Academic Career Mentoring Series


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http://viterbi.usc.edu/students/phd/academic_resources/
• Our central mission is the development of human beings and society as a whole through the cultivation and enrichment of the human mind and spirit. The principal means by which our mission is accomplished are teaching, research, artistic creation, professional practice and selected forms of public service. - USC Mission Statement

• We will provide branded products and services of superior quality and value that improve the lives of the world’s consumers, now and for generations to come. As a result, consumers will reward us with leadership sales, profit and value creation, allowing our people, our shareholders and the communities in which we live and work to prosper. - Fortune 500 Company Mission Statement
Panel Discussion Questions

• What career path did you consider most during your Ph.D., and what influenced any changes to this over time?

• What does it take to succeed in academia vs industry, and in which career can one make the most impact (what kind)?

• What compels you to pursue a career in academia now given your past experiences in industry? Can you share a personal story about your experiences in industry versus academia? How has one impacted the other, if at all?

• What are lessons learned and tips (advantages and/or disadvantages) from working in industry prior to pursuing a career in academia?

• What key things should one do during Ph.D. studies to determine whether a career in industry or academia is best for achieving one’s career goals? What advice can you give about deciding between industry vs academia?
Panelists

- Peter A. Beerel, Associate Professor, Ming Hsieh Department of Electrical Engineering-Systems
- Mike S. W. Chen, Assistant Professor, Ming Hsieh Department of Electrical Engineering-Electrophysics
- Henryk Flashner, Professor, Department of Aerospace & Mechanical Engineering
- Yan Liu, Assistant Professor, Computer Science Department
- Azad M. Madni, Professor and Director, Systems Architecting and Engineering Program, Daniel J. Epstein Department of Industrial and Systems Engineering
Panel Format

• Panelists’ remarks:
  – personal background; path taken to academic career
  – responses to panel discussion questions
  – additional tips

• Open Q&A:
  – questions from the audience

• Wrap-up
Job Search Resources for Placement in Academia

• Viterbi’s academic job search website of new postings for postdoc and faculty opportunities:
  • http://www.viterbi.usc.edu/students/phd/jobs-faculty-positions.php

• Additional links of national academic search engines:
  • http://www.academicleickeys.com/
  • http://www.academiccareers.com/
  and a clearinghouse of postdoc opportunities:
  • http://www.ucop.edu/acadadv/ppfp/
  • http://www.hercjobs.org/home/index.cfm?site_id=793
  • http://www.nigms.nih.gov/Training/CareerDev/MOREInstRes.htm
  • http://www.pathwaystoscience.org/Postdocs_portal.asp
  • http://minoritypostdoc.org/
  • http://graddiv.ucsc.edu/student_affairs/PostdocFellows_Minorities.php
Academia, Industry or Both?

Mike Chen

11/4/2011 USC
My Story

• First, get a PhD in Electrical Engineering. Why? Keep options open, and decide later when I am older...

• Next, industry. A fabless semiconductor company: Atheros communications (now Qualcomm-Atheros).

• Now, academia. Go Trojans!
Difference?

• Objective function is different. Industry -> profit. Academia -> proof of concept.

• Both are challenging and require innovations.

• Either way, you can make big impacts. Industry -> End products. Academia -> Originate core technology.

Which one makes you feel most excited?
Other things to consider

• Decision between industry or academia
  - Working style: Regular vs. irregular pattern.
  - Personality: Enjoy sharing knowledge?
  - Breadth vs. depth.
  - Team member: Work with professionals vs. younger researchers.
  - Openings.
Industry ➔ Academia

• Advantages:
  - Seeing what is going on in the real world definitely helps you teach, and research.
  - Isn’t it cool to know both sides?

• Disadvantage:
  - Not every industrial position allows you to work on “research-like” projects.
  - Industry job in general tends to be more focused in scope.
Conclusion

• Either way, you can make big impacts!

• Whichever side you enjoy the most is your best choice.

