What Does an Industrial Researcher Know or Care About Students and Mentoring?

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Largely stolen from:

Ultimate Frisbee & You

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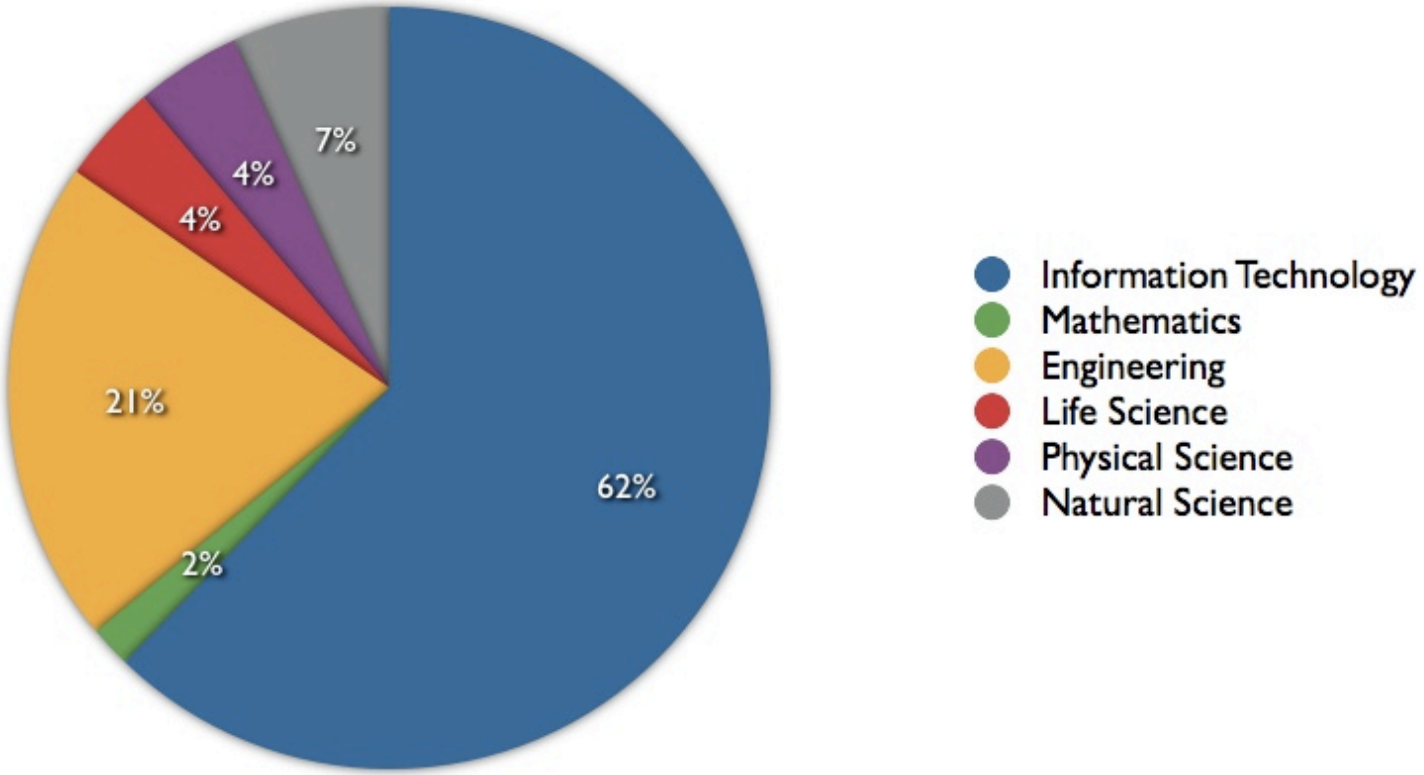
How your students' extra-curricular computing experiences can make you a better teacher, adviser & researcher

Thank you, Mary!

