Artificial Intelligence

&

Their Effect on Modern and Future

Society

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Abstract

Today's human ingenuity has sparked the imagination of people around the world, turning science fiction into reality, abstract dreams into physical designs, emotions into the physically emotionless, with the single limit placed on the creativity humanity has on itself. Despite once branded fictitious, companies have been designing countless creations ranging from self-driven vehicles to machines that can interact with people; moreover, even though today artificial intelligence is praised as one of humanity's most ingenious achievements, one of the biggest critics of AI are the average individuals in society who are affected by technology every day, regardless of their views on technology. The objective of my research revolves around understanding college students' views on innovative advancements in technology and their sentiment towards these progressions. A research survey will be conducted using a pool of forty-three students, with ranging majors and age; furthermore, the information gathered will be used to articulate the significance of this research, which is to question if it is ethical to continue certain technological advancements if such advancements are not supported by society, or the extent of advancement for supported technology.

Introduction

Emotions are what characterize humans. We react positively to situations or objects that make us feel good, safe, supported, and react negatively in times of stress, or when presented with possible danger or discomfort. Thus, with the emerging advances in technology becoming a bridge for human creativity, society is unwillingly tied together because of innovators; consequently, individuals are placed in situations they may or not have wanted. For example, self-driving cars are becoming more prominent, and they will continue to improve, adapt, and become more involved on highways and roads, but how do people feel about having to drive alongside a machine operated vehicle, or watch as machine learning is used to create art or music? This research aims to gather data from a pool of individuals, computer science majors and non-computer science majors, regarding their comfort with technology, and how likely they are to use the technology stated in modern and future society.

Some background research used as reference in this experiment is obtained through the Georgia Institute of Technology. They have conducted research into using neural network approaches to generate natural language guided by events within the dialogue [1]. They use four models to achieve a story based, coherent sentence. The paper continues to explain how each of their models: retrieve and edit, sentence templating, Monte Carlo Beam search, finite state constrained beam search, and standard beam search, is designed to create an event to sentence entity. The concluding result was that Monte Carlo was able to generate entertaining sentences, but would sometimes lose the meaning behind the event inputted, and the finite state machine tried to balance between correct semantics and entertaining sentences, and even occasionally failed to give complete sentences because of its constraints; however, each models was created to complement each other's weaknesses. Georgia Tech researchers are also working on

incorporating personalities into their robots' conversations with humans [4]. These two research topics form one of the baselines of the research conducted in this experiment as they aid in giving a possible scenario where humans could eventually hold a two-way conversation with an artificial intelligent machine, and thus pose the question, "Would an individual be comfortable with technology advancing this far?" In another paper, researchers conducted an experiment where a robot would touch and clean a person's forearm. The results showed people favored the robot cleaning their forearms when no verbal warning was given because the intent of the action was clear, which is similar to my proposed experiment except instead I analyze how comfortable people are towards technology [7]. Furthermore, an example of a morphed Turing Test is depicted by the automotive Turing Test conducted by Toyota Technical Center [6]. This research paper was about conducting a Turing Test using a self-driving automobile, and testing whether based on the car's actions if an interrogator is able to tell the difference between the AI run car, or a human driving behind the wheel.

Regarding the automated Turing Test, self-driving cars are becoming more prominent in society with more companies having self-driving car programs today. Due to these new developments and programs, people are placed in situations they may or may not have wanted to be in such as driving alongside a self-driving vehicle. The research conducted in this experiment helps display college students' views and stance on the way technology and innovation is carving itself into society. The significance of this research is also to raise questions regarding the extent of technology and how far are we willing to proceed with or without limitations.

In this paper, data is gathered using a survey that is presented to a pool of forty-three students. Within this survey, students are shown an explanation of a scenario based on relevant research and are asked to scale their answer based on their comfort level and how likely they are

to use the technology described in the scenario. The data gathered is used to distinguish how comfortable college students are with the rising technological advances that are being placed in society, and whether the students are likely to use or decline to use the technology.

