

Job Hunting with a Math Degree

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Presentation to the Pitt Math Club,
<https://www.mathematics.pitt.edu/content/math-club>,
Mathematics Department,
University of Pittsburgh,
6:00pm, 18 February 2026, 703 Thackeray

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[https://people.sc.fsu.edu/~jburkardt/latex_src/
careers_2026_pitt/careers_2026_pitt.pdf](https://people.sc.fsu.edu/~jburkardt/latex_src/careers_2026_pitt/careers_2026_pitt.pdf)

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Slides last modified 18 February 2026

One Day You're a Student, and the Next Day...?



Graduation is a **Wile E. Coyote Moment**.

You Have Chosen an Iffy Year to Graduate!



- State and federal support for university funding is wavering;
- Government institutions are in disarray;
- Businesses are unsure about hiring;
- Economic forecasts see “volatility” ahead;
- AI is making many jobs obsolete.

There is Life After College; but you're in charge!



After years of classroom drill and lectures, you are out on your own.

Simple choices you make now have a huge effect on your future.

I urge you to check the **Pitt Career Center** for advice on resume, cover letter, interviews, dress code and other professional advice.

<https://www.studentaffairs.pitt.edu/cdpa/>

I'll focus on some issues for students in mathematics.

What is Most Important?



Location? Travel? Salary? Family-friendly? Job satisfaction?
Independence? Social interaction? Job security? Advancement?
Computing skills? Health Insurance? Supportive Co-workers?

Where Do You Want to Go?



- Academic: Grad School, High School, College, University
- Biomed: Medtronic, NIH, Roche, UPMC, Viatrix
- Business: Actuarial, Banks, PNC, Wall Street
- CS: Ansys, Google, Meta, Microsoft, Nvidia, NREC, PSC
- Industry: Aerospace, Alcoa, Auto, Energy, PPG, Wesco
- Research Labs: JPL, Livermore, NASA, NCAR, NSA, Sandia

It Takes Determination to become a Professor!



There are more PhD's than openings. But a professor doesn't graduate one PhD student and then make room by dying!

A career starts as a post-doc; you teach, research and scramble for your real job (or another post-doc elsewhere?).

Quote from a tenured Pitt professor:

"Graduate school was the best life; every step upwards was less enjoyable; committees, paperwork, grants, department politics."

<https://theprofessorisin.com/>

Personal Connections → Later Recommendations



Get to know some of your professors, and get them to know you.

Try a project course with presentations, like “BIG Problems”:

https://www.mathematics.pitt.edu/sites/default/files/2181_1103-Syllabus.pdf

The worst letter of recommendation simply says:

“I believe this student did take my class.”

Become a Presenter



Especially for academic jobs, you need speaking skill and poise.

- speech class
- in-class presentations
- acting or singing (believe me!)
- improv class <https://steelcityimprov.com/>
- for a shock, video yourself in a mock interview

Pursue Outside Achievements



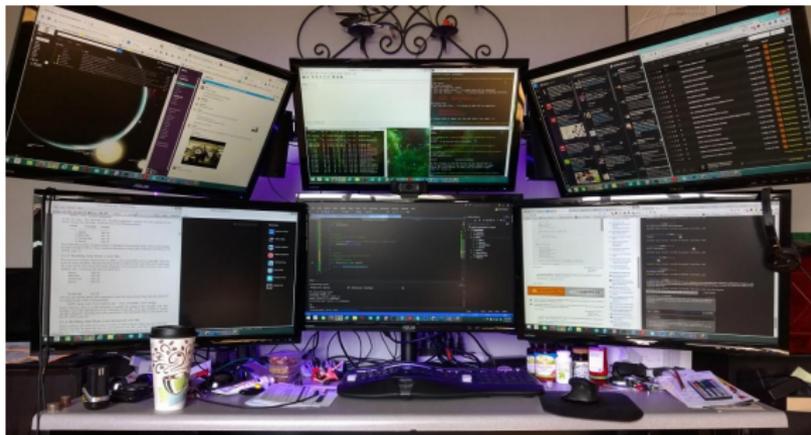
- Scholarships, Awards, Competitive Exams.
- Workshops and conferences in your field.
- External courses at Coursera, EdX, OCW, Udacity;
- Tutoring, mentoring, and other services.
- Research projects with local faculty are a plus:
<https://www.asundergrad.pitt.edu/research>
- An REU (Research Experience for Undergraduates);
- Internships give you experience, some income, and contacts;