• If you don’t know the answer for now, why not try both?
Ph.D Mentoring Program

Henryk Flashner
Dept. of Aerospace and Mechanical Engineering
Background in Industry

• Industrial experience in aerospace industry
  ▪ TRW Space Technology Group
  ▪ Control Analysis Department

• Duties
  ▪ Internal Research and Development
    ♥ Principal Investigator Large Space Structures Control IRAD
  ▪ Control Analysis of Spacecraft Missions
    ♥ Power Extension Package, 25KW System
Academic Background

• Education
  ▪ B.S and M.S in Mechanical Engineering from Technion-Israel Institute of Technology
  ▪ Ph.D UC Berkeley, Mechanical Engineering  
    ♦ Dissertation: Stability of Periodic Systems
    ♦ Major Areas: Control Systems, Nonlinear Dynamics

• Research Areas
  ▪ Dynamics and Control Analysis of Mechanical Systems  
    ♦ Spacecraft Control, Control of Rotating Systems, Flexible Systems
  ▪ Nonlinear Dynamics
  ▪ Biomechanics
Academia vs Industry

• Industry
  - Work in a team work setting
  - Communication skills
  - Relatively slow progress to leadership position from which one can exert influence.

• Academia
  - Leadership on projects is immediate
  - Teaching – must like it and be able to do it
  - Independent in selecting research topics
    ♦ Subject to funding opportunities
Industrial Experience

• Influence on Research in Academia
  ▪ Many of my research topics are motivated by applications
  ▪ Formed view that research in engineering needs to be motivated by one of the following
    ▪ Need of solving a problem – develop a new method for solution
    ▪ Need for explaining phenomena
    ▪ Develop techniques that has a chance in a future to real problems

• Allowed for Interaction with Aerospace Industry
  • Consulting for aerospace
  • Joint projects
  • Allowed to develop new research directions (Biomechanics)
Career in Industry and/or Academia?

• Industrial experience is an advantage in subsequent academic career
  ▪ Allows for better interaction with industry
  ▪ Allows for better choice of research topics that can be implemented and useful in applications
  ▪ Provides experience what it takes to produce a device that works

• Transition from industry to academia
  ▪ After 4-5 years in industry
  ▪ After about 20 years in industry
Career Choices: Industry vs. Academia

Yan Liu
Assistant Professor
Computer Science Department
Viterbi School of Engineering
University of Southern California
My Own Path

- 2001, B.S. Peking University
- 2006, PhD. Carnegie Mellon University  
  - 2004, M.S. CMU
- 2010, IBM TJ Watson Research Center
- Now, USC
1) What career path did you consider most during your Ph.D., and what influenced any changes to this over time?

- **Stage 1: Clueless**

- **Stage 2: Some idea**

- **Stage 3: Yes, I want it**

- **Stage 4: No, I cannot do it**
2) What does it take to succeed in academia versus industry, and where can one make the most impact?

- **Best virtues in all jobs**
  - Hardworking
  - Good attitude
  - Communication skills
  - (and some luck)

- **Different impact**
  - Academia: your own research achievement and many many students
  - Industry: you are on board of a big ship that makes a lot of impact
3) What compels you to pursue a career in academia now given your past experiences in industry? Can you share a personal in industry versus academia?

• Life is full of changes ..
4) What are lessons learned and tips (advantages and/or disadvantages) from working in industry prior to pursuing a career in academia?

• Advantages: Yes, you’re ready!!
  – More mature
  – Research better motivated by real applications
  – Better academic networks
  – Better management skills

• Disadvantage
  – You are not one person any more 😊
5) What key things should one do during Ph.D. studies to determine whether a career in industry or academia is best for achieving one's career goals?

• Doing an internship
• Talking to senior students in your group
• Visiting a top research lab in your area from other top universities
• Most important: know what you’re good at and what you want to be.

http://web.mit.edu/provost/pds_seminars/Schmitt_careerforum.ppt