University of Kentucky
Computer Science Department

Finding an Ethics Module for Your Course

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Contents

Why Computer Ethics?

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Teaching Responsible Computing Playbook

Accreditation and Ethics

Authors: Matthew Hertz, Atri Rudra

For undergraduate degrees that are accredited by ABET, assessing students' learning of ethical aspects of computing will be required. For example, for Student Outcome (4) of the Computing Accreditation Commission (CAC), a part of ABET accreditation standards for computer science programs, states that "*the Graduates of the program will have an ability to: Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.*" Other institutions may also include ethics training as part of their program or institutional goals (e.g. if they want to follow the ACM/IEEE CS curriculum guidelines). These institutions would also need to assess learning of ethical topics by their regional accreditor, such as the Middle States Commission on Higher Education or the Higher Learning Commission. Because ABET is more general, ABET will be used as an example in this section.

However, assessing ethical outcomes is a documented challenge (see Shuman et al., 2013 for a

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Teaching Responsible Computing Playbook

Overview

Contribute Examples and Feedback Here

Welcome to the Teaching Responsible Computing Playbook, a collaboration of an inaugural 32 authors and contributors across disciplines and computing programs. Each topic area is portrayed with a lens on Responsible Computing. (Please see the User Guide section for suggestions on navigating this playbook.)

The ultimate goal of Teaching Responsible Computing is to educate a new wave of students who bring holistic thinking to the design of technology products. To do this, it is critical for departments to work together across computing, humanistic studies, and more, and collaborate across institutions. This Playbook offers the lessons learned from the process of adapting and enhancing curricula to include responsible computing in a broad set of institutions and help others get started doing the same in their curricula.

Bemidji State University Grant

- Goal: Create a central repository of ethics modules
- Organizers: Marty Wolf and Colleen Greer
- Other Participants: Patrick Anderson, Emanuelle Burton, Judy Goldsmith, Darakshan Mir, Jaye Nias, Evan Peck
- Accomplishments:
  - Found modules
  - Defined criteria for evaluation [next slide]
  - Evaluated modules
- When available: Probably December

Evaluation Criteria

- Scaffolding for instructors
- Scaffolding for students
- Ease of curricular incorporation
- Assessment guidance
- Analysis of the focus of the module

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Complexity of Algorithms
Software Engineering
CyberSecurity
Machine Learning

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CS 315 or 515

Sustainability and Complexity

The goal of these lessons and assignments is to introduce students to the environmental impacts of computing.

These lessons were created with the help of Jon Wilson *in Haverford College's Environmental Studies Department.*

Data Structures (CS 2) Lesson: Energy Usage, Complexity, Deduplication, and Voting Rolls

Level: This lesson is designed to be part of a standard data structures curriculum where notions of complexity are being introduced for the first time. The lesson is designed to come late in the course and could even be used as a final project.
Topics: energy usage, complexity, sorting, hash tables, deduplication, voting

Programming Assignment (pdf)   Programming Assignment (tex)

With thanks to Alvin Grissom II *for the idea of considering deduplication of voting rolls.*

Analysis of Algorithms Lesson: Energy Usage and Complexity

Level: This lesson is designed to accompany Chapter 2 of Algorithm Design by Kleinberg and Tardos, and could also be used as a

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Concrete Complexity Measure: Cups of Coffee

1. Start off by setting up a static variable that will be useful in this lab: the watts used by your computer. You can use a default value of 200, or look up the specific value for the computer you're using.

2. Find something that consumes (a small amount of) energy and determine how many watt-hours that uses. For example, you might find the number of watt-hours it takes to make a cup of coffee. Make a variable for this amount. In later parts of the lab you'll be expressing your programming work in, e.g., energy it would take to make a cup of coffee.

3. We'll be determining the complexity of a program by timing it. Make a method that takes a floating point number of seconds and returns the number of watt-hours consumed.