Prepare an “Elevator Presentation”



You will speak to some people with little mathematical background. Have one clear example of what you can do:

- I model air flow around a wing;
- My work predicts how an epidemic will spread.
- I estimate the similarity of two strands of DNA;
- I aim a spaceship to where the moon is going to be;
- I can decide how much to invest in retirement funds;
- I can “forge” new works by dead authors;



Employers want to know your computing and Internet skills:

- your web page;
- social media accounts;
- application documents (cover letter, resume, essay);
- Lab reports, projects, papers;
- Videos and animations;
- Programs.

Programming Language



Based on this top 20 language listing, most jobs that ask for programming will not be interested in Fortran, Excel, or MATLAB...

The Machine Learning Craze



Employers are interested in experience with machine learning or data science or artificial intelligence or deep learning.

Investigate ChatGPT, Claude Code, Codex, Cursor, Gemini.

Some of our students have been able to take such a class at CMU. Pitt Math could offer such a class...*maybe if you beg!*

Or try Coursera, EdX, MIT's Open Courseware, or Udacity.

Many machine learning techniques come from Numerical Analysis and can be learned in Math 2070/2071.

The NSF maintains a list of the REU's it supports at

<https://new.nsf.gov/funding/initiatives/reu/search>

A few examples (from hundreds)

- Quantum Machine Learning Algorithm Design, Arizona State
- Algebra and Discrete Geometry, Auburn University
- Summer Scholars, Biology, Chemistry, Mathematics: CMU
- Number theory, aperiodic order, California State
- High Performance Computing, Clarkson
- Mathematical Biology, Clarkson

Local internships

Many Pittsburgh companies offer summer internships, which are short term, temporary jobs. You may be expected to have some basic skills, and get additional training. You are paid as a regular employee. If the job is closely related to your studies, you may make valuable contacts for a permanent job later. In any case, you should work hard to get a good letter of recommendation.

Because these jobs are local, you can easily stop by first, to get a feeling for the people and the job.

Companies with internships in the area include Aerotech, Bettis National Lab (West Mifflin), BNY Mellon, Carnegie Robotics, Chromalox, FedEx, Honeywell, KPMG, Microsoft, The Pittsburgh Pirates, PNC Bank, PPG, Quest Diagnostics, Tenaris, Williams.

Remote internships

SIAM maintains information about internships in industry, research institutions, and government labs:

<https://www.siam.org/programs-initiatives/professional-development/internships/>

The American Statistical Association **Stattrak** highlights opportunities for starting jobs in statistics and data science.

<https://stattrak.amstat.org/2025/12/01/2026-internships/>

Search for internships at Glassdoor, Indeed, LinkedIn, ZipRecruiter.

Go directly to websites of Apple, Google, IBM, Meta, Microsoft, NASA, NCAR, NIH, NSA, Oak Ridge National Lab, Pfizer.

More opportunities

The Mathematics Department web site includes a section on research opportunities and careers at

<https://www.mathematics.pitt.edu/undergraduate/undergraduate-researchcareer-opportunities>

Some of these links are very extensive and you are sure to find something of interest that you did not know about.

In particular, at the end of this page is information about the Painter Undergraduate Research Fellowship, given each year to 3 or 4 undergraduates, and paying to support 8 weeks in the summer of math research with a faculty advisor.

Some of these links may have expired. I will try to have them fixed. Meanwhile, we can look at:

<https://people.sc.fsu.edu/~jburkardt/html/opportunities.html>

What Happened to Other People?

