June 13, 2024

Dear colleague,

You hold in your hands the culmination of eight weeks of hard work, research, and academic rigor carried out by some truly remarkable and intelligent young Bostonians in the field of the social impacts of artificial intelligence.

Since late April, high school students from across the city took time out of their busy schedules to meet on the Boston campus of Northeastern University to participate in an after-school workshop known as *What The Tech?* This program was developed by Northeastern University's Boston Area Research Initiative alongside our partners: Tech Goes Home, Boston Public Schools, and the City of Boston's Department of Innovation and Technology

The purpose of this program was for participants to study, investigate, and cultivate their own insights into how AI affects our lives, particularly in Boston and the communities that call the city home.

AI is everywhere and these young people know it. Now they present to you some ways that this powerful emergent technology can impact a variety of communities, as well as the ethical questions that can arise and how they believe powerbrokers should address the issues.

I invite you to take this packet with you and to refer back to it the next time you look at the recommendations from your preferred streaming service, kill time by asking ChatGPT a question, or use an app to book a flight for you and your family. I guarantee that the issues raised today by these intelligent young people will resonate after we part ways today.

Sincerely,

Gregory Zapata
Education Program Manager
Boston Area Research Initiative (BARI) - Northeastern University

Contents:

Title: AI & Restaurants in Boston's Chinatown
Team members: William Liang & Jacky Li
Community: Chinatown

Walking down Chinatown Main Street of Greater Boston, alive with the sights, sounds, and aromas of its beloved traditional eateries, we wondered how these restaurants—such as Chinatown Cafe, May's Cake House, and Dumpling King—could thrive through local orders, many without mobile iOS apps or even websites. After asking the locals and restaurant owners, we realized the restaurants relied on a tightly-knit community and culture. Loyal customers who ordered frequently and were used to the traditional take-out, dine-in, and landline telephone ordering systems had no problem with how these restaurants operated. The question then came to mind: What happens when Chinatown's traditional take-out ordering has to accustom to the new generation, heavily reliant on modern technology?

We propose an online, AI-facilitated ordering system—implemented into newer software websites for these local restaurants, which could help them expand and gain recognition beyond the Chinatown community. We plan on using a generative Artificial Intelligence algorithm, which would take a customer's order in a real-time conversation (think chatbots like ChatGPT and Gemini), providing great convenience for both workers and customers. While most call-oriented orders occur through Chinese languages and dialects such as Mandarin and Cantonese, an AI-ordering system could allow convenience for all language speakers, as we would upload national language libraries into our algorithm to translate any language. By providing local restaurants with access to a modern digital-world, we carry the cherished traditional cuisines into a new era, accessible to everyone and bypassing language barriers.

In no way, do we hope to change the structure of the menus and what these restaurants provide for our communities. Our goal is to preserve these traditions, these core building blocks that we grew up from. Nonetheless, Artificial Intelligence comes with its flaws. Slang and words that have multiple meanings may be mixed up in translation (bias while training algorithm comes into play) and transitioning into a new operating system dependent on technology will be hard to trust for owners accustomed to traditional take-out. However, with the help of those in power at City Hall and tons of training with translative AI, we believe we can make a smooth and easy transition for these restaurants, and maintain an accuracy of around 95% for translations—similar to Google Translate.

If successfully implemented, we could increase productivity, efficiency of orders, expand recognition of local restaurants, and include a more diverse community, unrestricted from those who only speak Chinese.

Title: AI in the Airport
Team members: Jack Sawyers & Lucy Osowieck
Community: Traveling

Our project is about the use of AI in the airport. We both love to travel and we notice that oftentimes the vacation does not start until you leave the airport due to all of thes stress that happens within the airport. So many people travel everyday whether for enjoyment or vacation, or for work, or to visit families, and the experience within the airport should not have to be stressful or long. We believe that with the increased use of AI in the airport, the processes that occur within it can be made a lot less stressful and can take less time as well. AI could be used in many processes in the airport but we want to dive into how it can reduce delays/cancellations, create shorter queues and make it easier to go through identification checkpoints, and how it can ease checking baggage. Predictive AI can be used in aircraft maintenance, after being trained on historical data about aircraft parts and also using data from sensors on the aircraft, AI can predict when some parts will need a replacement or when the plane needs maintenance. This innovation could be massive and should be employed at more airports, with this foresight of when maintenance is needed for an aircraft, airlines can plan ahead. There would be a lot less delays and flight cancellations due to technical problems because the AI would be able to predict those problems ahead of time. AI can also be used in biometric scanners at the airport, these are actually employed at some gates at Logan Airport, they are the things that take pictures of you. This way of identification is much easier and much quicker than if a human was doing it and it has been proven to massively reduce queue times in the airport. AI could also be employed at security to scan things in carry-on luggage. Lastly, we believe AI in biometrics and robotics can be used to assist in baggage, not only can it automate the baggage checking process by printing labels (using biometrics for ID scanning), this could ease the often long queue that comes with checking bags. It can also automate the tracking and routing of bags through the airport, if implemented correctly, this could make the chance of a bag getting lost a lot less likely.

