NOW

ACCEPTING APPLICATIONS FOR SPRING 2023 TA's

Applications are open OCTOBER 5th – OCTOBER 31st

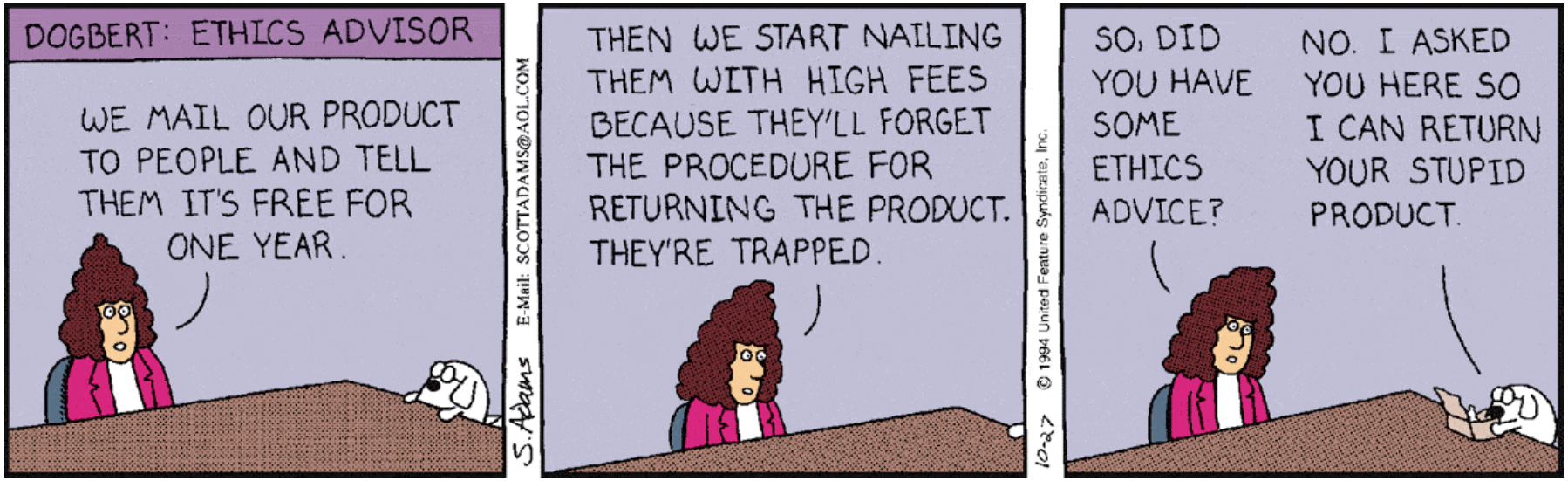
All you need is a 3.0 GPA and a desire to teach others about something you have recently learned.

https://wsu.co1.qualtrics.com/jfe/form/SV_6Dyck9JE5AbsKHz

You might be able to get credit, which can be used as a Free Elective, or a scholarship for doing so.

- Must be EECS student
- Must have A or A- in 302
- First time, 3 credits of 499 satisfying technical elective
- $1,500 each time after

Lect. #16: Professional Ethics 2



dilbert.com/strip/1994-10-27

Agenda for Today

1. Seven-Step Strategy Redux (E6)

2. SECEPP

3. Applications of SECEPP

Announcement

- GCS-PM plan due Friday, 10.28.22, before 11:59 pm; team grade and worth 9%
- As announced, lots of files have been posted in Canvas in the Ethics and GCS Information module; use rubrics while working on your reports
- Questions?

Poll

Does it seem odd to you that when we use the seven-step strategy, stronger arguments are typically invalid?

A. Yes

B. No

C. Only a little

D. Other

Comments on the Seven-Step Strategy

- In formal logic, testing the validity of an argument requires a complicated approach
- The seven-step strategy is based on informal logic; it's simple to apply, but this simplicity results in some weakness
- Establishing the truth of a premise can be difficult because facts and opinions aren't necessarily straightforward
- Use the seven-step strategy as a guide, but focus more on the strength of an argument

Case Study: UAVs
E6: Seven-Step Strategy Example

The U.S. should continue unmanned drone strikes. They make the world safer by destroying terrorist networks. They kill fewer civilians, as a percentage of total fatalities, than any other military weapon. They make military personnel safer. They are cheaper than engaging in ground or manned aerial combat. They are completely legal. The U.S. cannot risk falling behind the rest of the world in its development of drone technologies.

