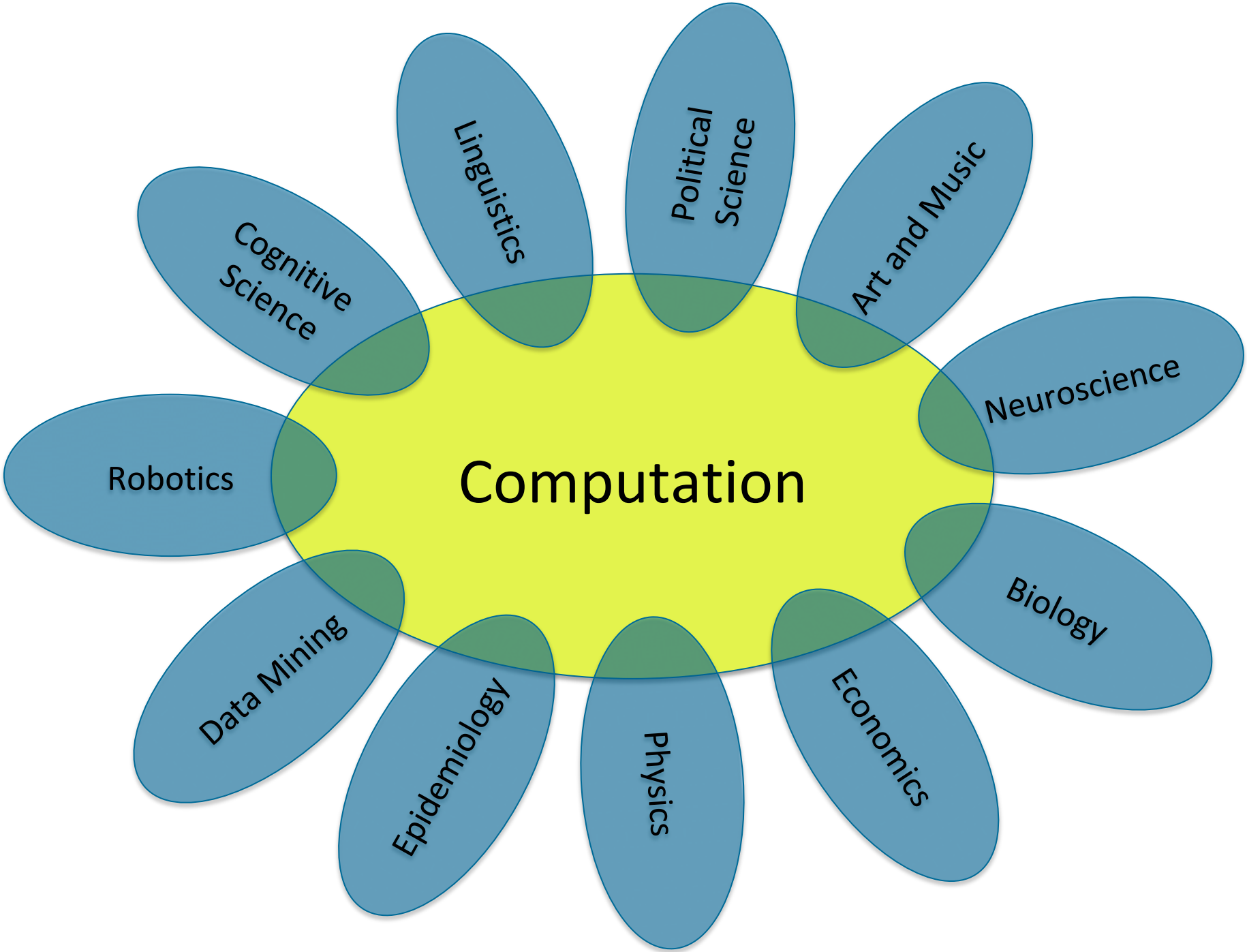
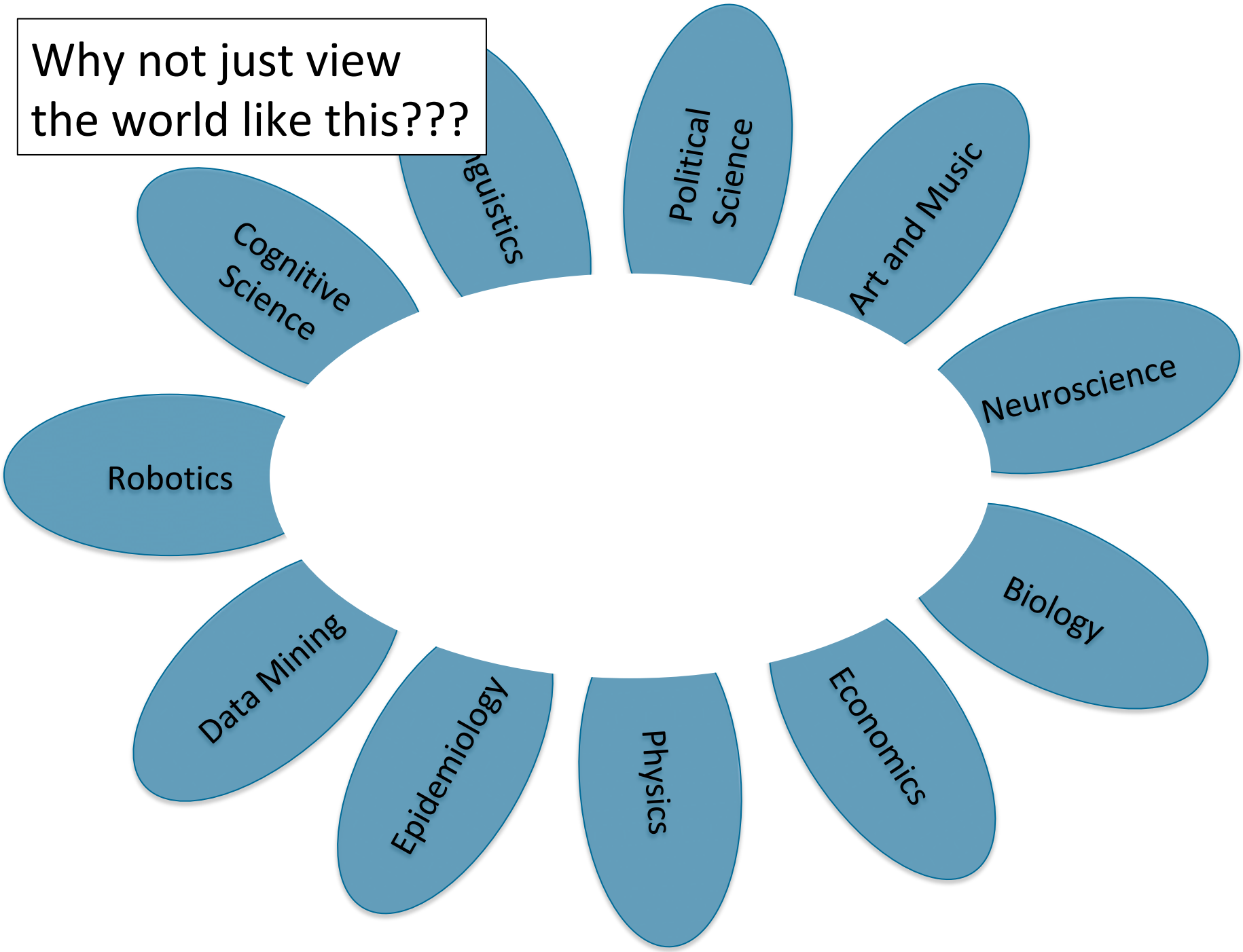
Computing as an Interdisciplinary Toolkit

