“Any sufficiently advanced technology is indistinguishable from magic.”

—Arthur C. Clarke
“It’s a no-brainer that 50 to 60 years from now, cars will drive themselves”

—Sebastian Thrun
Faculty director, “Junior” autonomous car project quoted in Forbes, May 11, 2011
“Nevada has become the first state to issue an ‘autonomous’ license for a driverless car”

—USA Today, May 8, 2012
Google Self-Driving Car on El Camino Real
August 2015
Computing as a Growth Accelerant
http://google.stanford.edu

Image courtesy of Google
A Day in the Life of Google

A picture is worth a few hundred million search queries…

Image courtesy of Google
The Power of Computing

- Creating awareness of “CS in the large”

- Computing is increasingly needed for work in other fields

- Providing context for computing
  - Programming is a means, not an end

It’s about empowerment!
Editor’s Note: Two-dimensional projection clearly does not capture the relative importance or organizational nuances of the field. Some topics may be closer to you than they appear on this slide.
CS Major Allows Exploration

- Computer Vision
- Systems
- AI
- Comp. Bio.
- Data mining
- Robotics
- Machine Learning
- Natural Language
- Comp. Economics
- Algorithms
- Theory
- Geometric Comp.
- Hardware
- Databases
- Distributed Systems
- Networking
- Security
- HCI
- Graphics
...in a Diverse Set of Areas
CS Core Course Sequence

You are here (almost)

CS106A
Programming Methodology

CS106B/X
Programming Abstractions

CS107
Computer Organization and Systems

CS110
Principles of Computer Systems

CS103
Math. Foundations of Computing

CS109
Probability for Computer Scientists

CS161
Data Structures and Algorithms
Tracks Areas

- Artificial Intelligence
- Theory
- Systems
- Computer Engineering
- Human-Computer Interaction
- Graphics
- Information
- Biocomputation
  - Incorporates many pre-medical school requirements
- Unspecialized
- Individually Designed
Sample of CS Areas of Research

- Artificial Intelligence
  - Robotics, machine learning, computer vision, …

- Computational Biology
  - Bioinformatics, genomics, drug design, …

- Graphics
  - Animation, modeling, motion capture, architecture, …

- Databases and information systems
  - Web search, transaction management, data integrity, …

- Security
  - Cryptography, secure protocols, …

- Systems
  - Network design, cloud computing, virtualization, …

- Human-Computer Interaction
  - Interface design, user-centric computing, …
Sampling of Career Paths

- **High-tech industry**
  - Research and development
  - Engineering management
  - Product management

- **Entrepreneurship** (consider Mayfield Fellows Program)
  - Start-ups (over 2,500 companies found by Stanford community)
  - Venture capital

- **Graduate and professional schools**
  - Graduate school → Academia/research/teaching
  - Law school → Public policy (consider CS181/182)
  - Business school → Management/entrepreneurship

- **Teaching** (consider CS198)
CS Minor

- Math through Math 51

- Required:
  - CS106B
  - CS107
  - CS103
  - CS109

- Two additional CS elective courses
CS Minor

You are here (almost)

Math 51 + 2 CS electives (which could be CS110 and CS161, among others)
Related Majors

• Math and Computational Science
  – Math, CS, Statistics, and MS&E, …
  – Tracks in Biology, Engineering, Statistics

• Electrical Engineering
  – Hardware, information science, analog/physical systems, …
  – Tracks in: areas above as well as Bio-EE, Green-EE, Music-CC

• Symbolic Systems
  – CS, Philosophy, Linguistics, Psychology. …
A Now Some Fun Movies…

- Lighthouse
- Fireball
- Curtain
- Robot