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# Computer Law and Ethics, COSC-3325, Lecture 1

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# Computer, Law and Ethics

- COSC-3325-01 is a 3 credits points module.
- Module homepage
  - <http://galaxy.lamar.edu/~sandrei/cosc-3325/>
- Teaching
  - Lectures: Monday, Wednesday, Friday, 12:20pm-1:10pm, room 111

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# Consultation and Reading list

- Dr. Stefan Andrei, [Stefan.Andrei@lamar.edu](mailto:Stefan.Andrei@lamar.edu) (please send an email to make an appointment - MA2, #69)
- Reading list for students in order to write the presentation/technical report including but not limited to:
  - The ACM digital portal: <http://portal.acm.org/portal.cfm>
  - The IEEE digital portal:  
<http://www.computer.org/portal/site/csdl/index.jsp>
  - The Lamar University library: <http://library.lamar.edu/>

# Reading materials - Reference textbooks

- Lectures based of the book:
  - Sara Baase: A gift of Fire: Social, Legal, and Ethical Issues for Computing and the Internet, 2008 (third edition), ISBN: 978-0-13-600848-4
- Communications of the ACM ([www.acm.org/cacm](http://www.acm.org/cacm))

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# Course Objectives

1. To give an introduction to the ethical style of good writing in computer science;
2. To present the social, legal, philosophical, and economic issues related to computers that members of a technological society might face in their professional and civic lives;
3. To discuss Copyright Laws/Issues and Model Ethical Acquisition and Use of Digital Information, Citing Sources Using Established Methods
4. To describe Proper Etiquette and Knowledge of Acceptable Use Policies when Using Networks, Especially Resources on the Internet and Intranet
5. To discuss Measures, Such As Passwords or Virus Detection/Prevention, to Protect Computer Systems and Databases from Unauthorized Use and Tampering
6. To describe the Impact of Computer Programming on the World Wide Web (WWW) Community

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# Student learning outcomes

- To think critically and ethically about computer science field;
- To discover and investigate relevant lawful information in order to gain knowledge and solve problems;
- To analyze information and ideas using appropriate methods;
- To ethically generate his/her own ideas and express them effectively orally and in writing;
- To deliver an ethical point of view and develop it with awareness of alternatives.

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# Grading criteria:

- The grade for the course will be based on:
  1. Assignments: 10%
  2. Midterm exam: 20%
  3. Presentation and written report: 30%
  4. Final exam: 40%

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# Policies:

1. Assignments that are turned in late will be assessed a late penalty of 20% and will be accepted for only one class period after the original due date.
2. There is no make-up final exam unless you have a **DOCUMENTED** medical or personal **EMERGENCY**.
3. All work in this course is to be your own. Anyone caught copying, plagiarizing or otherwise cheating on a homework assignment will get a 0 on that assignment. Anyone caught copying, plagiarizing or otherwise cheating on the final exam will get an F in the course. The same applies to those who allow their materials to be copied.



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# Lecture Structure

- Reminder of last lecture
- Overview
- Content (new notions + examples)
- Summary
- Reading suggestions
- Coming up next

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# Overview of This Lecture

- Rapid Pace of Change
- New Developments and Dramatic Impacts
- Issues and Themes
- Ethics

# Rapid Pace of Change

- 1940s: The first computer is built
- 1956: First hard-disk drive weighed a ton and stored five megabytes
- 1991: Space shuttle had a one-megahertz computer
- 2006: Pocket devices hold a terabyte (one trillion bytes) of data
- 2006: Automobiles can have 100-megahertz computers.
- ...

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# Rapid Pace of Change: Discussion Question

- What devices are now computerized that were not originally? Think back 10, 20, 50 years ago.
- In addition to automobiles, here are some other computerized devices:
  - TVs, clocks and watches, phones, cash registers, cameras, ovens, etc.

# New Developments

- Blogs (Word made up from ‘web log’):
  - Began as outlets for amateurs who want to express ideas or creativity;
  - Appealing because present personal views, are funny and creative, and present a quirky perspective on current events;
  - Now used as alternatives to mainstream news and for business public relations;
  - Popular blogs have 100,000 to 500,000 readers per day and can peak at several million views per day.

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# New Developments (cont.)

- Video Sharing:
  - Rise of amateur videos on the web;
  - Boom of websites like Youtube and Myspace;
  - Many videos on the web can infringe copyrights owned by entertainment companies.

