

LEARNING GUIDE



DATA

IN THE ARLENE AND ROBERT KOGOD CRADLE
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DIRECTED BY MARGOT BORDELON

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"If it feels a bit like playing god, Maneesh, that's only because all the old philosophical questions are now engineering ones, and we have to own our role."

— Alex, *Data*

THE PLAY

When **Maneesh** joins the User Experience (UX) team at Athena Technologies, the country's leader in predictive software, he's content to keep his head down. While others in UX, like his coworker **Jonah**, are trying to climb the ranks and get closer to the action, Maneesh chooses to stick to a low-stress environment.

Plans change when a classmate from college, **Riley**, discovers he's working there.

She's surprised someone as gifted as Maneesh is in data science is shying away from the real work. That work happens in Data Analytics.

Alex, the team leader of the Data Analytics team, discovers Maneesh's past and invites Maneesh to work on Athena's highly secretive new project. However, once Maneesh learns the true nature of what Athena is building, he's forced to question the cost of progress and what role he will play in the age of data.

MEET THE PLAYWRIGHT MATTHEW LIBBY

As a child, Matthew Libby would turn his living room into a fantasy world. Inspired by works like *Lord of the Rings*, he would create multi-part sagas for fun. His parents, noticing his love of storytelling, pushed him to start putting those stories to paper. Libby credits this with starting his love of writing.

He studied both creative writing and cognitive science at Stanford University, later earning his M.F.A. in dramatic writing from NYU's Tisch School of the Arts.

Raised in Los Angeles, Libby comes from a city saturated in arts and entertainment. Living near Silicon Valley, home of some of the world's largest tech companies, gave him an interest in science and technology. Many of Libby's plays explore the line between technology and humanity, including *Sisters* (2022 Winner of the Neukom Institute Literary Arts Award for Playwriting), a story of a woman and an artificial intelligence raised together as siblings.

In April 2018, when Mark Zuckerberg was testifying before the Senate about Facebook's approach to privacy and the Cambridge Analytica scandal (see article), Libby found himself at a crossroads, having just completed his undergraduate degree. In an interview with ArtsATL, Libby



says he started wondering if people he knew "who had stayed in Silicon Valley were having the same quarter-life crisis that [he] was having, and if the fact that they worked at companies that demanded so much of their time and energy and moral currency affected that." This speculation was the inspiration for *Data*.

FROM THE DIRECTOR'S NOTEBOOK



Margot Bordelon

"I did an experiment. I opened my Instagram, set my timer for 60 seconds then wrote down every single thing advertised to me as I scrolled: theater productions, skin care products, mushroom coffee, Dr. Marten boots ... Skin Laundry laser facials and... time's up..

"My big take-away: Instagram's got my number. I was intrigued by every single one of these ads! And on one hand I do find it creepy, I know my feed has been curated to my taste based on my online activity, but on the other hand, *I feel so seen*.

"One of the questions Matt [the playwright] and I have returned to in our conversations leading up to this production is: **are we our data?** Is there enough information about each of us online to make an accurate assessment of our character? Is there enough to understand what's in our hearts? My knee-jerk reaction is of course not, we're far too complex! Or... is this age of information simply revealing to us how transparent and predictable we truly are." — Margot Bordelon



EMPLOYEE HANDBOOK: KEY TERMS

Athena Technologies — the fictional company in *Data* — is at the forefront of all things algorithms, analytics, and data itself. In a competitive industry, getting a job at Athena means you've made it as a programmer. If you hope to make your way there, here are a few terms you should know:

DATA

Merriam-Webster defines data as “factual information (such as measurements or statistics) used as a basis for reasoning, discussion, or calculation.”

Data is the plural of datum. A datum is one piece of information, one digit in a number, one name on a page, one character in a sentence. Data can take the form of baseball stats, survey answers, and much more.

A difficulty with data occurs when there's too much to read through to make sense of the larger picture. With the internet, computers, and other modern technology, people can generate and collect large amounts of data — reading every single number would be impossible. That's where companies like Athena come in. They can build technology that aids in making sense of that information.

PRODUCT

Every company has something they are trying to sell. In Athena's case, their product is predictive software. Some examples in the play are programs that can predict the weather and screen for cancer.

USER EXPERIENCE (UX)

The team Maneesh works with is User Experience or “UX.” Rather than the actual building of a product and determining what it does, UX teams work on what the users of a website, application, or product see and interact with directly. This could include what color the background of a webpage is or the size of the “checkout” button when making purchases.

