My Experience as Industrial Researcher

Matthew Hamilton

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 interships

Is Grad School Useful?

- Need a PhD to be a professor, certain government research jobs.
- What about industry?
- Grad school is a lot of research training, seems a shame to waste the skills

How grad school training is useful for industry

- Project management skills, seeing something big through to the end
- Independence, self-reliance
- Networking
- 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
- NRC IRAP and others
- RDC - 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
- Informing potential employers or clients of R&D funding opportunities
  - demonstrating your value
  - convince entrepreneurs to take risks.

My Industry Experiences

- **GRI Simulations Inc.**
  - Oil and gas. Graphics and visualization R&D on existing products
- **Various Consulting Work**
  - Oil and Gas and Visual Effects industry.
- **Avalon Holographics**
  - Purely R&D company. Developing holographic displays for primarily gaming.
- In all cases my grad school training has been very applicable
  - Graphics, visualization, signal processing
  - Grant writing: SR&ED, NRC and RDC proposals, etc.

Academia vs. Industry

- 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 and support workers 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
- 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
- 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
- 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
- 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
- Lots of industrial gov't R&D funding in Canada, helps you get jobs
- Industry can give chance to work on bigger projects, attract more resources