Case Study: UAVs
Step 1: Convert to Standard Form

PREMISE 1: Drones make the world a safer place by destroying terrorist networks.

PREMISE 2: Drones kill fewer civilians, as a percentage of total fatalities, than any other military weapon.

PREMISE 3: Drones make military personnel safer.

PREMISE 4: Drones are cheaper than engaging in ground or manned aerial combat.

PREMISE 5: Drones are completely legal.

PREMISE 6: The U.S. cannot risk falling behind the rest of the world in its development of drone technologies.

CONCLUSION: The U.S. should continue unmanned drone strikes.

Case Study: UAVs
Step 2: Test for Validity

PREMISE 1: Drones make the world a safer place by destroying terrorist networks.

PREMISE 2: Drones kill fewer civilians, as a percentage of total fatalities, than any other military weapon.

PREMISE 3: Drones make military personnel safer.

PREMISE 4: Drones are cheaper than engaging in ground or manned aerial combat.

PREMISE 5: Drones are completely legal.

PREMISE 6: The U.S. cannot risk falling behind the rest of the world in its development of drone technologies.

CONCLUSION: The U.S. should continue unmanned drone strikes.

- Invalid because we can find a counterexample: The U.S. can continue its development of drone technologies without drone strikes.
- **Step 3:** Invalid => go to **Step 5**

Case Study: UAVs
Step 5: Determine Whether Inductive or Fallacious

PREMISE 1: Drones make the world a safer place by destroying terrorist networks.

PREMISE 2: Drones kill fewer civilians, as a percentage of total fatalities, than any other military weapon.

PREMISE 3: Drones make military personnel safer.

PREMISE 4: Drones are cheaper than engaging in ground or manned aerial combat.

PREMISE 5: Drones are completely legal.

PREMISE 6: The U.S. cannot risk falling behind the rest of the world in its development of drone technologies.

CONCLUSION: The U.S. should continue unmanned drone strikes.

- Inductive because conclusion likely follows if premises are assumed to be true

Case Study: UAVs
Step 6: Determine Truth or Falsity of Premises

PREMISE 1: Drones make the world a safer place by destroying terrorist networks.

PREMISE 2: Drones kill fewer civilians, as a percentage of total fatalities, than any other military weapon.

PREMISE 3: Drones make military personnel safer.

PREMISE 4: Drones are cheaper than engaging in ground or manned aerial combat.

PREMISE 5: Drones are completely legal.

PREMISE 6: The U.S. cannot risk falling behind the rest of the world in its development of drone technologies.

CONCLUSION: The U.S. should continue unmanned drone strikes.

- P1: Can't determine whether true or false; may create more terrorists
- P2: May not be able to determine whether true or false; counts unavailable
- P3: Can't determine whether true or false
- P4: Can't determine actual costs
- P5: May not be able to determine whether true or false; some countries probably don't have laws about drones
- P6: Can't determine whether true or false

Case Study: UAVs
Step 7: Make Overall Assessment

PREMISE 1: Drones make the world a safer place by destroying terrorist networks.

PREMISE 2: Drones kill fewer civilians, as a percentage of total fatalities, than any other military weapon.

PREMISE 3: Drones make military personnel safer.

PREMISE 4: Drones are cheaper than engaging in ground or manned aerial combat.

PREMISE 5: Drones are completely legal.

PREMISE 6: The U.S. cannot risk falling behind the rest of the world in its development of drone technologies.

CONCLUSION: The U.S. should continue unmanned drone strikes.

