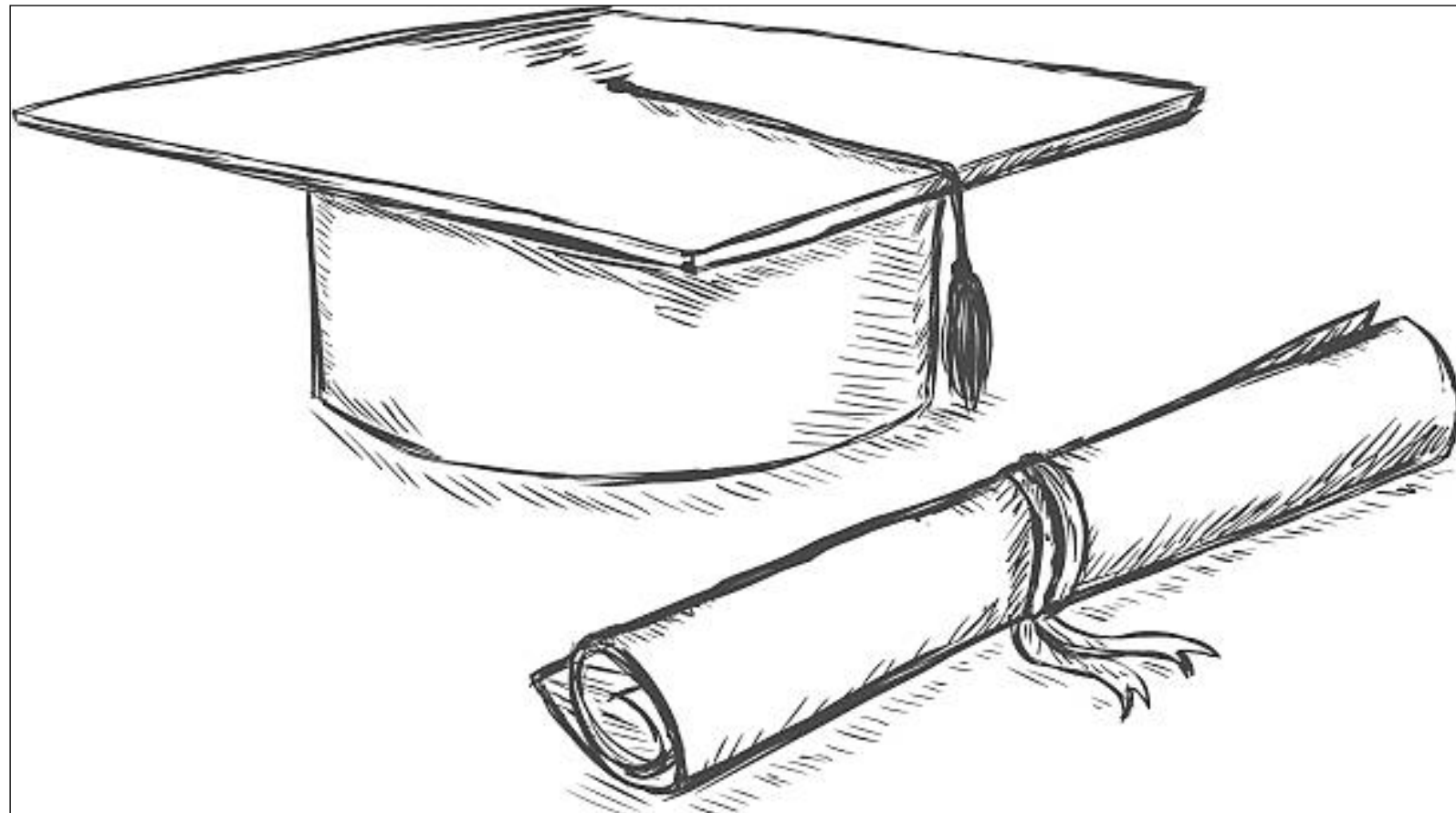# You Too Can be a Cybersecurity Data Scientist

I did it accidentally. You can do it intentionally.

John Speed Meyers, ODSC East, April 20, 2022

> whoami

Step 1

Step 2

Step 3

The Next 30 Minutes of Your Life

What is cybersecurity data science?

