Speaking of Diversity

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October 12, 2017

ICALEPCS 2017
What is Diversity?

• By definition, diversity is about variety

• We need a diverse set of skills to develop control systems

• But what about social diversity?
Why is diversity important?

• Studies tell us diverse workgroups are more successful, creative, innovative

• Diverse groups benefit from the different backgrounds, viewpoints and life experiences of the members

• A 2014 article in Scientific American summarized several diversity studies and concluded in diverse teams, everybody works harder
What is the current situation? U.S. Population and STEM workforce

Noninstitutionalized resident population of the United States ages 18–64, by race, ethnicity, and sex: 2014

- White men 31.0%
- White women 31.0%
- Asian men 2.7%
- Asian women 3.0%
- Black men 6.1%
- Black women 6.6%
- Hispanic men 8.7%
- Hispanic women 8.3%
- Other men 1.2%
- Other women 1.3%

Source: U.S. National Science Foundation

Scientists and engineers working in science and engineering occupations: 2015

- White men 49%
- White women 18%
- Asian men 14%
- Asian women 7%
- Black men 3%
- Black women 2%
- Hispanic men 4%
- Hispanic women 2%
- Other men 1%
- Other women 1%

Source: U.S. National Science Foundation

NOTES: Hispanic may be any race. Other includes American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, and multiple race.

Women, Minorities, and Persons with Disabilities in Science and Engineering: 2017
What is the current situation? University

- Our community draws on degreed professionals primarily from computer science, electrical engineering and physics
What is the current situation?
DOE Laboratories
Gender and Race/Ethnicity for all staff

Source: U.S. Department of Energy

- URM = Under Represented Minorities: African Americans, Blacks, Hispanics and Latinos
- OPC = Other People of Color: Asians, Asian Americans and Pacific Islanders
What is the current situation?

DOE Laboratories

Gender

Source: U.S. Department of Energy
What is the current situation?
DOE Laboratories
Race/Ethnicity

Source: U.S. Department of Energy
Diverse computing pioneers

Ada, Countess of Lovelace
Grace Hopper
Alan Turing
Why are there so few women and minorities?

- Centuries of legal discrimination and exclusion
- Social and cultural norms regarding roles, education and career
- Depiction of engineers and computer professionals in the marketing, media and entertainment
- Implicit bias in interviews, hiring, promotion, training
- Lack of support for dual career families
- Distinctly homogenous power structure
- Lack of encouragement, recognition, role models, mentors
What can we do?

• Understand our biases, we all have them
• Be accountable, raise awareness, ensure workgroups are inclusive
• Be a role model or a mentor to someone who does not look or live like you
• If you have a management role, ensure fairness at each step in hiring, evaluation and promotions

We can broaden our normative types
Conclusion

• While we may have limited power to change government and institutional barriers to diversity, we have tremendous power to act fairly and fill and flow our pipeline

• **We can improve diversity one career at a time**

• I welcome your feedback to start a discussion

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