



Jobs in Industry for Astronomysicists

Stephen Hardy



Australian Government
Department of Broadband, Communications
and the Digital Economy
Australian Research Council

NICTA Funding and Supporting Members and Partners



How do I get a job in industry?



- Networking
- CVs
- Interviews
- Longer term preparation

Hiring from two perspectives



- Hiring decisions are the most important decisions in a knowledge based company.
- A poor hiring choice can be terrible for the company and terrible for the employee.
- Many employers take a “better safe than sorry” approach – I didn’t fill a role for 18 months because the right person did not appear.

What does an employer want?



- If you are moving into a different field there are different perspectives on what is important:
 1. How long will it take for you to become productive?
 2. What is your long term potential?
 3. How well do you “fit” the organisation?
 - E.g. individual/team, open/closed, deadlines, reduced freedom, personality type, communication style, innovative or not?
 4. Will you let go? How much will you look backwards?
- What evidence can they collect to determine the answers to these questions?

Networking



- A short cut to a job is to have someone the employer trusts say positive things about you.
- In my opinion, this is the most best source of information.
- How do you build a network? Get out and about – try things in your target area.

E.g. a hire from physics:

Did Kaggle contests

Got freelance work in analytics

Coursera ML courses

I was confident he knew what he was getting into and he could point to specific things he had achieved.



CVs



- CVs have two tasks – get an interview, and guide the interview.
- What can an employer learn from a CV?
 - What are you looking for?
 - What skills do you have [evidenced by achievement]?
How can they be transferred to the new field?
 - What level of achievement did you reach?
 - Are there topics that can be explored to learn more?
 - What you know will be interpreted by the reader into “what sort of person is this”... rightly or wrongly.

Practical points



- First: Give a concise summary of your main skills and what sort of role you are after. Polish this.
- What practical skills do you have that make you useful in the short term? Highlight them in describing your experience. Don't guild the lily! [You may get the interview but if you are found out you will not get the job]
- Give concrete examples of what you did (make sure you did it). e.g. wrote 120,000 lines of IDL to process astronomical images using blah, blah, blah techniques.
- Highlight the fundamental strengths that you have - problem solving, computing, analysis, maths, supervision (e.g. management and leadership), presentation skills, communication
- Make sure your LinkedIn profile is consistent with your CV - AND – recent job ads I have had placed have only appeared in LinkedIn.

Interviews



- Gathering information in order to answer the same questions.
- Expect interviewers to drill down to determine what your contribution was in any given activity (including soft skills).
- Often looking for the boundaries of your expertise
 - It is ok not to know the answer to something, unless that contradicts claims you made in your CV.
- Problem solving in ICT interviews is common (but a little controversial)

My interview process (top secret!)



- Ask them to go through what they think the highest impact piece of research they have done is.
 - to get them comfortable
 - to drill down to work out exactly what their contribution was and why they thought it had impact (i.e. what do they value) and
 - to learn something myself.
- Questions on the CV
 - background / history - the main aim is to work out where they want to be heading to determine if it is consistent with the role on offer.
 - look for gilding the lily. Automatic disqualification! If you say you know something about Bayesian statistics, then I hope you know Bayes rule!
 - Find the boundaries!

My interview process (top secret!)



- Whiteboard problem solving. Some people are good at this, some people are not (but may still be good hires).
 - exploring maths: divide by 3 problem, ...
 - To code: design a Boggle solver,...
 - to problem solving – looking to see the approach, not the solution.
- **Soft skills:**
 - Describe a difficult person you have worked with and how you managed the relationship with them.
 - What was the most stressful time in your career and what coping strategies did you use?
- Questions from the candidate
- Reference checks!

Long term preparation



- If you suspect that you might have another technical career ahead of you, try to make sure you are collecting the skills you need while doing your current job.
- Sometimes this means doing things the slow way, just to collect a new skill.
- Collecting evidence of those skills is also important!

Data Science



- Intersection between: Statistics, Computer Science & domain knowledge
- Requires Jack-of-all-trades types
- R and/or Python
- Java and Scala (Haskell for the hardcore)
- SQL, Hadoop, Hive, etc... + about 20 other possible systems
- Machine learning – scikit learn, mahout, graphlab...