Like many UX teams, Athena's UX department is typically included in all phases of development; however, on Athena's current project, the UX team is being kept out of the loop.

DATA ANALYTICS

Data analytics is the practice of taking information, or data, and drawing conclusions based on that information. To be an effective data analyst, you not only have to be good at taking in a large amount of information and understanding how it relates to each other, but you have to know how to use that information to solve a problem or reach a goal. Strong programming and coding skills are a must!

ALGORITHM

Imagine you have a video streaming website, and you want to keep users on your site longer. You notice one user is watching and liking a lot of tutorials about table tennis and that have the phrase “ping pong” in the title. You determine the best course of action would be to recommend videos about table tennis tournaments as well. But if you were to have a million users on your site, how would you do this for each person?

One data analytics tool you could use is an “algorithm,” a set of rules for a machine to follow. It's a list of step-by-step instructions to reach a predetermined goal. Algorithms are useful for repetitive tasks that follow the same formula, or that require you to go through a lot of data.

Predictive algorithms, the ones associated with social media, are what Athena specializes in. Using statistics, these algorithms try to predict future events or behavior by using pre-existing data.

NON-DISCLOSURE AGREEMENT (NDA)

Members of Athena's data analytics team must sign a non-disclosure agreement, also known as a confidentiality agreement. According to *Ironclad Journal*, an NDA is a legal way “to protect ideas or information from being stolen or shared with competitors or third parties.” Breaking an NDA by sharing confidential information can result in legal action, financial penalties, and a damaged reputation.

WHAT DOES DATA HAVE TO DO WITH ME?

From the first time you open a web browser or make your own email, social media, or shopping account, your data becomes available on the internet. You may hear about the importance of keeping your data safe, but what exactly is your data?



PERSONALLY IDENTIFIABLE INFORMATION

When you sign up for a new website, you will commonly be asked for your name, age, email address, physical address, or phone number. This information, and anything that can be used to track your actual identity, falls under the most regulation and legal protection. The websites you give this information to can't do much without your explicit permission.

LOCATION DATA

Whether you're tagging a photo with a national landmark or playing a GPS-based game like *Pokémon Go*, some applications or websites may request access to your location data. If you leave this option turned on, advertisers can use this information to give you ads that are relevant to your area. So instead of general targeted ads about painting, you could also get ads about paint classes down the street from you. Websites can also use this information to make a best guess of who your friends and family are. If multiple devices can be tracked to one place at night, advertisers may determine that they belong to one family unit.



COOKIES

A cookie is a short piece of text that helps websites identify you and your computer. Websites can leave cookies on your web browser (ex. Chrome or Safari) to track your activity on their site. This can be useful for remembering you're logged into an account if you close the page or remembering what items are in your cart if you haven't checked out.

While some cookies can be useful, when third-party sites place cookies in your browser, they can track your activity as you navigate from one website to another. Cookies set by third parties introduce privacy concerns for users, but can be deleted from your browser or blocked completely depending on your settings.



Often, the goal of tracking and data collection is to find out who you are, what you care about, and what you're willing to spend money on. This data is incredibly valuable to websites and advertisers who make it their business to either sell you things or sell your information to others who want to sell you things. As users, we have to ask ourselves: what else could this data be used for?

DEVICE FINGERPRINT



Companies can also use device fingerprinting to track users. It is a way for websites to recognize a machine without the use of cookies. Rather than leaving data on the computer to read later, websites can read the settings or specification of the machine (like how large the screen is, or what software is installed) to identify the computer, and by extension, the user.

The benefit of fingerprinting is preventing fraud or someone accessing a website while pretending to be using another computer or pretending to be another person entirely. However, because it's much harder to hide these settings, it's difficult for users to block this tracking — or even tell they're being tracked in the first place!

LIKES/DISLIKES

When you double-tap or like a post, it sends a message about who you are or your preferences. Based on what you interact with on the internet, websites can track your interests and tailor what you see based on that information. For instance, if you like a post of a painting your friend made, you might see more artwork in your feed. Keep interacting with those posts, and maybe you'll get targeted ads featuring paint supplies and online tutorials.



ACTIVITY: KNOWLEDGE IS POWER

Get some insight into what information social media apps are collecting about you.

Open Instagram on your mobile device, go to Profile.
Select the three lines in the upper right corner.
Select Accounts Center.
Select Ad Preferences.
Select Audience-Based Advertising.

