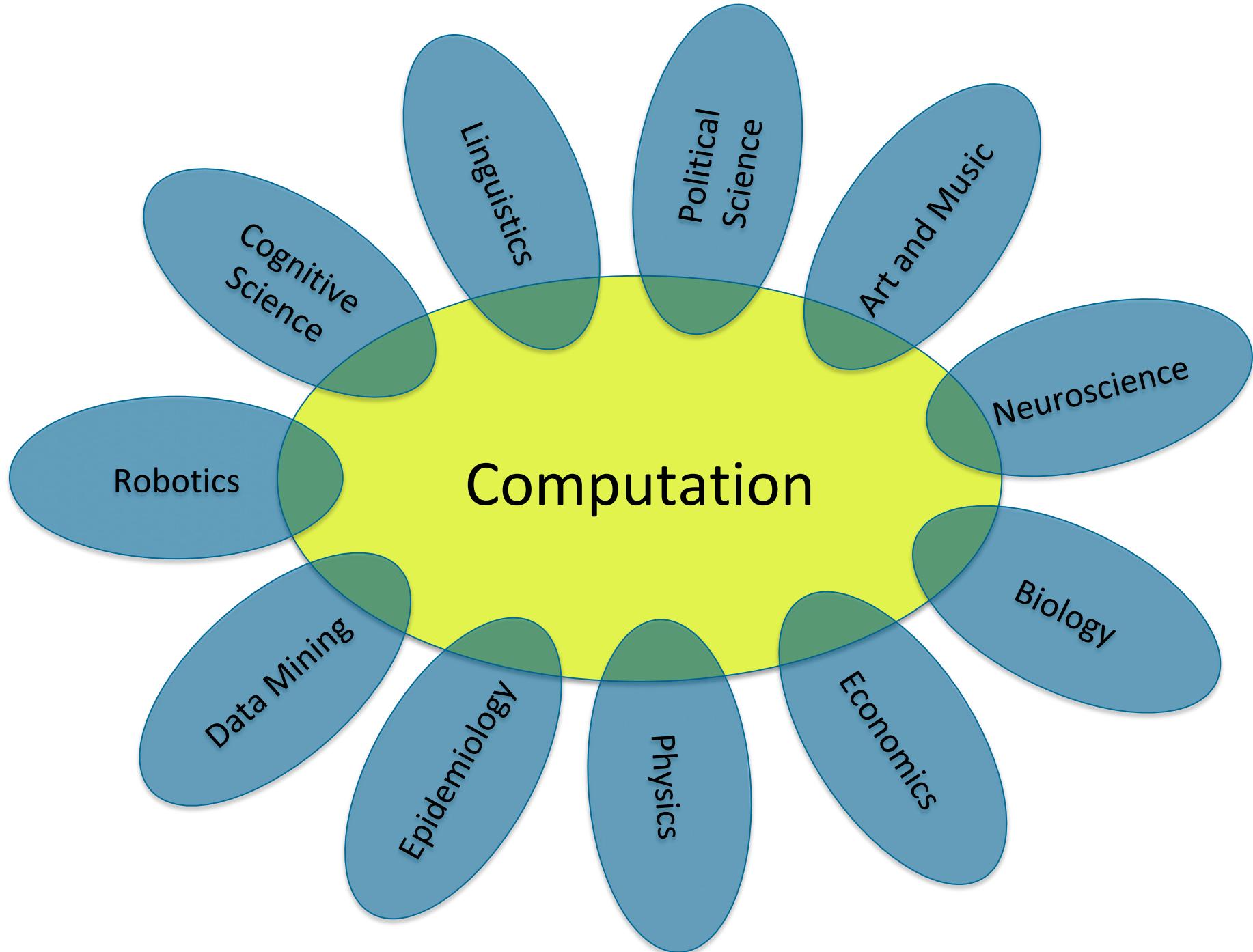


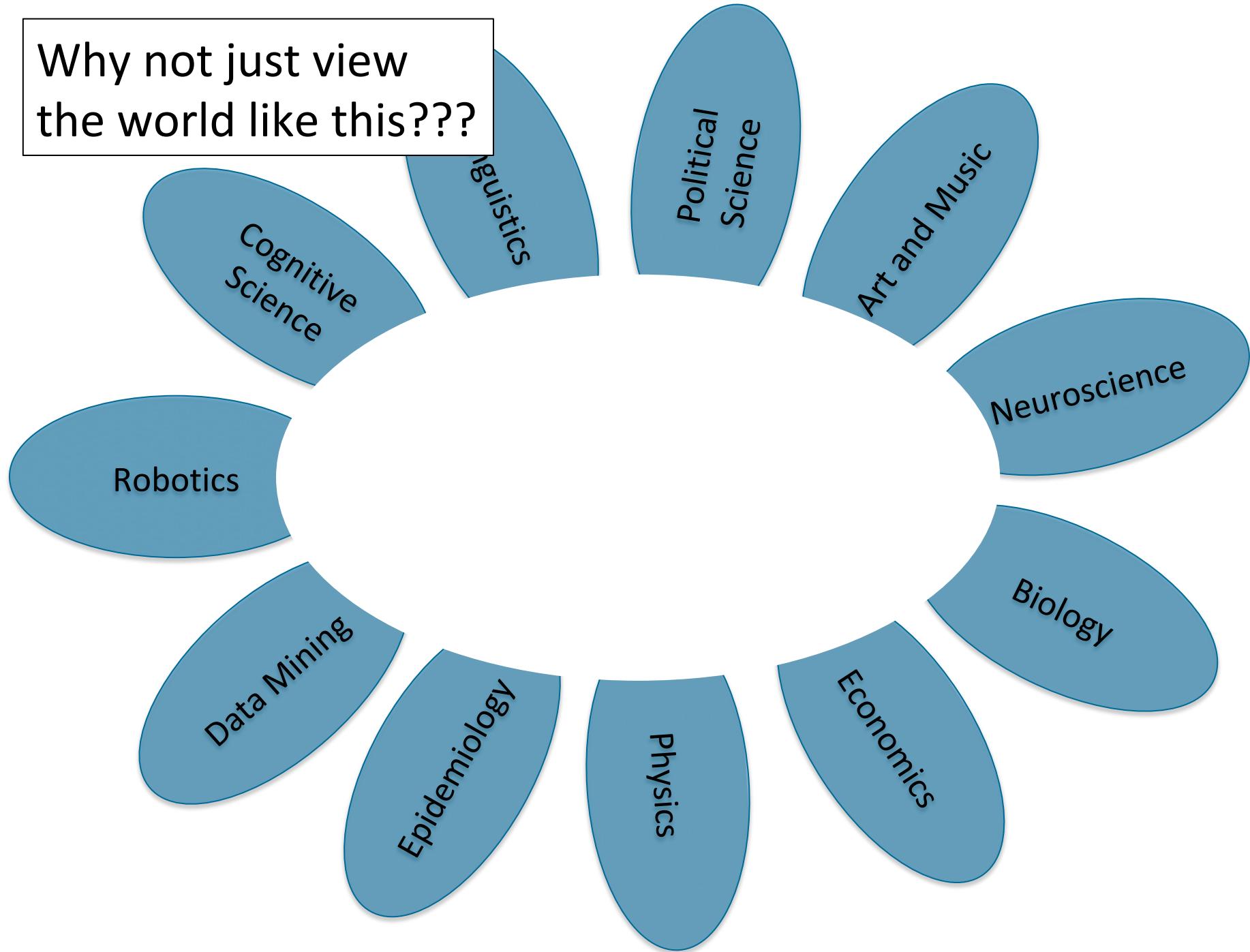
Computing as an Interdisciplinary Toolkit

Day 1

Computation



Why not just view
the world like this???



What Makes Computing Such a Potent Skill? Or, **How this Class Will Give You Superpowers**¹.

If you know how to use professional software engineering tools and processes, you can:

- Combine multiple existing software packages to do something awesome
- Build your own tool from scratch to solve problems (or help some people) that are important to you

¹The SoftDes faculty assume no liability if this class does not actually give you superpowers

What Makes Computing Such a Potent Skill? Or, **How this Class Will Give You Superpowers**¹.

If you know how to frame a problem computationally, you can:

- Develop creative solutions to hard problems
- See connections between your problem and other problems that initially seemed unrelated

¹The SoftDes faculty assume no liability if this class does not actually give you superpowers

What Makes Computing Such a Potent Skill? Or, **How this Class Will Give You Superpowers**¹.

