L11: Ethical and legal issues

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Motivation

**Job hunting scenario**

- You’re conducting a job search on your senior year
- You’ve interviewed with several companies
- Company A offers you a job, you accept the position and sign a contract agreeing to a starting salary, position and start date
- Two weeks later, Company B offers you a job with a higher starting salary and a more interesting position

- Do you turn down the offer from Company B?
- Do you accept their offer, and inform A you’re not working for them?
Definitions

Ethics
— The study of moral obligations
— If there is no decision to be made, there is no ethical dilemma

Morality
— Concerned with principles of right and wrong and the decisions that derive from these principles
  • Often taught by stories shared by all cultures, e.g. boy cry wolf

Principles
— Fundamental laws that govern behavior
  • e.g., the Golden Rule shared by all major religions

Values
— Whatever a person or group believes to be worthwhile
  • e.g., valuing hard work (good value)
  • e.g., valuing theft, unless it is from your own group (bad value)
Rule-based ethics

– In the strictest sense, rules can be considered to be absolute: either you follow the rule (good) or break it (bad)
– This type of ethical system is based on two principles
  • Universality: when the rules can be accepted by everyone
  • Transitivity: you would accept others applying the rules to you
– The challenge is to find a set of rules that everyone agrees on

Conditional rule-based ethics

– When there are certain conditions under which a rule can be broken
  • Breaking the speed limit while driving an injured person to a hospital?
  • Cheating in an exam b/c you had to work extra hours to pay medical bills?
Utilitarian ethics

– Decisions are made to bring about the highest good for all
– Challenges
  • How do you determine what the highest good is?
  • What to do if the decisions are really bad for certain parties?

Situational ethics

– Decisions are made to produce the highest good for the individual in the situation at hand
– Generally considered a poor ethical decision-making approach
Job hunting scenario

- You’re conducting a job search on your senior year
- You’ve interviewed with several companies
- Company A offers you a job, you accept the position and sign a contract agreeing to a starting salary, position and start date
- You inform all other companies you’re no longer available
- Two weeks later, Company A tells you they are rescinding their offer and are giving you a $1,000 compensation
- Later you find out they offered your job to another student in your class who had a higher GPA and more work experience

- Was the company’s decision ethical?
- How about your decision a few slides ago?
Intellectual property

Deals with the question of “who owns it”

– On your first day of work at a new company you may be asked to sign a contract so that they own all of the IP you create while on payroll

– You may also have to sign a non-compete clause preventing you from working for a direct competitor for a given period of time after leaving the company

Three ways of protecting IP

– Patents

– Trade secrets

– Copyrights
Patents

– The most well-know method to protect IP

– Utility vs. design patents
  • Utility: focuses on a useful process, machine, etc.
  • Design: focuses on ornamental aspects of a design

– A utility patent must meet three conditions
  1) It must be novel, meaning that nothing like it already exists
  2) It must be non-obvious, meaning that another person would not be expected to develop it based on existing technology
  3) It must be useful, meaning that it must perform a useful function and can be reduced to practice (i.e., you must be able to implement it)

– The elements of a patent are
  1) A citation of prior art: a list of similar patent or publicly available tech
  2) A description of the invention: how it operates and how it would be reduced to practice
  3) Claims: the legal description and the unique aspects of the invention
– In the US, patents are granted based on the concept of **first to conceive**, not first to file
  • Good records are therefore needed to prove this
  • Typically requires bound design notebook
– Once granted, a patent is valid for 20 years
  • After that period, it is fair game for anyone to use it
– Patents have drawbacks
  • The owner must be vigilant to defend it and initiate legal action
  • Once patented, the idea is made public for all to see
Trade secrets

– Rather than patent the idea, keep it secret!
  • Restrict the number of people who have access to the idea, and
  • Have those who know sign a non-disclosure agreement

– Drawback
  • If somehow the trade secret is made public, it is fair game for everyone to use it

– Reverse engineering
  • The process of taking apart a device to understand how it works
  • Digital Millennium Copyright Act (2000)
    – Criminalizes the act of circumventing measures that control access to copyrighted works (digital rights management)
Copyright

- Protects published works such as books, articles, music and software
- Others cannot distributed the materials without permission
- It is relatively easy to copyright
  - Just indicate the word “copyright” on the work, and include the year of publication and the name of the copyright holder
  - You can also register it through the US Copyright Office
- Good for the lifetime of the owner plus 50 years (75 years if company)

Copyleft

- A general method for making software free, and requiring all modified and extended versions of the program to be free as well
Liability and negligence

**Liability**

- A company or person can be sued for damages caused by a product design and be held liable for them (i.e., required to pay money)
  - There are two liability standards: negligence, and strict liability

- **Negligence** claims can be brought for design flaws, manufacturing defects and for failing to warn the user of safety hazards
  - An act is defined a legally negligent if the following 4 hold true:
    - The manufacturer had a duty to follow reasonable standards and rules
    - There was a breach of duty (i.e. failed to include safety devices)
    - The plaintiff was harmed
    - The breach caused the harm

- **Strict liability** focuses on the product itself: if the product contains a defect that caused harm, the manufacturer is liable
  - This is a less stringent standard: the person/company suing you does not have to prove negligence; you are liable if the following four things hold true:
    - The product was dangerous and/or defective
    - The defect existed when it left the manufacturer’s control
    - Defect caused harm
    - The harm is assignable to the defect
Handling ethical dilemmas

Use the **newspaper test** to evaluate decisions: would you be comfortable if the decision were published in a newspaper for all to see?
Whistleblowers

– There may be situations in which you are put in an ethical dilemma by your employer that cannot be resolved internally
– In such cases you may go outside the company to report the problem
– The following four criteria must be met:
  • The harm to the public must be considerable or serious
  • Concerns must have been made to your superiors (up to the CEO) without satisfactory resolution
  • You have documented evidence that would convince an impartial observer that your company is wrong
  • Release of the information outside of the company will prevent the harm
Incorporating ethics in the design process

– Have you conducted adequate research to understand prior art? Are you infringing on patents or copyrights?
– Do your requirements specifications meet the needs of the stakeholders?
– Did you make the design space as large as possible?
– Did you identify and apply relevant safety standards?
– Did you consider all possible ways a design can fail?
– Did you consider ways the product can be misused?
– Did you conduct design reviews?
– Have you reversed engineered another’s product?
– Are your cost & project schedules fair & realistic?
– Did the design pass acceptance tests (verification)?