

# Viewpoints from the doorstep

## Pre-major interest in and perceptions of computer science

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Interest in computer science among first-year undergraduates dropped by 70% since 2000 (HERI). Meanwhile, the gender gap continues to widen, with only 21% of graduating CS/IS majors being women in 2006, down from 37% in 1985 (NCES).

70%

Low interest and the gender gap keep computer science from meeting its potential:





- Addressing the IT labor shortage
- Better engineering through diversity
- Equal opportunity to study CS

### Research questions

- What factors affect undergraduate interest in CS, especially for women?
- How do these factors affect interest?
- What are pre-major undergraduates' perceptions of CS?

### Qualitative study

- Major component of my Ph.D. dissertation
- 45- to 60-minute, semi-structured interviews with 14 pre-major students in CS I:

interested in CS	not interested in CS
	
	

- Questions about what makes CS interesting/uninteresting, what CS and careers are like, previous computing experiences
- Inductive, thematic analysis of transcripts
- Framing with and extension of Eccles et al.'s expectancy-value model of achievement motivation

### What they said

Representative quotes illustrate themes from the interviews.

**“I actually don't know what people do when they major in CSE. I know they earn a lot of money, but I don't know what they do.”**

Several students admitted they were not sure what CS majors study or what CS professionals do. Students who were less interested in CS seemed to express more uncertainty.

**“I don't know if I'd be able to look at a computer screen for eight hours a day...for the rest of my life.”**

What perceptions students did have often focused on long hours spent programming, working in isolation.

**“...a person in a cubicle...shoes off, with coffee mugs and pizza boxes all over the place...their beard grown out...tired and zombie-like.”**

Women were especially concerned about the stereotype that computer scientists are asocial, unkempt, and overworked.

**“That idea, that you can make something, just of like words on a computer...Pretty cool.”**

Some students described creativity as a positive aspect of CS, citing programming's flexibility as a creative medium.

### What they didn't say

Equally interesting are topics that were *not* frequently raised by interviewed students.

- Some students (both women and men) cited the goal of contributing to society as a factor in choosing their majors, but few related CS with this goal.
- Perceptions of poor job prospects for CS majors discouraged only one student's interest. Others perceived positive job prospects.

### Next steps

- Large-sample survey to quantify theme significance
- Cross-institutional comparison
- Recommendations about recruitment and intro CS