Recruitment and Retention of Women & Minorities in Computer Science and Information Technology

women & minorities are significantly underrepresented in CS programs …

possibly less so in IT programs but we’re still far from achieving equitable representation
Why should society care?

• Under-representation translates into
  – loss of individual opportunity
  – Loss of talent to the workforce
  – loss of creativity in shaping the future of society
• Uniformity leads to inability to react to change, and ultimately to extinction
• Diversity is the raw material of novelty, innovation and evolution
Why should our universities care?

• Our business is the pursuit of excellence in research & teaching
• Lack of diversity is bad for business, both in academia and industry
• Diversity in academia leads to multiple perspectives needed for personal and institutional creativity and innovation
Recruiting women & minorities
... increasing the numbers

• Broaden the criteria used in admissions
  – explicitly include diversity considerations
  – encourage and facilitate transfer and reentry students
• Don’t require advance training in programming
• Be proactive in contacting potential minority & women students
  – outreach to improve the applicant pool
  – call minority & women applicants to improve yield
• Enhance the public image
  – actively counter negative stereotypes and misperceptions
  – advertise your unique and broad perspective on the field
Recruiting women & minorities
… specifically for graduate school

• Review all publications for any material that might discourage women or minority applicants

• Cultivate undergraduates for a research career
  – provide exposure and opportunity

• Communicate the opportunities an advanced degree offers

• Prepare students for graduate school
  – give individual encouragement to women & minorities
Recruiting women & minorities
... specifically for graduate school

• Broaden the recruitment pool beyond students with the traditional backgrounds
  – be proactive in making recruiting contacts
  – make sure admissions criteria accurately reflect success factors

• Seek out new sources of women & minorities
  – partner with women’s colleges and minority-serving institutions
Retaining women & minorities

… facilitating early success

• Provide bridging opportunities, especially for non-traditional students
• Place strong teachers in introductory and preparatory courses
• Diligently advise (one-on-one) and mentor
  – especially entering non-traditional students
• Integrate students into the research culture ASAP
• Build peer communities and foster a sense of belonging
Retaining women & minorities

... provide an environment for success

• Review all publications for any material that might discourage women or minority students
• Provide relevant role models
• Broaden the culture to accept a range of personal choices in work-life balance
  – implement family-supportive policies
• Promote professional societies
• Standardize information delivery, rather than relying on informal networks
Recruiting and Retaining women & minorities

• Perform a self-assessment of your strengths and weaknesses
  – collect tracking data
    • applicants, admissions, support, retention, time-to-degree, employment
  – build self-awareness

• Prioritize needed improvements

• Publicize your successes
Recruiting and Retaining women & minorities … curriculum

- UCI/SICS is proposing a new CS/Informatics curriculum that address issues of
  - Focused program rather than disparate classes
  - Ties to realistic problems
  - Creative problem-based exercises
  - Collaborative, team-based learning
  - Service-oriented give back to community
  - Integrated specializations with social impact and interdisciplinary ties to education, medicine, arts, psychology, …
Recruiting and Retaining women & minorities … curriculum

• Survey of our current majors and alums revealed
  – 41% of all polled students would rather have an Informatics degree than a CS degree, and another 29% were undecided
  – 78% of all polled students agreed that UCI should establish an Informatics degree program, with 18% undecided
  – 50% felt an Informatics degree would better prepare them for the type of employment they would like to pursue
  – women felt stronger about the Informatics degree program than men: 48% of women would prefer an Informatics degree as opposed to 38% of men, and 85% of women as opposed to 76% of men believe ICS should establish an Informatics degree program (unfortunately, we did not poll for ethnicity)
What about Women & Minority Faculty?

- Under-representation on the faculty
- Leaky pipeline
- Lack of role models
- Chilly climate
- Profession not seen as family friendly

**NSF ADVANCE program is helping to address this need in the Sciences generally**
What is ADVANCE at UCI?

• $3.45M NSF funded program
• Matching funds from UCI
• To address gender inequities in academia, especially in the sciences, by increasing
  – Recruitment
  – Retention
  – Advancement
What are ADVANCE & UCI doing?