If you know how to effectively communicate and understand computational ideas, you can:

- Maximize the impact of code you write
- Work effectively (speak the same language) as software developers that you might collaborate with or hire

¹The SoftDes faculty assume no liability if this class does not actually give you superpowers

Anecdotes from Recent Faculty Search

- Computation in Astronomy
- Computation in Healthcare
- Computation in Social Justice
- ...

Computer Graphics



Political Science

We're forecasting the election with three models
• Polls-plus forecast: What polls, the economy and historical data tell us about Nov. 8
• Polls-only forecast: What polls alone tell us about Nov. 8
• Nowcast: Who would win the election if it were held today

National overview

Updates • National polls •

States to watch

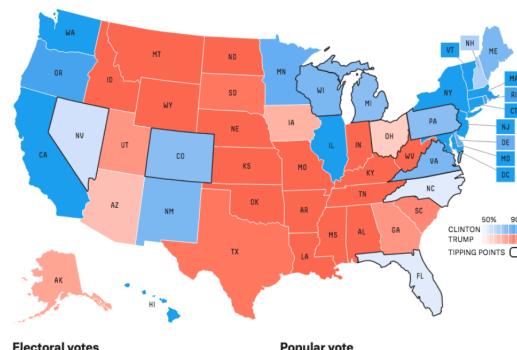
Arizona • Colorado • Florida • Georgia • Iowa • Maine • Michigan • Minnesota • Nevada • New Hampshire • New Mexico • North Carolina • Ohio • Pennsylvania • Utah • Virginia • Wisconsin

Who will win the presidency?

