

Navigating Your Future

Career Paths and Interview Success for CS Students

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Agenda

- Who Am I?
- Types of Careers
- Where ARE the Jobs?
- How To Get Those Jobs
- Free Advice
- Q&A

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Happy Halloween!

Please take some candy!

(Comic credit: Pablo Stanley @ Stanley Colors)

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Who Am I?

- Columbia University 2003 grad: BA Computer Science
- Software Engineer, Engineering Manager, and Solutions Architect
- 20+ years experience across a range of industries, brands, and organizational structures
- Mother of three

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Who Am I?



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Who Am I? Career Experience



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Career Experience: Internships Startup, NASA-GISS, Morgan Stanley

- 2000: Eaton Ergonomics – Computational Linguistics Intern (*Perl / Unix scripting*)
- 2000-2002: NASA-GISS – Systems Administration Intern (*Perl / Unix*)
- 2002: Morgan Stanley Women In Technology Scholarship + Internship in Corporate Treasury (*JavaScript, Perl, Unix, Databases*)

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Career Experience: Morgan Stanley, Google

- 2003: MS Technology Analyst Training Program (*Perl, Unix, Java, C++, C#, Databases*)
- 2003-2006: MS Equity Allocations – Rewrite of legacy system for performance (*Java, C#, Databases*)
- 2006-2007: Google – Software Engineer on Billing Operations Team (*Java, Python, DB*)
- 2007-2010 (**boomerang**): MS Equity Derivatives – Lifecycle Management System (*Java, DB, Management*)
- 2010-2013: MS Commodities – Profit & Loss Reporting Platform (*Java, Python, DB, Management*)
- 2018-2021 (**boomerang**): MS Interest Rate Derivatives Market Data Technology (*Scala, Java, DB, Management*)

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Career Experience: Hertz, Western Union, Consulting

- **2013-2016:** Hertz – Customer Master Data Management (*Java, Management*)
 - Remote!
- **2016-2017:** Western Union – Global Customer Care Portal (*Java, DevOps, Management*)
 - Hybrid!
- **2017-2018, 2021-2024:** Solutions Architecture Consultant @ DCA Group (*Mulesoft, Java, Azure Cloud*)
 - Remote! Consulting for Custom Truck One Source (Kansas City, MO)

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Career Experience: Modern Treasury

- **2024 - ?:** Solutions Architect @ Modern Treasury
- Provider of Payment Operations for a company's treasury function
 - Real-time payments
 - Track Revenue in realtime
 - Move, track, reconcile \$\$\$



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Types of Careers in Computer Science: Software

- **Software Engineer / Developer** – Design, develop, test, deploy, maintain applications custom-built for a company
- **QA Analyst / Software Engineer in Test** – Develop test plans, write code to test features, automate testing, perform manual testing, document defects, communicate results of testing
- **Site Reliability Engineer** – Develop tools for monitoring software in production, orchestrate and balance load across processes and servers, support incident escalation and resolution, measure and tune performance
- **Release Manager / DevOps** – Responsible for managing the complete software delivery lifecycle. Automate deployments. Make sure releases are communicated and documented. Develop backout plans.
- **Data Scientist / Data Analyst** – Develop and use tools to collect, cleanse, and analyze data. Use data to answer questions and solve problems. Typically using Python, R, and SQL. Helps to have a background in statistics or applied mathematics.

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Types of Careers in Computer Science: Solutions

- **Customer Success Manager / Technical Account Manager** – Drive the end-to-end customer engagement. Help customers understand a product's technical aspects, manage sales/renewals of services, pre/post sales onboarding and support
- **Pre-sales Engineer / Sales Engineer** – Client-facing engineer involved in explaining, building, presenting, and selling technical products to prospective customers.
- **Solutions Architect / Integration Architect / Solutions Engineer / Technology Consultant** – Connect a company's problems with the right technical solutions.
- **Developer Advocate** – help developers understand how to use a company's code, use standard practices, manage the community of developers, create technical content (videos, blog posts, code samples)

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Types of Careers in Computer Science: Project / Product Management

- **Business Analyst** – Document business processes and user requirements, analyze data, connect a company's IT systems to its business objectives
- **Project Manager** – Manage the project, set deadlines, assign bugs/features, allocate resources, assess priorities with the stakeholders, communicate with leadership
- **Product Manager** – Define the strategy for a product, perform product market research, own the product roadmap, plan launches, own the business case. Manage the product and its success.

