# What is computing & information science?

And what will we do here?

http://www. infosci.cornell.edu/courses/cs305/2009su/

## Today's agenda

- What is CIS?
- Course mechanics
- Computing in society

Lunch and extra time to activate NetID, get textbook, etc.

- Introduction to artificial intelligence

College admissions workshop

## Computing is the study of natural and artificial information processes

- Information – data …
- Information process – the discovery (generation), storage, retrieval, and transmission of information
- Artificial – human built; simplified representation of a complex (natural) system or item
- Natural – biology; natural language

## Common sense conceptions of "information"

- Be something or be about something, (a message, a substance, a concept)
- Be true: a falsehood is mis-information, not information itself
- Can be documented and later accessed

H. Rosenbaum, Indiana University

Have you used a computer since arriving on campus?

What (where) are these computers?

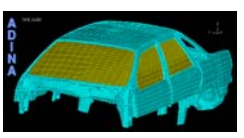
## A rapidly changing field…


- 40 years ago:

  How to make a computer useful

- Today:

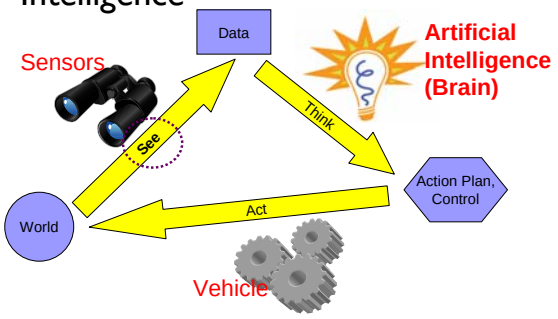
  Applications



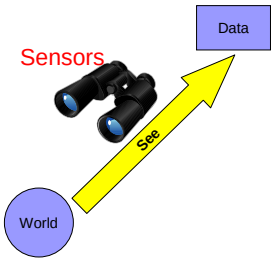

## Grand challenges in science & engineering all relate to computing

- Prediction of change in weather, climate, global environment
- Human genome project
- Autonomous vehicle
- Speech recognition
- Computer vision
- Verified software
- Information retrieval

## Computer Vision & Artificial Intelligence




## Computer Vision



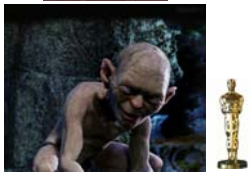

- Medical imaging (MRI)

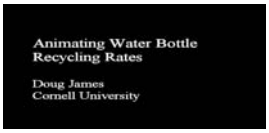
- Object recognition

- Image correction

## Computer Graphics

- Digitally synthesize and manipulate visual content
- Applications in entertainment, medicine, scientific visualization, military training





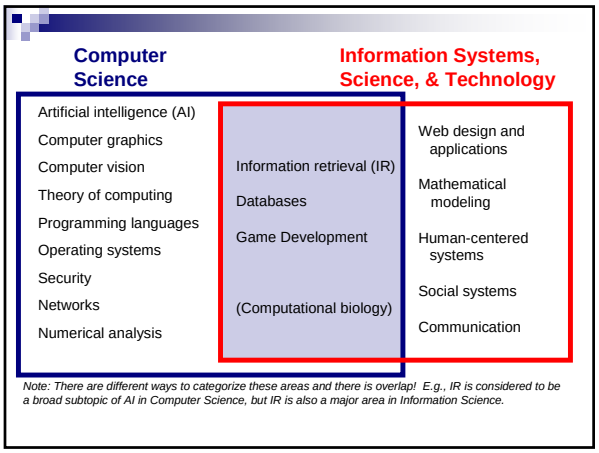

## Artificial Intelligence … beyond robotics

- Machine learning
  - Spam filtering
- Natural language processing
  - Sentiment analysis
  - Machine translation
- Information retrieval
  - Library catalog search
  - Google search

## Related to search technology, there are many other topics of interest and importance…

- Database
- Trustworthy system, security, privacy
- Human-computer interaction
- Web design and applications
- Policy and law

Information Science




## Our goals

- Learn about the broad field of computing & information science
- Analyze the social, legal, and ethical issues in computing today
- Learn about some cool CS/IS methods behind popular technologies (e.g., Google search)
- Learn some computer programming
- Discover the programs of study leading to careers in CIS

## What will we cover? Lots…

Four main threads

- Social, legal, and ethical issues in computing
- CS Application areas: artificial intelligence, machine learning, information retrieval
- IS Application areas: information architecture, human-computer interaction, information retrieval
- Computer programming

## What will you do?

- Participate in discussion, lecture, lab
- Read, reflect, and write…
- Develop computer programs
  - Manipulate digital media, build a spam classifier
- Perform a usability study on a real website
- Submit a term paper (and debate)
- Present a final project
- Participate in research projects on mobile computing

## What determines your grade?

| | |
|---|---|
| Participation | 10% |
| Lab exercises and homework | 45% |
| 2 Tests | 20% |
| Term paper (and debate) | 20% |
| Final presentation | 5% |

## Logistics

- M-F 9:00-10:15 PH307
- M-F 10:30-11:45 PH307
- M-R 1:15-2:45 UP111 or ACCEL lab
- M-R 3:00-4:45 ACCEL lab
- Office hours:
  - M 4:45-5:45p, TWR 7-8p, F 11:45-12:45a

## Computing in Society

- Does society drive technological innovations?
- Does technology change society?
- Technological and social determinism

What are the significant technological innovations in your lifetime?

What are the significant social changes in your lifetime?

## Relationship between technology and society

- Technological determinism
  - A society's technology determines it cultural values and social structures
- Social determinism
  - Both the path and consequences of technological innovation are shaped by society
- Mutual shaping

## Social Informatics

- Public uses of the internet
- Impact of technology in organizations, groups, and large-scale social settings
- Analysis of the use of technology in specific social contexts
- Life with computer-mediated communication
- The social shaping of information system
- The role of technology in changing or reinforcing patterns of work life, community life

## Ethic and law in a computing-oriented society

- What are some of the challenges/risks that result from recent technological innovations?
- Are new legislations necessary?
- Ethical frameworks for analyzing issues