Day 1


Computation
Linguistics
Political Science
Art and Music
Neuroscience
Biology
Economics
Physics
Epidemiology
Data Mining
Robotics
Cognitive Science

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

[1] **The 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

[1] **The 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

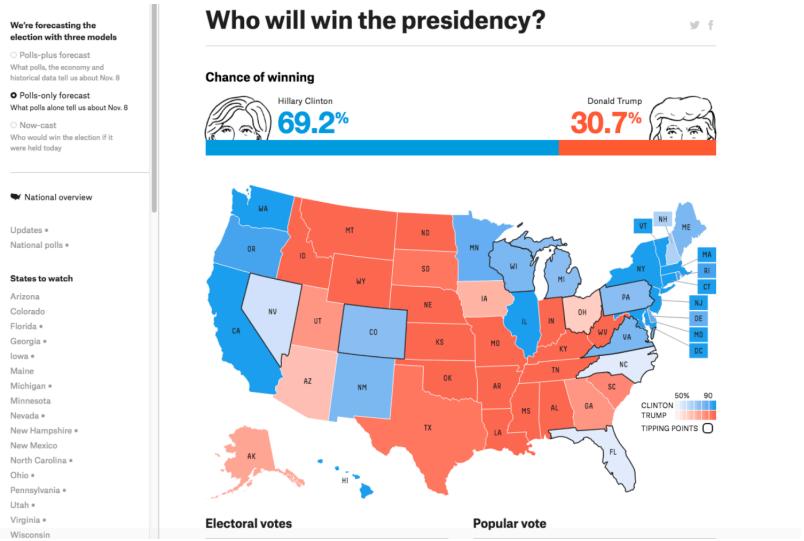
[1] **The SoftDes faculty assume no liability if this class does not actually give you superpowers**