Methods and topics of cybersecurity data science

Why become a cybersecurity data scientist?

Leading lights, employers, and how to get there

Cybersecurity data science

The use of quantitative methods to study how computers can be abused and what to do about it.

-Attributed to no one.

But what *is* cybersecurity data science?

Collect data on research in cybersecurity data science

But what *is* cybersecurity data science?

CONFERENCE	YEARS	TOTAL PRESENTATIONS
AI Village at DEFCON	2018, 2019	35
AAAI/AICS	2016, 2017, 2018, 2019	37
CAMLIS	2017, 2018, 2019	63[*]
FloCon	2016, 2017, 2018, 2019, 2020	89

https://github.com/jspeed-meyers/cyber-datascience-presentations

"A Panoramic View of (One Small Slice) of Cybersecurity Data Science," IQT Labs Blog, 2020.

But what *is* cybersecurity data science?

DATA COLLECTED	CYBERSECURITY AREA	METHODOLOGY
Network traffic (65)	Threat intelligence (15)	Adversarial learning (22)
Malware (46)	Security Operations Center (9)	Big data (10)
Malicious domains (11)	Intrusion Detection Systems (8)	Labeling (9)
Host logs (11)	Encryption (6)	Explainability (7)
Email security (5)	DNS security (6)	Statistical methods (6)
Code analysis (4)	DDoS (4)	Feature engineering (6)

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But what *is* cybersecurity data science?

	supervised learning	framework building	dataset creation	software tools	unsupervised learning	NLP	graph analysis
network traffic	20	10	9	14	5	2	5
malware	36	3	7	3	4	3	1
threat intelligence	5	5	2	1	1	4	1
malicious domains	10	0	1	1	2	0	2
host logs	5	1	2	3	1	1	1
SOC operations	6	0	1	2	2	0	0
IDS	4	1	1	0	2	1	1

