Artificial Intelligentsia Post-mortem

by

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I. Overview

Artificial Intelligentsia is a semester long project at Carnegie Mellon's Entertainment Technology Center. The team's names and roles are:

- Zhiguo Lai Designer/Programmer
- Lotus Li Sound Designer
- Shitong Shen Designer/Programmer
- Derrick Pemberton Jr.- Lead Design/Producer
- Jue Wang UI/UX Designer/Artist
- Heather Kelley Adviser
- Pamela McCorduck Client

The team was tasked to create an interactive experience inspired by the work of author Pamela McCorduck.Pamela McCorduck is the author or co-author of ten published books. Both her fiction and nonfiction deal with aspects of science—mainly the psychological impact of computing, especially of artificial intelligence, and in her later books, of the sciences of complexity. Our project focuses on her writings on artificial intelligence.

Artificial intelligence is a vast ocean of potential subjects for an interactive experience. Pamela's work explores everything from metaphysics to the lives of the scientists creating the systems. McCorduck spent her early career pulling on the shirts of important individuals, trying to pull their focus to technological developments that will have a monumental impact on human life. With that in mind, the team developed a mission statement for the project:

Demystify AI, specifically facial recognition, and foster public conversation about AI's potential impact.

Given Al's widespread impact, the team decided to develop a short mobile game, about 10 minutes, with a target audience ages 13-40. The game, titled *Al or Nay-I*?, was designed with The Transformational Framework by Sabrina Culyba. This framework is a tool to help designers realize their transformational goals in their game. The transformation we sought is threefold, after the game players will:

- Have a better understanding of how AI works
- Have a better understanding of the moral complexities of AI
- Feel better equipped to make judgements with regards to AI

II. What Went Well

Scope

As mentioned in the overview, artificial intelligence is a broad topic to explore in a game. The team successfully controlled the scope of the project through the development process. We elected for quality over quantity at every turn. For example, at one point *AI or Nay-I?* Included four mini-games exploring various uses of computer vision. After we started developing the phone security simulation, we learned the true time commitment for a robust game of that size. Eventually, the self driving cars and tumor recognition simulations were cut. What was left was a more focused, albeit shorter, game about facial recognition AI and the moral complexities surrounding the technology.

Transformational Goals

We included a survey at the end of AI or Nay-I to measure the effectiveness of the game at transforming the players. The resulting data showed the majority of our players agreed that they better understood how facial recognition AI works, they better understood the moral complexities of AI, and they felt better equipped to make judgements with regards to AI. (See Figs. 1-3)



Accessible Design

Given the wide age range of our target audience, *AI or Nay-I*? needed a design that was accessible as possible. With this in mind, we successfully incorporated simple mechanics that were both easy to use and connected to the transformational goals. We

also made sure to use the technology available to us on the mobile platform in clever and fun ways, like using the gyroscope in the phone security model making section, or requiring the player's signature when they sign official directives.

The narrative design also successfully walked the tightrope of bias and consistency. The perspective shifts between Minister of Technology and AI were reinforced by the visual design. The writing of the social media responses in particular received praise for their realism.

Aesthetically, we succeeded in creating an experience that felt cohesive through its entirety. The 2D art, 3D art, and sound design all together created a game that explores a serious topic without spooking the players.

Client Reaction

Finally, our client had many positive things to say about the final product. She said:

"The more I think about it, the more I like the game as a vehicle for expressing the positives and negatives of AI to an audience that certainly doesn't want to be bothered with deep details. This part could become commercial."

III. What Could've Gone Better

Extended Pre-Production

The team spent too much time in pre-production. This could be attributed to the type of paralysis creatives encounter when they are granted a ton of freedom. We struggled to find the identity of exactly what kind of game we were making for too long. As a result, we often made large changes that took great lengths of time to incorporate. Perhaps with better initial design plans, we could've avoided these setbacks. Luckily, with some wise cuts and scheduling, we were able to recover the lost time for the most part.

That being said, our working style was atypical. We often went through periods of low productivity. Then, when we realized we were falling behind, we pushed hard to catch up, sometimes logging hours that would be considered crunch in industry

Client Communication

Communication with our client was also a challenge throughout the semester. McCorduck did make it clear that she would be largely hands off in our first discussions. This sparse communication still worried the team and faculty as the semester dragged on. Luckily, Pamela was very pleased with the end product.

Development Pains

In the realm of development we faced many challenges as well. In general, the team was inexperienced with iOS development so it took us a while to figure out how to implement the mechanics we designed. In addition, many of the bugs came from the UI after the build which cost a lot of debugging time. We could've better researched the Unity UI system and from that establish a better workflow between artists and programmers. Better standards UI element additions to the scene would've prevented unwanted bugs and made alterations easier.

IV. Lessons Learned

The team learned a myriad of lessons over the semester. For one, incorporating ethical dilemmas in games is extremely difficult. Even harder though is formulating dilemmas for issues as morally complex as artificial intelligence. Everyone has strong opinions on AI so getting them to think about their decisions while also transforming the way they previously thought proved to be a monumental task.

Speaking on process, the team learned to embrace the rapid iteration style \of game development. Utilizing a scrum board and holding daily meetings, especially during production, kept us accountable for our progress. It's obvious to us now why agile development styles are so popular in the industry. Now, we are way less afraid to change things and embrace new ideas.

V. Looking Ahead

We have a few plans push this project into the future. We will be publishing *AI or Nay-I*? alongside Pamela McCorduck's memoir, titled *This Could Be Important*, in the fall of 2019. We are also supplying Mr. John Balash with devices equipped with *AI or Nay-I*? to show at the 2019 International Society of Technology in Education (ISTE) conference in Philadelphia. Finally, we are in conversation with multidisciplinary artist Eunsu Kang and the Bricolage Production Company to feature *AI or Nay-I*? in an upcoming immersive theatre piece that explores artificial intelligence.