

# Top-10 Job-getting Skills in Astronomy + How to Give A Bad Talk

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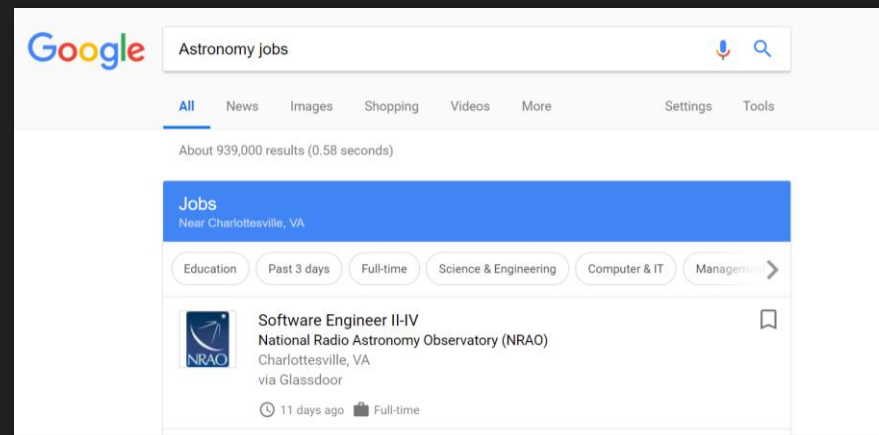
# AAS says...

- “As science professions go, astronomy is a relatively small field, with about 6,000 professional astronomers in North America.”
- ~100 institutes offering PhD degree in Astronomy
- Assume career lifetime of 40 years
- $6,000 \text{ jobs} / 40 \text{ years} / 100 \text{ institutes} = 1.5 \text{ job per year per institute}$

# Even worse...

- “Most professional astronomers (about 55 percent) are either faculty members at universities and colleges, or affiliated with universities and colleges through observatories and laboratories.”
- Only 1.65 out of 10 of us

# 1. You do not have to stay in academia



## Position Summary

Join the development team that created and maintains the software used by the worlds most powerful radio telescopes. The Common Astronomy Software Applications (CASA) package is used by astronomers and astrophysicists around the world to process and analyze data from radio interferometers. The CASA team is an international collaboration, led by NRAO, with the charge of supporting the scientific mission of NRAO and its partner organizations.

We are seeking a Software Engineer, with experience in software development using C++ and python, to join the CASA development team. The CASA team is responsible for the development and maintenance of the scientific processing software. The CASA package consists of a set of C++ libraries, primarily accessed through a python binding. The successful applicants will work to maintain and improve the infrastructure supporting the scientific algorithms. Job classification and compensation will be commensurate with education and experience.

# Bruce said...

- \_\_\_\_% of the jobs were filled in internally



Huge number

$$0 < x < 100$$

$$\text{Geometric mean} = \sqrt{0 \times 100} = 0$$

# Bruce said...

- \_\_\_\_% of the jobs were filled in internally



Huge number

$$1 < x < 100$$

$$\text{Geometric mean} = \sqrt{1 \times 100} = 10$$

## 2. Networking

- Go to meetings/conference/workshops
- Get letter writers
- Know your collaborators

Wait... What if I don't have a network 😞

# 3. Know where to find jobs

- AAS Job Register
  - <https://jobregister.aas.org/>
- Astrobetter Rumor Mill
  - <http://www.astrobetter.com/wiki/Rumor+Mill>



# 4. Qualify yourself

To be considered, you will have:

A PhD or equivalent in astronomy/astrophysics.

Experience in radio interferometry, preferably very long baseline interferometry.

A record of publication of scientific results in peer reviewed journals.

A demonstrated ability to work and contribute in a team environment.

A demonstrated ability to communicate scientific results to a range of audiences, from experts through to the general public.

# 4. Qualify yourself

## Position Requirements:

### Minimum Education

- ✓ Bachelor's degree in computer science, engineering, scientific or related field

### Preferred Education

- ✓ An advanced degree in a related field

### Minimum Experience

- ✓ At least one year of direct or related experience in software development with C++ and python. Candidates with progressively more responsible experience will be considered for a higher level position ranking.

