If you have questions during the presentation, you can ask me via slido.

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Journey from academia to industry

Joanna Huang
MCNet Summer School 2024

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1 My academic background

2 Exploring industry career options

3 Identifying transferable skills

4 Bridging the gap

5 Navigating job applications and interviews

6 What is it like being a data scientist?

7 Lessons learnt and advice

8 Q&A

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My academic background

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Bachelor's

UNIVERSITY OF TORONTO

Year 1 2 3 4

Biological physics

Masters

Imperial College London

5

Physics

ATLAS hardware

PhD

UCL

6 7 8 9

Particle Physics

ATLAS standard model measurement

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Exploring careers in industry

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What kind of jobs can I do?

Am I even qualified?

What if I don't like it?

Job hunting is so daunting, where do I start?

Will I be able to do the job?

What other skills do I need?

What kind of jobs can I do?

Research scientist

Machine learning engineer

Data analyst

Data engineer

Data scientist

What kind of jobs can I do?

Research scientist

Machine learning engineer

Data analyst

Data engineer

Data scientist

What kind of jobs can I do?

Research scientist: advances knowledge through theoretical and experimental research.

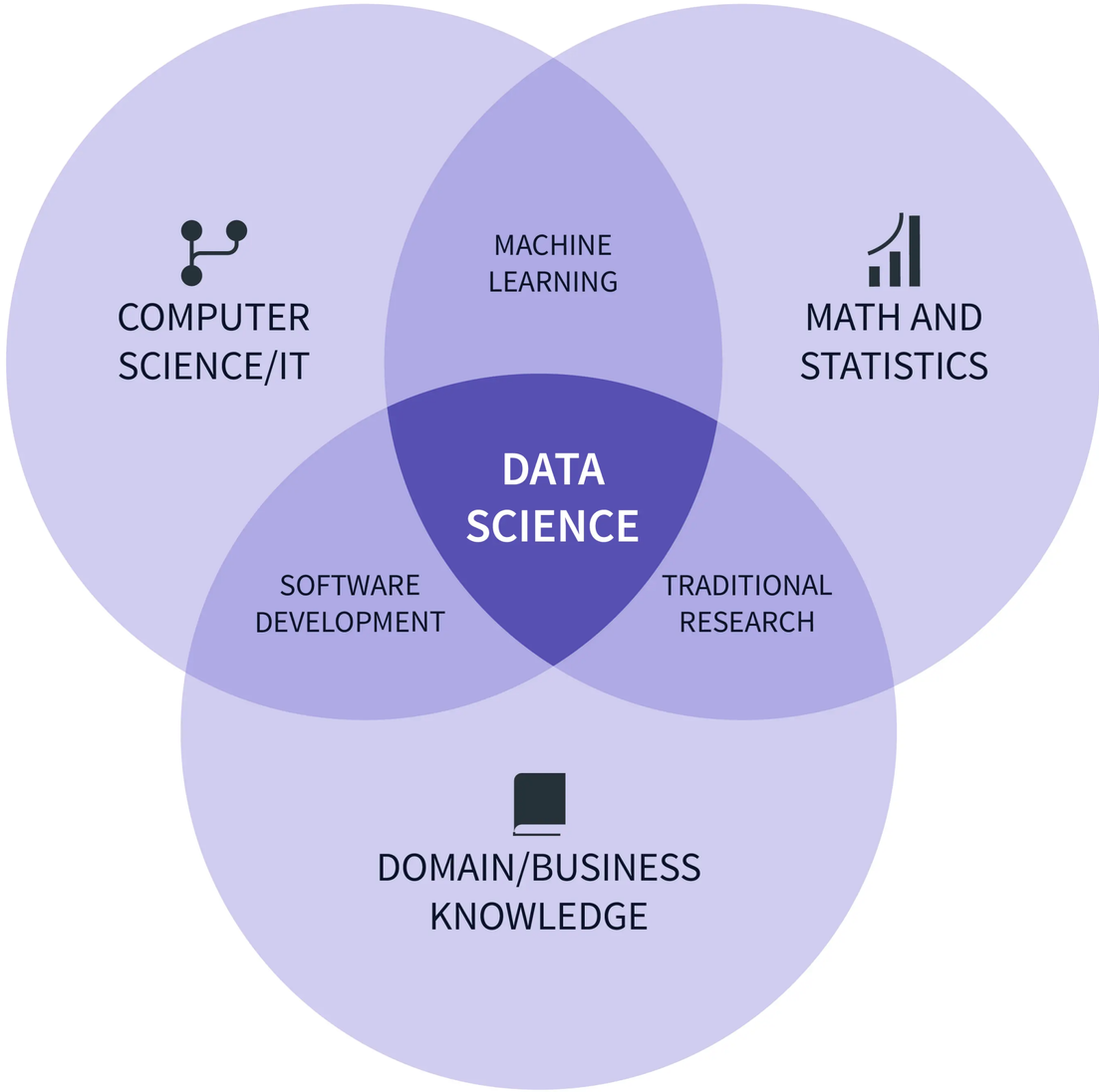
Machine learning engineer: Designs, builds, and deploys machine learning models.

