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 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

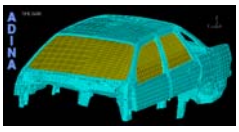
H. Rosenbaum, Indiana University

Have you used a *computer* since arriving on campus?

What (where) are these computers?

A rapidly changing field…

- 50 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

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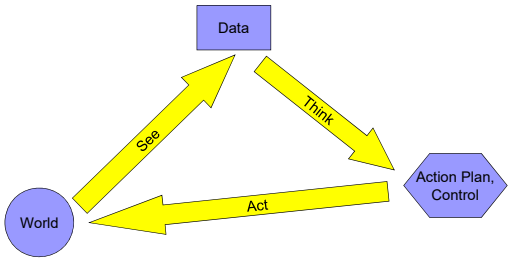
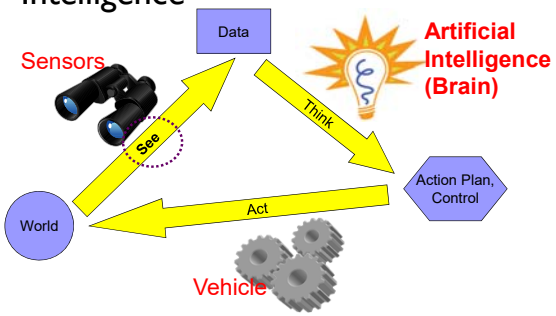
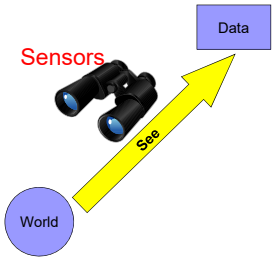
Human decision making and action



Computer Vision & Artificial Intelligence



Computer Vision



- Medical imaging (MRI)

- Object recognition

- Image correction

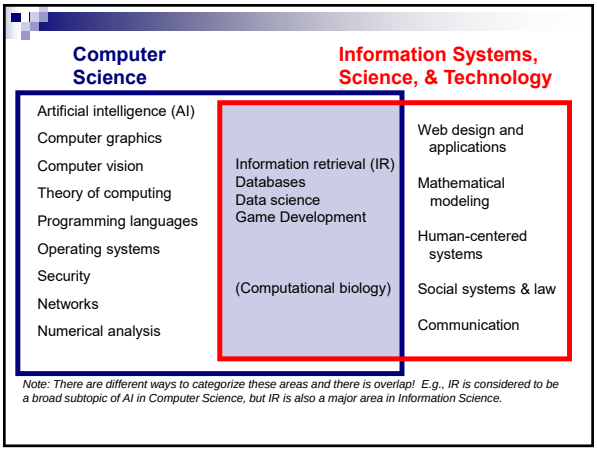
Artificial Intelligence… beyond Skynet

- 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

Computing and 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 important 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…

Three main threads

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

What will you do?

- Participate in discussion, lecture, lab
- Read, reflect, and write…
- Develop computer programs
- Perform a usability study on a real website
- Learn data science and "makers" ideas/tools
- Submit a term paper (and debate)
- Present a project of your choice

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

What determines your grade?

- Lab exercises and homework 50%
- 2 Tests 20%
- Term paper (and debate) 15%
- Final presentation 5%
- Participation 10%

Participation ≠ attendance

Be engaged in class and group work

What are the main challenges?

- Participation ≠ attendance
  - Overcome shyness
  - Prepare for class—do assigned reading
  - Lead and follow
  - Respect your fellow students and differences
- Manage time well to get things done
  - Excitement of new environment
  - Short duration of the course
  - Multiple concurrent assignments

Logistics

- Typical time and locations:
  - M-F 9:00-10:15 Ups 206 (classroom)
  - M-F 10:30-11:45 Ups 206
  - M-R 1:15-4:00 Ups 225 (computer lab)
  - ** there will be exceptions **
- Office hours:
  - See course website