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Software Engineering

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An Introduction to Software Engineering Ethics

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More

Environmental Ethics
Engineering Ethics
Sports Ethics
Global Ethics
Legal Ethics
Character Education

Shannon Vallor and Arvind Narayanan

No training in ethical theory, applied ethics, or philosophy is required for either the instructor or the students as they tackle these materials.This ethics module for software engineering courses includes a reading, homework assignments, case studies, and classroom exercises, all designed to spark a conversation about ethical issues that students will face in their lives as software engineers.

The revised module, which can be used in part or

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Deep Dive Into CyberSecurity

An Introduction to Cybersecurity Ethics

MODULE AUTHOR:

Shannon Vallor, Ph.D.

William J. Rewak, S.J. Professor of Philosophy, Santa Clara University

READ FIRST: NOTES FOR INSTRUCTORS

Module Purpose: This stand alone, 'plug-and-play' ethics module can be used in part or in whole, and is appropriate for coverage in two to five class sessions. It does not require purchase of a separate course text; all necessary materials, including reading, homework questions, and case studies, are provided herein. Use of the module does not

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CypherPunks

RESPONSIBLE COMPUTER SCIENCE

Responsible Computer Science

Teaching Modules
- Ethical Design and the Philosophy of Technology
- Crypto and Cypherpunk Ethics
- Adding Responsible CS to a Programming Assignment

Workshop Materials

Crypto and Cypherpunk Ethics

In the early-1990s, the cypherpunks emerged as a grassroots movement simultaneously criticizing the emerging government mass surveillance made possible by the computer revolution and advocating the widespread use of digital encryption as the best means for individuals to protect their personal privacy from such surveillance. This module draws upon cypherpunk and cypherpunk-related ethical analyses of cryptography to explore the ongoing debates involving personal privacy, national security, system/device security, and the meaning of an open society. Through reading, discussion, and small group work, students will develop conceptual and practical knowledge about the ethics of cryptography.

- Overview
- Instructor Guide
- Instructor Slides
- Student Handout, Lesson A
- Student Handout, Lesson B

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Deep Fakes Overview

In this module we will investigate and experience deepfakes through some video and text narratives. The goal is to think about the implications of deepfakes for society and the role of developers in creating these digital artifacts.

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Richard M. Nixon

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Deepfake

Video Games

Places to Look for Modules

EmbeddedEthiCS, Harvard University

HARVARD
UNIVERSITY

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Embedded EthiCS[TM] @ Harvard: bringing ethical reasoning into the computer science curriculum.

Modules

Search Course Modules

Operating Systems (CS 161) - 2019 Spring
Course description
Module Topic: Safety and design of Operating Systems
Module Author: Kate Vredenburgh
...

Read more ▶

Markula Center, Santa Clara University

Markkula Center
for Applied Ethics
at Santa Clara University

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Technology Ethics

Home › Markkula Center for Applied Ethics › Focus Areas › Technology Ethics

In Technology Ethics, the Markkula Center for Applied Ethics addresses issues arising from transhumanism and human enhancement ethics, catastrophic risk and ethics, religion and technology ethics, and space ethics.

AI ethics and corporate tech ethics development and training are researched, created, and delivered in collaboration with Internet Ethics.
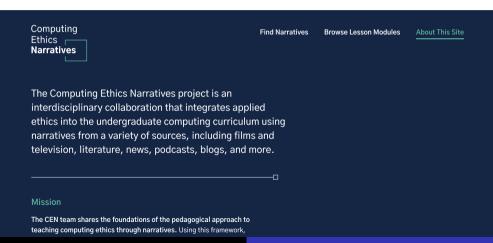
Technology Ethics Resources

Articles

Cases

Engineering Ethics

Internet Ethics

Ethics in Tech Practice

Computing Ethics Narratives

Computing
Ethics
Narratives

Find Narratives   Browse Lesson Modules   About This Site

The Computing Ethics Narratives project is an interdisciplinary collaboration that integrates applied ethics into the undergraduate computing curriculum using narratives from a variety of sources, including films and television, literature, news, podcasts, blogs, and more.

Mission

The CEN team shares the foundations of the pedagogical approach to teaching computing ethics through narratives. Using this framework,

There's So Much More

And never time for questions. Email me.