Data analyst: Analyses data to extract insights and inform decision-making.

Data engineer: Develops and maintains data architectures.

Data scientist: Applies statistical methods and machine learning to analyse data.

What kind of jobs can I do?



Data science *is an interdisciplinary field that lies at the intersection of several key domains*

Transferable skills

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Technical skills

- Python (by far the most common language among data scientists)
- Using the command line (bash)
- Using version control, collaborative coding on gitlab
- Some back ground in statistics and maths

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Soft skills

- Ability to work and problem solve independently
- Communication skills (ability to present and write explanations on complex topics)
- Having a scientific approach to problem solving

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Bridging the gap

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Data Scientist

London, England, United Kingdom · Reposted 2 weeks ago · Over 100 applicants

Full-time · Entry level

10,001+ employees · Insurance

Join us as an entry level data scientist! Where you will be doing some cool data science.

Required:

Python

Machine learning knowledge

Previous data science experience

Nice to have:

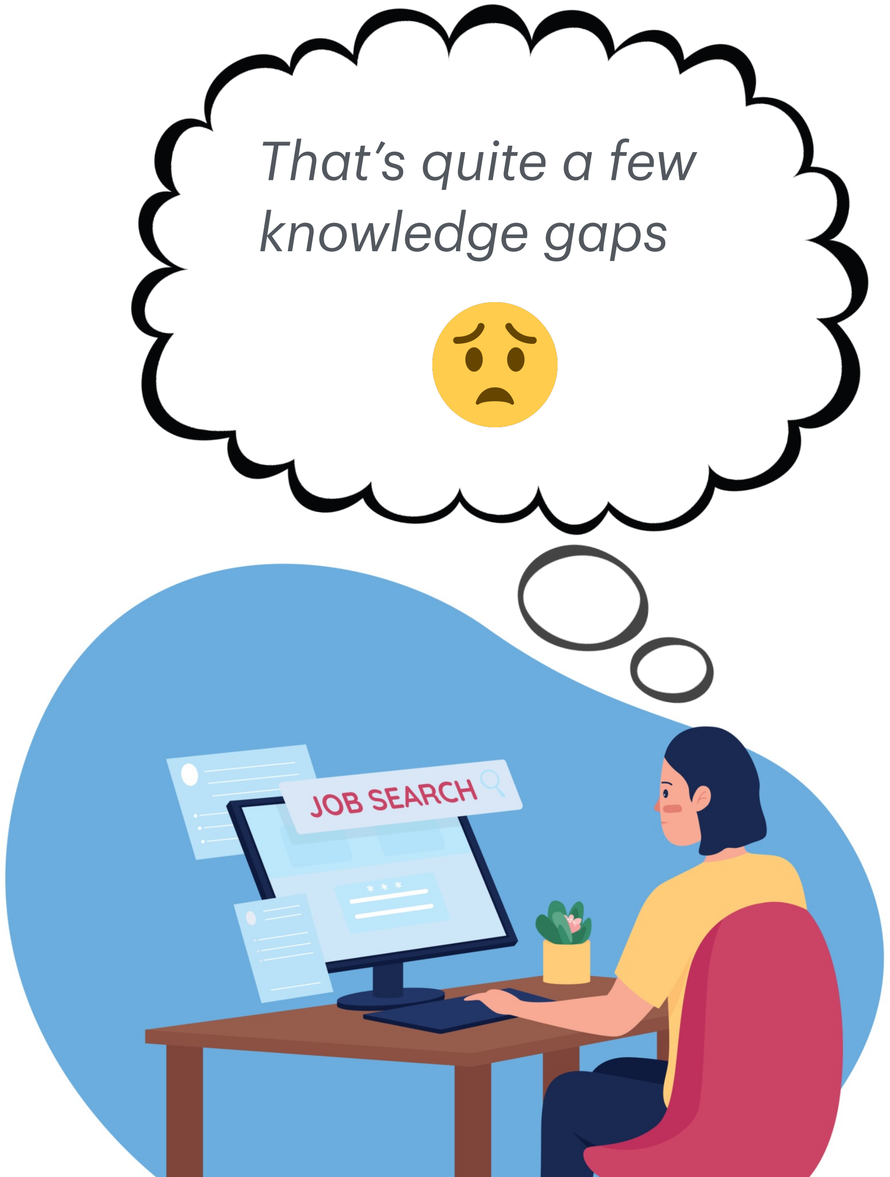
PhD in machine learning, statistics, maths, or physics

