



Ethics and Wrap Up

Jin L.C. Guo

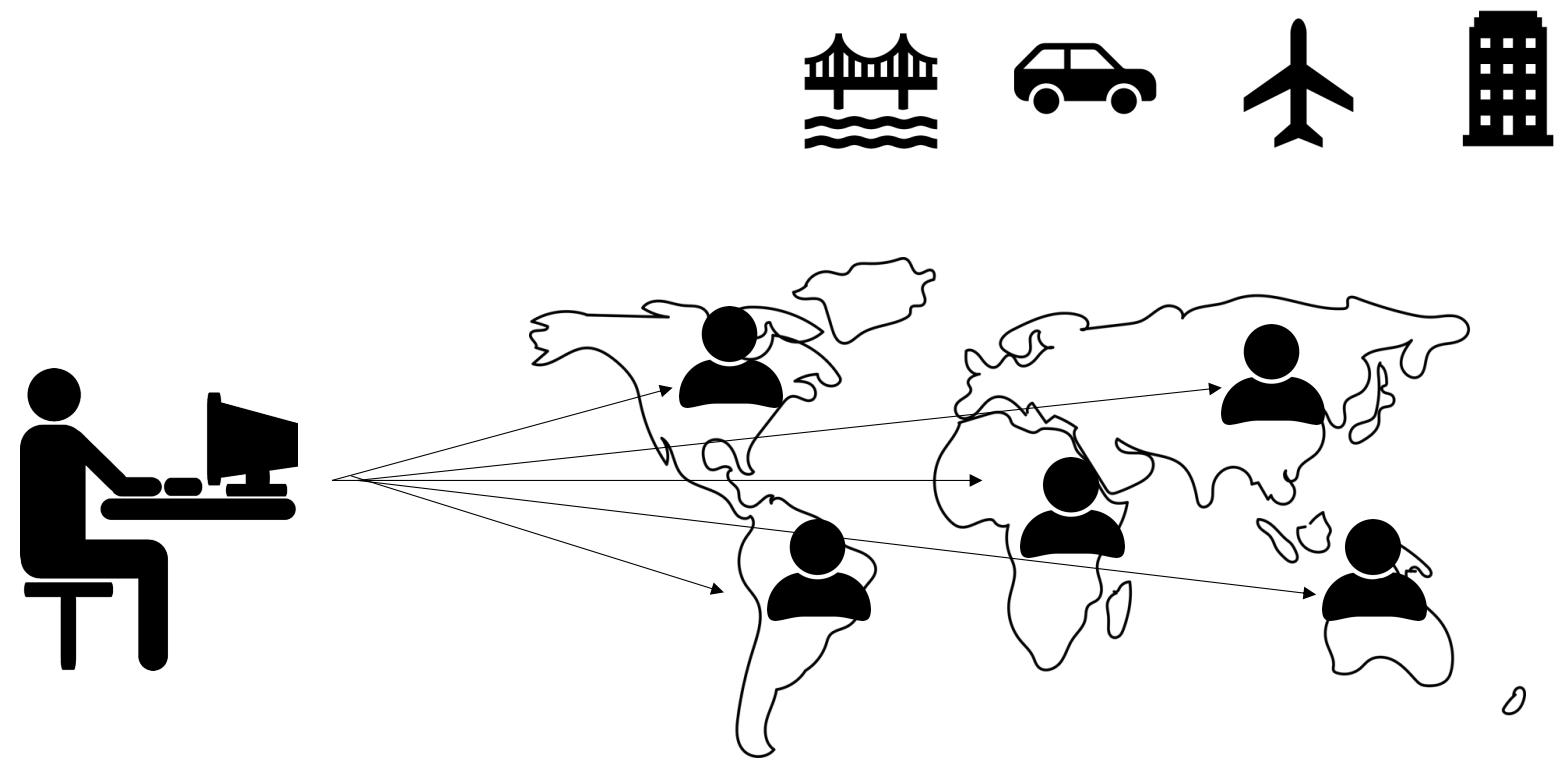
Content

- Course Evaluation
- Software Ethics
- Usage of AI Tools
- Black Mirror Writing Room

A complex network graph composed of numerous small, semi-transparent blue dots connected by thin lines, forming a dense web of triangles and polygons. This pattern covers the left side of the slide.

What does ethics
mean to you?

Software Engineer Ethics



Case Study

- Read the article [“Whistleblowers: Software bug keeping hundreds of inmates in Arizona prisons beyond release dates”](#)

Questions

- What kind of problems directly related to the software are mentioned in the article?

Questions

- Who were the various **stakeholders** whose interests were ethically significant here? What were the interests of each stakeholder? Whose interests should have taken precedence in the minds of the relevant actors, and why?
- Who might have the power to prevent this outcome?