The Mathematics Department Web Site lists the first jobs of some of its graduate students.

This tells you what companies are hiring, and what specialties they are interested in. You may even be able to contact one of these former Pitt people to ask for more information or help.

<https://www.mathematics.pitt.edu/graduate/graduate-employment>

Some of these graduates were hired by Limetree, American Economic Association, Wells Fargo, Blazen AI, Samsung, BNY Mellon, Indeed.com, Citigroup, Morgan Stanley, Discover Financial Services, Imandra R&D, Citibank, Equisoft.

Have an Idea of Your Options

SIAM (Society for Industrial and Applied Mathematics) has an online guide, and a booklet, suggesting how to prepare for your job search, and what kind of jobs you can expect.

<https://www.siam.org/media/hicbuee5/careers-brochure-2022.pdf>

Each page introduces a person with a specific job, what they studied in college, how they ended up getting the job, average pay, education requirements and other features.

Jesse Berwald
**PRINCIPAL SOFTWARE
ARCHITECT**

EMPLOYER
Quantum Computing, Inc.
DEPARTMENT
Engineering
LOCATION
Remote (I currently reside in Minneapolis,
Minnesota, U.S.)

WHAT DO YOU DO?

As a software architect I interact closely with many levels of the organization. I ensure that hardware engineering projects align with requirements from sales and marketing. It is essential that the senior leadership understands the scope of a product and how to prioritize where we can take it. One example of a recent interesting project was we released a software interface to a new hardware device, which allows customers to solve integer optimization problems on a quantum computing device.

What types of skills do you use?

My foundational skills as a mathematician have allowed me to learn new skills such as quantum computing with minimal pain and suffering. Mathematicians are keen generalizers, which is an important crossover skill in many jobs, including software engineering. Project planning and management is foundational: decompose a six-month block of work into smaller milestones and deliverables. Nevertheless, most days require a much larger dose of interpersonal skill than any other skill.

How are applied mathematics and/or computational science important to what you do?

Applied mathematics and computer science are foundational to my work. Quantum computing leverages a wide range of tools, from machine learning to quantum physics. Staying ahead of new research means that I set aside time to read relevant research papers, too. Currently, architecting software for quantum computing involves a larger-than-average portion of the stack; at one end, an understanding of the underlying physics is often required; at the other end, one is tasked with implementing these ideas as machine learning algorithms in the cloud.

What are the pros and/or cons of your profession/job?

Pro: In my current role at a start-up, we are all focused on essentially a single product, which really helps to guide one's work.

Con: Start-ups can travel a nonlinear path at times, which might involve a sudden change in the company's direction, which can lead to feelings of instability.

Does your job offer flexibility?

My job is very flexible in terms of working hours and location.



“Something to be aware of is that you will use your mathematics skills in a general sense solving very interesting problems, but it's unlikely that you will directly leverage your specialty.”

EDUCATION
B.S. Honors Mathematics,
University of Michigan
Ph.D. Mathematics, Montana State
University
CAREER STAGE: Mid

CAREER PATH

What career path did you take to your current position?

My career path has been very nonlinear. I dropped out of high school to pursue bike racing and ended up finishing my last two years of undergrad at University of Michigan. The next five years included graduate school in Connecticut, a software position at IBM in Massachusetts, serving coffee, framing houses in Montana, and lots of rock and ice climbing. I reentered graduate school in Bozeman, Montana and graduated with a Ph.D. in mathematics.

After my Ph.D. I spent two years as a postdoc at William & Mary, then a year at the Institute for Mathematics and Its Applications at University of Minnesota. Both of these postdocs focused on dynamical systems and topological data analysis. In 2014, I left academia for a data science position at Target, and after three years I transitioned to a sales engineer role at D-Wave, a quantum computing company in Vancouver, which ended up having many interesting collaborations with industrial partners. Now I work for a small start-up in the quantum computing realm, but have transitioned in this job from a quantum algorithm engineer to a software architect.

