



CONCOURS D'ADMISSION 2022

FILIERE UNIVERSITAIRE INTERNATIONALE
FORMATION FRANCOPHONE
FUI-FF_ Session 2_ Printemps

Épreuve n°4

ANGLAIS

Durée : 2 heures

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Trailblazing initiative marries ethics and tech

Computer science, philosophy faculty ask students to consider how systems affect society

By **Christina Pazzanese** Harvard Staff Writer

October 16, 2020

For two decades, the flowering of the Digital Era has been greeted with blue-skies optimism, defined by an unflagging belief that each new technological advance, whether more powerful personal computers, faster internet, smarter cellphones, or more personalized social media, would only enhance our lives.

But public sentiment has curdled in recent years with revelations about Silicon Valley firms and online retailers collecting and sharing people's data, social media gamed by bad actors spreading false information or sowing discord, and corporate algorithms using opaque metrics that favor some groups over others. These concerns multiply as artificial intelligence (AI) and machine-learning technologies, which made possible many of these advances, quietly begin to nudge aside humans, assuming greater roles in running our economy, transportation, defense, medical care, and personal lives.

"Individuality ... is increasingly under siege in an era of big data and machine learning," says Mathias Risse, Littauer Professor of Philosophy and Public Administration and director of the Carr Center for Human Rights Policy at Harvard Kennedy School. The center invites scholars and leaders in the private and nonprofit sectors on ethics and AI to engage with students as part of its growing focus on the ways technology is reshaping the future of human rights.

Building more thoughtful systems

Even before the technology field belatedly began to respond to market and government pressures with promises to do better, it had become clear to Barbara Grosz, Higgins Research Professor of Natural Sciences at the Harvard John A. Paulson School of Engineering and Applied Sciences (SEAS), that the surest way to get the industry to act more responsibly is to prepare the next generation of tech leaders and workers to think more ethically about the work they'll be doing

[...] In spring 2017, Grosz recruited Alison Simmons, the Samuel H. Wolcott Professor of Philosophy, and together they founded Embedded EthiCS. The idea is to weave philosophical concepts and ways of thinking into existing computer science courses so that students learn to ask not simply "Can I build it?" but rather "Should I build it, and if so, how?"

Through Embedded EthiCS, students learn to identify and think through ethical issues, explain their reasoning for taking, or not taking, a specific action, and ideally design more thoughtful systems that reflect basic human values. The program is the first of its kind nationally and is seen as a model for a number of other colleges and universities that plan to adapt it, including Massachusetts Institute of Technology and Stanford University.

[...] About 2,750 students have enrolled in Embedded EthiCS courses since it began. More than 30 courses, including all classes in the computer science department, participated in the program in spring 2019.

“We don’t need all courses, what we need is for enough students to learn to use ethical thinking during design to make a difference in the world and to start changing the way computing technology company leaders, systems designers, and programmers think about what they’re doing,” said Grosz.

It became clear that Harvard’s computer science students wanted and needed something more just a few years ago, when Grosz taught “Intelligent Systems: Design and Ethical Challenges,” one of only two CS courses that had integrated ethics into the syllabus at the time.

During a class discussion about Facebook’s infamous 2014 experiment covertly engineering news feeds to gauge how users’ emotions were affected, students were outraged by what they viewed as the company’s improper psychological manipulation. But just two days later, in a class activity in which students were designing a recommender system for a fictional clothing manufacturer, Grosz asked what information they thought they’d need to collect from hypothetical customers.

“It was astonishing,” she said. “How many of the groups talked about the ethical implications of the information they were collecting? None.”

When she taught the course again, only one student said she thought about the ethical implications, but felt that “it didn’t seem relevant,” Grosz recalled.

“You need to think about what information you’re collecting when you’re designing what you’re going to collect, not collect everything and then say ‘Oh, I shouldn’t have this information,’” she explained.

Making it stick

Seeing how quickly even students concerned about ethics forgot to consider them when absorbed in a technical project prompted Grosz to focus on how to help students keep ethics up front. Some empirical work shows that standalone courses aren’t very sticky with engineers, and she was also concerned that a single ethics course would not satisfy growing student interest. Grosz and Simmons designed the program to intertwine the ethical with the technical, thus helping students better understand the relevance of ethics to their everyday work.

In a broad range of Harvard CS courses now, philosophy Ph.D. students and postdocs lead modules on ethical matters tailored to the technical concepts being taught in the class.

“We want the ethical issues to arise organically out of the technical problems that they’re working on in class,” said Simmons. “We want our students to recognize that technical and ethical challenges need to be addressed hand in hand. So a one-off course on ethics for computer scientists would not work. We needed a new pedagogical model.”

Getting comfortable with a humanities-driven approach to learning, using the ideas and tools of moral and political philosophy, has been an adjustment for the computer-science instructors as well as students, said David Grant, who taught as an Embedded EthiCS postdoc in 2019 and is now assistant professor of philosophy at the University of Texas at San Antonio.

“The skill of ethical reasoning is best learned and practiced through open and inclusive discussion with others,” Grant wrote in an email. “But extensive in-class discussion is rare in computer science courses, which makes encouraging active participation in our modules unusually challenging.”

Students are used to being presented problems for which there are solutions, program organizers say. But in philosophy, issues or dilemmas become clearer over time, as different perspectives are brought to bear. And while sometimes there can be right or wrong answers, solutions are typically thornier and require some difficult choices.

“This is extremely hard for people who are used to finding solutions that can be proved to be right,” said Grosz. “It’s fundamentally a different way of thinking about the world.”

“They have to learn to think with normative concepts like moral responsibility and legal responsibility and rights. They need to develop skills for engaging in counterfactual reasoning with those concepts while doing algorithm and systems design” said Simmons. “We in the humanities problem-solve too, but we often do it in a normative domain.” (1091 words)

1. READING COMPREHENSION

Answer the following questions *in your own words*.

- Any passage including 3 or more words in sequence taken from the source, or paraphrase without citation will be penalized.
- 50 words minimum / question.

1. Why is ethical reasoning described as “fundamentally a different way of thinking about the world”?
2. What did the class discussion about the Facebook case in 2014 reveal?
3. Define what “ethical reasoning” consists in.
4. Why is Embedded EthiCS an innovative program?

2. ESSAY

Discuss the statement below (450 words, +/- 10%; use a / every 50 words). Please indicate the number of words at the end of your essay.

“Students [should] learn to ask not simply “Can I build it?” but rather “Should I build it, and if so, how?”