality, once AI can manipulate what we see**  
CYBERSECURITY — 11/17/2019 58

 **AI computing will enter the 'land of humans' in the 2020s: The promise and the peril**  
TECHNOLOGY — 01/05/2020 41

 **Enlisting AI in our war on coronavirus: Potential and pitfalls**

<https://bit.ly/39SkWnS>

 **Why are Artificial Intelligence systems biased?**  
CYBERSECURITY — 07/12/2020 151

# Some Impressive feats (in perceptual intelligence)...

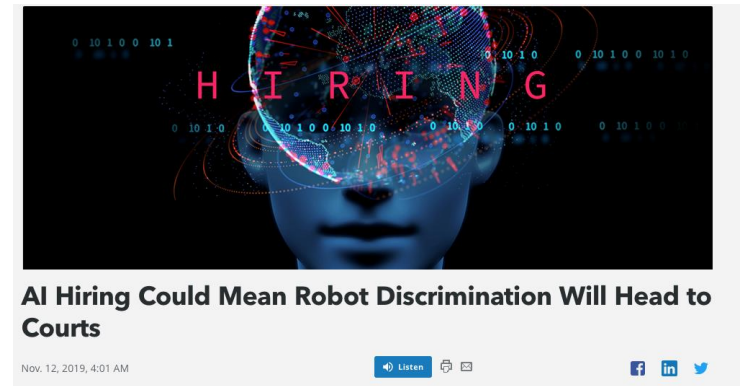
- Better than human accuracy on image recognition
  - Translated to Radiology, Conservation etc.
- Ability to clone voice; generate images..
  - Captioning images; generating synthetic reality..
- Improved language abilities
  - BERT; GPT-2; GPT-3...
- **Caveat: Very brittle still..**
- A big driver has been “learning from massive data corpora”

The collage illustrates various AI feats. On the left, a grid shows 'Novel Objects (COCO)' and 'Rare Words' with corresponding images and captions, such as 'Tennis player preparing to hit the ball with a racket' and 'A man in a red and white shirt and a red and white octopus'. To the right, a browser window displays a close-up of a woman's face. Below these, a screenshot of a Guardian article titled 'A robot wrote this entire article. Are you scared yet, human?' is shown, featuring a 'Support The Guardian' banner and social media engagement metrics.



# Liability Issues for Automated Decisions

- Many decisions by companies—from loan approvals to job interviews—are increasingly made by automated systems
- When these decisions are erroneous and cause injury, courts will have to wrestle with who is to be held liable
  - Human-in-the-loop, human-on-the-loop, human-out-of-the-loop
- A tricky issue in the case of modern machine-learned decision-making systems is that *they are not programs written by a human, but are often learned from data*
  - Raises issues of the diligence with the training data set has been curated.



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# Written vs. Learned Programs (Software)

## Traditional Programs

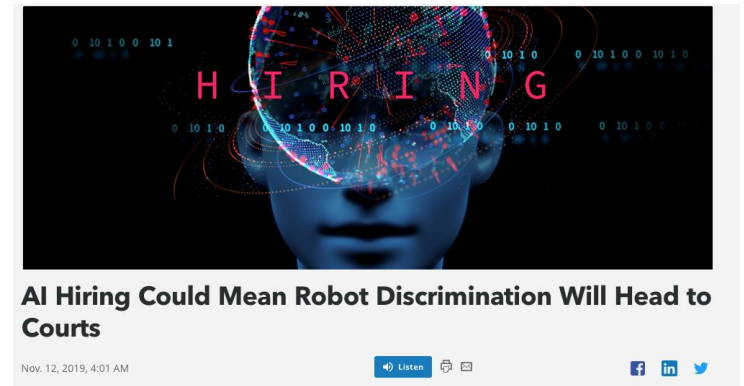
- Human programmers write the computer code
- The computer code executes and makes a decision
- Erroneous decisions can be traced directly back to the human programmer(s)