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# New Developments (cont.)

## ■ Cell Phones:

- ❑ Can now be used for travel, last minute planning, taking pictures and downloading music;
- ❑ Talking on cell phones while driving is a problem;
- ❑ Cell phones can interfere with solitude, quiet and concentration;
- ❑ Cameras in cell phones and privacy issues.

# Impact of cell phones in the society

- Some states have passed laws prohibiting use of hand-held devices.
  - Recent studies show hands-free devices, while freeing up the hands, do not reduce distractions, particularly among young adult and teenage drivers who often text message while driving.
- Cameras in cell phones threaten privacy.
  - Where is the line between capturing news events and evidence of crimes, and voyeurism?



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# New Developments (cont.)

## ■ Social Networking:

- ❑ First online social networking site was [www.classmates.com](http://www.classmates.com) in 1995;
- ❑ Myspace, founded in 2003 had roughly 100 million member profiles by 2006;
- ❑ Facebook was started at Harvard as an online version of student directories.

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# [www.secondlife.com](http://www.secondlife.com)

- Sites like Second Life ([www.secondlife.com](http://www.secondlife.com)) combine many of the features of social networking sites with the 3-D aspects of video games.
- What new problems/benefits arise when a person can take on a physical persona (an avatar) that may be completely different from who they are in real life?
- Some people with physical disabilities can interact with others without revealing their handicap.

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# New Developments (cont.)

- **Collaboration:**
  - Wikipedia, the online, collaborative encyclopedia;
  - Open Directory Project (ODP);
  - Collaboration between scientists in different states or countries;
  - Watch-dogs on the Web.

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# Wikipedia

- Wikipedia = collaborative encyclopedia with no editorial board in control.
- Benefits: is free, online, and open to voluntary contributions, has valuable information for public, is updated, is reasonable reliable.
- Warnings: it has flaws, errors, and is poorly written and definitely biased.
  - Example: Wikipedia's reliability was brought into question when a major contributor was found to be a 14 year-old boy instead of a scientist with a PhD and years of experience. He got most of his information from other Web sources.

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# Open Directory Project (ODP)

- ODP is the directory of the Web organized by topic areas, created by thousands of volunteers around the world.
- Many popular search engines (Google, Lycos, Netscape Search, AOL Search) use the ODP to provide their directory services.

# Web watch-dog sites

- Many online collaborative projects are beneficial.
- However, there exist some controversial collaborative projects, such as Web Watch-dog sites.
  - **Example 1:** In China, a man posted online the name of another man believed to have an affair with his wife, encouraging public action against him.
  - **Example 2:** Anti-abortion activists created a website with names and home addresses of doctors performing abortions → some doctors were killed.

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# New Developments (cont.)

- Traditionally, the Web was used only for research, information, and online communities.
- In the 1990s, the idea of commercial Web sites horrified Web users.
- The mail services used Web, for the first time, allowing their customers tracking the mail:
  - United Parcel Service
  - Federal Express

# Electronic commerce

- [www.amazon.com](http://www.amazon.com) started in 1994 and 10 years later annual sales reached \$8.5 billion;
- The online sales increased in the U.S. ten times from 1999 until 2005.
- The amount of purchases and sales on eBay was \$20 billion in 2005 and \$329 billion in 2010.
- The online sales brought down the prices by 10-40% (no need to go to the store in person, etc).
- PayPal is a very trustful company for secure encrypted transactions.
- This competition led traditional stores to adopt more consumer-friendly return policies.



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# Free Stuff on the web

- Libraries provided free access to books, newspapers and journals for generations before invention of computers.
  - The libraries are maintained from income taxes.
- Using computers, we have now free email, books, newspapers, games, TV show episodes, browsers, filters, firewalls, encryption software, software to view photos, movies, listen music, etc.
- Major universities (Stanford, Yale, MIT) post freely lecture notes and exam scripts for free.
  - The free sites on the web are maintained with money from advertisers.
  - Wikipedia does not carry advertisers, but donations.
  - Generosity and public service flourish on the Web.

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# New Developments (cont.)

- Artificial Intelligence (AI), Robotics, and Motion:
  - AI is a branch of computer science that develops theories and techniques for making computers perform tasks that require human intelligence.
  - Robots are mechanical and electronic devices that perform tasks traditionally done by humans.
  - Motion sensing devices are used to give robots the ability to walk, trigger airbags in a crash and cushion laptops when dropped.

