

## Forum

### Barriers To and Opportunities for Women in Computer Science

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## Opportunities for women in CS

- **Intellectually rewarding**
  - Dynamic, always changing
  - Challenging
  - Energizing - see impact of the work
- **Job opportunities**
  - Computer-related jobs - fast growing
  - Hundreds of thousands of positions unfilled
    - Even with downturn in economy - jobs that require strong technical skills in demand
- **Jobs at all levels - B.S., M.S. Ph.D**
- **Salaries high**

## Diverse types of careers

### Systems types careers

- Design and implementing systems
- Software engineering
- Artificial intelligence
- Communications - networking, web
- Applications of computer science
- Banking and finance
- Health care
- Research - Academia & industry
- Active recruitment of women
- industry & academia

## Status of Women - undergraduate

### Women earning B.S. degrees

- 1984 - 37%
- 1998 - 26% - about 29% drop
- 2002 - about same - stabilizing

### Other sciences & mathematics -

- Engineering +32.0% (current 16.9%)
- Physical Sciences +39.1% (current 38.4%)

*Computer science is only science % falling*

### **Advanced degrees in CS (1999)**

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Master's Degrees: 29% for women  
(steady)

Ph.D. degrees: 15% for women  
(increase from 11% in 1990)

Women Faculty:

- 14% are assistant professors (16% in 1998)
- 13% are associate professors
- 8% are full professors

### **Status of Women - cont.**

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Pipeline shrinks at all levels

Girls represent 17% of Computer  
Science AP test takers

Women are about 20% of IT  
professionals

### **Barriers to women in CS**

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#### **Undergraduate pipe**

- **Less experience with computers and programming**
  - Less confidence - buzz words & culture
- **Beginning programming classes tedious, boring -**
  - Computing with a purpose
- **Peer culture: geeks**
  - Image of computer scientists as nerds, hackers - Only interest is in computer

### **Barriers to women in CS (cont.)**

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#### **Graduate pipe**

- **Lack of role models and mentors**
- **Feeling of isolation**
- **Geek culture**

## Barriers to women in CS (cont.)

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### Faculty pipe

- Balancing work with family
- Lack of mentoring and role models
- Lack of network - information & advocates
- Fewer resources - e.g., salary, space, etc.

## Where do we go?

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Lots of efforts in progress -

- Projects sponsored by NSF
  - ITWF
- Professional organizations
  - CRA, ACM, IEEE, AAUW
- University & college: institutional changes
  - NSF advance program
- Department level
  - CMU, Pitt

## Examples

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- Projects to encourage women to graduate level - Distinguished lectureship
- Career workshops
- Educating faculty, students aware of problem
- Establishing mentoring programs
- CRA-W, ACM, IEEE, SIAM - a web clearing house

## Resources for women in CS

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Computing Research Association Committee on Status of Women in Computer Science research (CRA-W)

- <http://www.cra.org/craw>
- CRA - report on best practices

ACM: Women's Committee

- <http://www.acm.org/women>

Institute for Women and Technology

- <http://www.iwt.org>

AAUW:

- <http://www.aauw.org>