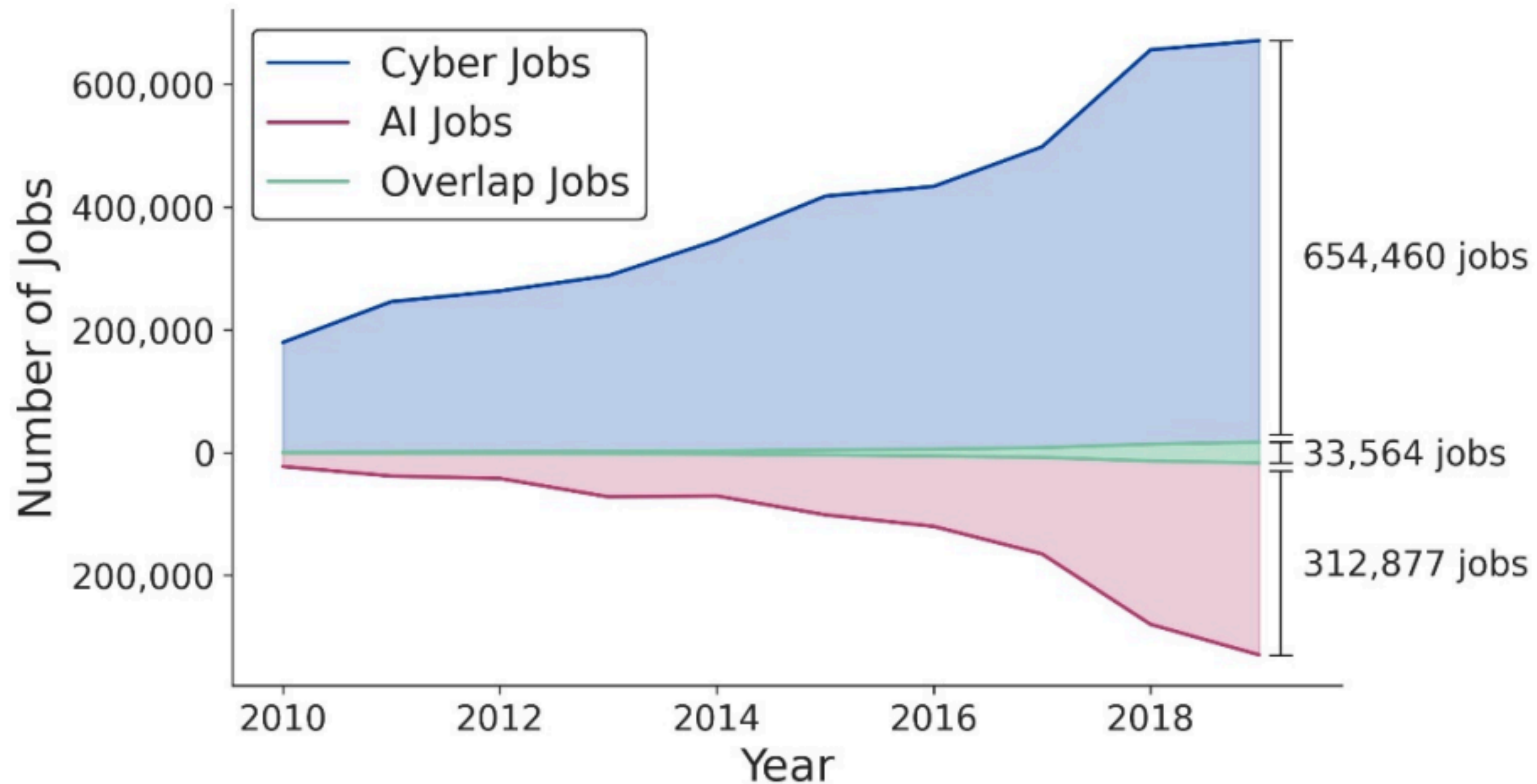https://github.com/jspeed-meyers/cyber-datascience-presentations
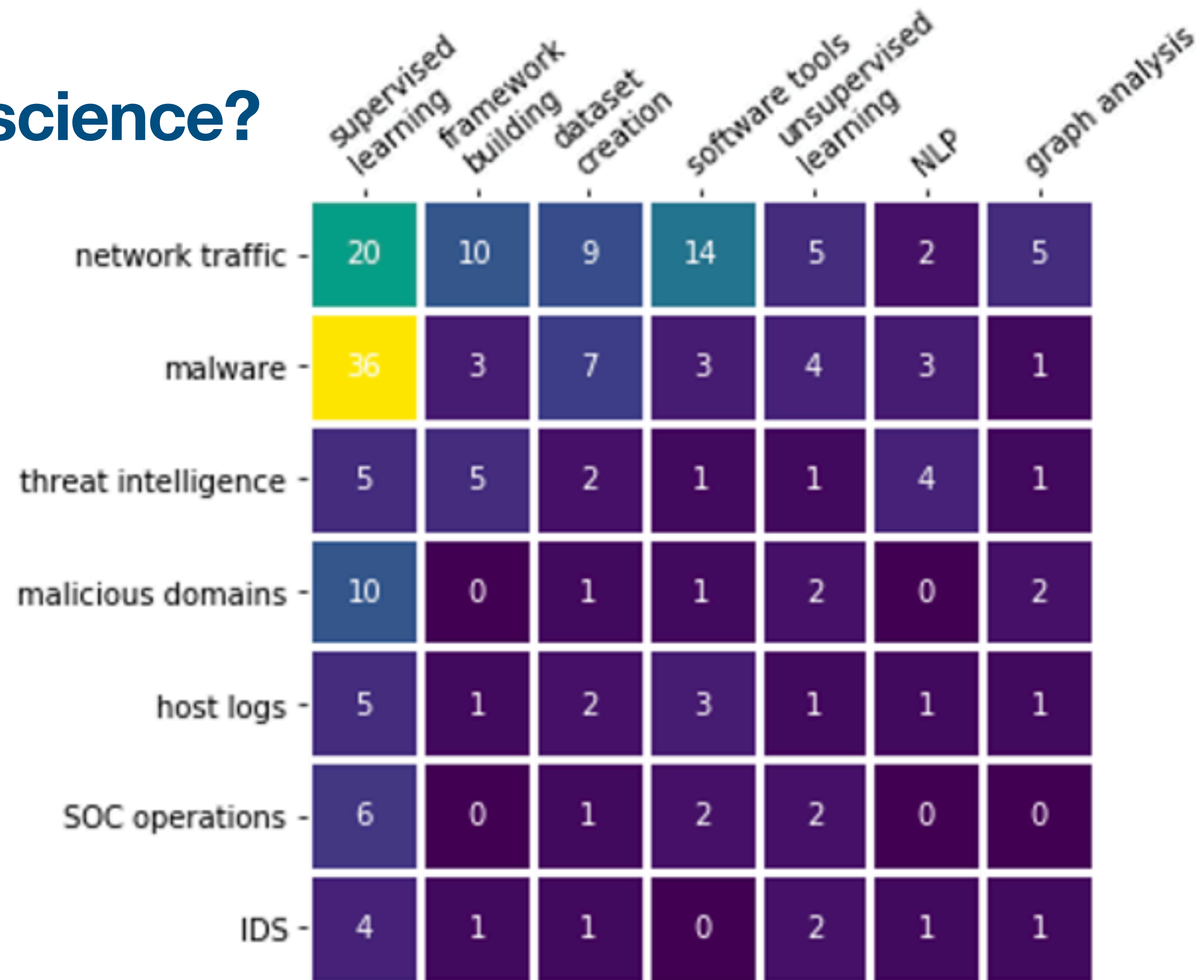
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What is the job market for cybersecurity data science?

