Computer Science

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Road Map

- Who am I?
- What is Computer Science (CS)?
- What is unique about CS?
- How is CS different from related majors?
- What traits are common to CS majors?
- What do CS majors do professionally?
Who am I?
My Academic Job

- Associate Professor of Computer Science
- Chair Undergraduate Committee
- Advise CS undergraduates
- Currently
  - Planning ABET accreditation
  - Chair of Information Technology Council
  - Writing a textbook
- Recent past: Beyond Paper, Inc.
My Distant Past

- B.A. Physics/Math (Albion College, 1982)
- M.S. Applied Math (MSU, 1984)
- Instructor of Mathematics, William Penn College, Oskaloosa Iowa, 1984-1986
- M.S. Computer Science (MSU, 1988)
- Ph.D. Computer Science (MSU, 1992)
- Visiting Researcher at the Universite de Technologie de Compiegne, France
- Assistant Professor (OU, until 1998)
What is Computer Science?
What CS is:

- Study of systematic methods for solving given problems (algorithms) using computers
  - Theory
  - Design
  - Implementation
  - Efficiency
  - Application
What CS isn’t:

- CS isn’t just programming
  - Neither is software engineering
- CS isn’t just about designing web sites
- CS isn’t just about using software
- CS isn’t just about using/fixing hardware
- CS isn’t just programming computer games
What is unique about CS?
Unique Features of CS

- CS is one of the youngest engineering disciplines (less than 30 years old)
- Most of the major contributors to CS are still alive
- CS is still in a period of very rapid evolution and change
  - Unclear whether this will ever stop
The Culture of CS

- In general, CS is less formal than many other disciplines
- Very few CS people work in isolation
  - Most work in small, or large, groups
  - Communication skills very important
- CS majors are not necessarily chained to desks, programming all day
How is CS different from related majors?
A Continuum

- Physics
- Electrical Engineering*
- Computer Engineering*
- Software Engineering
- Computer Science
- Management Information Systems
- Business
Placement in the Continuum

- If you’re struggling in Math1823, or taking remedial mathematics courses
  - Consider MIS
- If you’re trying to decide between CS and CpE, take ECE 2213 and CS 2334
- If programming is difficult or not enjoyable
  - Consider EE (if Math OK) or MIS
- EE and CpE can be Licensed Professional Engineers
Professional Licensing Issues

- CS majors cannot be Licensed Professional Engineers (in OK, now)
  - Already changed in Texas
- Liability versus professional responsibility
- OU’s CS School has ABET accreditation
  - Likely to be requirement for future licensing
- CS majors can be patent lawyers
What traits are common to CS majors?
Academic Traits

- CS majors are math minors
- CS majors take two semesters of chemistry and one of physics
- CS majors take communications classes
  - Oral
  - Written
- Many CS classes involve substantial computer programming
  - This can be developed in college
Personality Traits

- Must love change and be willing to change and adapt throughout entire career
- Must be able to see the big picture while paying attention to minute details
- Need excellent communication skills
- Must be able to exercise logic well
- Must be able to work effectively with groups of people
What do CS majors do professionally?
After graduation

- Starting salaries average 50K
- Typical jobs
  - Software maintenance
  - Technical support
  - Software engineer
  - System administrator
  - Graduate school
  - Technical sales
  - Technical writing
And later on…

- Software engineer
- Software designer/architect
- Project management
  - May require M.B.A.
- Professor or researcher
  - Requires M.S. or Ph.D.