

Good Will Hunting (for Jobs)



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Quick Introductions



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Your Skills Have (\$) Value

You've spent years working on your:

- Technical Communication
 - Teaching individuals
 - Technical speaking to multiple levels of expertise
 - Public talks
 - Writing, editing and reading academic papers
- Information Organization
 - Abstraction
 - Pattern recognition
- Quantitative Literacy
 - Data reasoning
 - Linear algebra
- Self Direction
 - Time management
 - Project management
- High level math
 - My day to day requires: PDEs, differential geometry, functional analysis, combinatorics, optimization, numerical methods

Industries Have (\$) Value for Your Skills

Careers looking for mathematicians

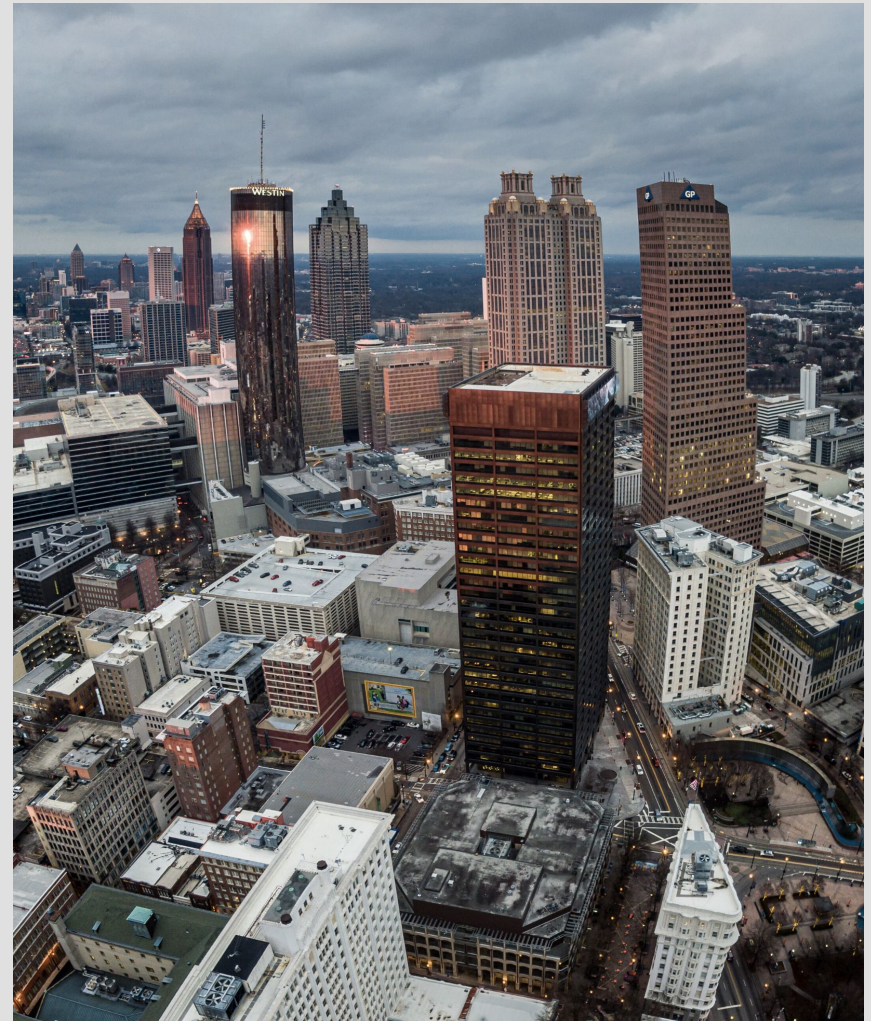
- Data Jobs
 - Data Science
 - Machine Learning
 - Data Engineering
- Software Development
 - Software Engineering
 - Product Management
 - UX Research
- Scientific Writing and Content Creation
- Finance
 - Quant Analytics
 - Financial Engineering
- Education
 - Public or Private Schools
 - Education Tech
- Non-Academic Research
 - AI / ML Researcher
 - Department of Defense
 - Analytics, Polling, Consulting
 - Simulation & Movie Effects
 - Climate Science

... and many more!

Non-Academic Jobs

Why?