Methodology

The basis of this experiment revolved around the survey, the scenarios described, and the questions presented. The scenarios were based on both related researches conducted, and real-world scenarios. The opening scenario articulated in the survey presented the data of miles driven in California by self-driving vehicles gathered from two of the top self-driving car programs in the world, Google's Waymo and General Motors' Cruise. Each scenario was followed by a pair of questions asking the surveyor their comfort levels ranging from very uncomfortable to very comfortable, and how likely they are to use the technology stated in the scenario using the same range system except instead of comfort it ranged from very unlikely to very likely. Another example of a scenario asked in the survey revolved around the research conducted by the Georgia Institute of Technology. The same form of questions was applied. Following the creation of the survey were the pool of individuals that were surveyed. The students were separated into two main categories: computer science majors and non-computer science majors, with classmates in CSC 450 and other computer science majors being the control group. The students were selected solely based on immediate friends available; furthermore, The CSC 450 class selected were part of the Senior Research class taught at Eastern Connecticut State University, and the remaining students were friends from numerous colleges in Connecticut and Georgia. The non-cs majors were broken down into subcategories based on their majors as well for a more detailed analysis of each major's views. Once all the data from the surveys were obtained, the analysis of the data were displayed in graphs that compared the students' answers

respectfully. The graphs were broken down into control group vs all majors, breakdown into sub-

majors, and all majors together. The following is a link to the project page containing the graphs:

https://jesvian.github.io/Senior-Research/.

Results

I analyzed the data gathered from the surveys of a pool of forty-three college students

with ranging ages and universities regarding their views on the incorporation of advancing

technology in society. It was discovered that over half of the students answered they were at least

comfortable with the idea of driving alongside a self-driving vehicle (**Fig 1).**
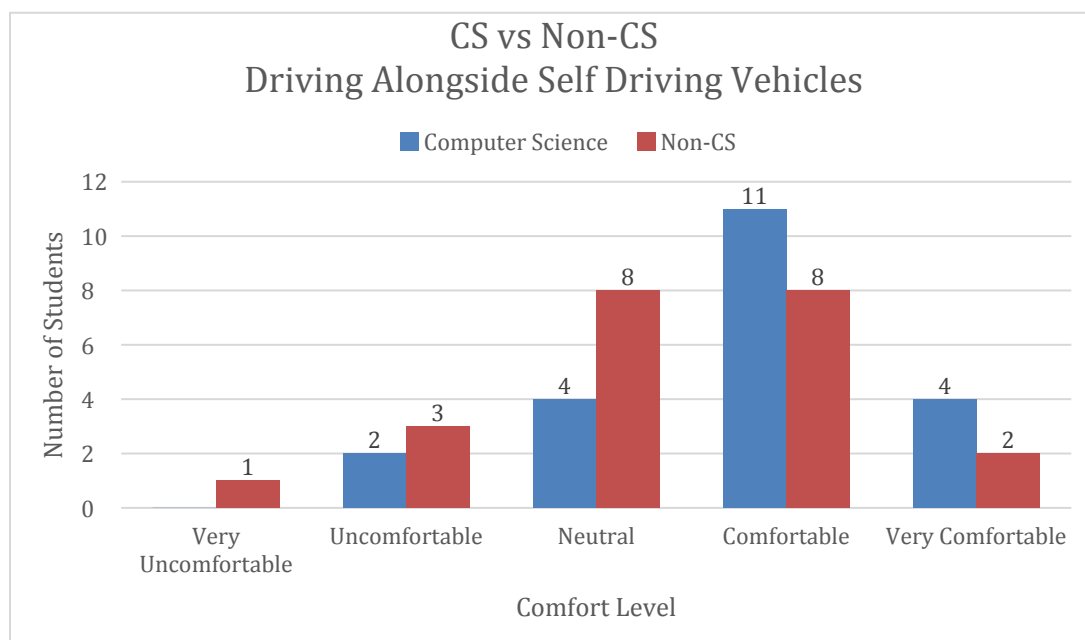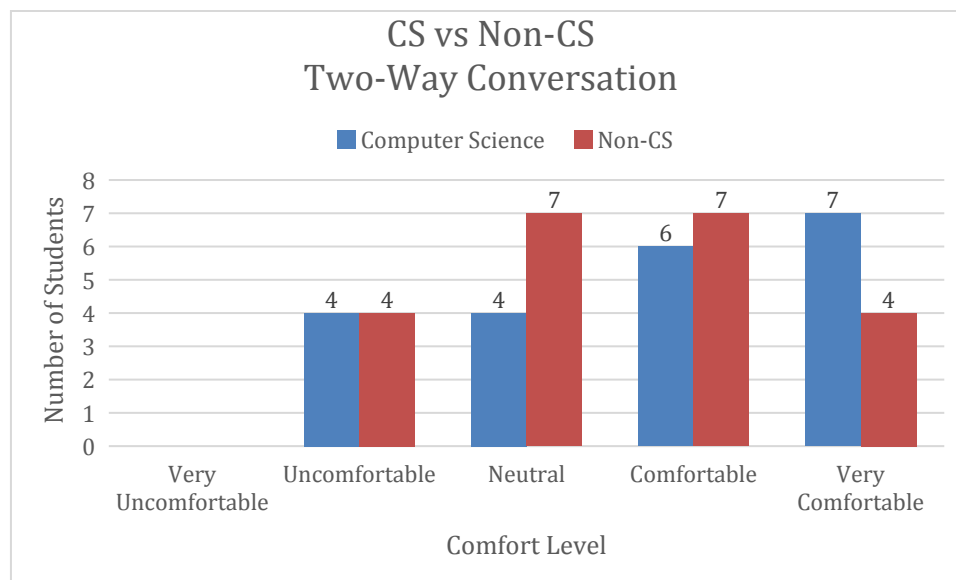