Cyber Jobs

AI Jobs

Overlap Jobs

654,460 jobs

33,564 jobs

312,877 jobs

What is the job market for cybersecurity data science?

Rank	Employer	Number of Jobs
1.	CACI	3736
2.	Deloitte	2532
3.	IBM	2428
4.	Aetna Incorporated	2087
5.	U.S. Bancorp	1775
6.	Amazon	1742
7.	Booz Allen Hamilton, Inc.	1651
8.	Accenture	1220
9.	Wells Fargo	1166
10.	JP Morgan Chase	1069
11.	Verizon	1046
12.	Microsoft Corporation	1035
13.	American Express	957
14.	Raytheon	879
15.	General Electric	797

Table 2 shows the top 15 employers for overlap jobs in the United States both by the total count of overlap jobs posted 2010-2019.

Source: Burning Glass Dataset.

Cindy Martinez and Micah Musser, "US Demand for Talent at the Intersection of AI and Cybersecurity," Georgetown University's Center for Security and Emerging Technology, 2020.

What is the job market for cybersecurity data science?

Consulting Firms

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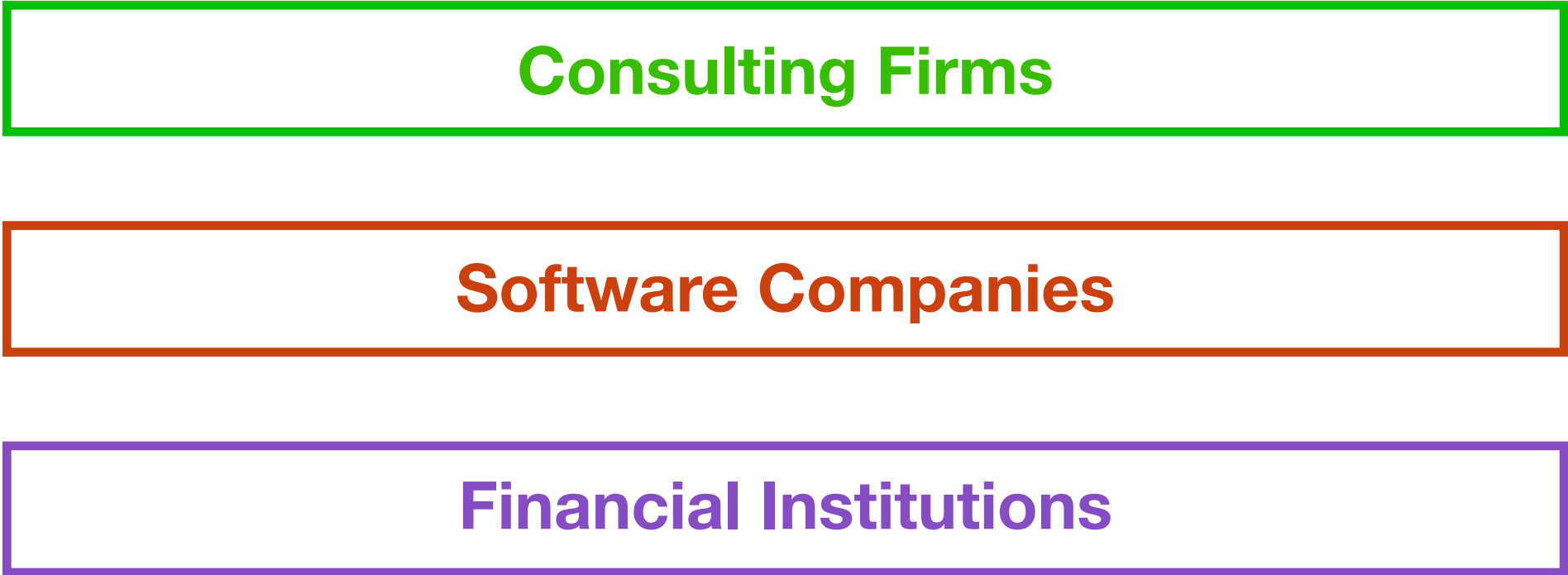
What is the job market for cybersecurity data science?