MLOps

SQL

Deep learning/NLP/computer vision

Cloud technologies



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Required:

- ✓ Python
- ✗ Machine learning knowledge
- ✗ Previous data science experience

Nice to have:

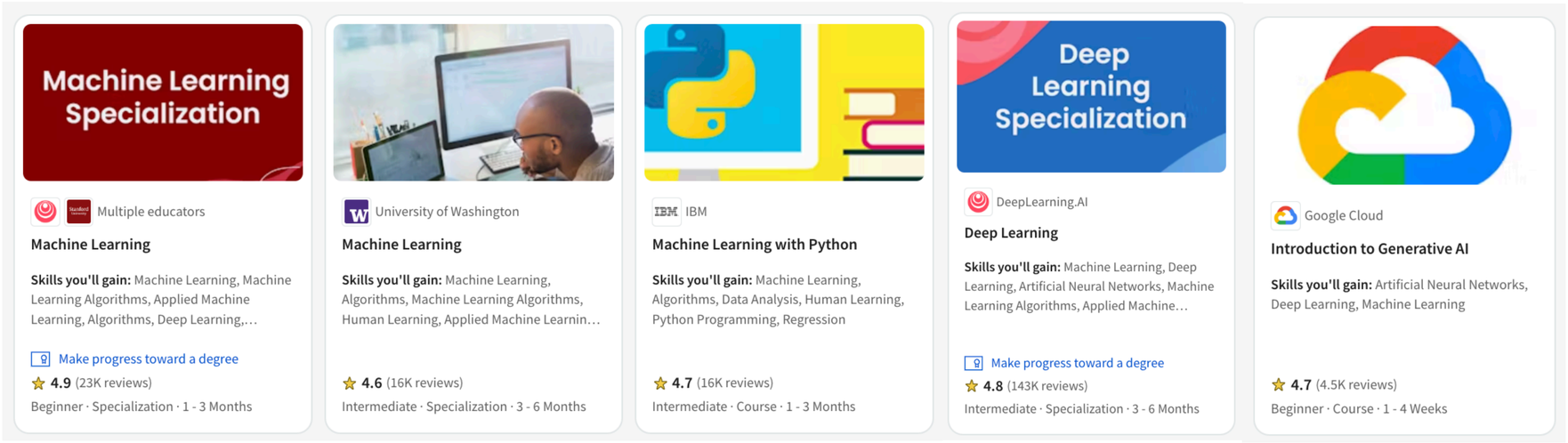
- ✓ PhD in machine learning, statistics, maths, or physics
- ✗ MLOps
- ✗ SQL
- ✗ Deep learning/NLP/computer vision
- ✗ Cloud technologies

I have little to no machine learning expertise… what can I do to change that?

General advice

- **Hunt for Opportunities**: Look for fellowships, secondments, and other learning opportunities.
- **Online Courses**: Take advantage of online courses to build foundational knowledge.

➡ Coursera, edX, Udacity, and Khan Academy



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I have little to no machine learning expertise... what can I do to change that?