Chance of winning

Hillary Clinton **69.2%**

Donald Trump **30.7%**



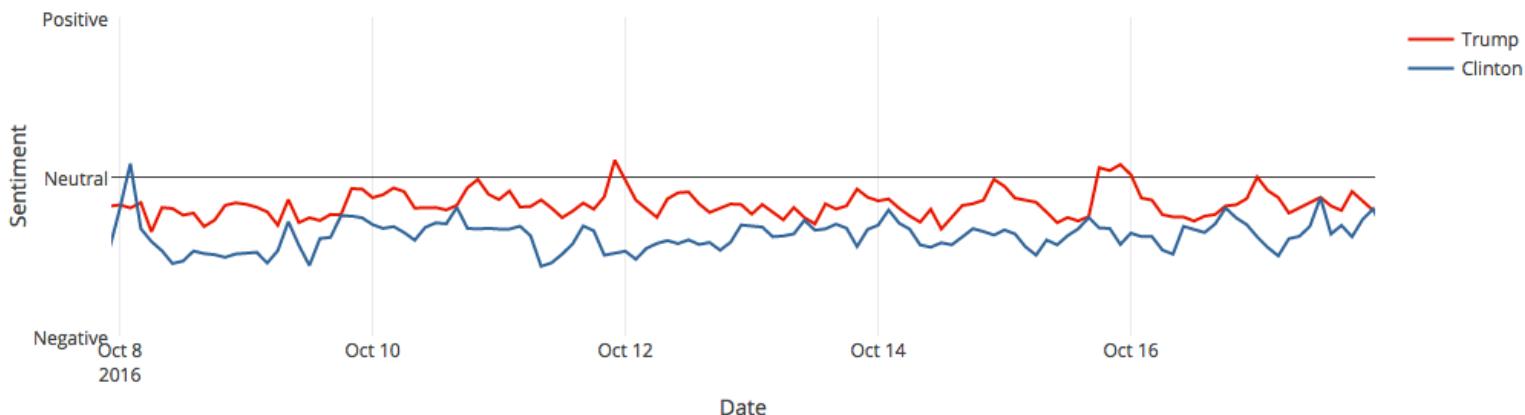
How Popular Is Donald Trump?