Figure 1. The comfort Levels of college students with self-driving cars in society

A further in-depth breakdown of all the majors surveyed shows the majority of the non-
computer science majors were either neutral or at least comfortable with this situation, and that
the single major that answered "Very uncomfortable" was in biology, where four out of the six
students were neutral and none were comfortable with the situation (**Fig 2**).
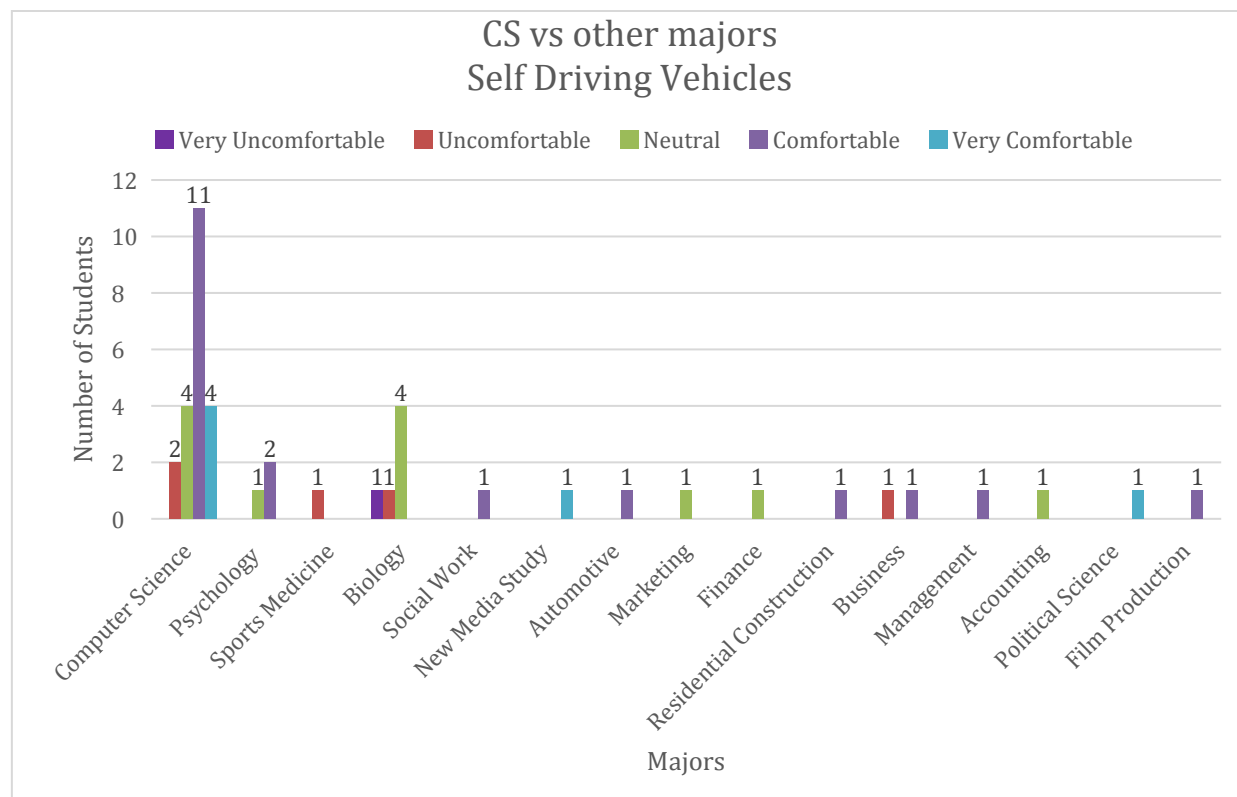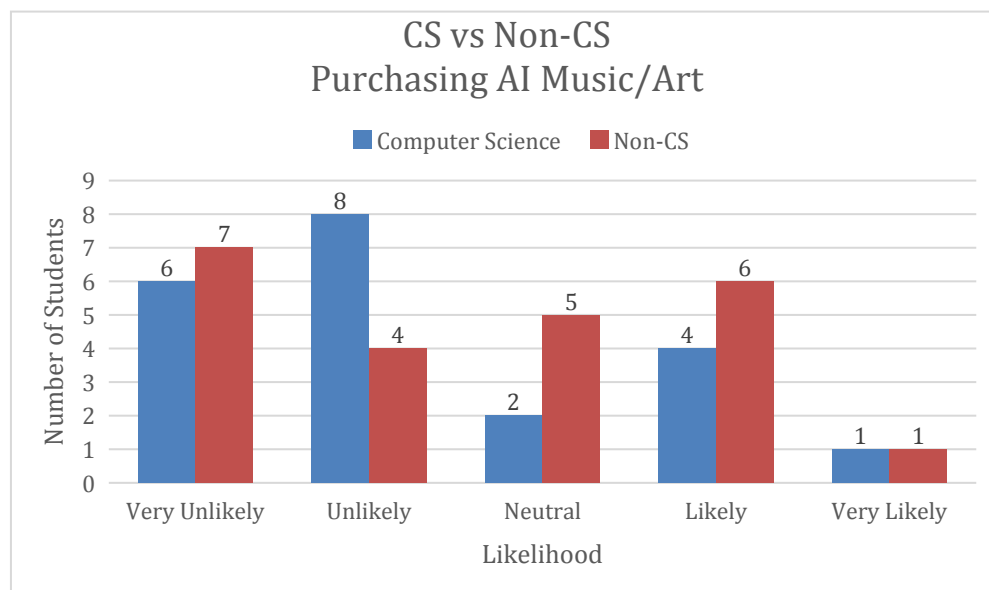
Figure 2. The comfort Levels of college students with self-driving cars in society based on majors

When the students were asked about their comfort level with having a two way conversation, similar to the way a human to human conversation plays out, twenty-three students in total answered they would be comfortable having a conversation with a machine, more than fifty-percent (**Fig 3).** The graph also illustrates that the same number of non-cs and cs majors answered they would be uncomfortable with the possibility of conversing with an artificial intelligence.

