My Experience as Industrial Researcher

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My Grad School Experience

- PhD Computing Science, University of Alberta
- Advanced Man-Machine Interface (AMMI) Lab
  - Lots of interesting real-world applicable projects
  - Focus on graphics, visualization, signal processing and high-performance computing
- Supervisor (Pierre Boulanger), good industrial focus
  - Worked with industry for funding, etc.
- Learned about commercialization of research and entrepreneurship (workshops in Alberta)
- Would have done internships
  - Believe there is an internship program at MUN for grad students?
Is Grad School Useful?

- Need a PhD to be a professor, certain government research jobs.
- Industrial research jobs as well in big tech research. (Google, NVIDIA, AI jobs, etc.)
  - Some of these companies even value PhD on the resume even when you are essentially going into a developer role that’s not really a research position per say
- However, a lot of jobs really don’t need a PhD
  - You trade all that time in school for time you could be getting hands-on experience in a job, probably getting paid more...
- Grad school is a lot of research training, seems a shame to waste the skills
  - Seemed a shame not to put the R&D skills to use in the end...
How grad school training is useful for industry

- Project management skills, seeing something big through to the end
- Independence, self-reliance
- Networking - you will get to know a lot of people and grow a network
- Producing something innovative
- Learn how your innovation can be useful for the world and have value for a market
- Talk about where it might have gaps later...
Funding in Industry

- SR&ED - tax credits
- NRC IRAP and others
- Provincial Gov - various programs, industrial post-doc program
- Industry-Academic collaboration funding (NSERC and others)
- NSERC and Mitacs research internships
- BCIP - first sale of new innovation to gov’t
- Other localities have similar (SBIR in US)
- Many others!
- Informing potential employers or clients of R&D funding opportunities
  - demonstrating your value
  - convince entrepreneurs to take risks.
My Industry Experiences

- **GRI Simulations Inc. (2012-2015)**
  - Oil and gas. Graphics and visualization R&D on existing products
  - Established company with existing customers
  - Lots of potential for R&D in this industry
  - Was able to publish in industry focused conferences

- **Birch Scientific (2013-Current)**
  - Helped with drilling start-up with successful exit (Marksman Ranging)
  - Web development for Oil and Gas
    - Fast-paced, 24/7 operations, “real-world” problems
  - Development of in-house IP (ongoing)
My Industry Experiences

- **Avalon Holographics (2015-Current)**
  - Start-up, no revenue (yet)
  - Purely R&D company. Developing holographic/light field displays.
  - Very ambitious; both exciting and frightening at times
  - Patents and been able to publish

- In all cases my grad school training has been very applicable:
  - Graphics, visualization, signal processing
  - Grant writing: SR&ED, NRC and RDC proposals, etc.
  - Seeing things through to the end amidst uncertainty
Academia vs. Industry

- (At risk of over-generalizing) Academia:
  - Success: Write lot of great papers, get lots of grants and have lots of people working for you.
  - Work a lot of hours (w/ no increase in pay?)
- Students are typically relatively inexperienced
  - They leave after a few years once they finally get momentum
- Faculty colleagues experienced but busy (not full-time focus)
- Well-funded labs can maybe avoid these pitfalls (don’t mean to over generalize)
- We still need basic research driven by curiosity and intellectually interesting questions...
Academia vs. Industry

- Solution to intellectually interesting problem doesn’t necessarily have a market ever or in any kind of immediate time frame that a typical investor is interested in.
- Industry:
  - teammates can be well-paid, experienced people
  - Full-time focus
- Work with variety of people (not just engineers and scientists)
  - Business, marketing, etc.
Observations and Experiences

● Industry: Resulting problem solving still very intellectually challenging and interesting like in academia
  ○ Perhaps more practical slant and focused on results
● Key is to pick a problem whose solutions results in a marketable product.
● Personally very interesting to see how things work out in the wild
● Private funding is generally skeptical about investing in academia
  ○ IP issues, etc. lots of barriers
● Academic “Science projects” vs. real marketable products
  ○ due to limited resources, not necessarily limited ideas and imagination
Observations and Experiences

- Skeptical of value of research and how it could result in saleable product
  - Need to understand why the risk is worth taking
  - Potentially not as ‘blue sky’ as you might be able to be in academia
  - Resources are limited; must get results to get back the investment

- Can be more geared towards industry telling them what they want and how
  - As opposed to being innovative and re-defining industry (not easy)

- Skeptical about working with university, academic credentials seen as not being practical.
Conclusion

- Your research training may not be a waste if you leave academia (not waste of time!)
- Other skills acquired in grad school are also applicable
- Lots of interesting problems in industry, particularly if seeing things help people make money is interesting to you
- Industrial gov’t R&D funding in Canada, helps you get jobs, helps projects become possible in companies
- Industry can give chance to work on bigger projects, attract more resources
- Sense of practicality in industry can be refreshing