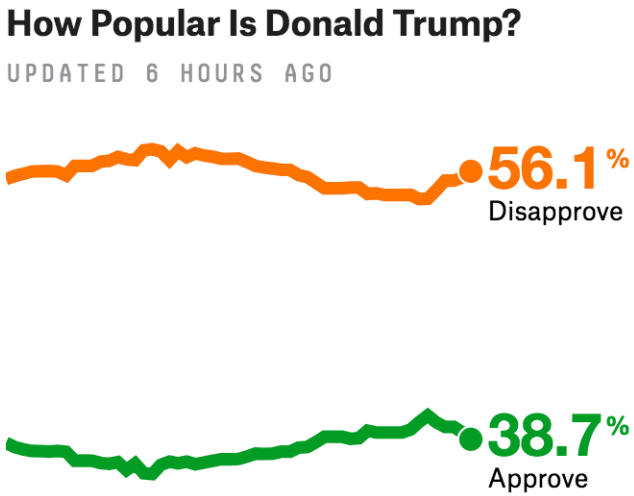
Anecdotes from Recent Faculty Search

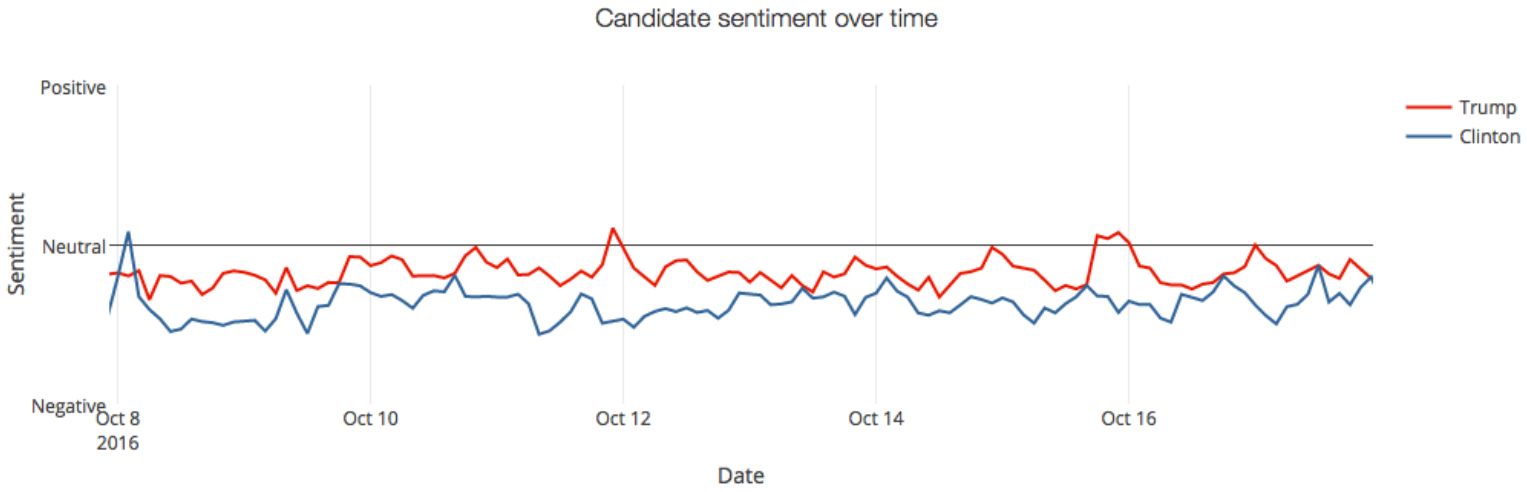
- Computation in Astronomy
- Computation in Healthcare
- Computation in Social Justice
- …