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Types of Careers in Computer Science: UI/UX

- **Web Developer** – Design, develop, and maintain web applications and websites
- **Full-stack Developer** – a software engineer who can do both web development and server-side development
- **UX Engineer** – Design and develop the entire user experience – wireframes, prototyping, graphics, front-end development, user research, usability testing
- **Mobile App Developer**
- **Video Game Developer**

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Types of Careers in Computer Science: IT Infrastructure

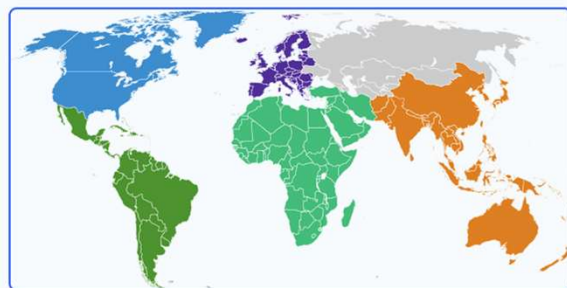
- **Database Administrator (DBA)** – Design, build, and manage database systems. Ensure database security. Back up and restore data. Collaborate with developers. Build data warehouses for Business Intelligence / Data Scientists.
- **Network Administrator** – Design the network for a company, maintain network file servers, diagnose network problems, perform repairs and upgrades, manage security solutions, firewalls, VPNs.
- **Systems Administrator** – Install / configure software and hardware, write scripts to monitor system performance, maintain appropriate user permissions and system security, diagnose and resolve system issues, manage upgrades.

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Types of Careers in Computer Science: Security

- Cybersecurity Analyst / Information Security Analyst
- Penetration Testing
- Ethical Hacking
- Digital Forensics

The 2023 Global Cyber Security Workforce, and Year-on-Year Growth, by Region



North America	1,495,825	+11.3%
Latin America	1,285,505	+4.5%
Europe	1,309,588	+7.2%
Middle East and Africa	401,582	+11.7%
Asia-Pacific	960,231	+11.8%

STATIONX

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Types of Careers in Computer Science: Advanced

These jobs almost always require higher level degrees – Masters, PhD, MBA.

- Robotics
- Artificial Intelligence / Machine Learning Engineer
- Computer & Information Research Scientist
- Chief Technology Officer
- Teaching / Academia

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Where are the jobs?

Fastest Growing Occupations

PRINTER FRIENDLY 

Fastest growing occupations: 20 occupations with the highest projected percent change of employment between 2023-33.

Click on an occupation name to see the full occupational profile.

OCCUPATION	GROWTH RATE, 2023-33	2023 MEDIAN PAY
Wind turbine service technicians	60%	\$61,770 per year
Solar photovoltaic installers	48%	\$48,800 per year
Nurse practitioners	46%	\$126,260 per year
Data scientists	36%	\$108,020 per year
Information security analysts	33%	\$120,360 per year
Medical and health services managers	29%	\$110,680 per year
Physician assistants	28%	\$130,020 per year
Computer and information research scientists	26%	\$145,080 per year
Physical therapist assistants	25%	\$64,080 per year
Operations research analysts	23%	\$83,640 per year



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How to get these jobs? Step 1: Land The Interview