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# Artificial Intelligence

- It includes playing strategy games like chess, language translation, diagnosing diseases, making decisions on large amount of data, understanding speech, vision capture, etc.
- Learning is a characteristic of AI based on pattern recognition (e.g., automatic sorting of mail).
- In 1997, IBM's chess computer, Deep Blue, beat World Champion Garry Kasparov!
- **Question 1:** Do computers outperform human intelligence?
- **Question 2:** How much can we trust computers? Can we rely on a surgery only done by computers?

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# Robotics

- Robotics arms have been assembling products in factories for decades.
- They work faster and more accurately than people.
- Robots are in general controlled by software and include aspects of AI.
- Most robots are special-purpose devices, with a limited set of operations.

# Examples

1. MacDonald's and other fast food sellers installed robotic food preparation systems to increase speed and reduce costs.
2. A robot pharmacist machine, connected to a patient database, plucks the appropriate medications from pharmacy shelves by reading bar codes to reduce the human error.
3. Physicians do complex surgeries using control robotics instruments as the software filters the physician's shaky movements.
4. Robots work in environments hazardous to people, searching survivors and exploring volcanoes and planets.

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# Robots with more general abilities

- Sony™ designed a robot pet-dog, called Aibo – it can walk, see, respond to commands, and learn from experience.
- Honda™ designed a robot with human shape, called Asimo, who can walk up and down stairs, act intelligently and perform a variety of operations to assist people.

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# Motion sensing and control

- Tiny motion-sensing and gravity-sensing devices collect status data.
- Software interprets the data and determines the necessary motions, then sends signals to motors.
- These devices help robot to stay upright.
- They provide image stabilization in digital cameras.
- They can detect when the car has crashed and deploys an airbag and/or triggers a lock on the computer hard disk to reduce damage.

# New Developments (cont.)

- Tools for Disabled People:
  - Restoration of abilities, productivity and independence to people with physical disabilities;
  - Some computer-based devices assist people to access Internet, create documents, control household and workplace appliances;
  - BlackBerry® is a very popular text-messaging device among Deaf people;
  - For people who are blind, a computer equipped with speech synthesizer can read aloud what a sighted person sees at a screen;
  - Prosthetics devices have improved from analog to digital using motion sensors that makes the leg adapt to person's walking.



# New Developments (cont.)

## ■ What's Next?

- Systems when a user manipulates 3-D images with hand movements, without touching the screen, e.g., mechanics, cooks, surgeons, could examine reference materials while working.
- Medical records on chips (smaller than a grain of rice) attached to medical bracelets.
- Biological and computer sciences will combine new ways to insert micro-processors or controlled devices on human bodies, e.g., to restore control and motion to people.

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# New Developments (cont.)

## Discussion Questions

- What changes and new developments do you expect in the next 50 years?
- How will life be different than it is today?

# Issues and Themes

## ■ Issues:

### □ Unemployment:

1. Between 1983-1993 when ATMs were introduced, the number of bank tellers dropped from 480,000 to 301,000.
2. Online banking services eliminated more teller jobs.

### □ Alienation and customer service:

1. The ATM may be confusing.
2. We might have a question ATM cannot answer.

### □ Crime:

1. If someone steals our account number and other personal information, then he may create fraud.
2. Instead, a human teller might be able to discover the fraud and identify the suspect.

# Issues and Themes (cont.)

## ■ Issues:

### □ Loss of privacy:

1. ATMs transactions are recorded in a database at a bank, the record of person's transactions at various ATMs can provide information about the person's whereabouts and activities.
2. Online account information is at risk from hackers.

### □ Errors:

1. An error in the computer program that operated the ATMs for a large New York bank caused accounts to be debited twice the amount of the actual withdrawal; in less than a day, more than 150,000 transactions (totaling more than \$15 million), were incorrectly recorded.

# Issues and Themes (cont.)

## ■ Themes:

- ❑ Old problems in a new context: crime, pornography, violent fiction and games, advertising, copyright infringement, gambling, and products that do not work right;
- ❑ Adapting to new technology: thinking in a new way about how to protect ourselves;
- ❑ Varied sources of solutions to problems: natural part of change and life because of improved technology, the market, management policies, education and public awareness, volunteer efforts, and law.

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# Issues and Themes (cont.)