The Good News

Distribution of Projected S&E Job Openings

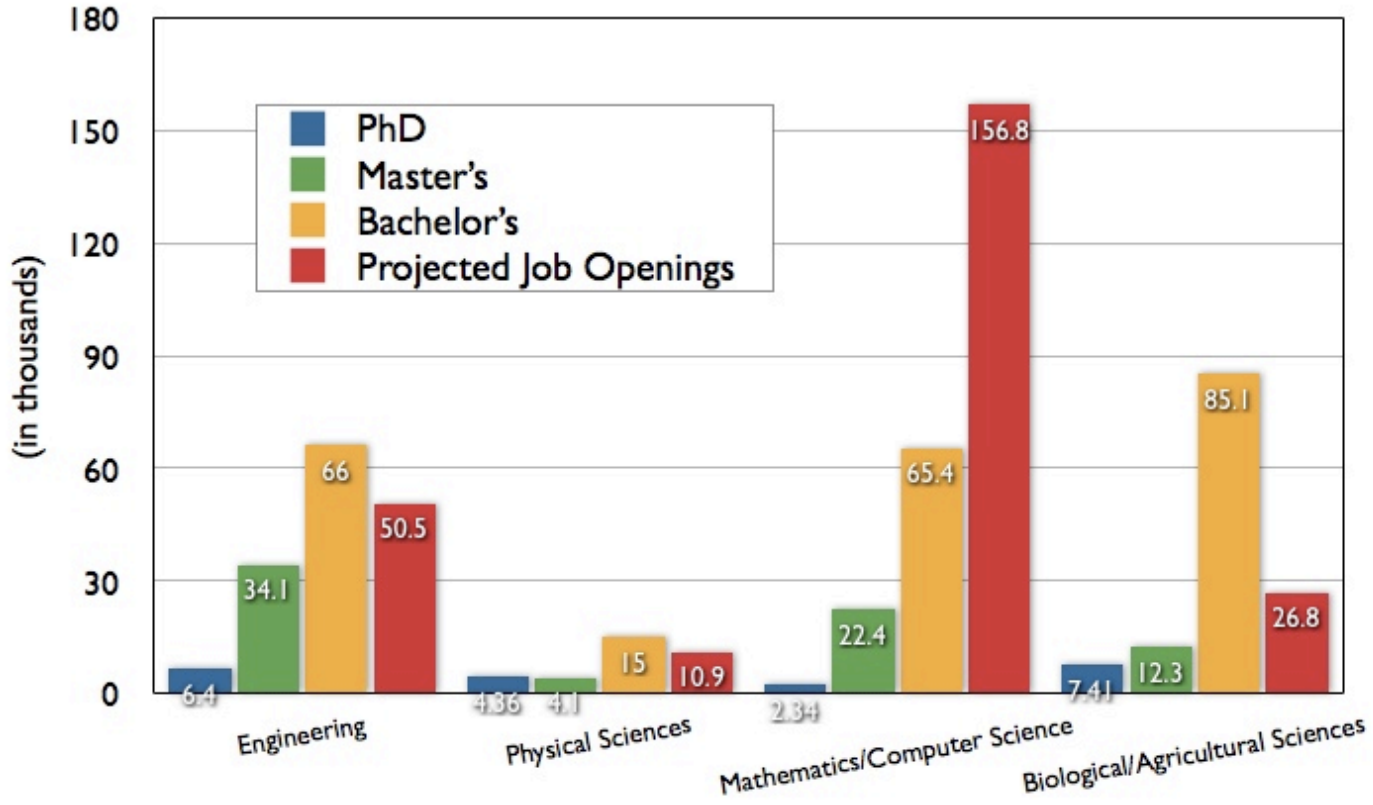
(new jobs plus net replacements) 2006-2016



Source: Bureau of Labor Statistics, Monthly Labor Review, 2007

The Bad News

Annual Degrees and Job Openings in Broad S&E Fields (2006-2016)



Source: Bureau of Labor Statistics, Monthly Labor Review, 2007

So, We *Have* to Care!

- But what do we *know*?
- We know how to get jobs
  - In industry, of course
  - But we also write lots of letters for academia
- We know how to be successful
  - In industry, of course
  - But we write lots of promotion letters for academia
  - And we are often well-connected
- We can help students succeed – and we must!
  - Otherwise, who will be our successors?

Your Mission

- Attract, retain, and graduate future computing professionals
  - Developers, engineers, architects
  - Project, program, and product managers
  - Designers, entrepreneurs
  - Lawyers, writers, K-12 teachers, …
  - Oh, yes – and the next generation of professors!
- Leverage “extra-curricular” programs
  - Summer internships
  - Mentoring programs
- It’s not only your mission – it can be good for you, too!

