



Increasing Social Responsibility – What Should ~~CS~~ Departments Engineering Schools Do?

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**IRRATIONAL
EXUBERANCE**



Irrational Exuberance

- Artificial Intelligence
- Self-driving cars
- Robotics
- Biotechnology
- Urban transit (150 mph, \$1)
- ...



(New Yorker, 2014)

Artificial Intelligence (Statistical machine learning)

high impact

- Computer vision
 - Object detection, recognition, classification
- Speech recognition
 - Speech to text translation, text to speech translation
- Manufacturing
 - Data analytics, supply chain
- Robotics
 - Autonomy in driving, drones
 - Industrial robots



low impact

Self-Driving Cars

First self-driving car (Ernst Dickmanns, 1987)

“First fully autonomous Tesla by 2018” (Musk, 2015)

“Next generation Audi A8 capable of fully autonomous driving in 2017” (Moser, Audi, 2014)

“first self driving cars on the market by 2019”
(Volkswagen, 2016)

“large number of self-driving cars on the road by 2019”
(Ng, Baidu, 2016)

“avoid referring to self-driving vehicles as ‘automated’ vehicles; capability of such cars can be analyzed [only] through simulation and testing but not by examining its source code” (www.driverless-future.com/)



Level 5 Autonomy in Self Driving Cars



Uber-Waymo Trial

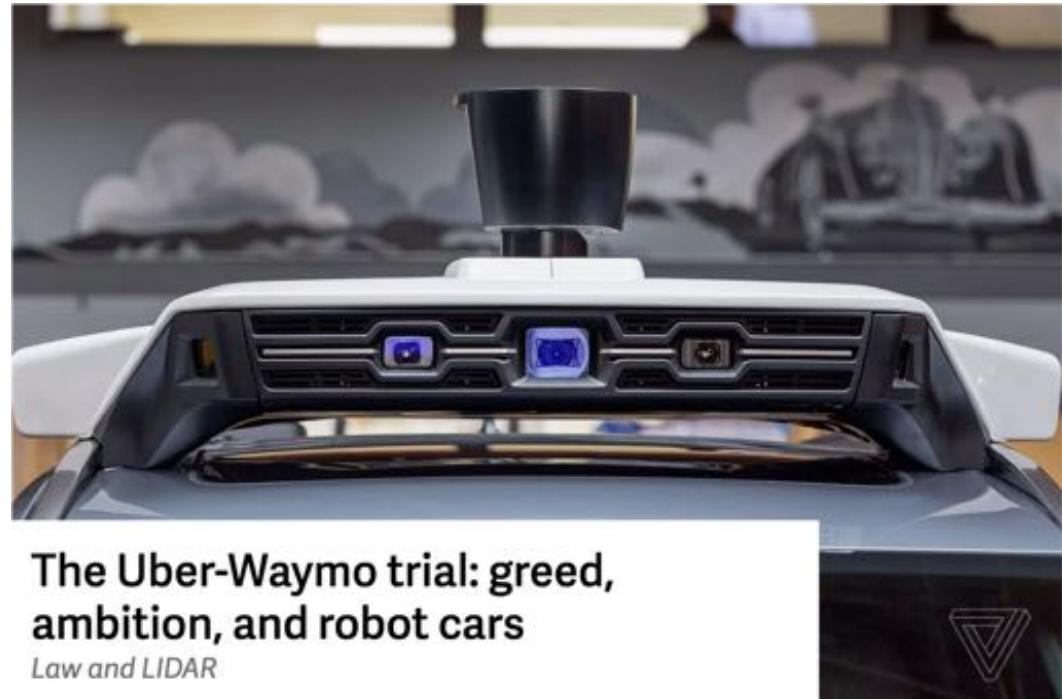
“We don’t need redundant brakes & steering, or a fancy new car, we need better software. To get to that better software faster we should deploy the first 1000 cars asap. I don’t understand why we are not doing that.” (Jan 2016)

“I’m pissed we didn’t have the first death.” (July 2016)

