

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

Sequoia supercomputer		
96 racks x 32 boards x 32 nodes x 17 cores	1.6+ million cores	1 PF/s = 150,000 computations for every human on the planet per second
96 racks x 204.8 TF/s	19.6 PF/s	
96 racks x 100 KW	9.6 MW max	

- 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

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