- Inductive argument; difficult or impossible to evaluate truth or falsity of six premises
- Overall assessment: Weak argument in favor of continuing drone strikes

Professional Ethics: SECEPP

- Last lecture: IEEE and ACM Codes of Ethics
- In 302, we'll use the Software Engineering Code of Ethics and Professional Practice (SECEPP)
- Code for software engineering profession, but useful for all EECS majors
- Approved and adopted by two international professional societies, i.e., ACM and IEEE Computer Society

Professional Ethics: SECEPP 8 Core Principles

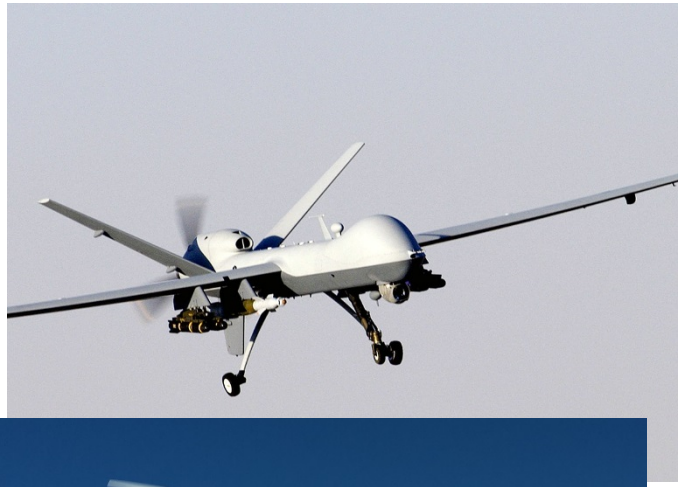
1. **PUBLIC** – (Software) engineers shall act consistently with the public interest.
2. **CLIENT AND EMPLOYER** – (Software) engineers shall act in a manner that is in the best interests of their client and employer consistent with the public interest.
3. **PRODUCT** – (Software) engineers shall ensure that their products and related modifications meet the highest professional standards possible.
4. **JUDGMENT** – (Software) engineers shall maintain integrity and independence in their professional judgment.
5. **MANAGEMENT – (**Software) engineering managers and leaders shall subscribe to and promote an ethical approach (to the management of software development and maintenance).
6. **PROFESSION – (**Software) engineers shall advance the integrity and reputation of the profession consistent with the public interest.
7. **COLLEAGUES – (**Software) engineers shall be fair to and supportive of their colleagues.
8. **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.

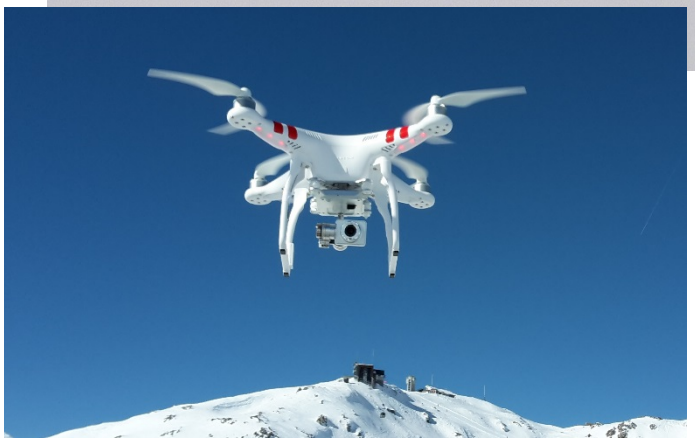
Professional Ethics: Application of SECEPP

"These Principles should influence (software) engineers to consider broadly who is affected by their work; to examine if they and their colleagues are treating other human beings with due respect; to consider how the public, if reasonably well informed, would view their decisions; to analyze how the least empowered will be affected by their decisions; and to consider whether their acts would be judged worthy of the ideal professional working as a (software) engineer. In all these judgments concern for the health, safety and welfare of the public is primary, that is, the "Public Interest" is central to this Code."

Case Study: UAVs
Application of SECEPP

- **UAVs** are remotely-controlled aircraft which may be armed with missiles and bombs for attack missions
- **Proponents** claim that drones have minimized deaths, are legal, are supported by Americans and other countries, and have made the world safer by eliminating terrorist networks.
- **Opponents** claim that drone strikes create more terrorists than they kill, kill a large number of civilians, violate international law, lack congressional oversight, and violate the sovereignty of other nations.