Consulting Firms

Software Companies

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Consulting Firms
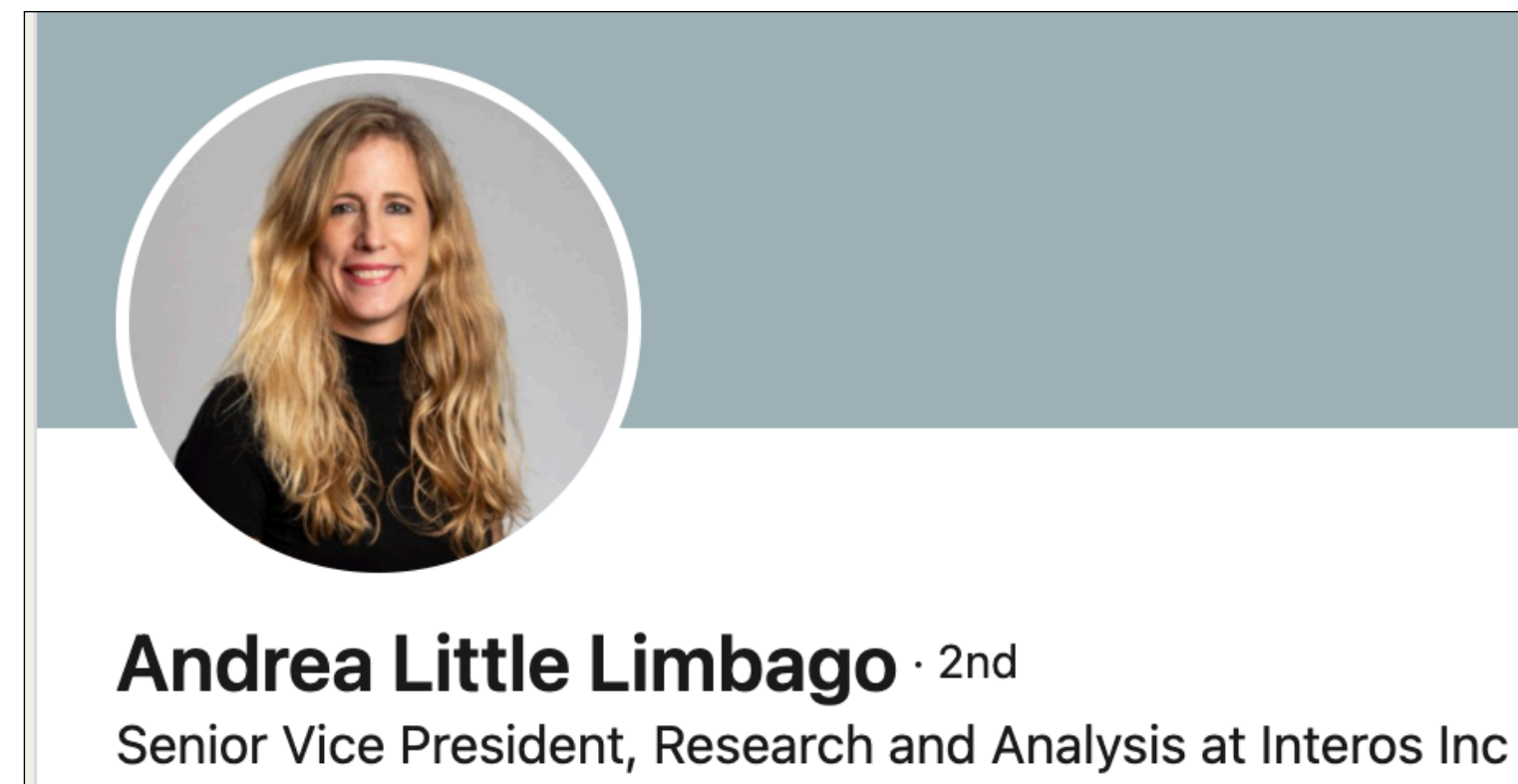
Software Companies