More common issues

- Addictive design;
- Questionable personal data usage;
- Algorithmic bias;
- Weak cyber security;
- Overemphasis on features;
-

Ethical Obligations of Software Engineers

- Personal level

Take full responsibility for our moral choices and their consequences

- Professional level

What does integrity look like in a software engineer?

What sort of specific coding practices demonstrate integrity, or a lack of it?

Professional Ethics - Medical Ethics

- Respect for Autonomy
- Beneficence and non-maleficence
- Justice

Gillon, Raanan. "Medical ethics: four principles plus attention to scope." *Bmj* 309, no. 6948 (1994): 184.

ACM/IEEE-CS Software Engineering Code

- For anyone that is a member of the software engineering profession

Software engineers shall commit themselves to making the analysis, specification, design, development, testing and maintenance of software a beneficial and respected profession. In accordance with their commitment to the health, safety and welfare of the public, software engineers shall adhere to the Eight Principles.

<https://ethics.acm.org/code-of-ethics/software-engineering-code/>

PUBLIC

Software engineers shall act consistently with the public interest.

CLIENT AND EMPLOYER

Software engineers shall act in a manner that is in the best interests of their client and employer consistent with the public interest.

PRODUCT

Software engineers shall ensure that their products and related modifications meet the highest professional standards possible.

JUDGMENT

Software engineers shall maintain integrity and independence in their professional judgment.

MANAGEMENT

Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance.

PROFESSION

Software engineers shall advance the integrity and reputation of the profession consistent with the public interest.

COLLEAGUES

Software engineers shall be fair to and supportive of their colleagues.

SELF

Software engineers shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession.

PRODUCT

Software engineers shall ensure that their products and related modifications meet the highest professional standards possible

- 3.06. Work to follow professional standards, when available, that are most appropriate for the task at hand, departing from these only when ethically or technically justified.
- 3.08. Ensure that specifications for software on which they work have been well documented, satisfy the users' requirements and have the appropriate approvals.

3.10. Ensure adequate testing, debugging, and review of software and related documents on which they work.

3.13. Be careful to use only accurate data derived by ethical and lawful means, and use it only in ways properly authorized.

3.15 Treat all forms of software maintenance with the same professionalism as new development.

Meanwhile

[Goldman Sachs Predicts 300 Million Jobs Will Be Lost Or Degraded By Artificial Intelligence](#)

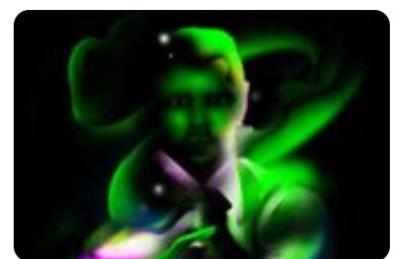
F Forbes | 6 days ago

In recent months, the world has witnessed the rise of artificial software ChatGPT and ... The rise of artificial even software engineers less sought after



[Tinkering With ChatGPT, Workers Wonder: Will This Take My Job?](#)

C The New York Times | 2 days ago



[Will AI Replace Computer Programmers?](#)

C acm.org | 6 days ago

On the other, they have some looking over their shoulders as they see AI increasingly invade an area of knowledge work typically reserved for human beings — threatening their skills and livelihoods.



in the process [Get a Load of This New Job: "Prompt Engineers" Who Act as Psychologists to AI ...](#)

F Futurism | 25 days ago

W
"I

[4 Reasons Low-Code Tools Will Never Replace Software Developers](#)

E Entrepreneur | 5 days ago

Related: [Software Development Jobs Are a Bright Spot in Uncertain Economic Times. Here's What Business Leaders Need to Know.](#)