- **Build up Resume:** KNOWLEDGE, SKILLS, ACTIVITIES
 - Courses, Projects, Certifications, Skills, Summer Jobs, Volunteer, Hackathons, Open-Source, Side Projects, **Internships**
- **Career Development Center**
- **Connections** – LinkedIn, Friends, Family, Professors, Ex-Colleagues. Reach out to people.
- **Websites:**
 - usajobs.gov – Federal government jobs and internships
 - ACTUAL COMPANY WEBSITES
 - Indeed / ZipRecruiter / LinkedIn / TechLadies / Google Jobs / UpWork / TopTal

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How to get these jobs? Step 2: Ace The Interview

Hard
Skills

Soft
Skills

Q&A

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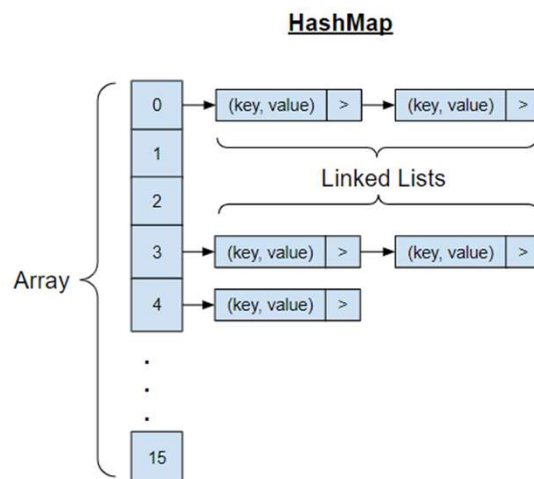
How to get these jobs? Step 2: Ace The Interview: Hard Skills

- Data Structures, Algorithms, Coding, Design, Security
- LeetCode: Practice “Easy” level problems (e.g. 125. Valid Palindrome).
 - DON'T dive into the code right away.
 - TALK about how you would approach the problem. State or ask about any assumptions.
 - Write (and Test!) the code (or explain how you would test it). Iterate and fix as needed.
- System Design: Design a url shortening service. Explain how the internet works.
- **Tips:** Read *Cracking the Coding Interview*, *System Design Interview* by Alex Xu (or just subscribe to *ByteByteGo* substack), *The Pragmatic Engineer* substack

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How to get these jobs? Step 2: Ace The Interview: Hard Skills (example)

- Question: What is a HashMap?
- Answer should include:
 - Data Structure storing key-value pairs
 - Typically implemented as an array of LinkedLists (or buckets)
 - Use hash function to determine the “slot”
 - Bonus points for talking about collisions
 - If you're in person – a picture is worth a thousand words!



<https://medium.com/@anudeepbala7/hashmaps-in-interview-preparation-a-java-guide-9bb665f561a1>

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How to get these jobs?

Step 2: Ace The Interview: Soft Skills

- **Personality / Fit:** Do we want to work with you? You're being hired as a person, not an LLM
- **Communication:** Are you clear? Are you concise? Are your answers *structured*?
- Practice answers to some example questions:
 - Tell me about a project you worked on. What were some of the challenges, mistakes, failures you ran into? What would you do differently? What did you enjoy about it?
 - What are you passionate about? Last great book you read? Favorite class?
 - How do you resolve conflicts?
- **Tips:** Take courses in Communications. Do mock interviews. Practice your answers. Add successes into your answers. Read: <https://braydie.gitbook.io/how-to-be-a-programmer>

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How to get these jobs?

Step 2: Ace The Interview: Q&A

- YOU ABSOLUTELY MUST HAVE QUESTIONS

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Free Advice

- Bring your authentic self to every interview
- Build up your toolkit. Make yourself invaluable. Be good at something, even if it's not relevant to your space
- Never burn a bridge
- Be patient with difficult personalities - find the best in everyone
- Luck is where preparation meets opportunity (Roman philosopher Seneca)
- Accept constructive criticism graciously. If someone is giving you feedback, they believe in you.
- Think like an owner. Be part of the driving success of your business – not just doing what you're told
- Be full of WONDER

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Q&A

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