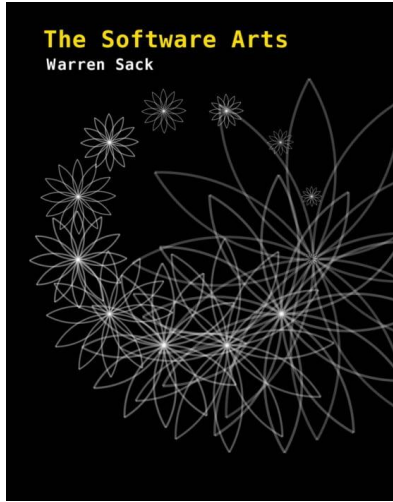


A Motivation for Diversity in Technology Development

12 March 2022

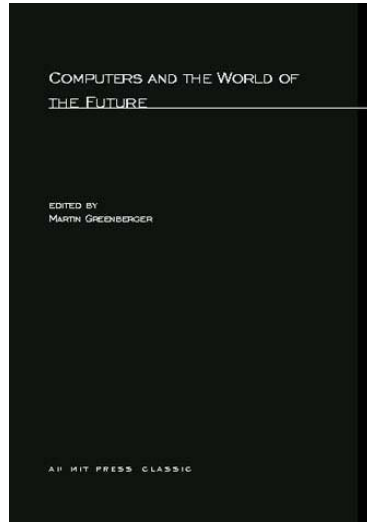
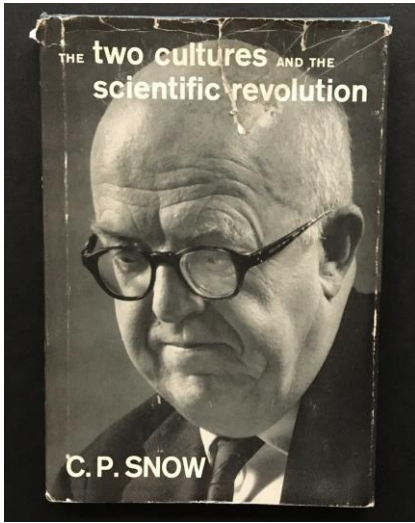
Pete Tucker

ptucker@whitworth.edu



The Software Arts Warren Sack (2019)

WE ARE IN THE MIDST OF A REWRITING OF THE WORLD IN WHICH
MANY OF OUR IMPORTANT POLITICAL, ECONOMIC, SOCIAL, AND
CULTURAL INSTITUTIONS ARE BEING TRANSLATED INTO
SOFTWARE



Computers and the World of the Future

Lecture by C. P. Snow at MIT's symposium
on "Computers and the World of the Future"
(1961)

A HANDFUL OF PEOPLE, HAVING NO RELATION TO THE WILL OF
SOCIETY, HAVING NO COMMUNICATION WITH THE REST OF
SOCIETY, WILL BE TAKING DECISIONS IN SECRET WHICH ARE
GOING TO AFFECT OUR LIVES IN THE DEEPEST SENSE.

Facial expression recognition in job interviews

- Artificial intelligence and facial analysis software is becoming commonplace in job interviews
 - developed by US company HireVue
 - analyses the language and tone of a candidate's voice
 - records their facial expressions as they are videoed answering identical questions.
- The AI assesses applicants against its database of about 25,000 pieces of facial and linguistic information
- These are compiled from previous interviews of “successful hires” – those who have gone on to be good at the job.



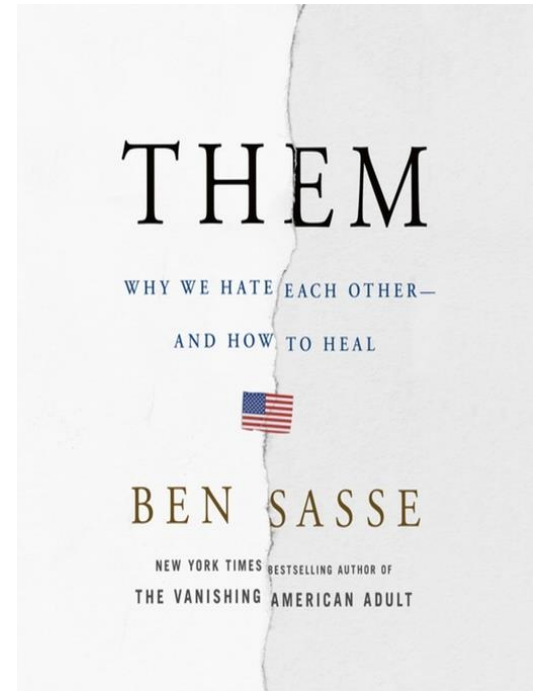
Facial expression recognition in job interviews

- Dr. Thomas
 - Algorithms are often implemented without ways to address mistakes.
 - AI makes it easier to not feel responsible.
 - AI encodes & magnifies bias.
 - Optimizing metrics above all else leads to negative outcomes.
 - There is no accountability for big tech companies
- Dr. Bell
 - What does "autonomous system" mean? How much autonomy?
 - What will agency look like? How will humans be able to intervene with autonomous systems
 - How will we think about safety, assurance, privacy, ethics, laws? How will we decide who is responsible for autonomous systems?
 - How will we measure if our autonomous systems are effective?
 - How will we be human in this world of autonomous systems? How will humans engage with these systems in normal use? What will it feel like when those systems are making decisions or doing things we're used to doing?