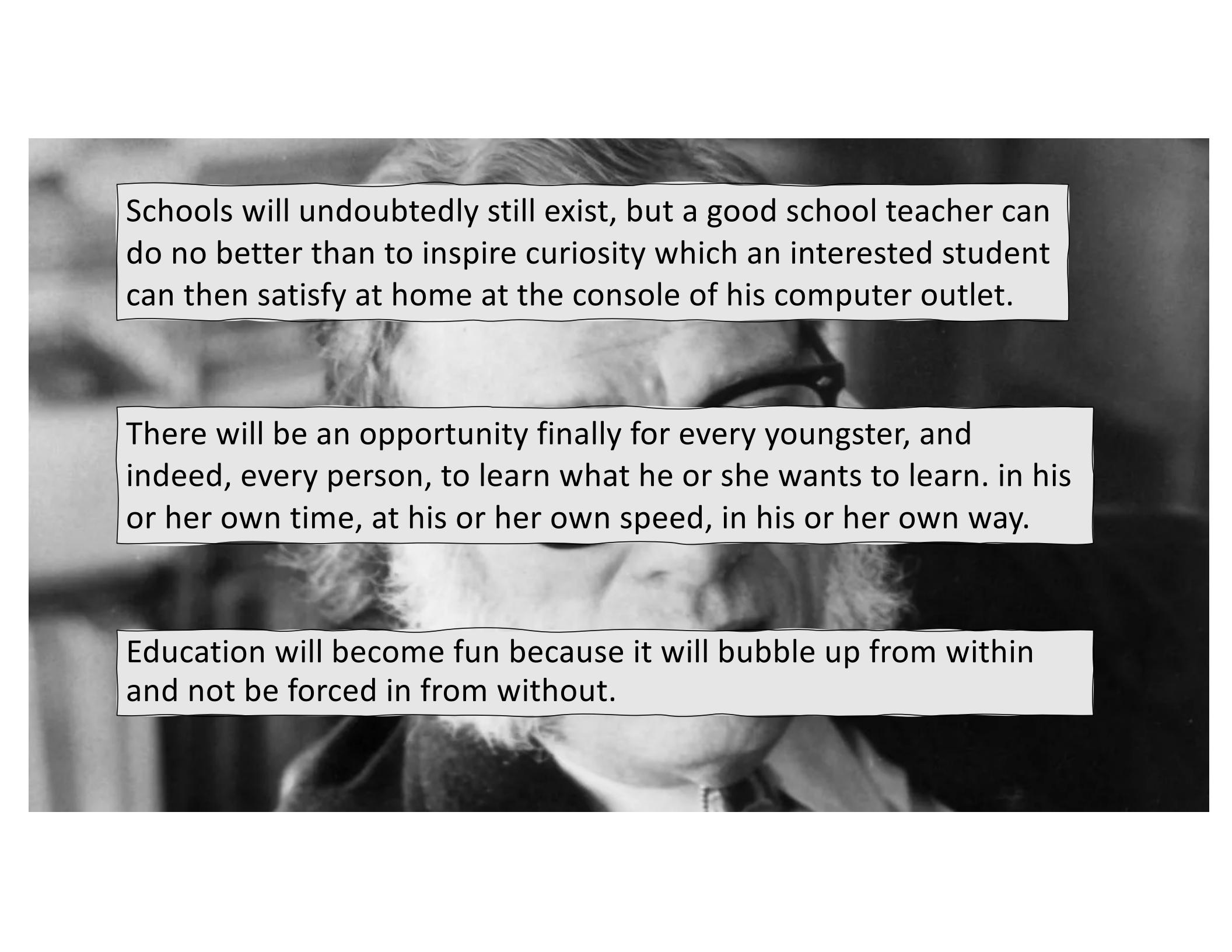




What should the CS education look like?

How are you using AI tools now?

- Have you used Copilot/ChatGPT or other similar tools to help you study the course now? If so, how?
- In what cases do you find those tools useful for your learning?
- In what cases do you find those tools disappointing?
- What features do you expect to have for future programming tools?



Schools will undoubtedly still exist, but a good school teacher can do no better than to inspire curiosity which an interested student can then satisfy at home at the console of his computer outlet.

There will be an opportunity finally for every youngster, and indeed, every person, to learn what he or she wants to learn. in his or her own time, at his or her own speed, in his or her own way.

Education will become fun because it will bubble up from within and not be forced in from without.

Stretch our imagination to ...



NETFLIX ORIGINAL

BLACK MIRROR

2019 TV-MA 5 Seasons

“TITLE”

[summary here]

Creators: [your names]

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✚ MY LIST



Replace
This
Image

Artificial Intelligence Mar 4

China's social credit system stopped millions of people from buying travel tickets



POLICY \ US & WORLD \ TECH

EU should ban AI-powered citizen scoring and mass surveillance, say experts

New recommendations have also been criticized as lacking enforceability

By James Vincent | Jun 26, 2019, 7:30am EDT

L.A. Kids and Instagram Anxiety: "Social Media Is Destroying Our Lives"

9:45 AM PDT 8/18/2017 by Stephanie Chan



NETFLIX ORIGINAL

BLACK MIRROR

2019 TV-MA 5 Seasons

Watch Season 5 Now

"Nosedive"

A woman desperate to boost her social media score hits the jackpot when she's invited to a swanky wedding. But the trip doesn't go as planned.