## Learned Programs (AI)

- Human programmers writes general code schema to learn from data
- This general code is then trained on massive data corpora resulting in a “learned” program
- The learned program then executes and makes a decision
- Erroneous decisions are a complex combination of the general code schema and the training data
  - Quite often, the errors come from the training data
    - (E.g. An influential study showed that commercial gender recognition systems had high error rates for non-white-male subjects—mostly because they were trained on easily available data that happened to be unbalanced)

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  - Raises issues of the diligence with the training data set has been curated.
- Statutes like EU's GDPR try to help partially by requiring explanations
  - ..but this also brings the issue of the accuracy of the explanation



## *Wrongfully Accused by an Algorithm*

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# Liability Issues for Automated Decisions (2)

- A related issue is “biased decisions”
  - ..and biased decision support (e.g. in the case of the COMPAS recidivism prediction system that had been used in Florida courts)
- Again, the issue is complicated by the way bias often gets introduced, inadvertently, through training data
  - Can companies be made liable for poor Dataset curation diligence?



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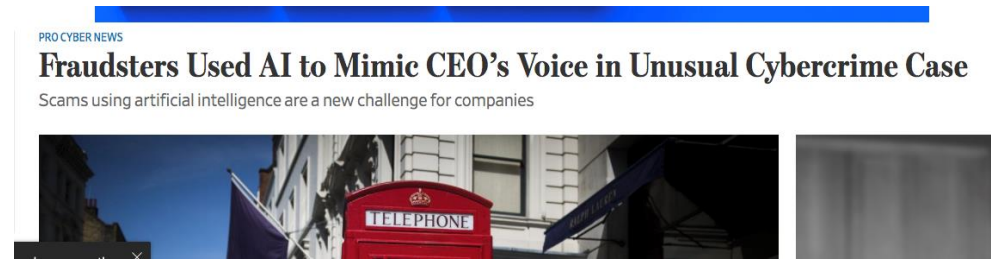
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# Evidence/Witness Admissibility Issues

- The advent of Deep Fakes—specifically the ability of AI technologies to make very convincing forgeries of image/video/voice
- This could have significant ramifications to evidence admissibility and eye witness testimony
  - As of now, there are some technological solutions to tell apart synthetic media from real ones
  - However, this is a moving target, and it will be increasingly harder to tell them apart..
    - Society might move to cryptographic authentication techniques eventually, but there will be significant legal challenges in the interim..



Commentary

## Looking Out for Manipulated 'Deepfake' Evidence in Family Law Cases

With digital evidence critical in so many family law proceedings, and with deepfake technology becoming easier for anyone to access, it's a given that this form of advanced digital trickery is something family law attorneys must be prepared to confront.

By **Bari Weinberger** | February 22, 2021 at 10:00 AM

# Evidence/Witness Admissibility Issues (2)

- Given the digital footprints we all leave everywhere, and the availability of AI technologies to analyze those footprints, there are also going to be significant **privacy issues** that could affect evidence admissibility
  - For example, there will be ways of stitching together such footprints—some captured with consent, and others without consent—to make a case against a defendant

## **Amazon's Alexa may have witnessed alleged Florida murder, authorities say**

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# AI & The Courts: Summary

- Since the 2011 Reference Manual, there have been significant advances in AI—especially in perceptual intelligence tasks
- The widespread deployment of these technologies brings up thorny issues to the courts, including:
  - Automated decision liability issues
    - Complicated by training data set biases
  - Evidence admissibility issues
    - Complicated by privacy issues

Imagine there is no [#AI](#)

It isn't hard to do

No [#Trolleys](#) to kill or die for

And no [#DeepFakes](#) too

Imagine all the GPUs refreshing CRTs in peace..

Imagine there's no [#DataSetBias](#)

I wonder if you can

No need for explanations or [#GDPR](#)

A decision-space of man 😊



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