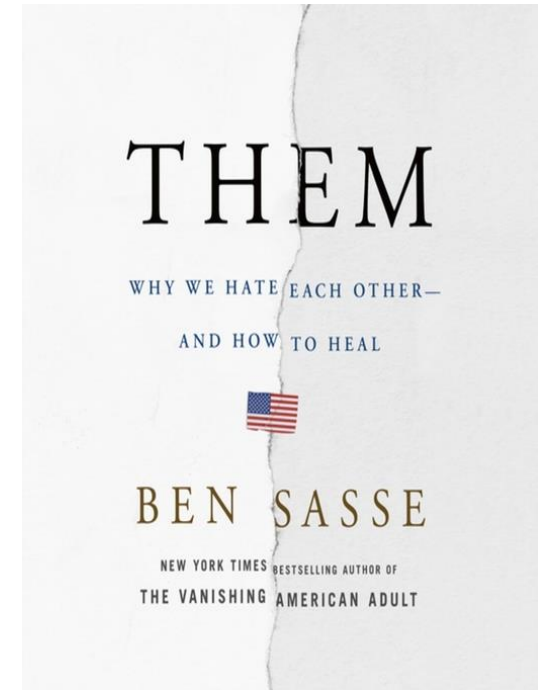
Example: Social Media

- (Based on discussion from Ben Sasse, in Them: Why We Hate Each Other - and How to Heal, Oct 2018)
- Metrics
 - Social media sites want you to watch more videos, see more images, comment on posts, ...
 - They want you to stay on their site longer
- Approach
 - When a user finishes watching a video and choose another video to watch, what do they choose?
 - What makes a user decide to comment on a post?
 - Are there properties of the new video that are similar to the previous that the site can learn from?



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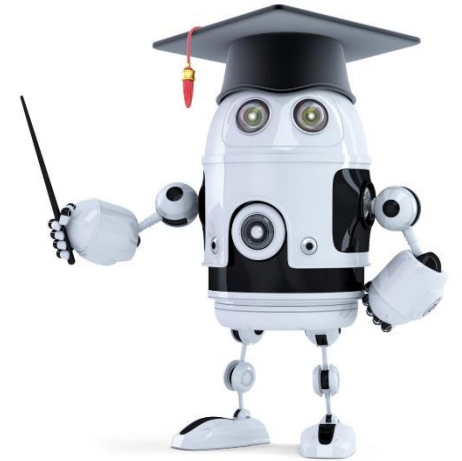


Example: Education

- [New Solution Provides Students with Personalized Career Maps During Enrollment Process](#)
- Machine learning to forecast the value of educational experiences in the labor market
- Helps colleges quantify the value of education experiences for prospective students at the front end of the enrollment process
- Provides students with personalized ROI estimates for specific degrees, majors and courses based on each student's unique background and goals.

Potential Example: Education

- Nate Bowling recently released a Podcast called “[Mommy, my Teacher got Replaced by a Robot](#)”
 - He asserts “in just a few years there will be fewer teachers”
- If he’s right, mommies and daddies will start hearing that from their kids
- If he’s right, we all will interact with kids taught by a robot
- What education can be automated? When should humans intervene?
- How will kids engage with the automated teacher? How will parents?
- Will automated system be better than human teachers? How will we measure?



Other contexts where AI is being introduced

- Check out the work at the [AI-2 Incubator](#) of the Allen Institute for Artificial Intelligence
- [Robots](#) as basketball and soccer players
- [Umpires in professional baseball](#) ([How one blown strike call in Game 5 illustrates MLB's need for robot umps](#) - ESPN)
- [NFL player salaries](#)
- [Robots](#) driving cars and trucks
- [Drones delivering packages for UPS](#)
- Creating [music from a computer](#)
- Generating [voice](#) and [video](#)
- Algorithms to determine bail
- Algorithms to determine whether you get a loan



WE ARE IN THE MIDST OF A REWRITING OF THE WORLD IN WHICH MANY OF OUR IMPORTANT POLITICAL, ECONOMIC, SOCIAL, AND CULTURAL INSTITUTIONS ARE BEING TRANSLATED INTO SOFTWARE

US Bureau of L&S

- Software Profession
 - Woman: 19%
- White: 57%
- Asian: 34%
- Black: 6%
- Hispanic: 6%

Profile for respondents to Stack Overflow 2020 Developer Survey

- Undergraduate Major
 - CS: 62%
 - Other Engineering: 9.3
 - Info Sys: 8.0
 - Natural Science: 4.3
 - Math: 3.6
 - Web dev: 3.5
 - Business: 2.7
 - Humanities: 2.0
 - Social science: 1.8
 - Fine arts: 1.4
 - No major: 0.9
 - Health science: 0.5
- Race
 - White: 68.3%
 - South Asian: 10.4
 - Hispanic: 7.6
 - Middle Eastern: 4.9
 - East Asian: 4.6
 - Black: 4.5
 - Southeast Asian: 4.5
 - Multiracial: 1.7
 - Indigenous: 0.8
- Gender
 - Man: 91%
 - Woman: 8.0
 - Non-conforming: 1.2

n: 65000

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- Hiring
- Social Media
- Sports
- Education
- Transportation
- Health care
- Climate Solutions
- Arts and Theatre
- Politics and Government
- Justice

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- What does "autonomous system" mean?
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- How will we measure effective?
- How will we be human in this world of autonomous systems?

Questions?

- About the talk?
 - About my background or interests?
 - About CS at Whitworth?
 - About Whitworth?
-
- Pete Tucker
 - ptucker@whitworth.edu