Computer Graphics

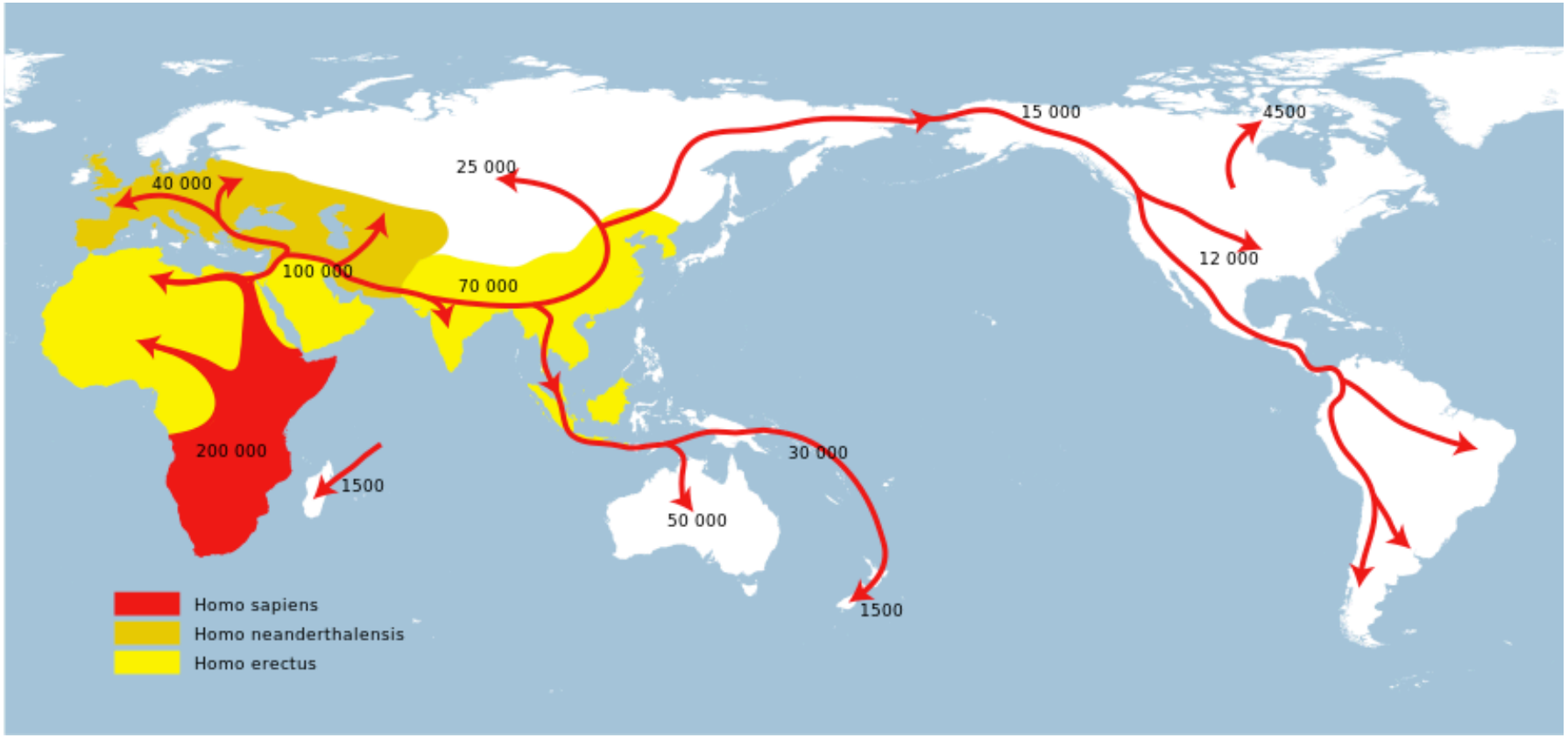
Political Science



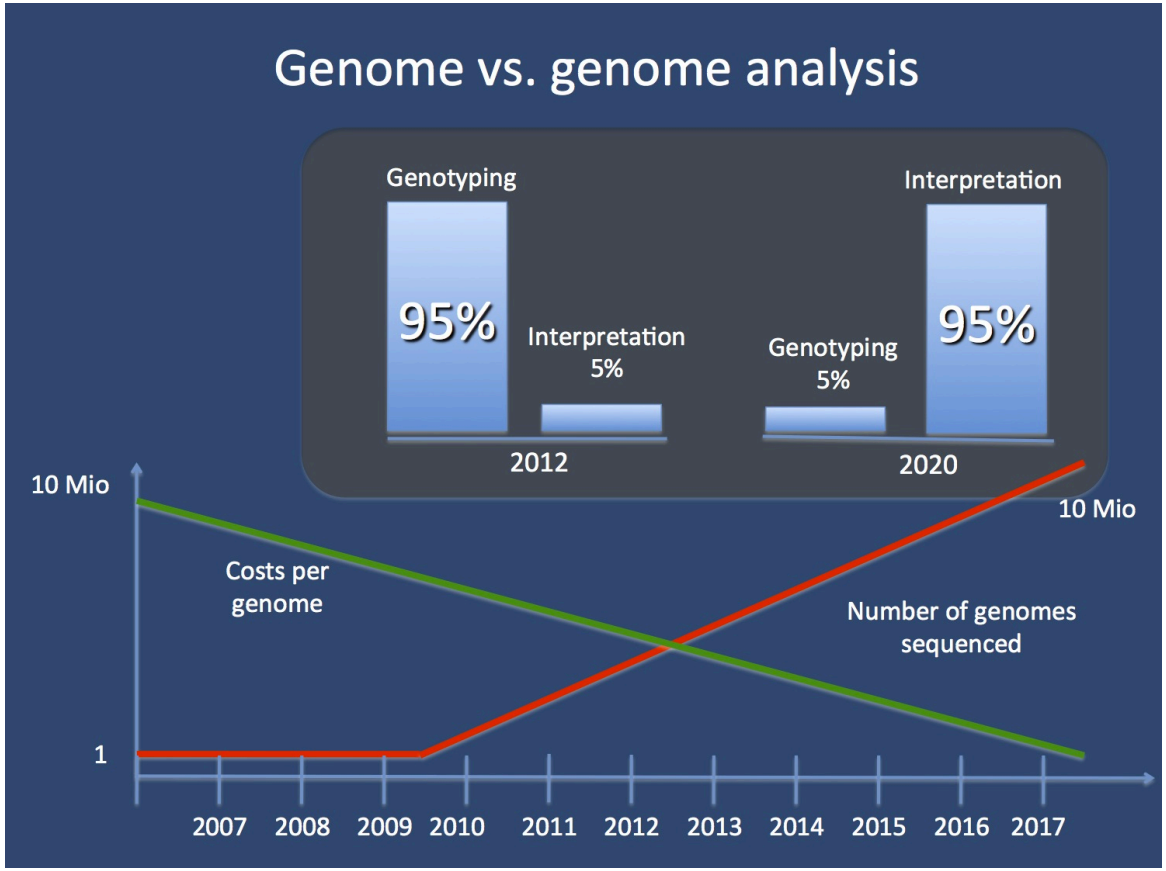




Computational Biology: Origin of Modern Humans