Breakout Discussion (8 min)

- If you can't recall the pros and cons of the use of UAVs, take a few minutes to read them at drones.procon.org/
- As a team, identify relevant clauses in the SECEPP; SECEPP available in Canvas (Ethics and GCS Information module)
- Based on your analysis, formulate a position on whether drones should be used for military operations.
- Write down your argument in sentence form

Breakout Discussion (4 min)

- Construct a formal argument in standard form using SECEPP clauses to support your position on UAVs
- You will need at minimum, three premises:
  - Premise stating that you're using SECEPP
  - Premise(s) identifying relevant clauses and describing how they apply to them in the scenario
  - Premise stating that actions/decisions must be in accordance with SECEPP
- Choose someone to present your argument

Poll

Should the United States continue to use UAVs as they have been?

A. Yes

B. No

C. Other

Hypothetical Scenario: George and the Jet Application of SECEPP

George Babbage is an experienced software developer working for the Acme Software Company. Mr. Babbage is now working on a project for the U.S. Department of Defense, testing the software used in controlling an experimental jet fighter. George is the quality control manager for the software. Early simulation testing revealed that, under certain conditions, instabilities would arise that could cause the plane to crash. The software was patched to eliminate the specific problems uncovered by the tests. After these repairs, the software passed all the simulation tests.

George is not convinced that the software is safe. He is worried that the problems uncovered by the simulation testing are symptomatic of a design flaw that can only be eliminated by an extensive redesign of the software. He is convinced that the patch that was applied to remedy the specific tests in the simulation did not address the underlying problem. But, when George brings his concerns to his superiors, they assure him that the problem has been resolved. They further inform George that any major redesign effort would introduce unacceptable delays, resulting in costly penalties to the company.

There is a great deal of pressure on George to sign off on the system and to allow it to be flight tested. It has even been hinted that, if he persists in delaying the system, he will be fired. What should George do next?

– Gotterbarn and Miller, 2004

Professional Ethics: Application of SECEPP
1. PUBLIC and 3. PRODUCT

For George Babbage scenario, relevant clauses are:

- 1.03: Approve software only if they have a well-founded belief that it is safe, meets specifications, passes appropriate tests, and does not diminish quality of life, diminish privacy or harm the environment. The ultimate effect of the work should be to the public good.
- 1.04: Disclose to appropriate persons or authorities any actual or potential danger to the user, the public, or the environment, that they reasonably believe to be associated with software or related documents
- 3.10: Ensure adequate testing, debugging, and review of software and related documents on which they work.

Professional Ethics: Application of SECEPP
1. PUBLIC and PRODUCT

For homework and report, cite specific clauses; include number and text

For George Babbage [illegible]

- 1.03: Approve software only if they have a well-founded belief that it is safe, meets specifications, passes appropriate tests, and does not diminish quality of life, diminish privacy or harm the environment. The ultimate effect of the work should be to the public good.
- 1.04: Disclose to appropriate persons or authorities any actual or potential danger to the user, the public, or the environment, that they reasonably believe to be associated with software or related documents.
- 3.10: Ensure adequate testing, debugging, and review of software and related documents on which they work.

Professional Ethics: Application of SECEPP 1. PUBLIC and 3. PRODUCT

- George Babbage must contend with **safety** issues
  - Test pilot is putting life on line (but pilot is used to this)
  - If plane crashes, it may hit people on ground (pilot could unintentionally fly over populated area)
  - Clause 1.03 makes safety a priority; Clause 3.10 requires adequate testing
  - George recognizes these issues and, by Clause 1.04, discloses his professional opinion to his superiors
  - **George is forced to choose between loyalty to his employer and his obligation to public safety**

Professional Ethics: Application of SECEPP
5. MANAGEMENT

For George Babbage scenario, relevant clauses are:

- 5.01: Ensure good management for any project on which they work, including effective procedures for promotion of quality and reduction of risk.
- 5.11: Not ask a software engineer to do anything inconsistent with this Code.

Professional Ethics: Application of SECEPP
5. MANAGEMENT

- SECEPP requires George's managers to act ethically:
  - "Ensure effective procedures for promotion of quality and reduction of risk"
  - Do "not ask a software engineer to do anything inconsistent with this Code"
- Managers might argue that an adequate process was followed and problems have been addressed (difference of opinion)
- Burden is to prove it is safe before it is released, rather than proving it unsafe
- Possible compromise: Delay release in order to conduct further tests

POLL

Which of the two sets of UAV arguments did you think was more compelling?

A. Pro drone strike arguments

B. Con drone strike arguments

C. Both sets were equally compelling

D. Neither set was compelling