



# STOR 320 Data Ethics

Lecture 23

Yao Li

Department of Statistics and Operations Research

UNC Chapel Hill

# Why Data Science?

- Fields
  - Math
  - Statistics
  - Computer Science
- On-Demand Job Market
  - LinkedIn Workforce Report: Shortage in All Cities (2018)
  - [Article](#) by Gregory Piatetsky
- Applicable Across All Areas
- Bigger Data Requires Better Skills
- People are Scared Because Analytics is Coming

# Data Privacy



# Data Privacy

- People Have Data and Need Us to Analyze the Information to Answer Their Questions
- Decisions Based on Our Analyses Can Effect Others
- We Must Operate Ethically
- Fairness and Privacy

# Hippocratic Oath for Data Scientists

*I solemnly pledge to practice my profession with conscience and dignity;*

*To respect the privacy of the people whose data is confided in me;*

*To maintain the utmost respect for the individuals whose data I am analyzing;*

*To be transparent, open, and honest about the type of analysis I am applying to their data;*

*To never use my knowledge to violate human rights and civil liberties, even under threat.*

-- [Marie Wallace](#)

# Data Fraud

- Appropriate Data Analysis
  - Let the Data Speak for Itself
  - Hypotheses Before Analyses
- Transparency
  - Data Imputation
  - Handling of Outliers
  - Data Transformations
  - Statistical Methods
  - Necessary Assumptions
  - Variables Included and Excluded

# Data Fraud

- Recent Incident at Harvard (2018)
  - Dr. Piero Anversa
  - 31 Publications
  - Stem Cell Research
  - Showed the Heart Has the Ability to Regenerate
  - Fraudulent Data
  - [Article](#) by NY Times



# Data Fraud

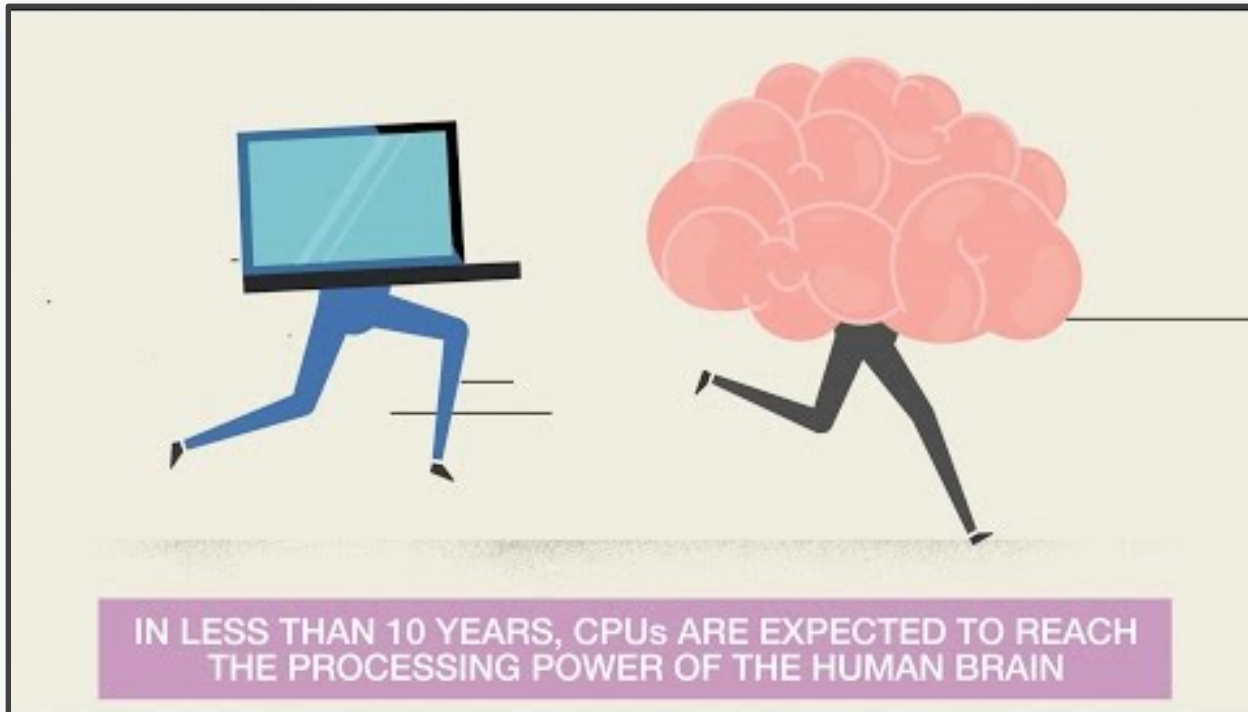
- Thought Provoking Questions
  - Why Does This Happen?
  - Are You Capable of This?
  - How Does This Apply to You in Your Group Projects?





