Intellectual Property

Ethics and Computing
Chapter 8

Motivation

- Most new ideas in the computer field involve intellectual property
- Intellectual property must be protected to promote development of new and useful things
U.S. Constitution

- Article 1, Section 8
- “Congress shall have the power … to promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.”

ACM Code of Ethics

- General moral imperatives 5 and 6
  5. Honor property rights including copyrights and patents
  6. Give proper credit for intellectual property.
IEEE Code of Ethics

- Item 7

7. Seek, accept, and offer honest criticism of technical work, acknowledge and correct errors, and credit properly the contributions of others.

AITP Standards of Conduct

- Not use or take credit for the work of others without specific acknowledgment and authorization.
Software Engineering Code

- Principle 5.9
- Ensure that there is a fair agreement concerning ownership of any software, processes, research, writing, or other intellectual property.

Intellectual Property

- Non-physical product created through intellectual effort
- Legal issue: Opportunity for profit
- Protection intended to
  - Preserve motivation to develop new and useful things
  - Enforce fairness in business dealings
Intellectual Property Protection

- Patents
- Copyrights
- Trade secrets

Patents

- First U.S. patent law signed by George Washington in 1790
- U.S. Patent and Trademark Office (PTO)
- Good for 20 years
  - Then open to public
Patent Eligibility

- Any new and useful process, machine, manufacture or composition of matter, or any new and useful improvement thereof
- Must satisfy tests of novelty, originality, utility, and nonobviousness

Patent Eligibility Tests: *Novelty*

- Invention must be new relative to “prior art”
  - All existing technology that can be reasonably known to someone working in the field
- Cannot have been described in print or offered for sale, even by applicant, prior to one year before patent application date
Patent Eligibility Tests: *Originality*

- Applicant for patent must be the actual inventor
- Patent granted in the name of a person or persons
- Rights may be assigned to a corporate entity

Patent Eligibility Tests: *Utility*

- Invention must be able to do what it is claimed to do
- Function must serve some purpose or need
- The purpose or need must be legal and moral
Patent Eligibility Tests: *Nonobviousness*

- Obvious if someone with ordinary skill in the area and access to prior art considers the invention obvious
- Distinct from similar patents in the area
- Documented significant effort by people of ordinary skill in the area

Obtaining a Patent

- PTO application
  - Describe invention and how to make it
- Based on “date of first invention”
- Reexamination
- PTO board of appeals
  - Federal court
  - U.S. Supreme court
Patent Issues

- Employer/employee patent rights
- Patent rights can be transferred or sold
- Infringement
- International patents
  - Duration, origin, disclosure
- On-line patent searches
  - www.uspto.gov

Copyrights ©

- Intended to protect ownership of original creative and artistic works
- Work need not be published
- Protects expression of idea, not idea itself
  - Can use different algorithm to accomplish same purpose
  - Can use copyrighted algorithm for a different purpose
Obtaining a Copyright

- You have one as soon as work fixed in some tangible medium
- Can apply for a registered copyright with the Copyright Office
  - Useful for infringement protection
- Good for life of author plus 50 years

Copyright Use and Infringement

- “First sale” rule except for easily copied material
- Protects against translation to other languages
- Infringement requires access and substantial similarity
- E.g., plagiarism
Software Piracy

- Global losses ~ $13 billion per year
- Penalties: 5 years prison and $250,000 fine
- Some countries do not honor IP treaties
- Organizations against software piracy
  - Business Software Alliance
    - www.bsa.org
  - Software and Information Industry Association
    - www.siia.net

Trade Secrets

- Useful when you do not want the idea in the public domain
- Nondisclosure agreements used to control transmission of idea
- “No compete” agreement to prevent competition from ex-employees
- Not governed by federal law
  - Laws vary across jurisdictions
Other IP Issues

- Reverse engineering
  - Ethical when used for understanding and improvement
  - Unethical when used just to duplicate
- “Look and feel” copyrights
  - Some protection
  - Still being refined in courts

Software Patents

- Patent protection for
  - Hardware control software?
  - System software?
  - Pure algorithm?
- Do software patents “…promote the progress of science and useful arts”?
Points to Remember

- Illegal and unethical
  - Knowingly infringe on a valid patent or copyright, including copying copyrighted software
  - Hire someone away from another company to obtain trade secrets
  - Violate a valid nondisclosure or “no compete” agreement

- Unethical
  - Make claims in a patent application when prior art invalidating the claims is known to exist
  - Use false claims of patent infringement to intimidate competitors
  - Appropriate other’s ideas and present them as your own
  - Use unreasonable clauses in a “no compete” agreement
Points to Remember

- Few, if any, new ideas are developed without influence from existing ideas.
- Intellectual property protection is intended to promote, not stifle, the development of new ideas.

Resources

- U.S. Constitution
  www.nara.gov/exhall/charters/constitution
- U.S. Patent and Trademark Office
  www.uspto.gov