**CS vs Non-CS
Two-Way Conversation**

■ Computer Science   ■ Non-CS

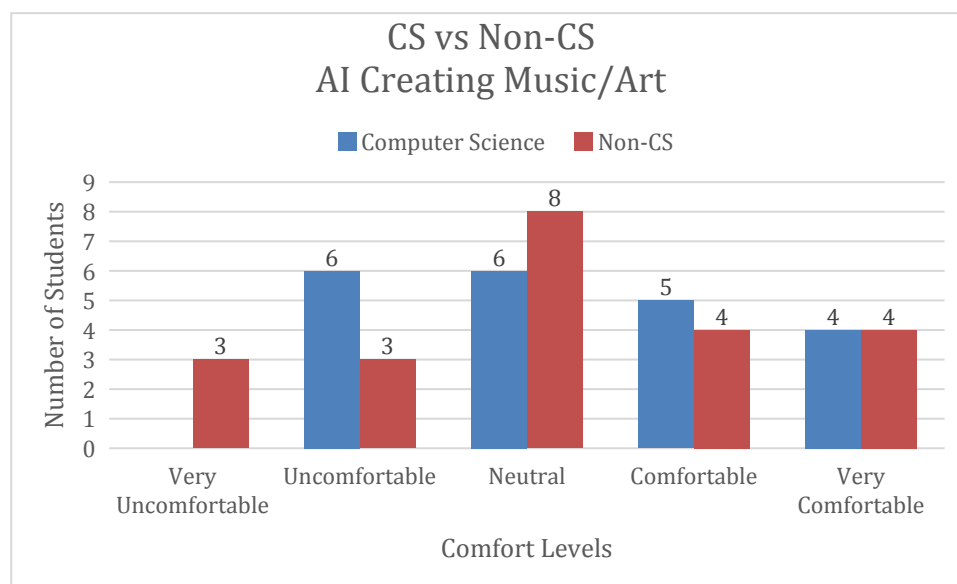**Figure 3.** The comfort levels of college students with having a two-way conversation with an AI

I also found that when asked about artificial intelligence creating their own music or art and competing against other human artists twenty-five out of the forty-three students responded negatively that they would not be likely to purchase art or music from machines (**Fig 4**).

**CS vs Non-CS
Purchasing AI Music/Art**

■ Computer Science   ■ Non-CS

Figure 4. The comfort levels of college students in regard to purchasing AI created music/art

When asked about their comforts levels with artificial intelligence creating their own music or

art, less than half of the students (18) responded they were at least comfortable with the

possibility, outweighing the twelve students who responded with at least uncomfortable (**Fig 5**).

Figure 5. The comfort levels of college students regarding AI creating music/art

Discussion

The overall outcome proves most people either do not mind or are at least comfortable

with most advancing technology being in society. The experiment found most surveyors were

neutral or at least comfortable when presented with a situation where the machine learned and

created a product on their own such as music or art; however, students did not support the idea

of purchasing the machine created art or music. The outcome of these results shows businesses

that attempt to monopolize artwork or music made by machines may not sell enthusiastically to

college students. College students make up a large chunk of the population In society, and are

only ever expanding and will continue t grow, thus having the support of both college students

in general, and students entering the workforce after university is monumental to politicians

who are trying to push new policies linked to technology, and normal consumers in society who are affected by whether or not the new technology such as self-driving cars are widespread and popular on the roads sooner rather than later.

Another outcome that is shown by the experiment is if individuals have the option to choose whether this technology affects their lives, the students do not mind or are comfortable enough to use the technology. This is similar to the experiment in the research article, "Touched By a Robot" where researchers conducted an experiment where a robot would touch and clean a person's forearm [6], Where the results showed people favored the robot cleaning their forearms when no verbal warning was given because the intent of the action was clear. In another experiment called The Moral Machine Project, the researchers obtained feedback from over three million people and discovered people prefer that the machine make sacrifices if it means more lives are saved [8]. In 2015, Allen Institute for Artificial Intelligence hosted their first Allen Ai Science challenge; moreover, essentially the challenge was to test AI on a difficult task such as answering eighth grade science questions, and the resulting winner scored 59.31% on the exam[5]. Moreover, about machines taking information and displaying they learned from it, examples of this have been tested successfully. An AI program was created to compete against the top StarCraft player in the world, and although it was ultimately defeated by the world's best human player of the video game StarCraft in the finals, the results still showed that the machine could adapt and keep pace with human players [2].

The size of my experiment, and lack of consistent number of students for each major is a rather large constraint for this experiment. Each major will have an uneven amount of student replies because there is no determination on whether a computer science or a non-computer science major can participate; thus, the data is not 100% accurate due to the pool size being

selected by myself and the individuals being my friends and classmates, ergo this study is done using a convenience sample. The explanation prior to each question is also a limitation. An explanation of possible scenarios is provided prior to most questions asked; however, students will not have been exposed to such events (most likely) themselves, so everyone's answer is based solely on a "what if" scenario. The pool of surveyors is also not representative of any larger population. My results could also fluctuate drastically if the type of people surveyed included older individuals. Several factors could influence and be included by adding older parties such as exposure to technology and understanding of technology in general.

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