Bioinformatics

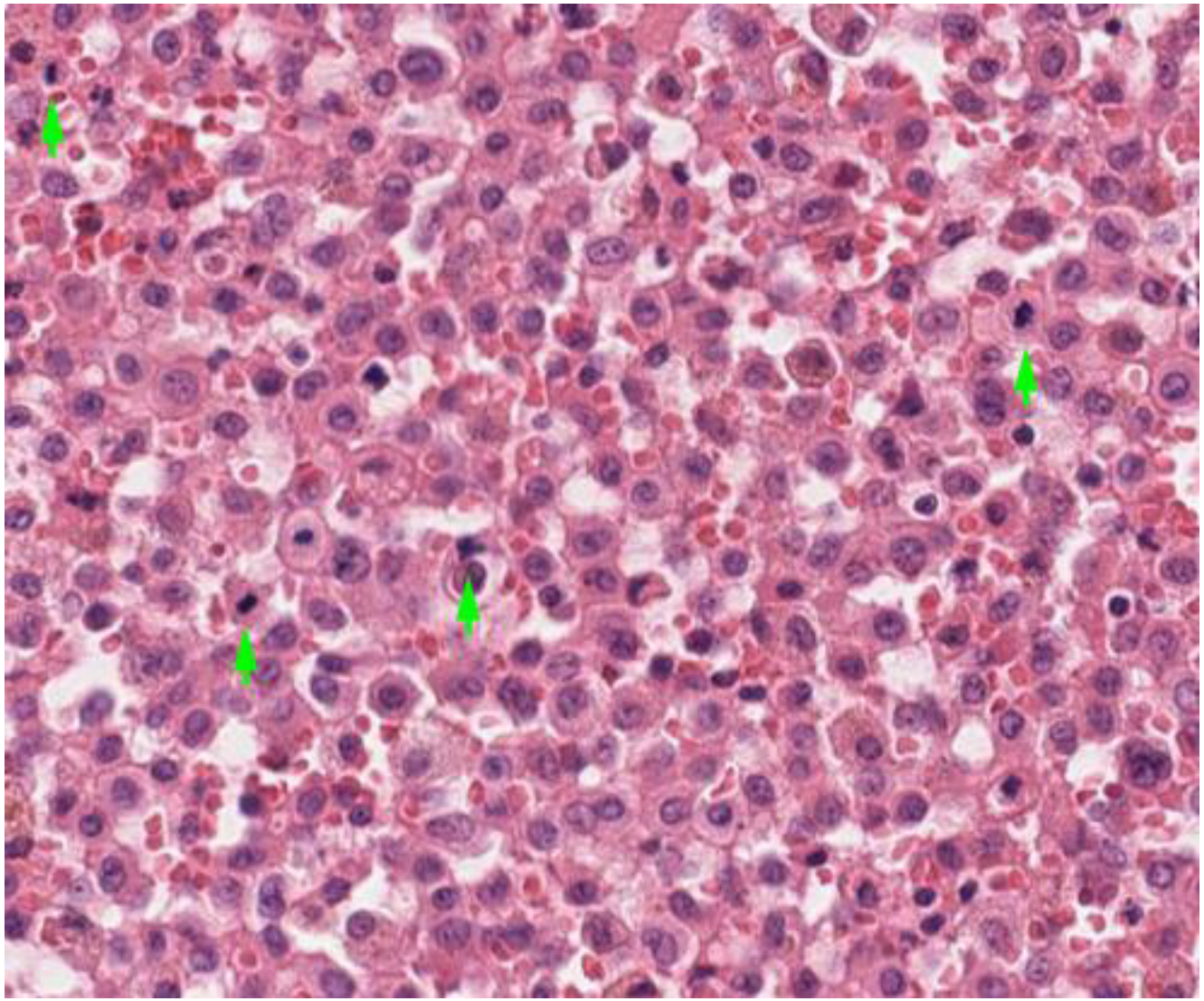


Has the potential to lead to better screening and understanding of complex syndromes and diseases.