UPDATED 6 HOURS AGO

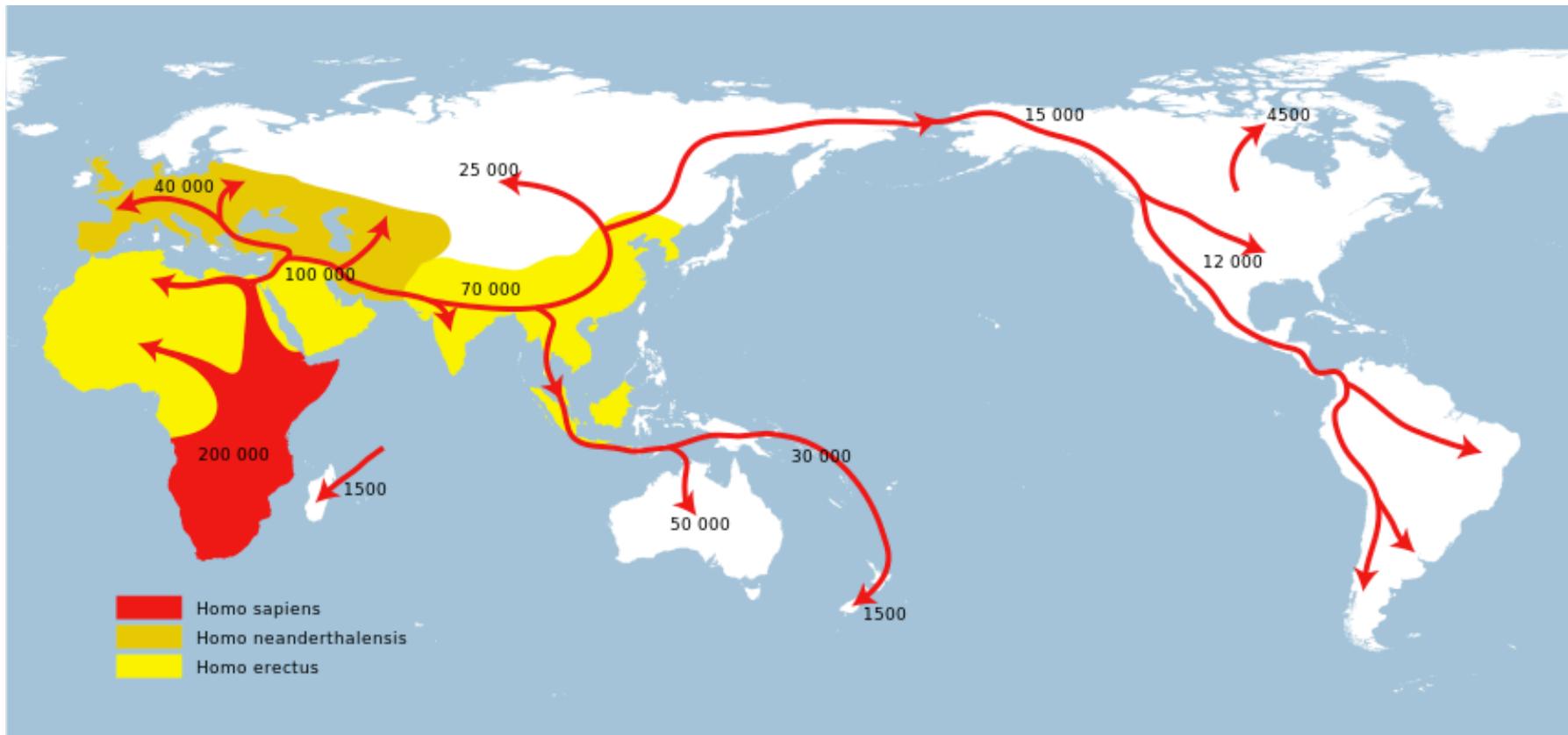
56.1 %
Disapprove

38.7 %
Approve

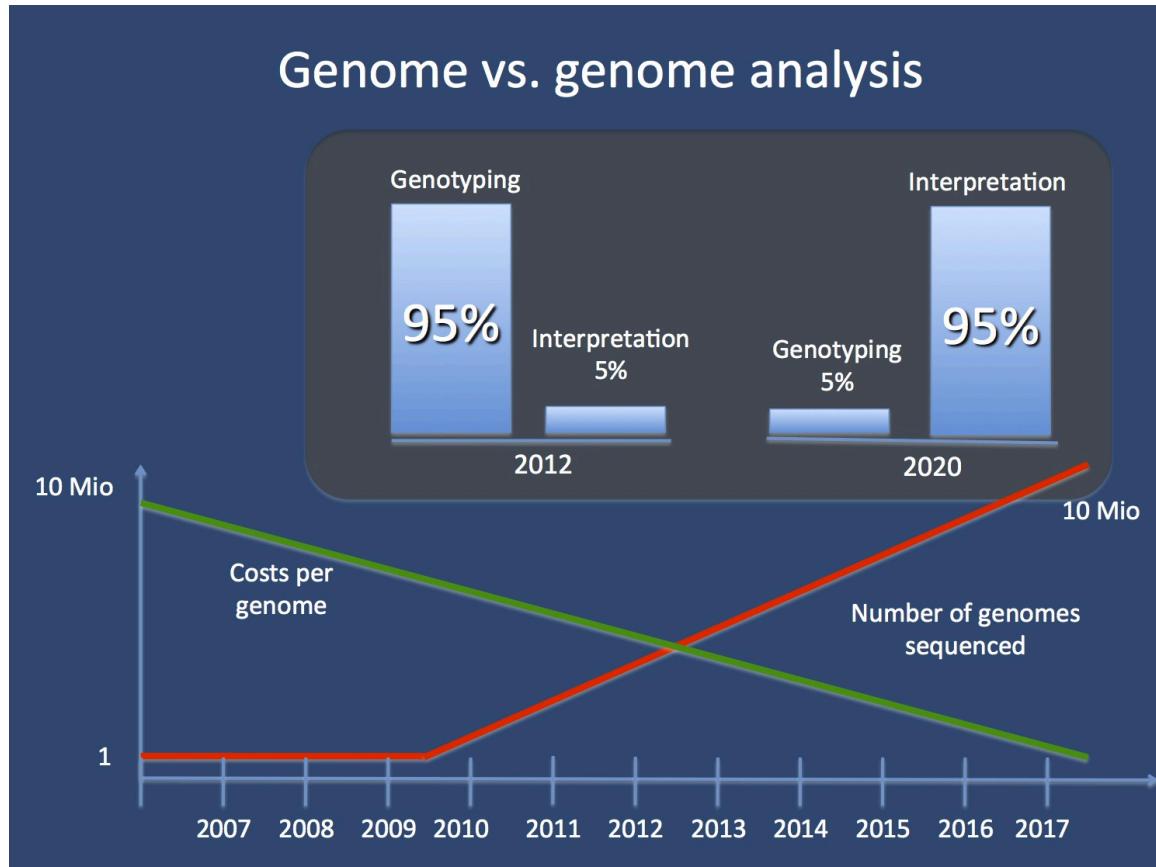
Candidate sentiment over time



Computational Biology: Origin of Modern Humans



Bioinformatics

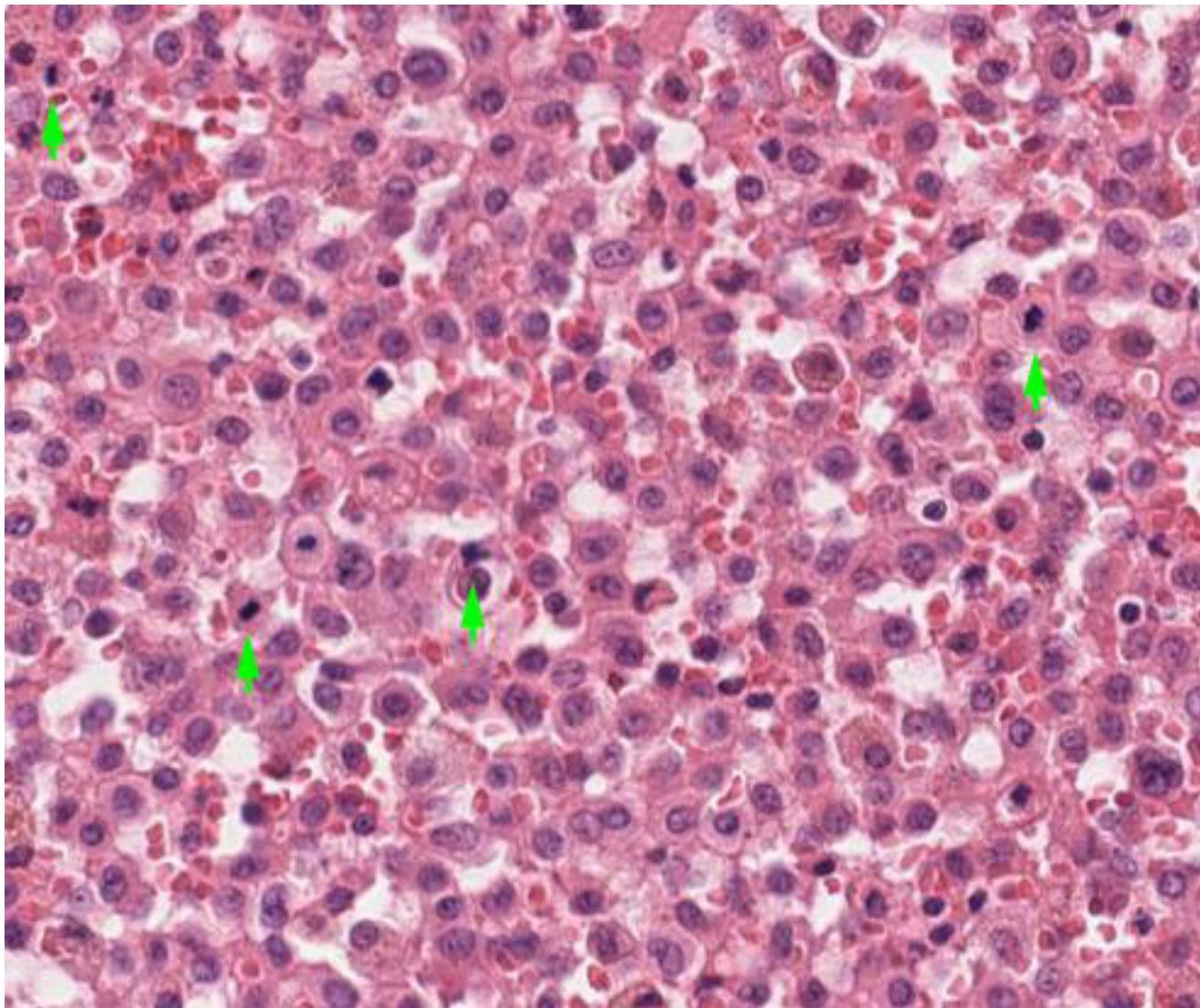