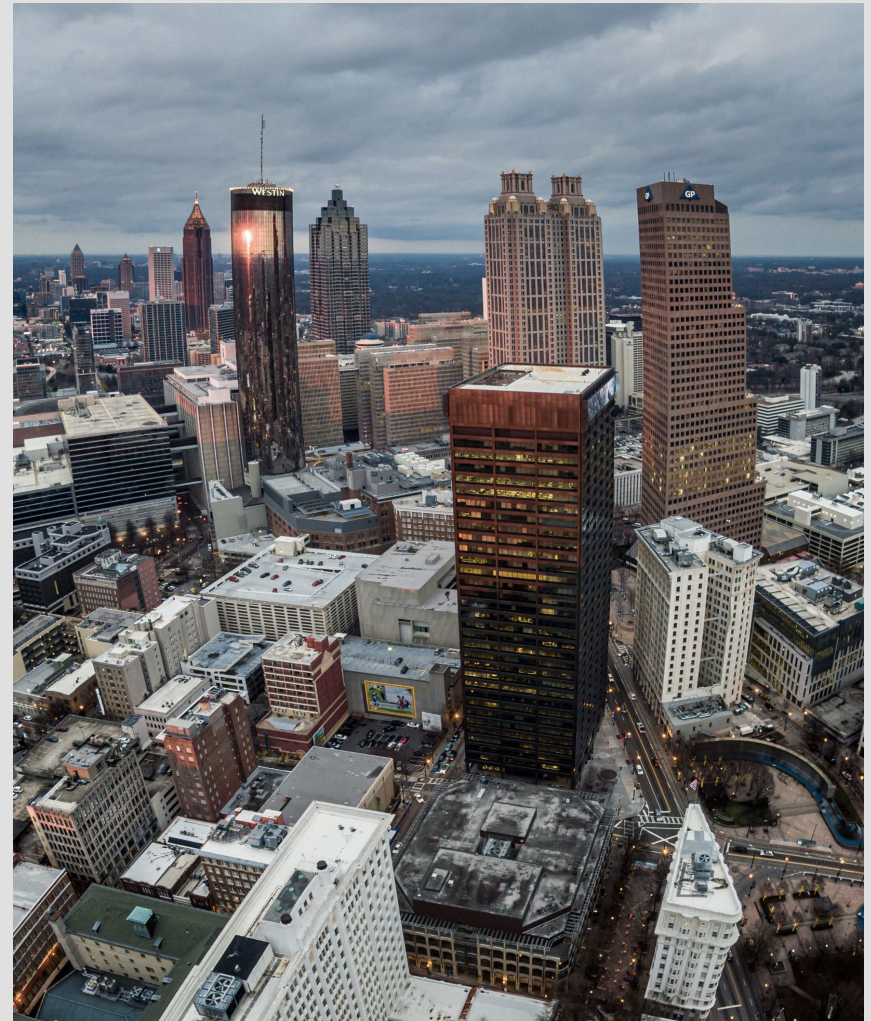
- If you like working as part of a team/organization
- If you need more flexibility in how you work
 - Especially location flexibility
- If you like having the option of multiple career tracks
- If you want better pay
- If you just don't feel like academia is for you



Non-Academic Jobs

Why Not?

- If you like working alone or in smaller groups
- If you need more flexibility in what you work on
 - E.g. the types of research problems that interest you
- If you know for sure that an academic career is for you
- If you want a more stable job
- If you have philosophical or cultural conflicts



How to Start

Connections

Top Priority!

- Grad school cohort
 - Message former students of your professors
 - Coffee with friends of friends
 - LinkedIn
 - Jobs Fairs
 - Networking Events
 - Hosted by Professional Associations (check their sites)
 - Code Meetups
 - Internships!
 - Relationships >> Meritocracy
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How to Start

Mentorship

Finding a mentor

- 1-2 major mentors or several “mini-mentors”.
- If you have someone in mind, go for it!
- Engage with people from the career community.
- Seek more advice, less information.

After you find a mentor

- Take ownership of your mentor-mentee relationship.
 - Set up regular 1on1 times.
 - Come up with specific questions, topics and agenda.
- Actively seek feedback from them.
 - E.g. share your code or resume.

How to Start

Finding Community

Looking for communities ...

- Both remote and local in-person
- Search on Meetup
- For online communities
 - Blogs, forums, chats etc.
 - Slack or Discord
 - LinkedIn
- Hackathons
- Communities affiliated to your school

Some examples ...

- HackerNews (tech; online)
- Locally Optimistic (data; Slack)
- Teach for America Alumni Network (education; remote + local chapter events)

How to Start

Start Now! Develop your skills!

Communication is Universal

- Write clear README's and in-code documentation.
 - Be a good TA!
 - If you get the opportunity to teach your own class, do it.
 - Go to conferences, give lots of talks.
 - Practice, record, watch yourself!
 - Keep a journal and/or write a blog.
 - Use communication tools to explain and track your projects!
 - Put a link in your resume and README's.
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Learn Coding Skills

Build things, document, share

- Try to vibe code!
 - Learn to debug and proofread code
 - Focus on the information flow and data structures
- Learn software dev skills
 - Git
 - IDEs
 - Code reviews and pull requests
 - Code with a friend
- BUILD something
 - Start a project in your field of interest
 - Contribute to an open source project
 - [Project Euler!](#)
- Document your experience
 - Make a personal website
 - Blog or keep a portfolio of projects and problems

EVERYONE SHOULD CODE

Learn AI Skills

Replace yourself

- Develop a “builder” mindset
 - Get your hands dirty; try everything!
 - Look for tasks to automate.
 - Get on newsletters/update emails.
- Make AI your partner
 - Use AI to critique you.
 - Ask it to give you ideas.
 - Give AI feedback to make it better.
- Know when to use AI ... and how
 - Are you writing to report? To think? To document? To decide?
- Beware the slop
 - Know what good looks like.
 - Check for hallucinations.
 - Apply sound judgment and decisions.