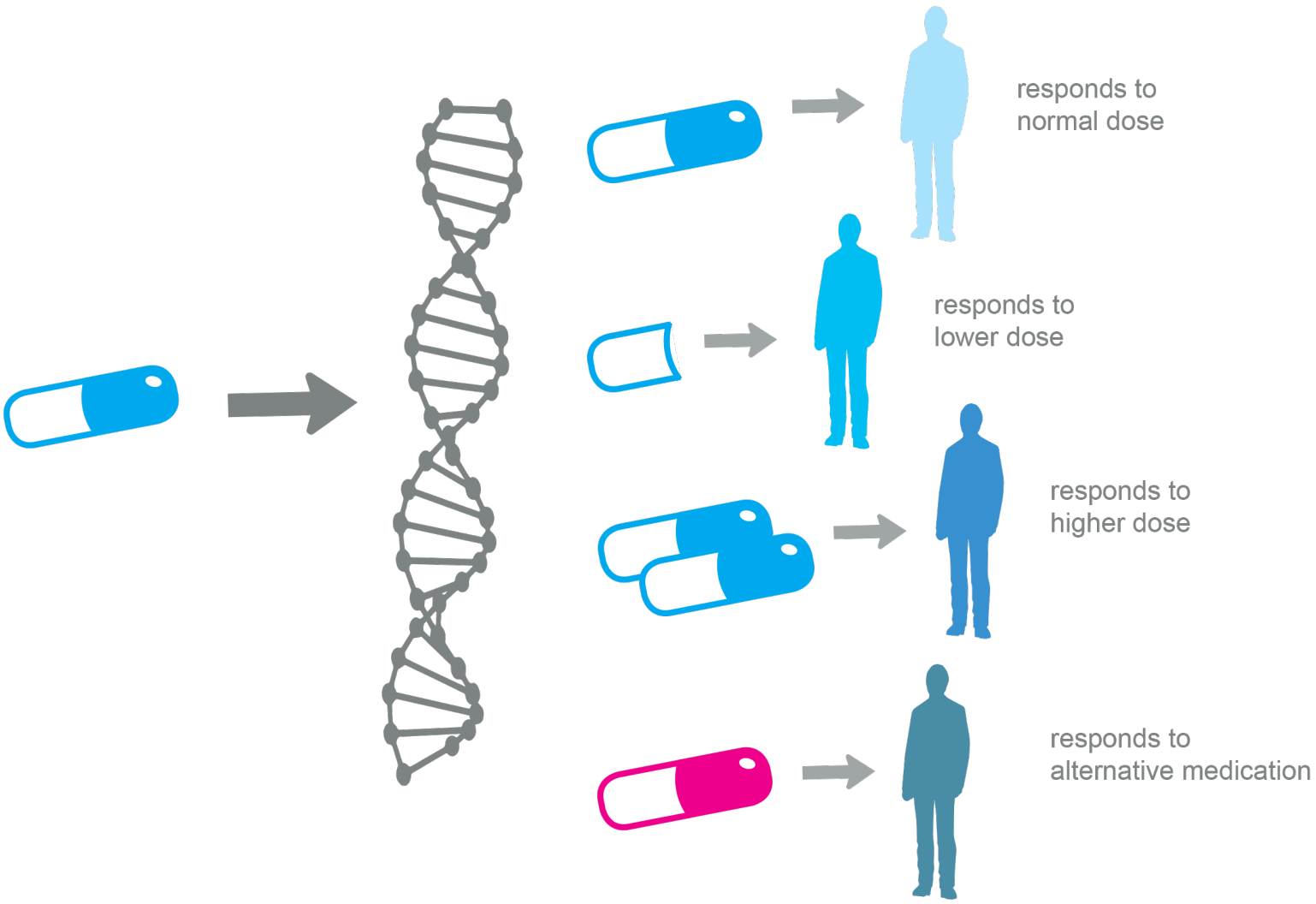
Medical Imaging

- 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

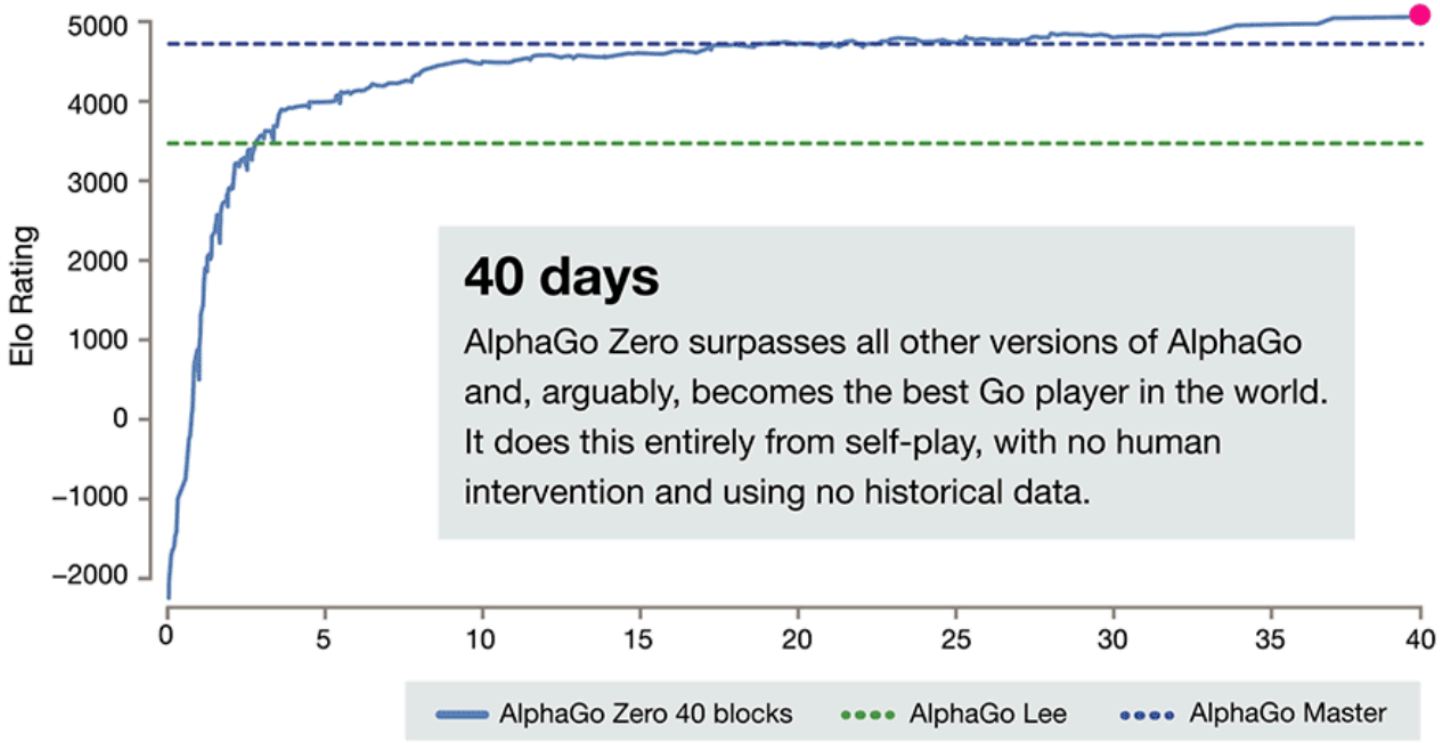


Personalized Medicine

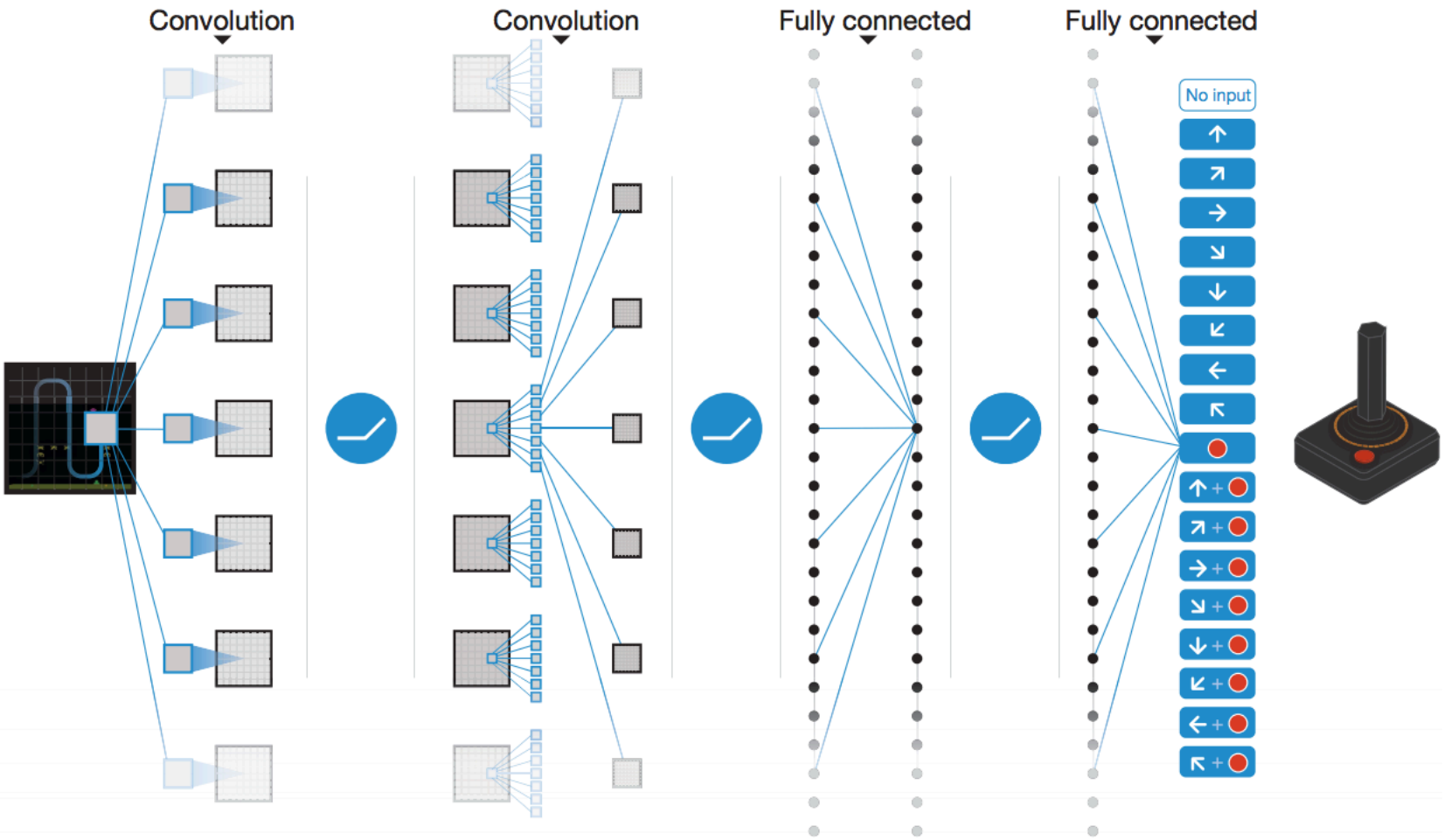


AI / Machine Learning

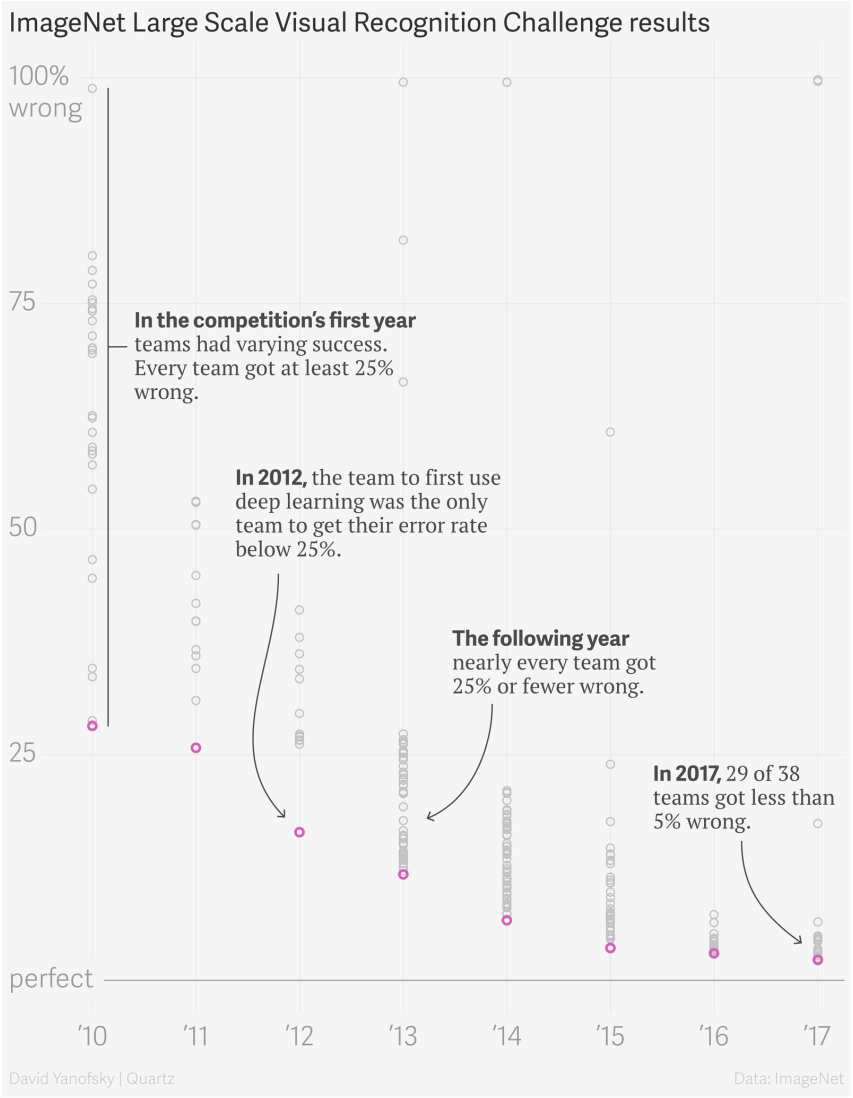