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Creators: Charlie Brooker



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Digital immortality: How your life's data means a version of you could live forever

'When your heart stops beating, you'll keep tweeting': Controversial app that updates your Twitter feed from beyond the grave

- LivesOn analyses users' Twitter feeds to continue posting in the same style after they are dead
- Being developed by a London-based ad agency, who say 'it'll work better than a frozen head'
- It joins DeadSocial and If I Die in the market for apps offering social media services which continue after death

By [DAMIEN GAYLE](#)

PUBLISHED: 06:30 EDT, 20 February 2013 | UPDATED: 06:45 EDT, 20 February 2013



109
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NETFLIX ORIGINAL

BLACK MIRROR

2019 TV-MA 5 Seasons

Watch Season 5 Now

"Be Right Back"

29 of 48m

After learning about a new service that lets people stay in touch with the deceased, a lonely, grieving Martha reconnects with her late lover.

► RESUME

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Creators: Charlie Brooker

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DETAILS

More parents using GPS to track children but experts warn there could be consequences

By Melanie Vujkovic

Posted 3 Apr 2019, updated 3 Apr 2019

EDUCATION

Privacy Experts Say The Trade-Offs Of Tech To Track Kids In School Aren't Worth It

August 26, 2019 · 4:22 PM ET

Heard on [All Things Considered](#)

TEEN MONITORING

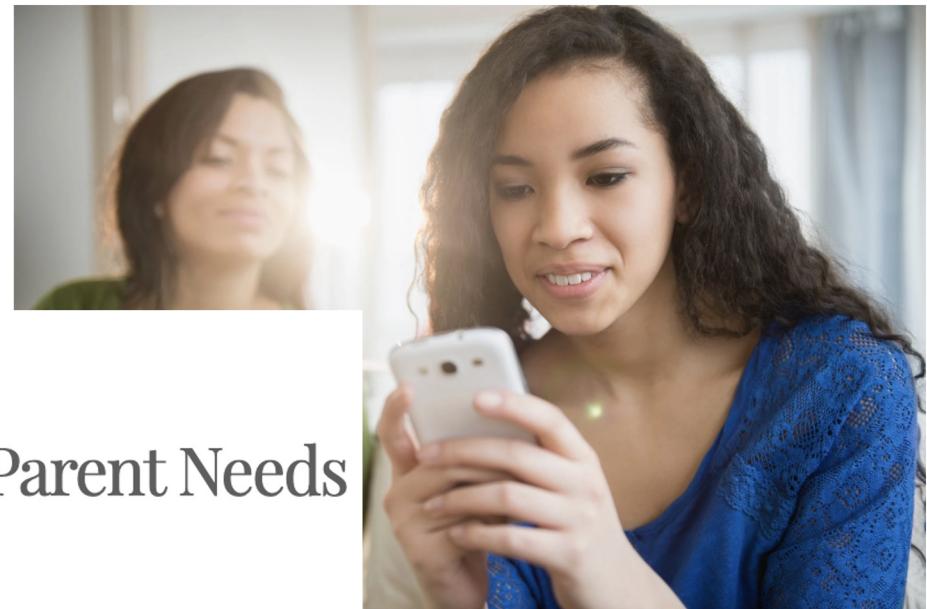
The Best Teen Monitoring Apps Every Parent Needs

⌚ JANUARY 13, 2020

👤 ALEXANDRU TANASE

The New York Times

Is Snooping on Teenagers Ever O.K.?



N SERIES

BLACK MIRROR

2019 TV-MA 5 Seasons AD

"Arkangel"

Worried about her daughter's safety, single mom Marie signs up for a cutting-edge device that monitors the girl's whereabouts -- and much more.

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⊕ My List



Creators: Charlie Brooker

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DETAILS





1. Brainstorm *near future* technology for computer science education.
2. What are the potential social implications and/or ethical issues and/or regulatory challenges with this technology?
3. What do you think might be a cautionary tale related to this technology?
4. What fictional person in the future could best illustrate this caution?
5. What is their story?

Acknowledgement

- Some content in this module is adapted from “An Introduction to Software Engineering Ethics” by the Markkula Center for Applied Ethics at Santa Clara University with permission.
- The black mirror activity is designed and shared by Casey Fiesler at the University of Colorado Boulder under a Creative Commons Attribution 4.0 International License.



COMP 303 Software Design Summary

Huge **Thanks** to Our TA Team

Avinash Bhat

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Sam Abdulkarim

Shuo Wen

Yijia Jing

Josh Weinstein

Charlotte Sacré

Huge **Thanks** to **YOU**

In Classroom and Zoom

Individual Interaction

Ed discussion forum

What's missing

- Techniques for larger systems and development team
 - Development and Deployment Tools
 - Scheduling
 - Team

What's missing

COMP 533 Model-Driven Software Development

COMP 555 Software Privacy

COMP 585 Intelligent Software Systems

ECSE 428 Software Engineering Practice

ECSE 429 Software Validation

ECSE 557: Introduction to Ethics of Autonomous Intelligent Systems

... ...

Last Requests

- 
- Ask ethical questions throughout your professional career;
 - Use the techniques and tools of COMP 303 effectively;