• Equity Advisors in each School
  – best practices for search committees
  – mentoring for junior and senior faculty
  – awareness and informational workshops

• Leadership from the top down

• Surveys to develop quantitative and qualitative indicators of equity

• Career partner program

• Workshops and seminars

• Outreach with hands-on-science to K-12

• ADVANCE Chairs - unique to UCI
  – for outstanding scholars committed to gender equity
What are ADVANCE & UCI doing?
Recruitment Strategies

• ADVANCE Brochure
  • Best Practices*
  • Readings

• OEOD Brochure
  • Affirmative Action Obligations
  • Nondiscrimination in searches

• Career Partner Program

• Plan and Advertisement Form
Best Practices for Achieving Diversity: Search Committee/Department

• Be aware of recruitment history and official goals
• Advertisement should be as broad as possible
• Identify professional societies, grad programs, web sites and list servers for specified groups
• Encourage personal contact with colleagues
• Consider non-ladder rank academics (lecturers, professional researchers and postdoctoral fellows) as potential candidates
Best Practices for Achieving Diversity: Search Committee/Department

- Short list to be appropriately diverse relative to the pool
- Interview with emphasis on research and teaching performance & goals, and less on former institution
- Be aware of gender based perceptions (e.g., in letters of recommendation)
- Focus on substance, \textit{not} style - evaluating intellectual curiosity, dedication & perseverance, \textit{not} assertiveness and single-minded independence
- Understand own biases and unconscious preferences
Best Practices for Achieving Diversity: Administrators

- Selection and evaluation of Deans / Chairs should include commitment and effort to promote diversity
- Select search committee with diverse membership, if necessary include underrepresented faculty from other appropriate departments
- Consider lightening the load of underrepresented faculty members in the areas of service and or teaching in order to insure they are not over burdened
- Make committee members aware of labor-intensive, proactive role in a successful search
- Provide search committee with recruitment manual offering State and Federal laws and resolutions
Best Practices for Achieving Diversity: Administrators

• Discuss need for proactive recruiting and the desirability of achieving faculty diversity
• Be aware of areas in which women and minorities are well-represented when choosing the area in which to recruit
• When possible, cluster hire – several positions in broad area leads to larger pool
• Be aware of variable negotiations styles and the need to be flexible in the hiring process with final candidate
• Determine individual candidate’s needs, such as salary and set-up, career partner position, childcare, housing, etc.
Recruiting and Retaining women & minorities at all levels

• Diversity is a matter for everyone
• These recommendations help all students
• Build programs to last
• Seek out industrial advice and funding

Long-term, institutional change is needed!
National Center for Women and Information Technology … mission

To ensure that women participate fully in the influential world of information technology
National Center for Women and Information Technology … goals

- **Parity** achieve parity (equal participation for women and men) within 20 years
- **Diversity** ensure the inclusion of girls and women from all racial, cultural, and socio-economic backgrounds
- **Coverage** ensure participation at all levels of the education and workforce pipeline: K-12, undergraduate and graduate study, and career advancement
- **Innovative Methodology** use a systematic, measurable approach to find what works, reuse it, and enhance existing programs
- **Leadership** be the recognized authority on best practices and policy-shaping
National Center for Women and Information Technology … priorities

• **K-12 Students** stimulate girls’ interest in and encourage a positive image of information technology

• **Undergraduate Students** encourage majors in IT fields, develop appropriate curricula, and target re-entry students

• **Graduate Students** employ recruiting, mentoring and retention programs

• **Faculty** promote women in academic leadership and mentoring positions

• **Professionals** promote workplace stability and equity and connect women from the education pipeline to the workplace

• **Society** raise visibility of women as producers and consumers of technology
National Center for Women and Information Technology ... structure

• Distributed group of partners - “hubs” - autonomous, independent agents committed to center’s mission
  – Academic institutions
  – Industry programs
  – Professional groups
  – Outreach organizations

• Working together through center network
  – Center’s core is a lightweight administrative body responsible for unifying activities and support
National Center for Women and Information Technology ... structure

- **Core**
  - University of Colorado Boulder (Bobby Schnabel & Lucy Sanders)
  - with support from IWT (Telle Whitney)

- **Hubs**
  - Institute for Women and Technology
  - Girl Scouts of America
  - Computing Research Association
  - University of Colorado
  - Georgia Institute of Technology
  - University of California (Irvine & Berkeley)