AI / Machine Learning



AI / Machine Learning



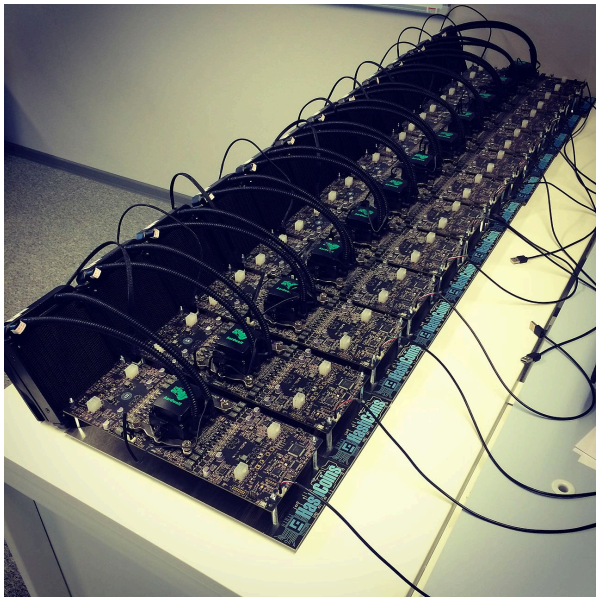
AI / Machine Learning



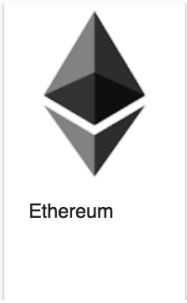
Wearable Sensing

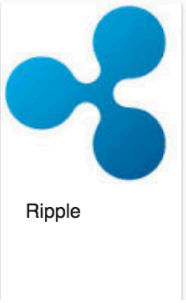
Robotics: DARPA Robotics Challenge

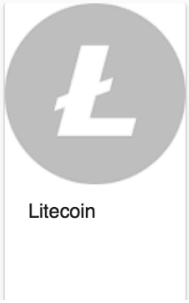