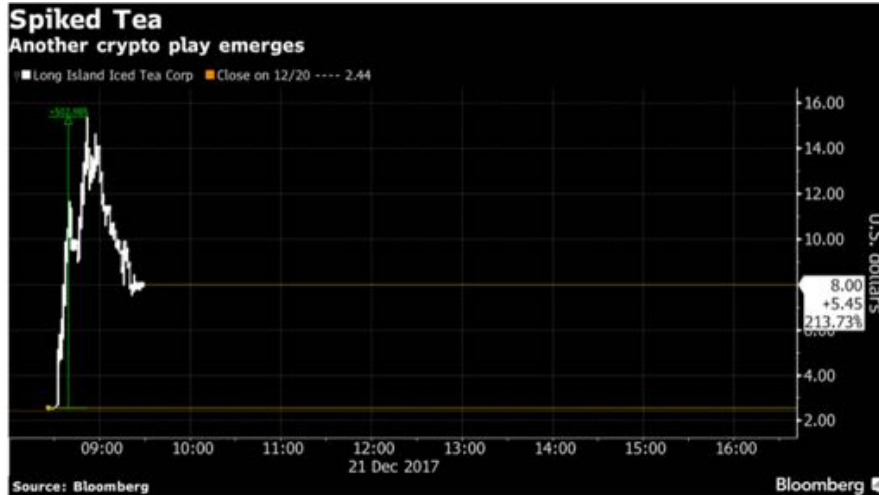
“We need to think through the strategy, to take all the shortcuts we can find,” (2017)

“I just see this as a race and we need to win, second place is first loser” (2017)

“get in on the ground floor of a company that strives to become one of the pre-eminent autonomous vehicle solutions providers, and can expect to share in the financial benefits of Kache.AI as we grow” (July, 2018)



Blockchain



Long Island Iced Tea Corp. shares rose as much as 289 percent after the unprofitable Hicksville, New York-based company rebranded itself Long Blockchain Corp. (Bloomberg)

THE VERGE TECH SCIENCE CULTURE CARS REVIEWS MORE

BUSINESS US & WORLD TECH

HTC's blockchain-powered Exodus smartphone is a risky bet that needs to pay off

Expected by the end of the year

Bitcoin will replace payment systems like VISA!



VISA: 111.2 billion transactions/year
Bitcoin: 1 MW 1 hr/transaction

Intellectual Dishonesty

“a failure to apply standards of rational evaluation that one is aware of, usually in a self-serving fashion”

Extrapolation

Super Human Performance in Games to Artificial General Intelligence

- 1952- Tic-tac-toe (5478 states)
- 1994- Checkers
- 1997- Chess (10^{46} states)
- 2011- Jeopardy
- 2016 - Go (10^{170} states)

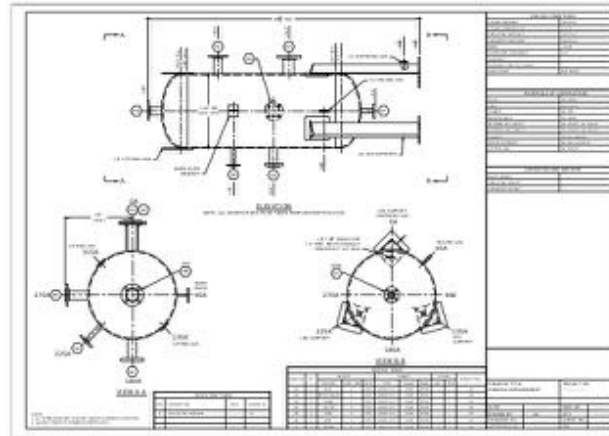
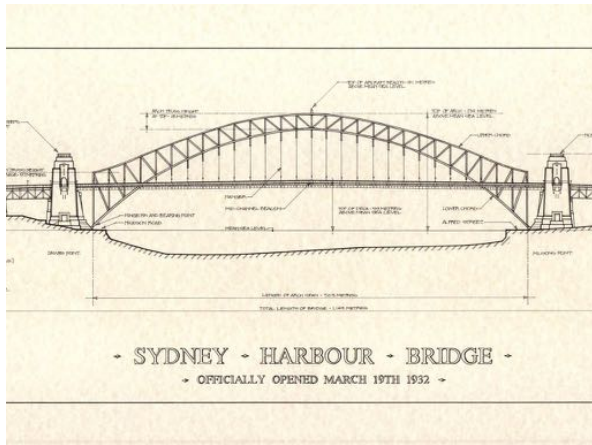
Linear Progress in Computer Chess



Safety

- Verification
- Trust
- Security

Accountability and Ethics



Recognize when computer systems are becoming integrated into the infrastructure of society, and adopt an appropriate standard of care for those systems and their users

2018 ACM Code of Ethics and Professional Conduct

FATE: Fairness, Accountability, Transparency, and Ethics in AI

Summary

As professionals

- Call out intellectual dishonesty

As teachers, we have to teach

- Limitations of technology
- Dangers of extrapolation
- Accountability and ethics

As administrators

- Address “FATE of technology” across the university