- Themes (cont.):
  - Global reach of net: ease of communication with distant countries has profound social, economic, and political effects – some beneficial, some not.
  - Trade-offs and controversy: increasing security means reducing convenience; protecting privacy makes law enforcement more difficult.
  - Differences between making personal choices, making policies for business and organizations, and for writing laws are fundamentally different.

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# What is Ethics?

- Ethics is the study of what it means to “*do the right thing*”.
- Ethical theory assumes people are rational and make free choices.
- Rules to follow in our interactions and our actions that affect others.
- Behaving ethically includes being honest, keep promises, do not steal, and do our jobs.
- Sometimes, however, it is difficult to do the right thing; it takes courage in situations where we could suffer negative consequences.

# What is Ethics? (cont.)

- The study of right versus wrong acts is not simple.
- Ethical Views:
  1. **Deontological:** means the rules are to be followed regardless of consequences (that is, never lie).
  2. **Utilitarianism:** means it is alright if the consequences are good (that is, it is ok to lie if it saves a life).
  3. **Natural rights:** means to let people make their own decisions within limits (that is, the act is ethical if it was freely made without deception; and it implies that stealing, killing, deception are unethical).
- There are no simple answers.



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# The Deontological View

- Deontological means to follow the absolute rules regardless the consequences, e.g., “never lie.”
- Kant provided three deontological principles:
  - Universality: “*We should follow the rules of behavior that can be universally applied to everyone*”, that is, “*do not do to others something that you do not like*”.
  - Rationality: “*Respect the reason in you.*”; using reason, rationality, and judgment, rather than emotions, when making a decision in an ethical context, is a wise one.
  - Interaction: “*One must never treat people as merely means to ends, but rather as ends in themselves*”.

# Controversy to the Deontological View

- The universal principle of the deontological view could lead to controversy:
- Example:
  - If a person is looking for someone he intends to murder, and he asks you where the intended victim is, the universal principle says it is wrong for you to lie to protect the victim.
  - Most of the people disagree because of the consequences.

# Utilitarianism

- The guiding principle is the “utility” or happiness.
- A person’s utility is what satisfies the person’s needs and values.
- An action may increase utility for some people, but decrease it for others.
- The utility for all affected people is called “aggregate utility”.
- Utilitarianism says an act is right if it tends to increase the aggregate utility and wrong if it tends to decrease it.
- Utilitarians agree that the rule “Do not lie” increases the aggregate utility, but there is no precise calculation for each instance where lying is considered.
- However, the utilitarians agree that it is Ok for you to lie to protect the victim (which is opposite to deontological view).

# Controversy to the Utilitarianism view

1. Utilitarianism might be difficult or impossible to determine all the consequences of an act.
  - ❑ Do we choose the acts contributing to happiness of people or let them decide that?
  - ❑ Should some people's utility be given more weight than others?
2. Utilitarianism does not recognize or respect individual rights, that is, a person has no protected domain of freedom.
  - ❑ Example: If there is a convincing case of killing one innocent person to distribute his organs and properties, and redistributing to many community members maximizes the utility in that community, utilitarianism could justify these acts.

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# The 'Natural Rights' View

- This view respects a set of fundamental rights, such as the rights to life, liberty, and property.
- John Locke argued that for a natural right to property that we create or obtain by mixing our labor with it.
- Respect for these rights implies ethical rules against killing, stealing, deception, and coercion.

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# Controversy to the 'Natural Rights' View

- Some natural rights believers think it is ethical to be involved in voluntary interactions and free exchanges, where the parties are not coerced or deceived.
- Some natural rights believers think it is unethical if the above actions leaves some people poor.

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# There are no Simple Answers

- There is no formula/algorithm to solve any ethical problem.
- Human behavior and real human situations are complex.
- One real ethical problem may not clearly fit into a single view, such as, deontological, utilitarianism, or natural rights.
- However, all views have merit:
  - Kant's emphasis on treating people as intrinsically valuable "ends";
  - Utilitarianism's consideration of consequences and increasing achievements for people's happiness;
  - Natural-rights approach to set minimum rules to guarantee own values and judgment.

# Do organizations/businesses have ethics?

- Some philosophers argue that it is meaningless to speak of a business or an organization as having ethics:
  - People make all decisions and take all actions.
- Others argue that an organization that acts with intention and a formal decision structure is a moral entity.
  - Both the individuals and company are responsible for their acts.
- People in management positions shape the culture, ethics, and personality of an organization.



