

## What The Tech: A High School AI Workshop

*A collaborative effort between the Boston Area Research Initiative at Northeastern University, the City of Boston's Department of Innovation and Technology, Tech Goes Home, and Boston Public Schools*

### Instructor Information

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### What You Will Learn

Welcome to "What The Tech: A High School AI Workshop", where you will study artificial intelligence (AI). Specifically...

- What it is (and isn't)
- How different types of AI works and the different ways they are used
- The ethical questions of AI and the guidelines we may need
- How all this impacts your community, neighborhood, and city!

This program has been designed by the Boston Area Research Initiative (BARI) and Tech Goes Home (TGH) and is for students from all backgrounds. **No technical skills are required.** We're glad you've joined us!

**About BARI:** BARI is a data research program at Northeastern University that uses many different types of data to work with local communities to fight for a fairer Boston.

**About Tech Goes Home (TGH):** Tech Goes Home is a non-profit technology advocate based in Boston that empowers communities to access and use digital tools to overcome barriers and advance lives.

You and your fellow students will learn about this new technology through group activities that will help you become forceful advocates for your community. This will include learning about...

- 1) **Technology, Our World, and the Roots of AI:** We will identify and elaborate the way that technology and humans have impacted one another since the beginning of the known world, all the way up to the emergence of AI in our modern era.

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- 2) **Different Types of AI:** As you start to understand the different major types of AI, you will also elaborate on their similarities and differences, and define the way they can make our lives easier (or not!).
- 3) **The Ethics of AI:** Just like any other types of tech we use (social media, cars, etc.), there is a right way and a wrong way to use AI. We will identify and define what they are, while you consider where the line between the two is.
- 4) **AI in the Boston of Tomorrow:** As we understand more and more about AI's background, potential applications, and ethical issues, you will elaborate on what it means for our city. You will present what the City of Boston should and shouldn't use AI for and why.

### How We'll Learn It

We will meet in **RYDER HALL, ROOM 266, ON THE NORTHEASTERN CAMPUS** for eight weeks, from April 22 to June 13. As your skills are developed, you will take part in group activities, lectures, weekly reflective assignments, and field trips in order to apply your newly acquired skills to everyday situations related to artificial intelligence, local issues, and the ethics surrounding both.

As we continue working, you will pick a situation/scenario that calls for AI and research potential ethical limits and issues, leading up to a final project presentation.

**Please remember to bring your BPS-issued laptop to EVERY SESSION! You will need it!**

### Course Assignments

In this program, there will be two types of course assignments: weekly reflections and a final group project.

*None of the assignments will be graded and **may be completed in whatever way you choose.** That means responses can be written, drawn, videotaped, recorded, or whatever. Even though the assignments will not be graded, it is still important to complete them because they are the best way to show what you have learned!*

### Weekly Reflections

At the end of each week, you will be asked to complete a *reflective assignment* over the weekend. This assignment will allow you to speak about what interested you that week and more!

The text of each week's assignment will be given at the end of the Wednesday session. Think about how you want to prepare and present your assignment and let me know.

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There will be six weekly reflection assignments. *At least five of those assignments should be turned in before the end of the workshop.*

### Final Projects

Towards the end of the course, you will all break into groups. You will then pick an issue where AI could be useful, as well as identifying potential ethical issues and limits. This final project will be presented at the end of the course at Boston City Hall's Civic Pavillion on Thursday, June 13, 2024! to an audience of your fellow students, as well as local partners and neighbors.

### Summer Internship Opportunities

Upon completion of the workshop, you will be eligible for an internship with TGH and BARI focusing on AI and social equity. Your internships will begin after the completion of the school year and will run the course of the summer. Important: The internship and the program are separate experiences. If you want to just do the program and not the internship, that's fine. But if you want to do the paid internship, completing the program is required.

We will discuss the internship further as we move forward.

### Student Stipends

You will earn \$15 dollars per hour for each hour of *active participation* in both the workshop *and* internship portions of the program. "Active participation" means showing up, doing the work both in and out of class, asking questions and being a good listener.

### Student Expectations

**Present and active participation:** Like any class or job (you will be paid, after all), it is expected that you show up ready to learn, participate, and listen in a way that is open, friendly, and respectful. Remember: we are all in this together!