Has the potential to lead to better screening and understanding of complex syndromes and diseases.

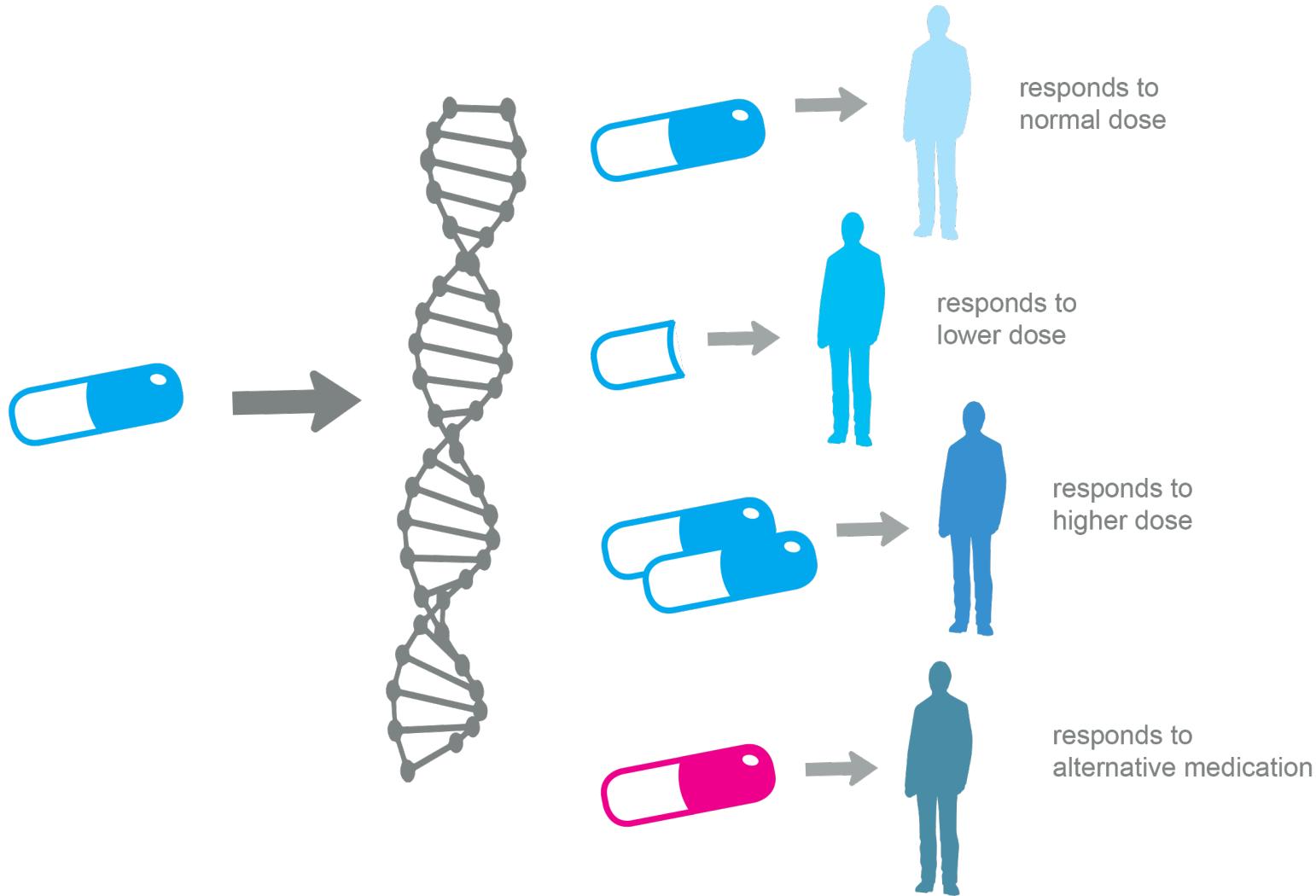
Medical Imaging

- Automated lesion detection
- Computer aided diagnosis of CAT scans of the lung
- Etc.
- <http://ieeexplore.ieee.org/document/7463094/#full-text-section>