However, Ethical concerns are large with these implementations of AI. The biometric scanners themselves bring about several Ethical concerns, firstly, the worry of them saving personal data, which many worry about (that's why the scanners are only optional in airports right now!). In addition, the scanners can have implicated bias, from our research, we found that black and asian people were 100 times more likely to fail a biometric scan than their white counterparts. People also worry that this AI technology might be implicated for crime in the airport which would bring even more worry about bias. Another ethical concern is the possible loss of jobs as AI is further implemented in the airport, not to mention the lack of human interaction that some people value if it is further implemented. The last ethical concern we wanted to bring up is that of equal access. Those who do not know how to use technology well (such as the elderly) could end up having more difficulty trying to navigate through the airport and it could be more stressful for them. Boston Logan is quite a busy airport, it sees many long

queues, cancellations, and delays and anything that could assist in decreasing the stress of those processes should be considered. With the implementation of greater forms of AI in the airport, delays and cancellations could be kept at a minimum, and it could be made easier and less stressful to make it through security checkpoints. There are many valid concerns, people trust humans more than AI and it can make mistakes which can be very critical in an airport setting. Not to mention, if the AI is hacked, then there could be serious consequences for the airport. We believe that these concerns are valid, but that if implemented correctly and watched over closely, AI could make the airport a lot less stressful for everyone involved.

Title: AI in the Art Community
Team members: Roisin Foley, Nikki Tsui & Sophia Figueria
Community: Artists

We as a group have chosen to represent the Art Community and focus on the use of AI in it. We acknowledge that AI is a serious problem in the Art Community at the moment, but there are also some benefits to using it. The use of AI these days is often perceived as beneficial and helpful, but AI is able to cause job loss. We've come together to give a thorough explanation as to how AI is being used in the Art Community and how many use it.

The use of AI comes with a multitude of ethical issues about properly crediting artists for their work. As AI becomes more and more developed, it will get harder to differentiate what was human made from what an AI made. We have compiled some ways to prevent art from being used to train AI and examples of this happening today.

Title: AI and Music - Mixing and Mastering
Team members: Eamon Innes & Gideon Neave
Community: Music

We chose to discuss the potential use of AI in the mixing and mastering process within music creation. Mixing and mastering are processes done at the end of the creation of a song or musical project that are used to clean up the sound of the song and make it feel more balanced, as well as to prepare it for distribution and playing on a number of different devices. It is a crucial stage of the music creation process for an artist that is looking for their music to reach a wide audience and to grow their brand, and can have a big impact on the way a song sounds. These processes can often be somewhat inaccessible for many, especially smaller, artists. They require a large amount of knowledge and skills to do on one's own, and if outsourced to an experienced engineer it can become very expensive. This creates a divide in the music community because smaller artists who are likely making little money from their music will not have access to good engineers or equipment for this process to be completed. We hope that AI can help remedy this problem.

The use of generative AI tools could revolutionize the mixing and mastering process. This would solve many of the problems created in the mixing and mastering process. It would be much easier to learn, and the price would be much smaller. The AI could either take the form of a tool for an engineer to use to make the process easier and cheaper, or just an AI that can do the whole process itself. It is likely that the former would be better for mixing, while the latter would be better for mastering, as mixing has a creative component that the artist would want a great degree of control over, while mastering requires less of a creative mind. Either way, the use of AI would reduce the digital divide because it would give many more people access to the tools to complete this process for a much smaller price. There are some ethical concerns however. There is the potential for the suppression of creativity, which could be combated by using AI as more of a tool to assist an engineer, rather than something that does the whole process by itself. There is also the possibility of engineers who have trained for a long time losing their jobs. However, there would still likely be jobs for them out there at a higher level at which artists wouldn't want to rely on AI. Lastly, there is the problem of the data used to train the AI and how artists might react to their music being used for a project like this. The potential of this idea for Boston is great, as Boston has a vibrant music community. We believe that it would be beneficial to distribute technology like this among students at music schools and BPS schools around Boston, which would allow people who wouldn't normally have had access to these tools a chance to follow their passions. By providing these resources to rising artists and students in the city, we can better foster an environment of creativity and opportunity in our city.

Title: AI in Longwood Medical Area
Team members: Amira Beriane, Sawsane Salhi, & Jolia Tsan
Community: Longwood Medical Area

Longwood Medical Area encounters high volumes of patients with complex medical conditions. AI systems can be helpful by using it to analyze medical images like X-Rays and MRIs. It could also check through large amounts of health records digitally to identify patterns and potentially predict future outcomes. As for the type of AI needed to be used, machine learning algorithms work well with image recognition, Natural Language Processor (NLP) for patient records, and predictive analytics for disease predictions. Potential issues raised are privacy issues against breaches and unequal treatment based off of biases that could lead to unequal treatment. These biases could arise from the data used to train the algorithm.

Longwood medical area is known for its very bad traffic congestion so having AI to reduce it would greatly aid in decreasing the amount of accidents that occur in the area and be more time-efficient. Emergency vehicles and medical professionals will be priority to the system to make sure they arrive on time and people will receive their service. Medical employees would be granted priority access through congested areas while non-medical drivers could be directed somewhere else/managed differently to minimize traffic flow. This will be done through computer vision, machine learning, + predictive analytics. We could use AI to read license plates + cross-reference them with a database of registered medical employees. An issue in this idea could be from the potential of Ubers/Patients not being able to get to hospitals on time.

Title: Boston, Gambling, and Artificial Intelligence
Team members: Brave Arimah
Community: Boston as a whole

How can AGI be used in gambling to optimize money management (i. e. build a game plan to make as much money at the casino)? How can it be used by the bookmakers to unfairly set odds?

Gambling has been massively growing in Massachusetts, especially in the Boston area with the opening of the Encore casino in nearby Everett. Naturally at the casino, people play to win and artificial intelligence – more specifically generative artificial intelligence – has started to be used to build gameplans on winning.

Concerns come baked into gambling itself; addiction to gambling can lead to the breaking down of families. However, a more concerning issue comes especially in sports betting, where there are much better odds for the average Joe to win. Since AI can be used to predict the statistics of sports players, unfair odds could be put into sports betting, meaning that the house continues to win.