Financial Institutions

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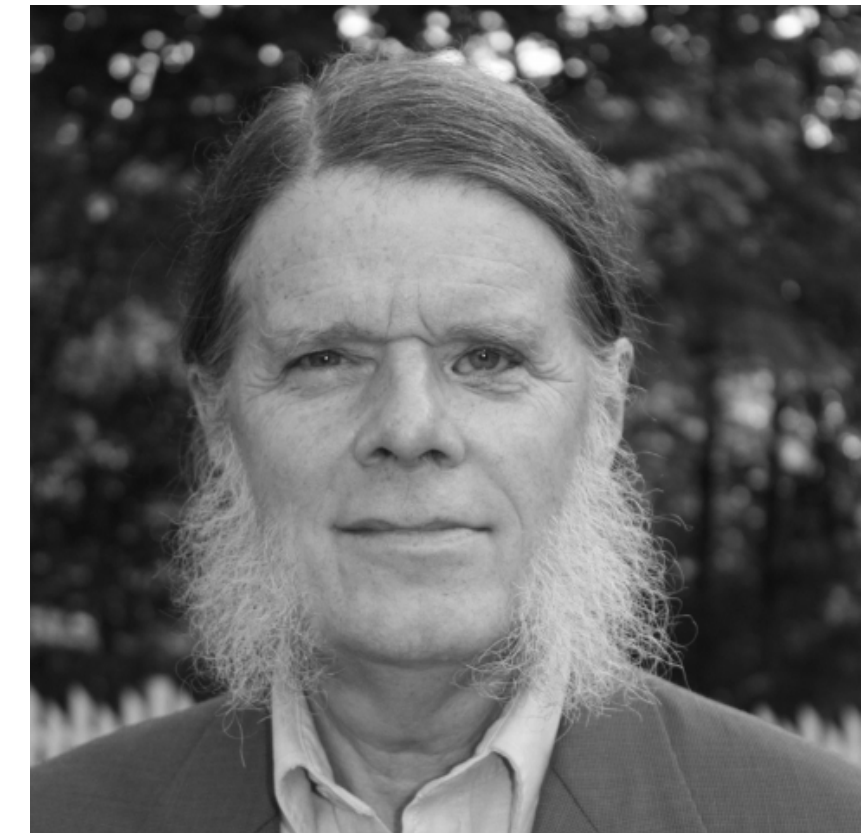
Who are (some of) the leading lights of cybersecurity data science?

Joshua Saxe

Andrea Little Limbago

Dan Geer

How do you get there?

Hands-On Books

Clarence Chio and David Freeman, *Machine Learning and Security: Protecting Systems with Data and Algorithms,* O'Reilly Media, 2018.

Academic/Sociological Reading

Scott Mongeau and Andrzej Hajdasinki, *Cybersecurity Data Science: Best Practices in an Emerging Profession,* Springer, 2021.

"Searching for the Science of Cybersecurity Data Science:
What Recent Books on Cybersecurity and Machine Learning Miss," IQT Labs Blog, 2020.

But what *does the future hold for cybersecurity data science?*

???

Code-level analysis

Software supply chain metadata

You Too Can be a Cybersecurity Data Scientist

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