EVERYONE SHOULD USE AI

How to Start

Start Now! Develop your skills!

Learning Resources

- Deeplearning.AI
 - Coursera / Udemy / Udacity etc.
 - [MIT open courses](#)
 - Podcasts:
 - Acquired
 - Lenny's Podcast
 - Use a chatbot as your tutor
 - Read applied papers in fields you care about
 - SIGGRAPH
 - Watch conference talks! ([A personal favorite from Kate Gregory](#))
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How to Start

Start Now! Develop your skills!

Book recommendations

- Programming:
 - Cracking the Coding Interview, by Gayle McDowell
 - Clean Code, by Robert Martin
 - Data Science / Machine Learning:
 - Modern Multivariate Statistical Techniques, by Alan Izenman
 - Deep Learning, by Ian Goodfellow, Yoshua Bengio and Aaron Courville ([free online copy](#))
 - Product Management:
 - Build, by Tony Fadell
 - The Lean Product Playbook, by Dan Olsen
 - Read in the problem area you want to work in. (And in related fields!)
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How to Start

Internships

- Check big math organizations for applied math positions
 - NSF
 - <https://www.zintellect.com/Catalog>
 - AMS
 - [ASA Internships](#)
 - Conference Job boards:
 - <https://cdfam.com/careers/>
 - National Labs: [ORISE](#)
 - Nearly any tech company
 - “early career” postings
 - Ask!
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Looking for Job Listings

Ask Ask Ask Ask

- Lean on your network
- Job aggregation sites
 - LinkedIn
 - Glassdoor
 - <https://simplify.jobs/>
- Cold email
 - Esp. small firms or startups
 - Find people with similar backgrounds
- Check career sites of interesting companies
- Get on talent lists of your favorite companies
- Apply frequently and broadly
 - Consider 1-2 year plans initially
 - Be curious
- Prioritize recent or advertised postings
- Timelines are informal and varied

Hiring Process

Creating Awesome Applications

Resume

- Easy to read
 - Easy to edit
 - **Tailor to the Job and Company**
 - *Make* experience relevant
 - Teaching is communication
 - Problem solving
 - Math intuition
 - Avoid the overtechnical & irrelevant
 - Not your CV
 - Banish jargon
 - OK to use AI, but know when it looks AI-sloppy
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Hiring Process

Creating Awesome Applications

Cover Letter

- Make it friendly yet specific
 - Try “Dear hiring manager” instead of “To whom it may concern”.
 - Avoid general filler phrases.
 - Sound confident, not arrogant.
- **Personalize it!**
 - Tell them why you want to work for them.
 - Tell them why you are the best choice for the role.
 - Connect with the company’s mission and/or values.
 - OK to use AI, but know when it looks AI-sloppy

Hiring Process

Interviews

TECHNICAL

- Mind your jargon
- Prepare for:
 - 1on1 or panel interviews
 - Live coding
 - Take home problems
 - In person code review
 - Invited talk

NON-TECHNICAL

- Math PhDs may face special scrutiny:
 - Flight risk?
 - Pragmatism
- Answer honestly, humbly, curiously
- Don't get discouraged!
 - Not a meritocracy
 - Timing, personality, practicalities all
—— at play

Hiring Process

What the hiring manager wants



Hiring is ...

- A huge time investment.
- An act of trust.
- About forming a team or organization - and not about you!

Hiring Process

What the hiring manager wants

Conforming qualities ...

- Curiosity
- Introspection
- Learner
- Sharer
- Collaboration
- Communication
- Organization or team values

Differentiating qualities ...

- Builder or tinkerer
- Specific skill
- Process/team role
- Leadership

You got the job!

Should you take it?

Evaluate the offer

- Run it by a mentor
- Weigh all the factors
 - Salary
 - Time Off
 - Location and Travel
 - Benefits
 - Healthcare
 - Career Growth
 - Lifestyle
 - Job Security

Negotiating

- Not optional
- Do your homework
 - Find salary stats
 - Quantify your worth
 - Research the firm
 - Ask somebody in industry
 - Don't commit on any unconsidered detail
- Negotiate job description & details
- Mention upcoming leave
- Nibble

Resources

1. [Tips on Ph.D. job search](#)
2. [How to Stand Out as a Non Traditional Applicant](#)
3. [Hacker News](#)
4. [The Professor is In](#)
5. [How to Convert an Academic CV for Industry Positions](#)