What is computing & information science?

And what will we do here?

http://www.cs.cornell.edu/courses/cs1305

Today's agenda

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

Lunch and extra time to activate NetID, get textbook and other supplies, register (for international students), etc.

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"

- Knowledge derived from study, experience, or instruction
- 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

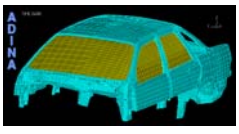
H. Rosenbaum, Indiana University

Have you used a computer since arriving on campus?

What (where) are these computers?

A rapidly changing field…

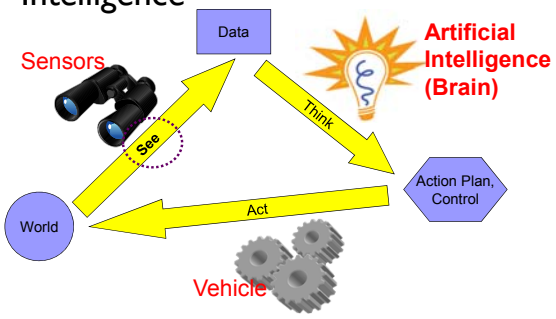
- 40 years ago:
  - How to make a computer useful
- Today:
  - Applications



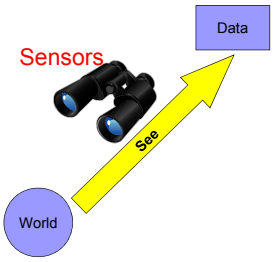
Grand challenges in science & engineering from 15 years ago…

- 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



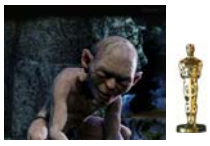
- Medical imaging (MRI)

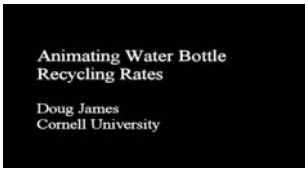
- Object recognition

- Image correction

Computer Graphics

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





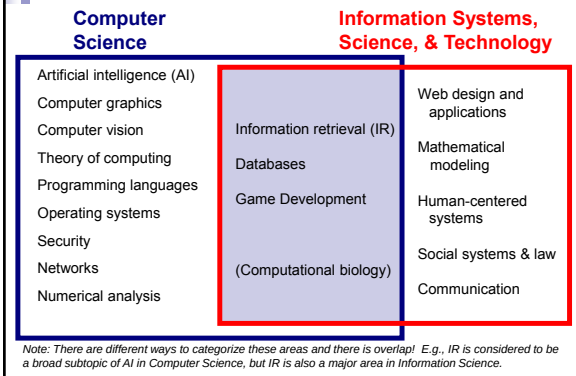
Artificial Intelligence… beyond Skynet

- Natural language processing
  - Sentiment analysis
  - Machine translation
- Machine learning
  - Spam filtering
  - Self-driving cars
  - Practical speech recognition/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



Note: There are different ways to categorize these areas and there is overlap! E.g., IR is considered to be a broad subtopic of AI in Computer Science, but IR is also a major area in 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 applications and 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, ethical, and legal issues in computing
- CS Application areas: artificial intelligence, natural language processing, machine learning, information retrieval
- IS Application areas: information architecture, human-computer interaction, information retrieval
- Computer programming: graphics, media manipulation

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

http://www. cs.cornell.edu/courses/cs1305

What determines your grade?

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

Participation ≠ attendance
Be engaged in class and group work
Respect differences

Logistics

- Typical time and locations:
  - M-F 9:00-10:15 PH403
  - M-F 10:30-11:45 PH403
  - M-R 1:15-2:45 UP109 or ACCEL lab
  - M-R 3:00-4:45 ACCEL lab
- Office hours:
  - See course website