Illinois Career Seminar

Srinidhi Ramamurthy
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Outline

- My background
- Current landscape
- Startups vs mature companies
- Where can physicists add value?
- What to do once you get a job to succeed?

Background

Worked with Prof. Taylor Hughes on topological physics.

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Went through the whole interview process for Wall Street and DS jobs. Ended up working for a startup, i.e. Uplift Inc during summer 2018 and converted to full time after liking it.

DS landscape

I am assuming you all have heard this multiple times by now.

- Data Engineer responsibilities:
  - Build and maintain data pipelines, i.e. take logs from services which are running live, and provide them in a queryable form to every user at the company.
  - Data understanding at a technical level.

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- Data Engineer responsibilities:
  - Build and maintain data pipelines, i.e. take logs from services which are running live, and provide them in a queryable form to every user at the company.
  - Data understanding at a technical level.
- Data Engineer skills:
  - Good understanding of warehousing services.
  - Be a very strong programmer.
  - Be able to communicate with a technical user.
  - Document and write code well.

DS landscape

- Data Scientist responsibilities:
  - Provide insights based on analyses/modeling. Will likely involve deploying models in production.
  - Need to understand how warehousing services work.
  - Understand the details of the data and QA it.
  - Work with technical teams to accomplish what is needed.

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  - Need to understand how warehousing services work.
  - Understand the details of the data and QA it.
  - Work with technical teams to accomplish what is needed.
- Data Scientist skills:
  - Be a decent to good programmer.
  - Understand how ML algorithms work and which kind of modeling could work for which data set.
  - Communicate in a crisp and clear fashion.

DS landscape

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Your goal is to become this in a couple years.

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- Maintain end to end data pipeline, i.e. from logs to queryable databases, maintain data being piped to models that are being served live.
- Understand the ins and outs of the data and curate good data sets for future ML applications.
- Build and maintain models in production.
- Translate the utility of your models to direct business user.

You essentially have to become an end to end expert.

DS landscape

Example :
Credit modeling at Uplift

Big takeaway

Remember always:

> Fear the data! Assume it is always wrong/messed up.

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- Be very clear about what you know and don’t know and fill out the gaps.

Working for a startup vs mature companies

Startup vs larger/mature company

- Role
- Organizational structure
- Timeline for delivery of results
- Structure in daily and weekly tasks
- Self management vs chain of command management
- Risk vs stability
- General competence of people around you
- Depth of technical asks to solve the problem

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- Good communication/writing skills.
- Ability to iterate on a given problem statement quickly.
- Translating an ambiguous task into a clear problem statement and sketching out a quantitative solution.
- Can speak to both a business user and a technical user.

The first 3 are something you already have and probably seen in action.

The latter 2 will become apparent to you once you start working. But, the latter 2 are far more important in your long term career development.

Where can physicists add value?

It is natural for us to thrive at startups in my opinion.

- You are afforded the time and freedom to learn and experiment.
- The solutions you come up with need not be state of the art, they need to be 80% correct.
- Self direction is encouraged, if you come up with something which is very helpful for the company, it is going to be used!
- Not everything has been thought through, ample opportunity to get exposed to multiple arms of the company and solve critical problems.
- Learn the ins and outs of how to run a business in the process and impact the bottom line directly.

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I do not like too much specialization, I would much rather learn 100 things to an 80% depth than 10 things to a 100% depth. (Take away from my time in grad school.)
The market is ever changing, so too much specialization can lead to career stagnation and eventually uncertainty in employment.

What to do once you start working?

- Be very clear and understand what you are asked to do.
- Communicate and meet with whoever you report to at a regular cadence.
- Understand how you are being measured.
- Attempt to think outside the box you are assigned once you get some breathing room.
- Voice your likes/dislikes to your manager on a monthly basis at least, and ask for clear feedback.
- Do not shy away from expressing your opinions.
- Document everything well.
- Hold yourself up to a high standard and do not submit sloppy work ever. Quickest way to lose trust.
- Keep a semblance of work life balance.

Questions

Thanks for your time, questions?