My path

- 3 month data science fellowship (via UCL project based)
- 1 month data science fellowship (online, courses based)
- Online machine learning courses
- Joined machine learning communities on Kaggle and LinkedIn

UCL CDT DIS

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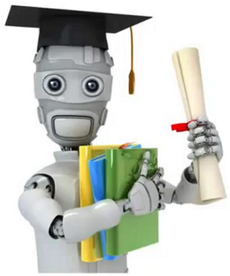
DATA SCIENCE 4 ALL
FALL 2020
WOMEN'S SUMMIT


Machine Learning

Machine Learning
by Andrew Ng
coursera

kaggle

Navigating applications and interviews

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The most daunting part about the transition is the application and interview process...

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Tips for applications

- **Tailor your resume**
  - Get feedback from peers
  - Incorporate relevant keywords from the job description
  - Highlight and quantify your achievements

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Tips for applications

- **Tailor your resume**
  - Get feedback from peers
  - Incorporate relevant keywords from the job description
  - Highlight and quantify your achievements
- **Network, Network, Network!**
  - Leverage LinkedIn
  - Attend events
  - Seek out referrals

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The most daunting part about the transition is the application and interview process...

What to expect for interviews

- **Screening call**
  - Are you a good fit for the role? Is the role what you are looking for?
- **Coding test**
  - Automatically scored coding tests
  - Live coding tests
- **Take home assignment**
  - Comprehensive project that you submit after a few days

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The most daunting part about the transition is the application and interview process...

Tips for interviews

- **Research the company**
  - What are their core values? What is the product or service provided?
- **Practice coding under pressure**
  - Use platforms like LeetCode to practice solving problems within a time limit
  - Simulate live coding tests by solving problems on a call with a peer.
- **Practise building models using data from Kaggle**
  - Create a Jupyter Notebook as the final submission report.
  - Provide clear documentation of your approach and note any limitations or constraints

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After nine years of studies, I took the leap and transitioned from physics to data science.

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What is it like being a data scientist?

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As a data scientist, my main responsibility is focused on solving real-world problems through machine learning

My key responsibilities on a consulting project as a data scientist are:

1. Exploratory data analysis.
2. Translating client needs into a technical problem that can be solved with machine learning, taking data restrictions into account.
3. Designing and implementing bespoke ML solutions.
4. Prepare the solution as a Python package.
5. Support engineers with the deployment of the solution

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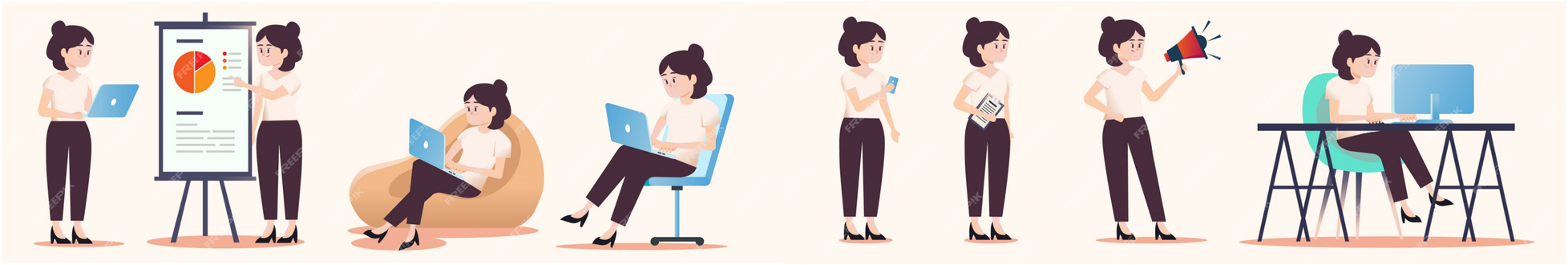
Deploying code is the process of moving code from a development environment to a production environment, where it becomes accessible to the client

A day in my life as data scientist looks something like this



- **Daily "stand-up" meeting** first thing in the morning with my team
  - Did I do what I said I would do yesterday? If no why not? What is my plan for today? Do I have any blockers?
- **Focus time** to do some work
  - Usually involves writing code, using Jupyter notebooks, lots of merge requests, documenting results and sharing that with the team
  - Lots of "pairing sessions" where you pair code with a technical colleague to solve problems together
- **Meetings**, meetings, and more meetings
  - Commercial meetings, data science meetings, engineering meetings, company-wide meetings, project-specific meetings, knowledge share meetings, development meetings