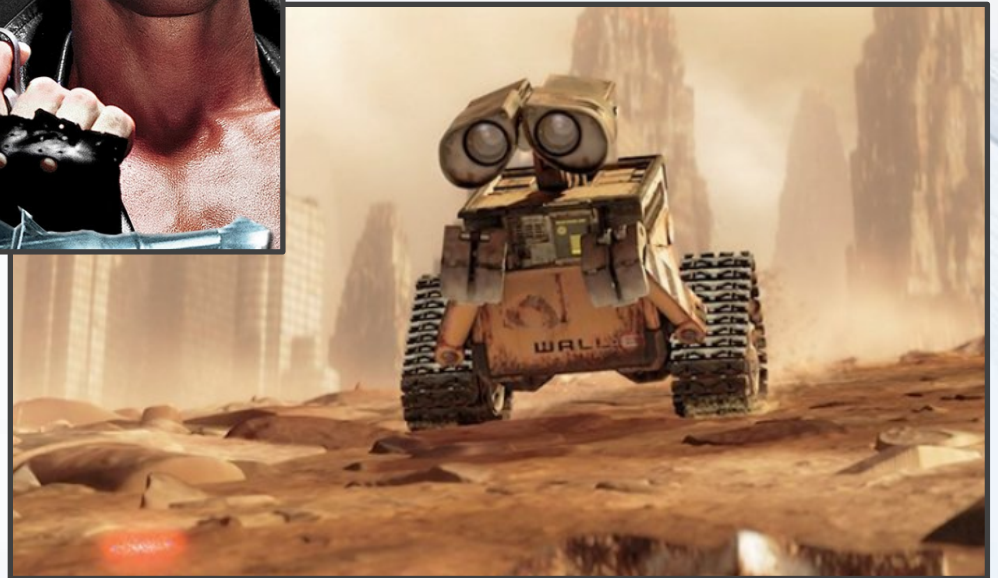
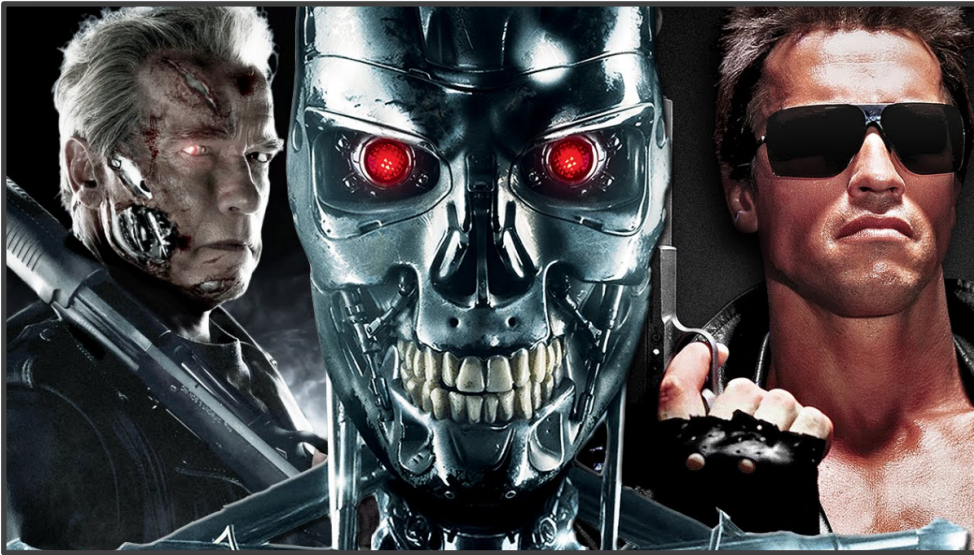
# Data is Coming

- The Expansion of Data



# Data is Coming

- How About Now?



# Values of Data

- How Much is Data Worth?
  - In 2016, Microsoft Purchased LinkedIn for \$26.2 Billion
  - In 2016, Caesar's Total Rewards Program Was Valued at \$1 Billion During Bankruptcy
  - [Article](#) in MIT Sloan Magazine

# Values of Data

- Thought Provoking Questions
  - Are You Worried About Data Privacy?
  - How Should We Address This?



# Modern Data Ethics

- Weapons of Math Destruction
  - Author: Cathy O'Neil
  - Blog: [mathbabe.org](http://mathbabe.org)
  - Worked on Wall Street
  - Saw the Dark Side of Using Algorithms on Big Data to Make Business Decisions
  - Leader in Data Ethics