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# Important Distinctions

- It is misleading to divide all acts only in two categories:
  - Ethically right and
  - Ethically wrong.
- Rather, it is better to think of acts as either:
  - Ethically obligatory
  - Ethically prohibited
  - Ethically acceptable
- Hence, when dealing with ethical dilemmas, we may have right, wrong, and okay decisions.

# Negative rights and positive rights

- Negative rights (a.k.a., liberties):
  - Merely oblige others to *refrain* from interfering with someone's attempt to do something;
  - They mean the right to act without interference;
- Examples:
  - the right to life,
  - to be free from assault,
  - to use your property,
  - to use your labor, skills, and mind to create goods and services,
  - to access the Internet, etc.

# Negative rights and positive rights (cont)

- Positive rights (a.k.a., claim-rights):
  - Impose a moral obligation on a person to do something for someone;
  - An obligation of some people to provide certain things for others.
- Examples:
  - A positive right to life means that some people are obligated to pay for food and medical care for others who are out of work.
  - Access to Internet, as a claim right, could require such things as taxes on out telephone bills to provide subsidies access to poor people.

# Conflict between negative rights and positive rights

- Some people think liberties are almost worthless by themselves, and the society must devise social and legal mechanisms to ensure that everyone has their positive rights satisfied, even if that means diminishing liberties of some.
- Other people think that there can be no positive rights, because it is impossible to enforce claim rights for some people without violating the liberties of others → hence, the protection of negative rights is ethically essential.

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# Ethics (cont.)

- Important Distinctions (cont.):
  - Difference between wrong and harm;
  - Personal preference and ethics;
  - Law and Ethics.

# Difference between wrong and harm

- Carelessly causing harm is wrong, but harm alone is not sufficient to say an act is unethical.
- Many admirable acts may make people worse off:
  - Example: creating a better software may put many competitors or workers out of business.
- Lack of harm does not mean that an act is ethically acceptable:
  - Example: hackers used to argue that breaking a computer is no harm.
- However, hacking is a violation of property rights.
  - Example: A person has no right to enter your property without your permission, independent of any harm done.

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# Personal preference and ethics

- It might be hard to draw the line between right and wrong.
- Example:
  - You are part of an organization that believes in anti-abortion, and they ask you to set up a web site for it. You believe in freedom of speech, but you find the job distasteful.
  - Question: If you decline the job, are you acting on ethical grounds?
- The organization's freedom of speech does not impose an ethical obligation on you for the job.

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# Law and Ethics

- There are no questions for acts that are either both lawful and ethical or both unlawful and unethical.
- The laws implement the obligations and prohibitions of ethical rules (e.g., against murder and theft).
- **Example 1:** Commercial laws, i.e., the *Uniform Commercial Code*, are important to society and should be consistent with ethics.
- **Example 2:** In the U.S., drivers drive on the right side of the road, and in England, drivers must drive on the left. There is nothing wrong about either choice. But once the convention is established, it is wrong to drive on the wrong side of the road.



# Difference between law and ethics

- The question is whether an unlawful act may be view as ethical or whether an unethical act may be view as lawful?
- Example 1: Is it ethical to prohibit marijuana use by terminally ill people?
  - Lawful: No
  - Ethical: ?
- Example 2: Is it ethical for the government or state university to give preference in contracts, hiring, or admissions to people in specific ethnic groups?
  - Lawful: ?
  - Ethical: Unlikely

# Difference between law and ethics (cont)

- Example 3: Is it ethical for a bank loan officer to carry customer records on a laptop to work at the beach?
  - Lawful: ?
  - Ethical: No.
- Laws are usually uniform and stated clearly what actions are punishable.
- Ethical actions are complex and variable, but it might be impossible to prove them in court.
- Widely accepted ethical rule: “*Do not lie.*”

# Ethics Discussion Question

- Can you think of examples of liberties (negative rights) and claim-rights (positive rights) that are at opposition to each other?
- Example:
  - The ‘right to freedom of speech’ versus the ‘need to protect children from materials that are inappropriate for them’.
  - Who the affected parties are?
  - What are the negative and positive rights for the different parties?

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# Summary

- Rapid Pace of Change
- New Developments and Dramatic Impacts
- Issues and Themes
- Ethics

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# Reading suggestions

- From [Baase; 2007]
  - Chapter 1

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# Coming up next

- Privacy:
  - [Baase; 2007], Chapter 2

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Thank you for your attention!

Questions?