Medical Imaging: Histology



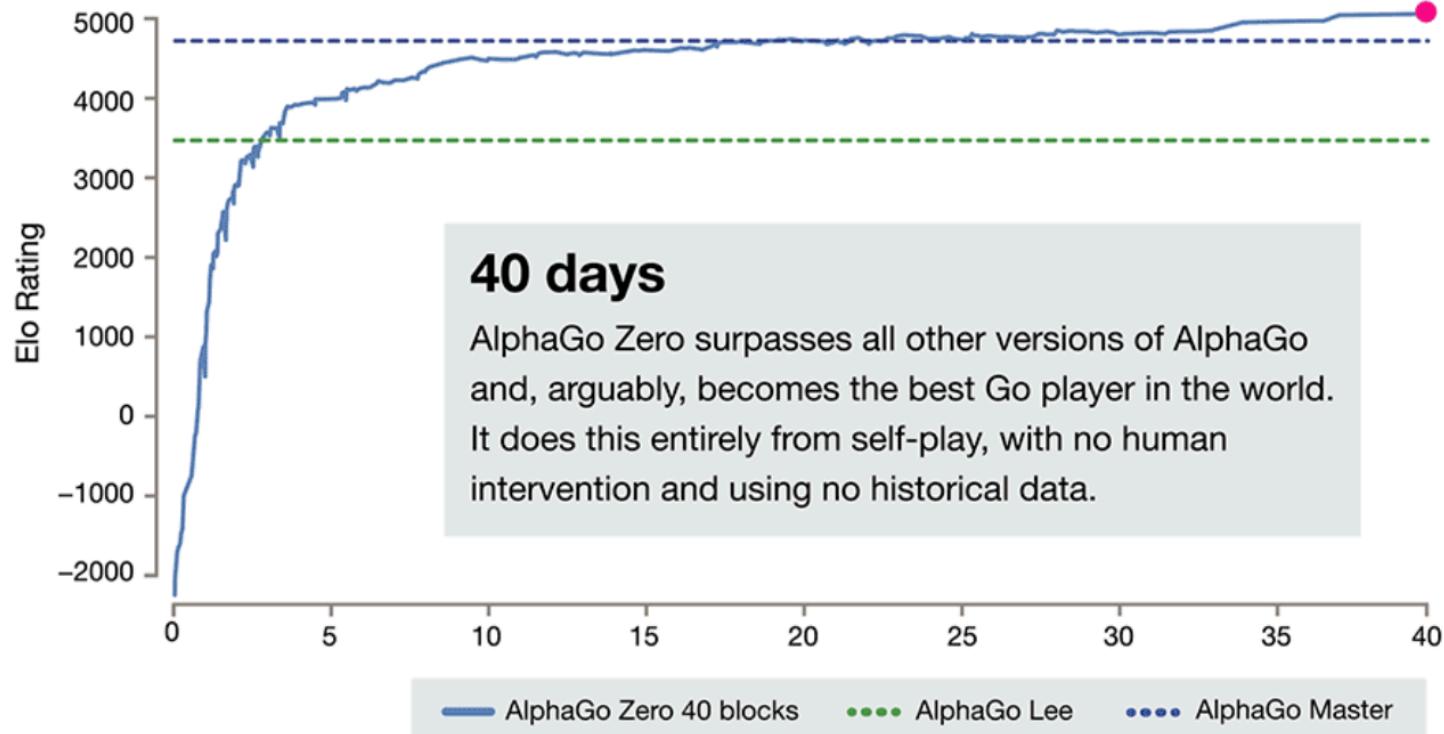
Personalized Medicine



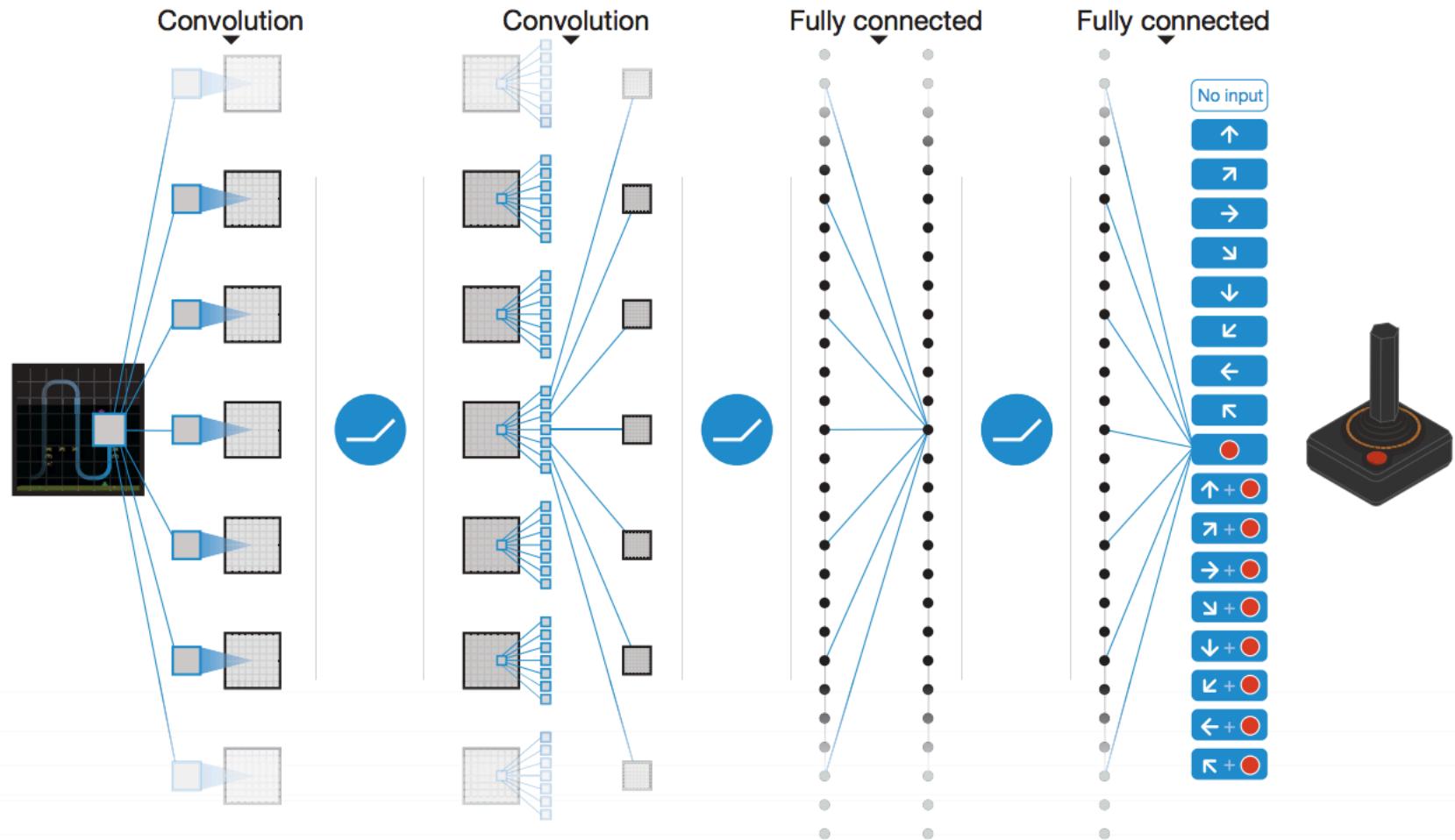
AI / Machine Learning



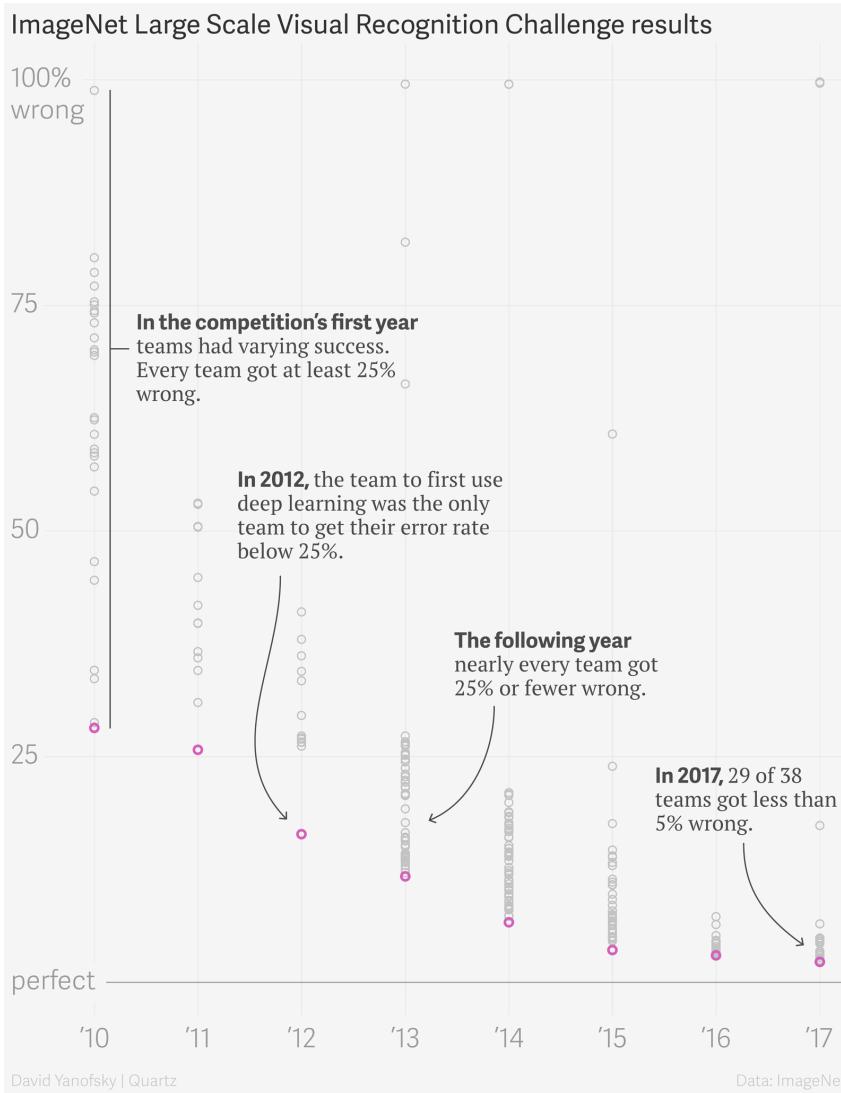
AI / Machine Learning



AI / Machine Learning



AI / Machine Learning



