Alternative Career Choices

Academic Career Workshop for Underrepresented Participants
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Computer Scientist at LLNL

- **Background**
  - 60% Mexico
  - 30% New Mexico
  - 10% Texas + California

- **Computer science education**
  - BS, National Autonomous University of Mexico
    - Senior year, University of New Mexico
  - MS, University of New Mexico
    - Research intern, Intel Santa Clara

  - PhD, University of New Mexico
    - Research intern, IBM T. J. Watson
    - Guest instructor, University of Costa Rica
    - Instructor, University of New Mexico

- **Postdoctoral appointments**
  - Sandia National Laboratories
  - IBM Research, Austin

- **Recreation**
  - Dancing, running, biking, basketball, and swimming
Scientific Discoveries
High-Performance Computing (HPC) Enabling Technologies

- Science through simulation
  - Climate change
  - Human genome science
  - Clean-energy technologies
  - Smarter weapon simulation to avoid real-world testing

- HPC challenges
  - Power
    - New architectures
    - Algorithm re-structure
  - Reliability and resilience
    - Increased failure rate
    - Application specific
  - Scalability
    - More realistic problem sizes
    - Full machine scale

- Career at LLNL
  - World-fastest supercomputers
  - Direct impact on applications’ performance and scalability

Sequoia supercomputer

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<th>96 racks x 32 boards x 32 nodes x 17 cores</th>
<th>1.6+ million cores</th>
<th>1 PF/s = 150,000 computations for every human on the planet per second</th>
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<td>96 racks x 204.8 TF/s</td>
<td>19.6 PF/s</td>
<td>9.6 MW max max</td>
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PhD Students’ Considerations
Career in Academia or Research Laboratories

- **Write papers**
  - Develop and convey an idea clearly, concisely, and objectively
    - **Need:** What is the problem? Why now? Limits of current practice?
    - **Approach:** What is my unique approach?
    - **Benefits:** How does it solve the problem? Drawbacks and limitations? Who cares and why?
    - **Competition:** How does it compare with other alternatives?

- **Partake in technical proposals**

- **Participate in internships, research experiences**
  - Build network of collaborators & future funding sources

- **Apply to scholarships, fellowships, grants**

- **Attend & participate in conferences & workshops**

- **Teach**
  - How much time does it take?
  - Do I find it rewarding?
  - Am I an effective instructor?
My Network’s Influences

- Career in systems research
  - PhD advisor
    - Role model as a researcher and mentor
    - Focus on my growth not individual milestones, projects
  - Undergraduate computer architecture professor
    - Support and genuine interest in my success
    - Graduate school proponent

- Dissertation direction and feedback
  - Sandia National Laboratories collaborator
  - Team members from IBM T. J. Watson internship

- Postdoctoral appointments

- Connection to Lawrence Livermore National Laboratory
  - Collaborator at IBM
  - SC job fair + Richard Tapia conference