### Preferred Experience

#### Experience encompassing the following areas:

- Experience with C++ and Python programming.
- Experience with GNU, Intel, or Clang compilers for Linux or OS X
- Development experience with the C++ standard template library
- Experience integrating software components into a functioning, maintainable system
- Development experience in user space system level C++ programming
- Experience with CMake or other Linux configuration generation systems
- Experience with parallel application development (both multi-process and multi-threaded)
- Understanding of object-oriented design and development
- Experience in a geographically distributed development group
- Experience with version control software and testing methodologies
- Experience debugging and profiling software systems



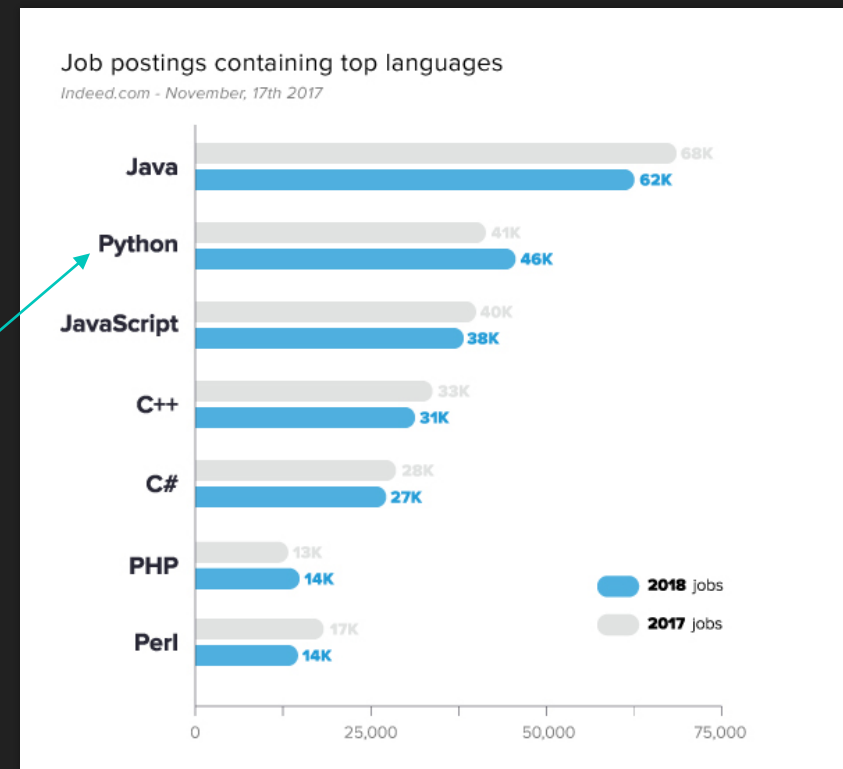
**Ad** Free developer plan!

A screenshot of the GitHub Education website. The header includes the GitHub Education logo and navigation links for Stories, Events, Student pack, Classroom, Community, and Contact us. The main content area features a green chalkboard background with the text "TEACH AND LEARN BETTER, TOGETHER" and a "Request a discount" button. Below this, there is a section for the "STUDENT DEVELOPER PACK" which includes an image of a yellow backpack and a "Get the pack" button. The text below the button says "Get the Student Developer Pack" and "Dozens of free resources from great companies to help students learn."

# 5-8. Build skills

- Teaching and administration skills
- Communication skills
- Presentation skills
- Technical skills
  - ARCS offers summer workshop every year Ad
  - Python, C++, Fortran, scientific visualization, high performance computing, parallel programming

You are here



# 9. Present yourself to others

- Personal website
- Good CV
- Write proposals
- Publish papers

# 10. Learn to interview

- Prepare and practice
  - Google interview questions
- Learn about the department/company
- Know everything about your CV
- Give a job talk/chalk talk/teaching demonstration

# Top-10 list

- Open mind to change
- Networking
- Know where to find jobs
- Qualify yourself
- Build skills
  - Teaching and administration skills
  - Communication skills
  - Presentation skills
  - Technical skills
- Present your self to others
- Learn to interview

# Reference

- <https://aas.org/learn/careers-astronomy>
- <https://aas.org/learn/college-departments-offering-astronomy-related-degrees>
- <http://www.faculty.virginia.edu/rwoclass/astr8500/JobGettingSkills.pdf>
- [http://www.faculty.virginia.edu/rwoclass/astr8500/pryal\\_job\\_getting\\_skills.pdf](http://www.faculty.virginia.edu/rwoclass/astr8500/pryal_job_getting_skills.pdf)
- <https://www.codingdojo.com/blog/7-most-in-demand-programming-languages-of-2018/>
- <https://jobregister.aas.org/>
- <http://www.astrobetter.com/wiki/Rumor+Mill>
- <https://career.ucsf.edu/grad-students-postdocs/career-planning/academic-jobs/interviewing>
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- <https://help.github.com/articles/about-github-education-for-educators-and-researchers/>