

# PhD Non-Academic Careers and Job Search

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VMware

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New Mexico State University

With many thanks to prior speakers on this topic



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# Poll: Who are the folks in our neighborhood?

- How many of you are:
  - Undergraduates
  - MS students
  - PhD students
  - Others ?



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# Poll: Why are you here?

- How many of you:
  - Are on the fence about a career in industry/government?
  - Have made up your mind about an industry/govt position?
  - Want to learn more to make your decision?



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# Sujata Banerjee - My Career Journey



**USC**

**Univ. of Southern California**  
Ph.D.



**Indian Institute of Technology**  
IIT Bombay  
B.Tech. and M.Tech.



**Univ. of Pittsburgh**  
Associate Professor  
Assistant Professor



**Hewlett Packard  
Enterprise**

**HP Labs**

Sr. Researcher  
Sr. Manager

Distinguished Technologist  
and Director

**vmware®**

**VMware Research**  
**Vice President, Research**  
Sr. Director of Research  
Sr. Staff Researcher

<https://research.vmware.com>

Research – Enterprise and Datacenter networks, Software Defined Networking,  
Network Functions Virtualization, Systems for ML, Energy Efficient Networking

Communities – ACM SIGCOMM, IEEE Communications Soc., CRA CCC, NSF



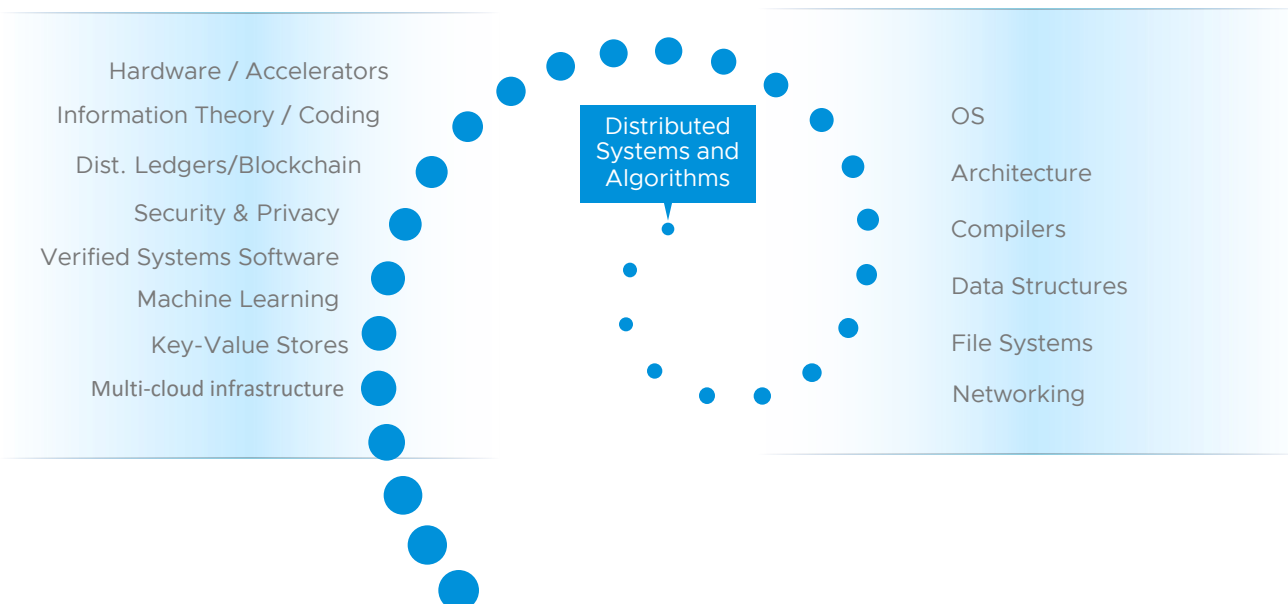
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# VMware Research

<https://research.vmware.com>

Our Mission: To ensure VMware's long term technical future by creating novel technologies and unique differentiation for VMware's technology portfolio, and advancing the state of the field through external impact on the research community.