If you are active on Instagram, you will see a list of companies that advertise to you based on your data. You can manually opt out of being on these advertisers' lists.

Learn more about how to protect your data:
<https://tinyurl.com/dataprivacytips>

THE CAMBRIDGE ANALYTICA SCANDAL

The 2018 Cambridge Analytica scandal was an inspiration for *Data*. Cambridge Analytica was a consulting company based in the U.K. that used data science to help political campaigns. According to “The History of the Cambridge Analytica Scandal” on bipartisanpolicy.org, “Cambridge Analytica claimed to be able to use Facebook data for its clients to better target political messages to people that could be influenced, also known as ‘microtargeting.’”

In 2018, a whistleblower revealed the story to *The New York Times*, *The Observer*, and *The Guardian*. These news outlets reported that Cambridge Analytica had used 50 million Facebook profiles to obtain data without the users’ knowledge or understanding.

One affected user, David Carroll, requested the information the company had collected about him. The two files sent to him contained his voter registration status, his past election history, and a best-guess of how he might vote in the future.



— Mark Zuckerberg testifies before Congress.

Cambridge Analytica was hired by Donald Trump’s 2016 election team to manage data operations. Using the information the firm had collected, the Trump campaign could target voters — especially undecided voters — with political ads tailored to them, raising concerns about its potential influence on the outcome of the election.

Among its many impacts, the scandal resulted in Facebook founder Mark Zuckerberg appearing before Congress, new data privacy regulations, and scrutiny of how political campaigns use ads and social media.

LEARN MORE ABOUT THE CAMBRIDGE ANALYTICA SCANDAL

Watch this trailer for the documentary *The Great Hack*:
<https://tinyurl.com/thegreathacktrailer>

Read National Public Radio's ongoing coverage:
<https://tinyurl.com/cambridgeanapr>

? A QUESTION OF ETHICS

At some point, you may be asked to make similar decisions in your own life and career. As a class, explore this scenario:

After months of work, you launch a private social media site specifically for your school. All of your closest friends and classmates join the site and are happy to have somewhere to talk outside of class. It has been a valuable space for people to connect and to organize events and activism. When nearly the entire school has an account, you are called into your administrator’s office. They are concerned about the risk of cyberbullying, harassment, and other inappropriate behavior happening on the site. They tell you your options: take down the site, leave the site up and risk expulsion, or let the administrators secretly monitor what your classmates are posting. What do you tell them?



DIGITAL PRODUCTION OF DATA

In May 2021, in the midst of the COVID-19 lockdown, *Data* premiered for audiences as a digital theater production. During its filming, no two actors were ever face-to-face at the same time. Watch the trailer to see how they used technology to make the show happen!



<https://youtu.be/v3S3mBHDfWk>

HELPFUL HINTS FOR THEATER AUDIENCES

As an audience member at the theater, YOU are part of the show! Just as you see and hear the actors onstage, they can see and hear you in the audience.

To help the performers do their best, please remember the following:

- Arrive early.
- Visit the restroom before the show starts.
- Sit in the seat indicated on your ticket.
- Ushers are there to help you!
- Before the show begins, turn off your phone, watch alarms, and any other electronic devices. If anything rings by accident, turn it off immediately.
- Do not use your phone for texts, calls, games, pictures, or recording.
- Respond to the show; you can laugh, cry, and gasp. However, don't distract the performers onstage.
- There is no food allowed in the theater.
- Intermission is the best time to discuss the show and visit the restroom.
- If you must leave during the show, wait for a scene change and exit quietly and quickly.
- Be sure to applaud at the end! During a musical, audiences sometimes clap after a song or dance. If you love the show or a performer, you can give a standing ovation. The actors bow to thank you.

THREE BIG QUESTIONS

1

What decisions should be made by a computer or artificial intelligence?

2

What responsibility comes with talent and power?

3

Who are we beyond our data?

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Visit www.arenastage.org for more information on Arena Stage productions and educational opportunities.

(Front cover) Karan Brar for *Data*. Photo by Tony Powell

(Page 2) Rob Yang and Karan Brar for *Data*. Photo by Tony Powell.

(Page 7) Isabel Van Natta, Karan Brar, Stephen Cefalu, Jr., and Rob Yang for *Data*. Photos by Tony Powell.

(Back cover) The cast of *Data*. Photo by Tony Powell.

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