**Ask Questions!:** I am always happy to answer questions if someone is feeling stuck, but I believe that your classmates are the best resource. If you have a question, raise your hand and we will all work on an answer *together*. If you feel more comfortable Googling it, that's also fine.

**If You Are Feeling Sick:** Staying safe is a responsibility that we all must take seriously. Remember that our individual actions will help everyone stay safe. If you don't feel well, it's okay to stay home—just communicate as early as you can!

We look forward to asking, answering, and discussing these questions and more with you during this workshop! Welcome to **What The Tech!**

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### Topics

The focus of each week will be as follows. Like technology and AI, this class is an evolving thing! Some things may be subject to change but I will do my best to let you know ahead of time.

### **PART 1: THE BASICS OF AI**

Who we are and how we got here.

### **Week 1: Society & Technology, Community, and AI [Monday, April 22 & Wednesday, April 24]**

*This week will focus on:*

- Talk about how technology and society have changed human society and vice-versa.
- Using examples from the discovery of fire to the emergence of social media to introduce ourselves to the central ideas of the workshop: innovation, ethics, and impact.
- A brief history of AI
- Why does this stuff matter?
- Community, both ours and in general
- We will also discuss the workshop itself, including workload, expectations, and our project goals.

### Monday, April 22

#### *Class Activities*

- Introduction to course and our goals
- In groups: what do you think of when you hear “artificial intelligence?” How do you think you first heard about it?
- Closing: think about the groups that matter most to you

### Wednesday, April 24

#### *Class Activities*

- AI: past and present
- Society and Technology
- Community: What are your communities? Who do you find in them?
  - Talk about how AI might impact our communities.
  - In groups, pick some technology that impacts your communities and Boston in general.
- Debrief (what went well this week? What didn't? What are you excited for? What are you unsure about?)

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### Week 2: Popping the Hood on Artificial Intelligence [Monday, April 29 & Wednesday, May 1]

AI contains multitudes, from terminology to skill sets and beyond. What do we need to know?

*This week will focus on:*

- How does AI work?
- Focus on some of the terms of AI.
  - Inputs, algorithms, prompts, outputs, machine learning, deep learning, etc.
  - Touch on three types of AI we'll be looking at during Weeks 4 (Predictive), 5 (Generative), and 6 (Robotics/Automated Vehicles).
- Examples of tech in the world and how AI can or may potentially be involved
  - Watch a few of the videos from the [City of Boston](#) to familiarize ourselves.
- What do we talk about when we talk about AI? Threat, stigma, fear, promise, potential.

#### Monday, April 29

##### *Class Activities*

- Share weekly reflections
- Lecture: key terms of AI
- Discuss: transferable skills concept

#### Wednesday, May 1

##### *Class Activities*

- Tech in the world: In groups of three, go out to the Northeastern Campus and find tech that makes a difference in all of your lives (1) on campus and (2) in Boston
- Debrief

### Week 3: The Ethics of AI [Monday, May 6 & Wednesday, May 8]

Are we doing this right? Are we doing it for the right reasons?

*This week will focus on:*

- Who benefits from AI? From its design? From its application?
- Who stands to get hurt?
- “Benign mistakes” versus “Deeply consequential mistakes”, and other ethical dilemmas.
- We will also look at questions of ethics that come from the general usage of AI, including its impact on the jobs we do and our natural environment.

#### Monday, May 6

- Share weekly reflections

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- Ethics in AI lecture
- Video: Gender Shades by Joy Boulamwini
- “What would you do?": ethical dilemmas in AI

Wednesday, May 8

### *Class Activities*

- Lecture and activities on ethics and new technology - Dr. Vance Ricks (Northeastern University)
- Debrief

## **PART 2: CERTAIN TYPES OF AI**

There are many different types of AI and many ways they can be applied. We will look at three specific types of AI. The skills they require, the ways they impact our world and the ethics of their usage will be at the heart of our discussions.