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# Guidance from Sujata

Evaluate what you really enjoy doing to define your role

- Research vs Building products vs Management
- Design vs implementation; Tangible vs open ended problems

Need Depth and Breadth to succeed

- Inter-disciplinary work often has big returns
- You may need to work in large diverse teams for big impact

Work on hard and soft skills

- Learn to network: Go to conferences, meet-ups
- Learn to “sell” your ideas and present your work well

Be ready and open for change

- Watch for technology trends
- Be ready to learn and “re-invent” yourself
- Don’t stay in a role that you don’t enjoy

*“I would like to be remembered as someone who used whatever talent she had to do her work to the very best of her ability.” - RBG*



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# Dr. Patty Lopez

NMSU Computing Research Laboratory (1982-1989)  
Vision & Robotics Researcher (PhD, Computer Science)

Hewlett Packard (1989-2008)  
Software Developer,  
Color & Imaging Scientist

General Co-Chair,  
2013 Grace Hopper Celebration of  
Women in Computing Conference



New Mexico State University  
BS, MS, Computer Science  
(1976-1982)



HP Campus Manager  
for NMSU (1998-2008)



HP Girls Tech Camp – on team  
that planned and delivered the  
first outreach camp ~2006



Co-founded  
Latinas in Computing,  
2006



Intel Corporation (2008-2021)  
Sr. Platform Applications Engineer &  
Technical Lead, Datacenter Group



Intel Encore Computer  
Science Fellow in Residence,  
New Mexico State University  
(2021-present)

On sabbatical from Intel with my family  
in Kauai; Westie had to stay home



Artificial Intelligence

Computer scientist Derek Partridge, left, psychologist Victor Johnston and graduate student Patty Lopez of New Mexico State University have been invited to tell colleagues at a European conference

In July about their work in teaching a computer think. The highly controversial field of artificial intelligence is a blend of psychology, biology and computer science.

MS/PhD Advisors D. Partridge  
and V. S. Johnston (~1981)



# Topics I can cover/address:

- Industry/govt research paths and options
- What to look for in a sponsor
- Changing companies mid-career, career reinvention
- Navigating change - org / manager / work / life
- On/off-ramps, keeping skills and motivation fresh
- Work/life prioritization
- Leadership roles in/outside of work
- Childcare/eldercare challenges
- Building community/finding support



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# Let's jump right in!



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# What is YOUR Dream Job?

- Figure out:
  - Where to live? More remote and flex options post-pandemic
  - What kind of work?
- Industry/Government/Research Lab jobs come in many flavors
  - Research
  - Engineering
  - Development
  - Design
  - Management
  - Consulting
  - Start-up

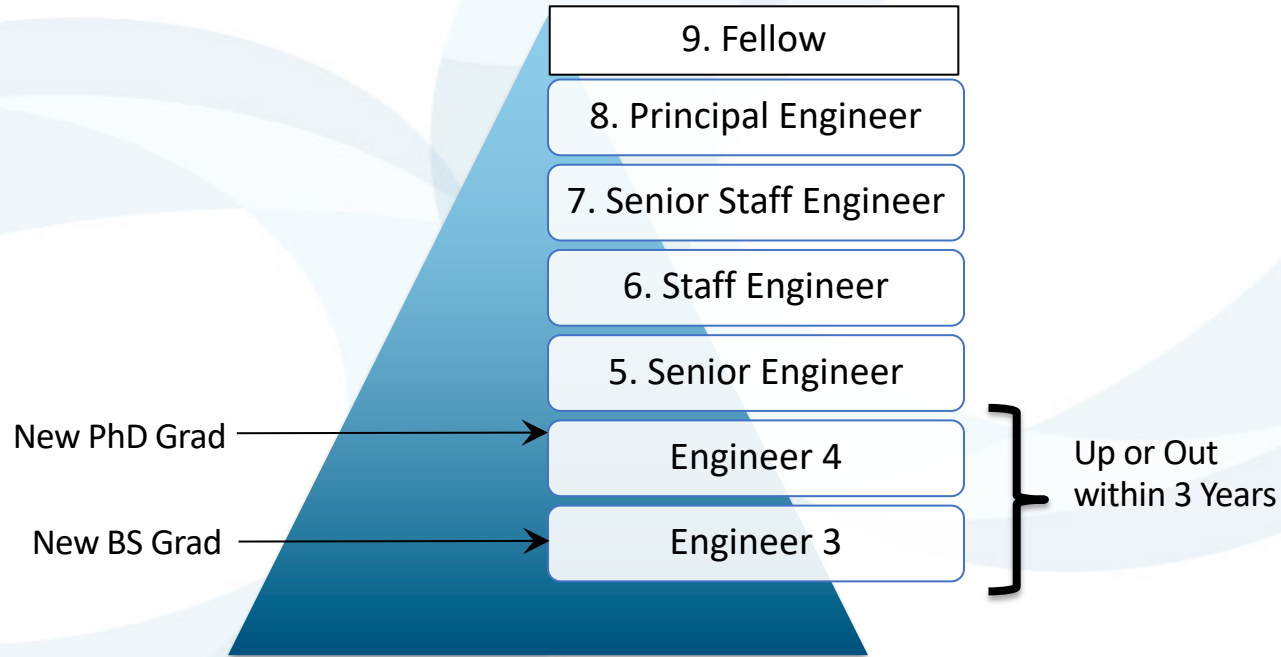


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# The Engineering Ladder

Titles may vary across companies



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# Comparisons: Industry, Academia, Government