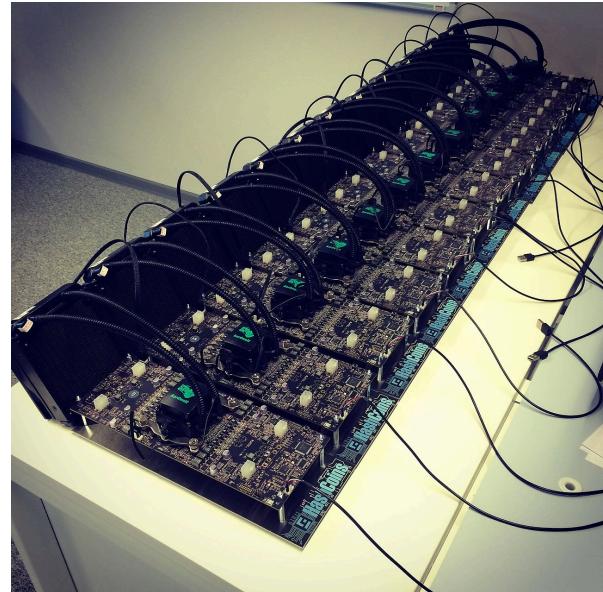
Wearable Sensing



Robotics: DARPA Robotics Challenge



Crypto Currencies



BitCoin mining hardware



Bitcoin



Ethereum



Ripple



Litecoin



Dash



Monero



Dogecoin

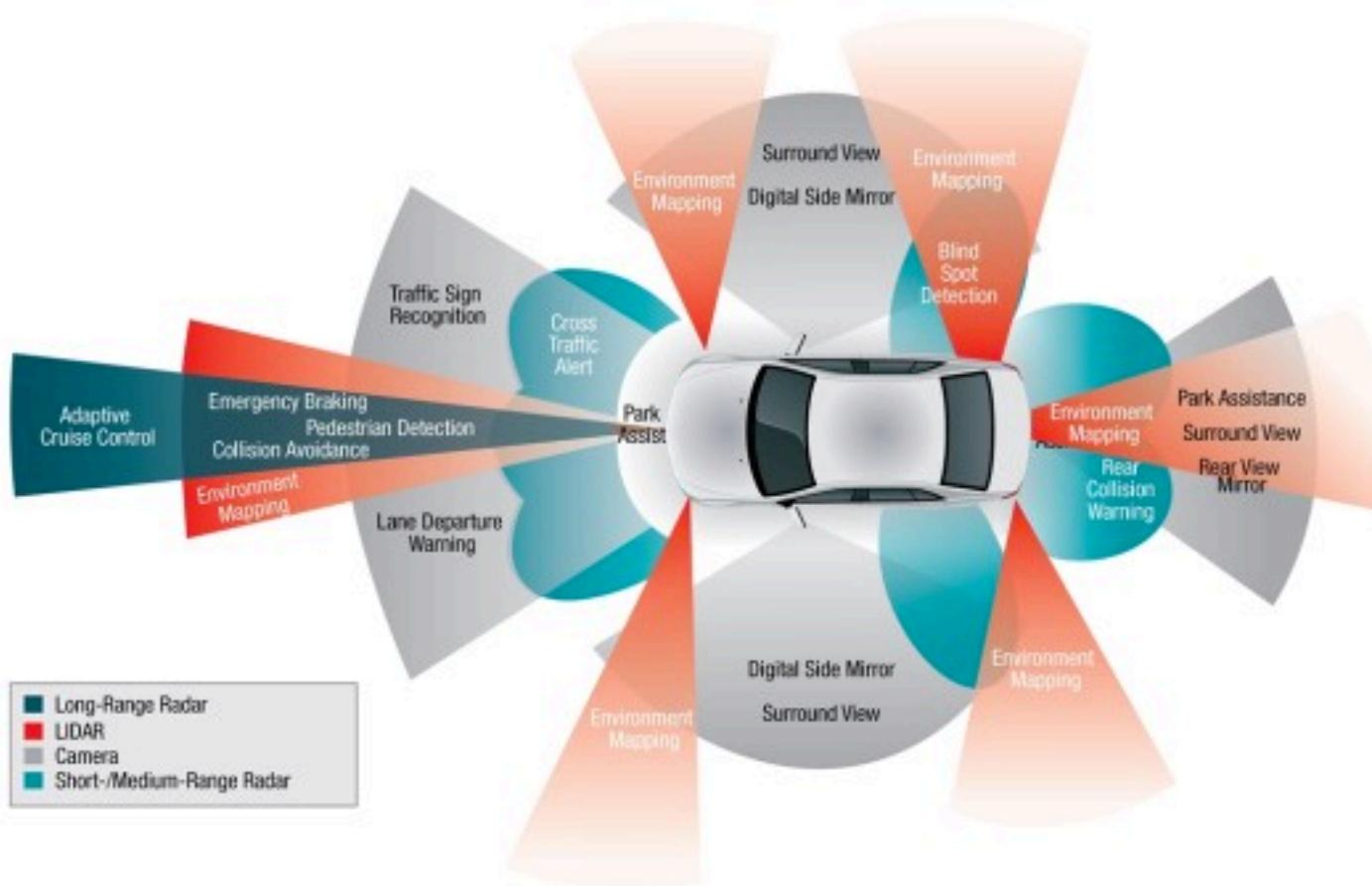


NEM



Namecoin

Robotics: Self-driving Cars



ART and Music



Protabytes
By Ira Greenberg

For Your Processing

<http://fyprocessing.tumblr.com/>

ART and Music

“The Triumph of the Cyborg Composer”

<http://www.psmag.com/mustread/triumph-of-the-cyborg-composer-8507/>

Excerpts from Light and Darkness
By Emily Howell