Key differences between academia and industry

- Academia is driven by personal **research goals**, while industry is driven by **corporate goals**
- In academia, research is driven by the **pursuit of knowledge**, whereas industry focuses on applying research for **practical impact**
- Academia offers **flexible schedules**, while industry follows set **business hours**
- Academia involves **independent working**, while industry is more **collaborative**
- Academia offers competitive and **limited career paths**, while industry provides **diverse opportunities and stability**

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Lessons learnt and advice

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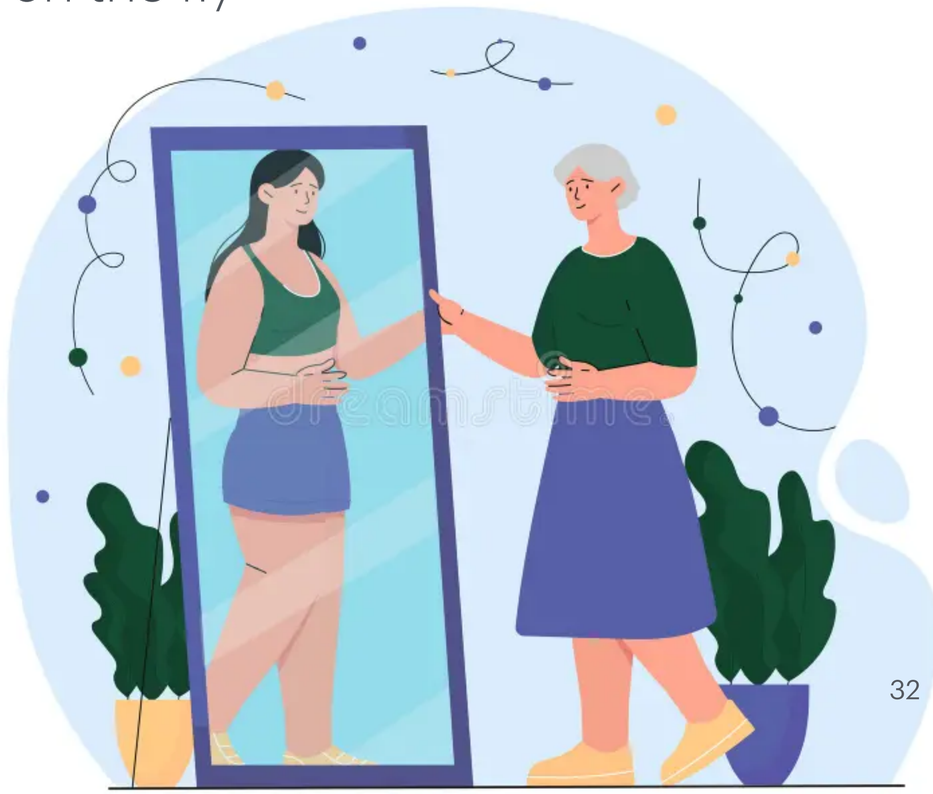
Insights and wisdom I would share with my past self

- Your PhD prepares you more thoroughly for industry roles than you think
- Checking every single box in the job description isn’t necessary
- Whatever gaps there are in your knowledge, you can learn on the fly
- Don’t underestimate the importance of networking
- Approach interviews with the same diligence as studying for exams, your job depends on it
- Recognise and confidently showcase your true value; don't underestimate yourself!



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My advice to academics looking to transition into industry

- **Develop transferable skills**: Focus on communication and teamwork alongside technical expertise.
- **Network actively**: Take advantage of your professional networks. Reach out to your peers for advice
- **Research industry needs**: Understand industry demands to tailor your resume to them.

- **Gain practical experience**: Seek internships, fellowships, freelance work, etc. to boost your resume.
- **Stay flexible and adaptable**: Embrace uncertainty and be open to exploring different career paths.
- **Invest in continuous learning**: Technology evolves quickly so seek out ways to keep yourself up to date.

Q&A

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