ADVICE

What advice would you give to someone pursuing a similar degree or profession?

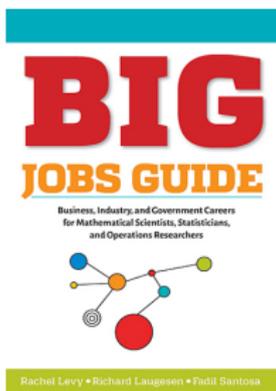
Reach out to people you know in industry, pursue summer internships at national labs or companies, and learn to code in a modern language such as Python. The need for mathematical reasoning shows up in many unexpected areas.

Was there anything that surprised you when you started out in your career?

The number of people and technologies I regularly work with always impresses me. Developing a new product often involves much more work than a large journal paper.

SALARY

\$150K–\$300K + bonus and stock options



SIAM also publishes a guide specifically for jobs in business, industry, and government.

<https://epubs.siam.org/doi/book/10.1137/1.9781611975291>

What you should study, what to put in your resume, why do an internship, advice for international students.

Grad School?

If you love what you are studying, and want to go further in your education before taking a job, you can look into graduate school.

Graduate school is not for everyone; you should find a current graduate student, offer to pay for lunch, and have them tell you their joys and woes.

After that, if it still seems like a good idea, get advice from faculty in your area about where to apply. Look online at the departments and try to identify professors, groups, or centers you would like to work with. If possible, visit the campus and meet the people you will be working with for the next two to five years.

After Grad School?

Be aware that most holders of graduate degrees do not go on to an academic position; even those who do often have to take several post-doc positions first. Check out <https://www.mathjobs.org/jobs> for listings.

Job Listings [URMs] [📄]

[\[select by types\]](#) [\[by country/state\]](#) » [\[sort alphabetically\]](#) [\[by postdate\]](#) [\[by enddate\]](#) [\[by deadline\]](#) [\[by startdate\]](#) [\[by distance\]](#) [\[by status\]](#) » [\[show map\]](#) »



United States:
Pennsylvania (22)

Allegheny College, Mathematics

1. [VAP] Mathematics, Visiting Assistant Professor of Mathematics (Pennsylvania, US)

Bryn Mawr College, Computer Science

1. [AP] Visiting Instructor/Visiting Assistant Professor of Computer Science (Pennsylvania, US)

Bucknell University, Mathematics

1. [TTA] Tenure Track position in Analysis (Pennsylvania, US) [Apply](#)
2. [TTM] Tenure Track position in Mathematics (Pennsylvania, US) [Apply](#)

Lehigh University, Mathematics

1. [LEHIGHTAP23] Any area of Mathematics or Statistics, Teaching Assistant Professor (search halted, deadline 2023/03/17 11:59PM, Pennsylvania, US) [Apply](#)

Penn State Behrend, School of Sciences

1. [ATPLM] Assistant Teaching Professor or Lecturer of Mathematics (Fall 2023) (Pennsylvania, US)
2. [LATPM] Lecturer/Assistant Teaching Professor of Mathematics (Starting Spring 2023) (Pennsylvania, US)
3. [LATPM1] Lecturer or Assistant Teaching Professor of Mathematics (Fall 2023) (Pennsylvania, US)

Pennsylvania State University, Department of Mathematics

1. [CCMA] Mathematics, Postdoctoral (Pennsylvania, US) [Apply](#)
2. [NTLF] Mathematics, Non-Tenure Line Faculty (filled, Pennsylvania, US)

Mock Interviews



You can scare yourself into taking things seriously by getting a mock interview at the University Career Service, at 200 William Pitt Union, with walk-in hours 11am-3pm.

Here's an example of a mock interview:

<https://youtu.be/ZROBXaT9WRs?si=FzhDh3V5ckW8J4om>

Get Started on Your Journey!



I hope I've scared you enough to get going on your job search;
given you a roadmap of what lies ahead of you;
and offered tools to help you reach your goal!