Academia	Industry (other than Research)	National Lab or Industrial Research
Active publishing in top tier conferences	Must build “real” systems	Mix of building “real” systems and publishing
Active collaborations with academia	Up-to-date technical skills	Active collaborations with labs and academia
Establish visibility in research community	Understand business roadmaps	Address agency or company mission critical problems
“Soft” money	“Hard” money	“Soft” and “hard” money



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# GOVERNMENT RESEARCH CENTERS



- DOE, DoD, NASA, NSF, DHS, NSA, NIST, NRC, FAA, ...
- Mission-driven research and development



## Why Work at a Government Lab?

- Opportunity to work on problems of national and international importance
- Chance to make a difference
- Work on cross-disciplinary teams with other scientists



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# Scientist Track

- Postdoc
  - Named - small project internally funded
  - Regular - working as a primary on an already funded project
- Research Scientist
  - Significant leadership roles in projects
  - Smaller projects on own
- Scientist
  - Leadership of projects and proposals
- Senior Scientist
  - Recognized international leadership in area of research
  - Leadership of large-scale projects

Advancement metrics similar to a research university



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# Poll: Have you done an internship?

- YES?
- NO?

Check out the company and culture via an internship!



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# Applying for Jobs

- Your network will matter
- Increase your visibility
  - ✓ Volunteer at local events and conferences
  - ✓ Go to talks by people from industry (& academia) visiting your campus. Meet with them.
  - ✓ Give polished presentations at conferences
  - ✓ Target networking opportunities at conferences
  - ✓ Stay in touch with school alumni
  - ✓ *Do you have a LinkedIn profile?*
- Attend bigger events: GHC, career fairs, CRA-W grad cohort
- Apply to positions on employer's website and follow up!



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# Things to consider

- There is a lot of variability in industry jobs, even in the same company
- Some leaders don't understand the value of the Ph.D.
- If you are trying to get an engineering job, make sure your coding skills are visible in CV and up-to-date (e.g., on Github)
- You have learned to deal with ambiguity and find solutions. These insights are valuable.



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# Phone/Virtual Interview

- It's a pre-screen
- Do your homework
  - ✓ Lookup the person who contacted you for the screen
  - ✓ Lookup the group/team
  - ✓ Read the open position (open req) closely for details that you might have missed
- Mock/practice interviews
  - ✓ Have a short technical pitch on your thesis ready
  - ✓ Opportunity to ask your questions – technical focus of the group, work environment, etc.



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# On-Site Interview

## Logistics

- Give yourself plenty of time to get there, fly in the night/day before
- Show up on time (or early)
- Dress professionally
- Be confident and enthusiastic about your work

## Make sure you understand format

- Talk? Whiteboard interviews? Meetings?
- Ask for the list of people ahead of time, research them
- Ask for breaks if you need them, take a breath in restroom, carry a snack
- Lunch/dinner are interviews, stay professional



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# Interview (2)

- If there is a talk (same as academic):
  - ✓ Rehearse, rehearse, rehearse
  - ✓ Have polished slides: call out important points, use visual material, dig deep technically
  - ✓ Be professional when answering questions but don't let them derail you
- Don't be offended if they didn't have time to read cv/papers closely or attend talk
- Ask questions: This is your chance to figure out if you want to work there
- Is this a place you can see yourself grow?



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# Offers

- Congratulations!
- Negotiate whatever you care about
  - ✓ Start date
  - ✓ Salary (even if outside your comfort zone)
  - ✓ Signing bonus
  - ✓ Stock options
  - ✓ Moving package
  - ✓ Campus and flexibility
  - ✓ Presenting work at conferences
  - ✓ Consider all *strong* offers



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# Backup Questions

- Do internships matter?
- How do I showcase my technical skills?
- Can I publish papers? Contribute to open-source projects? Work with students?
- How do I find and get staffed on projects?
- How are projects started, how long do they last (6 mo – 3+ years)?
- What is the interview process like?
- How important is teamwork versus individual work?
- How are my work goals set?
- What is the career path of a researcher in your organization?
- Is it possible to switch during your career: Industry/Academia/National Laboratory/Funding Agency/Non-Profit?



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**Thank you!**



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