Internships for Undergraduates

- Summer in industry, national lab; NSF REU; Co-ops
  - http://www.acm.org/crossroads/resources/internships.html...
- What's in it for the student
  - Window on future;
  - Workplace readiness;
  - Potential employer
- What's in it for you
  - More mature, motivated students;
  - Good PR for your department;
  - Potential collaborations
- What to do
  - Encourage BEST students to apply
  - Think BROADLY: all STEM fields need CS majors
  - Influence culture: Set expectations in class, reward students, advertise & communicate with employers, share experiences

Internships for Ph.D. students

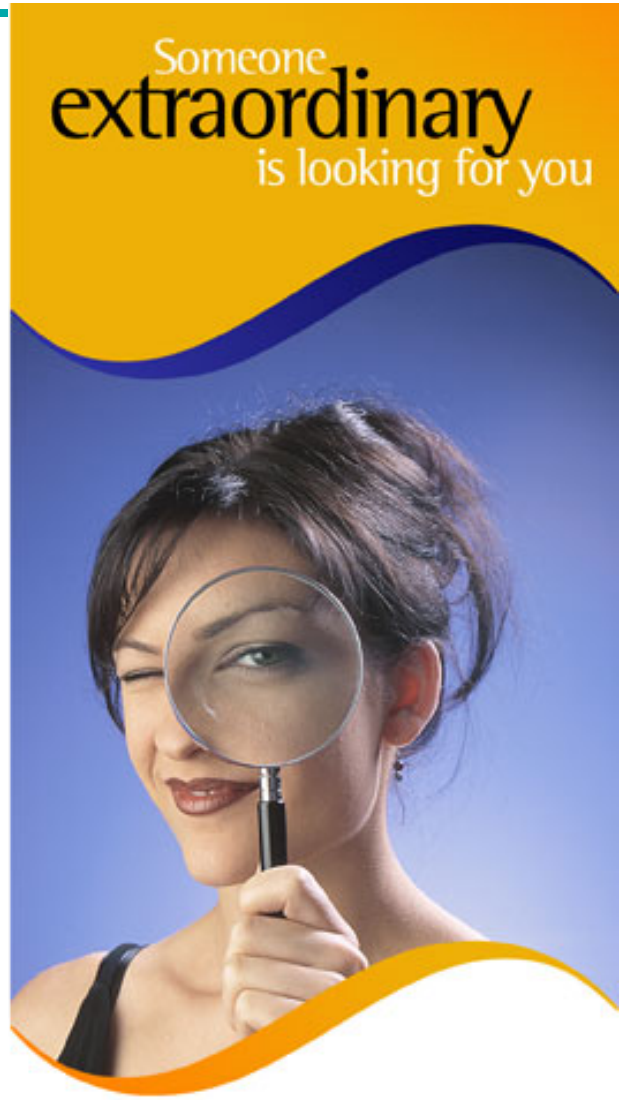
- Every PhD student should have at least one internship in an industrial or national lab
  - Summer or anytime; earlier, the better; before 4th year
- What's in it for the student
  - Exposure to real, hard problems in context
  - Exposure to a different career path – better decisions later
  - Potential publications & dissertation subjects
  - Letters of recommendation
  - A permanent job?
- What's in it for you
  - Establish (long-term) collaborations
  - Potential funding source
  - Better prepared students – your legacy

Internships for Ph.D. students

- What to do
  - Encourage your BEST students
  - Plan WAY ahead (DECEMBER)
  - Reach out, by email or phone
  - Think Local - easier to maintain local collaborations
  - Think Global – global experience can be a leg up these days
  - Provide student time to bootstrap before internship begins
  - Have student give a talk when they return
  - Look for publishable material
  - Encourage them to stay in touch with their mentor

MentorNet www.mentornet.net

- Award-winning E-mentoring program
- Pairs protégés with experienced professionals for email-based relationships
- Community college, undergrad & graduate students, post-docs, un-tenured faculty
- ***30,000+ pairs since 1998***
- Real-world information, encouragement & advice
- Life-long professional & personal relationships
- Large pool of mentors in computing
- Diverse skill sets, job functions, educational backgrounds
- ***Free to any student with .edu email***



Homework Assignments

- Engage yourself
  - Learn more about extra-curricular programs supported by your dept, division, university, NSF, DARPA, DoE, CRA, ...
  - Find a mentor outside your department
- Engage your students
  - Professional life begins in first CS class
  - Promote a culture of apprenticeship & professionalism
- Engage your department & chair
  - Manage up!
  - *"Enriching Undergraduate Learning through Apprenticeship"* at CRA 2010 biennial (http://www.cra.org/events/snowbird-2010/)

Good Mentors

- Are people you like
  - You are comfortable talking to them
  - You respect their judgment
- Are people you'd like to grow up to be
  - In some respect! Know what you want from them!
  - Not just someone you generically admire
- Are people who can identify with you
  - Not so far removed that they don't understand your problems
- Are people who will be honest with you
  - Minimize conflicts of interest
- You can have multiple mentors!
  - Diversity of opinions are generally a good thing
  - Some mentors are better for some discussions than others
  - No one has all the answers

Be a Mentor
Have a Mentor
Your Entire Career

Be Good to Your Students
They Are Our Future