Crypto Currencies

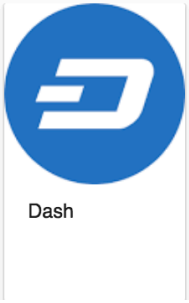


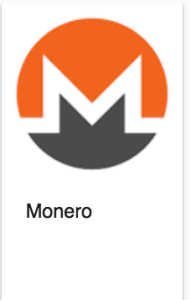
BitCoin mining hardware



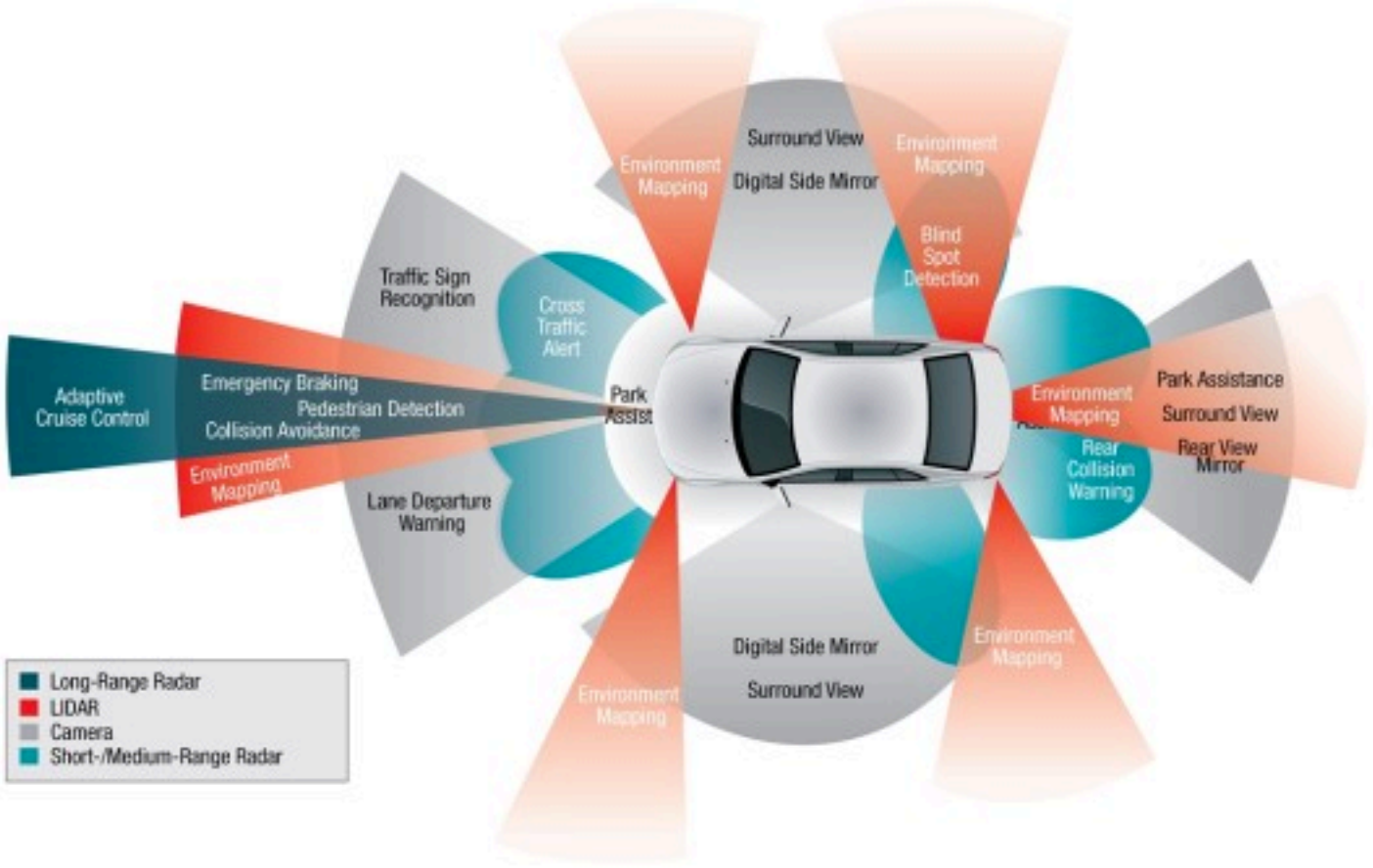








Robotics: Self-driving Cars



ART and Music

Protobytes
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