### **Week 4: First Type of AI: Predictive Analytics [Monday, May 13 & Wednesday, May 15]**

How our data past impacts our future

*This week will focus on:*

- How predictive analytics (the use of statistics and other data to predict events across settings) works and the types of data it uses
- Ask what it means to integrate computerized predictions with our everyday life. This includes
  - Advertising
  - Entertainment
  - Law enforcement
  - The language we use in messaging apps.
- The ethical questions of how our data is used in predictive analytics and AI

Monday, May 13

### *Class Activities*

- Share weekly reflections
- Mini-lecture: the basics of predictive analytics
- Predictive analytics demonstration: Dr. Alice Mello (Tufts University)

Wednesday, May 15

### *Class Activities*

- Mini-lecture: predictive analytics in our world

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- Group activity: Google's Teachable Machine
- Introduce final project (groups) and talk about internship.
- Break into teams: what are good and bad examples of AI in predictive analytics?
- Debrief

### **Week 5: Second Type of AI: Generative AI [Monday, May 20 & Wednesday, May 22]**

Of the three types of AI, this may be the one that we most like to have fun with... but what's the cost?

*This week will focus on:*

- How generative AI works
- The types of data it uses
- Discuss how it impacts our day-to-day lives, including
  - School
  - Jobs
  - Music
- Examine the pros, cons, and limits of generative AI
- Figure out the difference(s) and overlap between generative AI and other types of AI

#### Monday, May 20

##### *Class Activities*

- Share weekly reflections
- Lecture: What generative AI is and how it works
- Activity: ChatGPT
- Discussion: In the era of fake news and deep fakes made by generative AI, how can we make sure usage is responsible?

#### Wednesday, May 22

##### *Class Activities*

- GueLecture: Dr. Daniel O'Brien (Northeastern University)
- Break into teams: what are good and bad examples of Generative AI?
- Group discussion: ethical dilemmas of AI
- Debrief

### **Week 6: Third Type of AI: Robotics and Automated Vehicles**

How much automation is too much automation?

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*This week will focus on:*

- How automated vehicles work
- The types of data they use
- Their potential impact on...
  - Our neighborhoods
  - Our jobs
  - And more!

Monday, May 27

NO CLASS - MEMORIAL DAY

Wednesday, May 29

*Class Activities*

- **Museum of Science's new permanent exhibit on AI: [Exploring AI: Making the Invisible Visible](#)**

If not, we will...

- Share weekly reflections
  - If we do go on the field trip, then the weekly lecture for this week (covering week 5 material) will become optional
- Lecture: AI, Robotics, Automated Vehicles, and the Future
- In groups: who is someone in our lives whose life would be made improved by automated vehicles
- Work on final projects
- Talk about internships
- Debrief

### **PART 3: AI AND THE EVERYDAY**

This is where our past focuses all start to come together.

#### **Week 7: AI in Our Communities [Monday, June 3 & Wednesday, June 5]**

What AI means for our community, including work, play, and how we're governed

*This week will focus on:*

- Linking your individual interests to the promise or peril of AI.
- Communicating fears and aspirations about AI
- What does it mean to be an advocate? How does one be an advocate in the world of AI?



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- Thinking about what policies on AI could look like in school, work, government, and how they all might differ.
- Discussing how AI impacts recreation

### Monday, June 3

#### *Class Activities*

- Lecture: How communities respond to AI
- Share weekly reflections
- Brainstorm: how do each of the types of AI we've discussed interact with how we spend our free time? Share weekly reflections

### Wednesday, June 5

#### *Class Activities*

- Group work
- Lecture: Marvin Venay (Tech Goes Home: Chief External Affairs and Advocacy Officer)
- Continue work on final projects: research
- Debrief

### **Week 8: Final Project Prep and Presentation [Monday, June 10 & Wednesday, June 12]**

Bringing all the elements together and practicing in front of classmates. And then showtime! Final details to be confirmed. Maybe we can secure a special venue for the presentation?

*This week will focus on:*

- Preparing and rehearsing for Thursday's presentations!

### Monday, June 10

- Share weekly reflections
- Continue work on final projects: research

### Wednesday, June 12

#### *Class Activities*

- Dr. Alice Mello to remotely join in and help students with prepping the group work
- Rehearse presentations
- Debrief

### Thursday, June 13 - Boston City Hall

- Final Presentations!