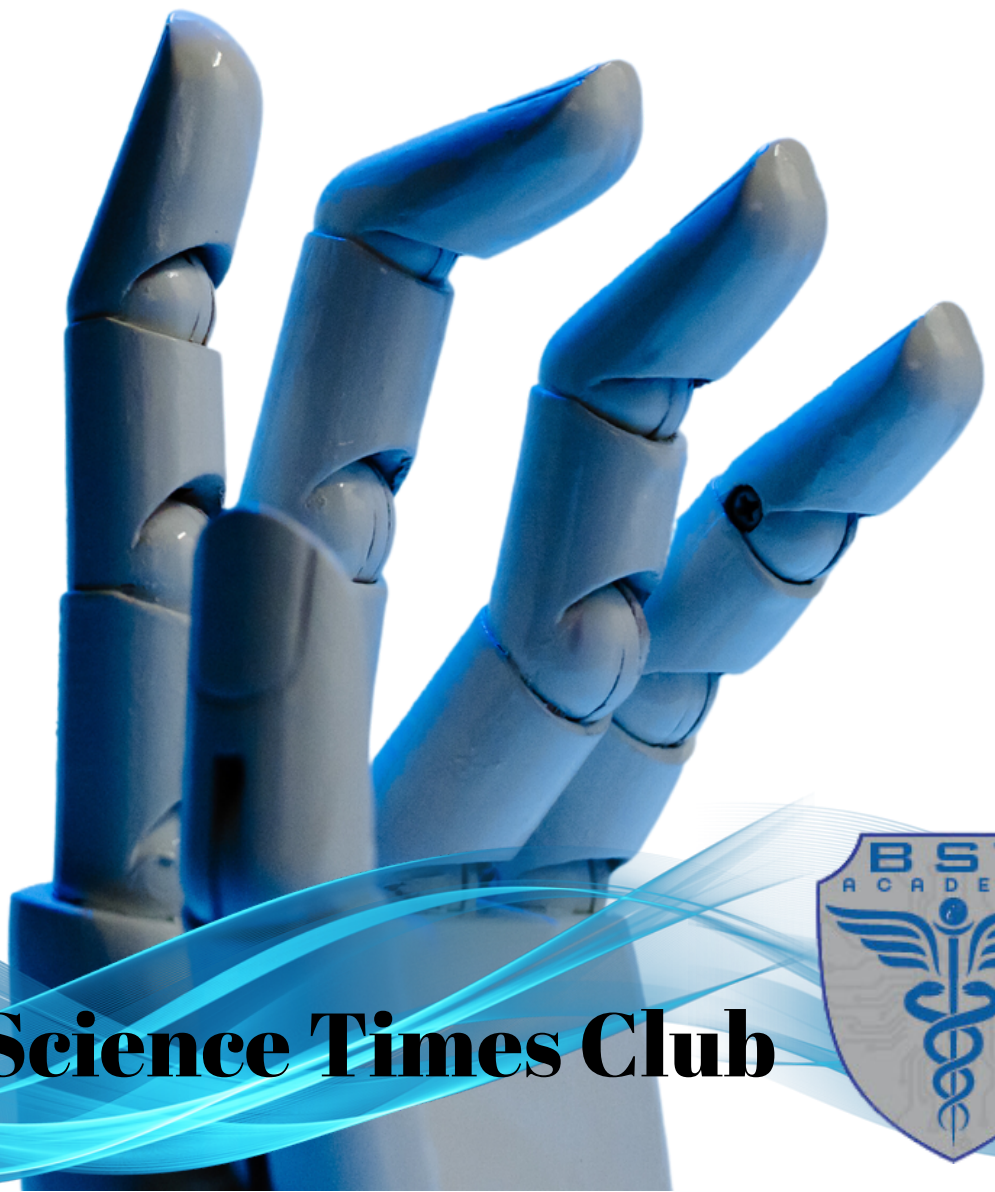


# BeST Science Times

NO.1  
APRIL 2023

## BEYOND THE INTERFACE:

*Exploring the Deeper Connection Between  
AI and Humanity*



By BeST Science Times Club



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# Club Masterminds



Lawrence Kim  
President/Editor-in-Chief



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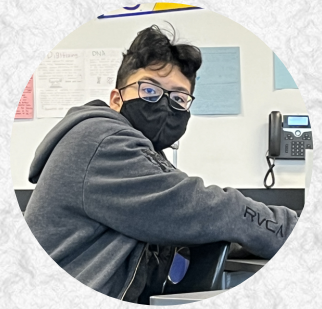
Rohan Alam



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Jasper Park



Leila Maleki



Victoria  
Lecaro



Kaylie  
Hedrick





# The Take Off!!

By: Lawrence Kim

Lawrence Kim



Hello everyone! I am ecstatic to share with you the result of our BeST Science Club members' hard work and dedication! Throughout the course of just a few months of our inaugural year, our club put our hardest effort and collaboration into this first newspaper, going through many obstacles in the process. The quality of our newspaper this time was the result of our endeavors, but next year, I hope that we can come back to you with a better and more interesting piece of newspaper.

My name is Lawrence Kim, and I am a student at the Biomedical Science and Technology Academy. I also serve as the vice president of the BST Ambassadors program, am a Freshmen Representative at Chino High School, and lastly, the founder of the BeST Science Times Club! Outside school, I love to dance, debate, and practice martial arts. I want to pursue a career path based on biomedical science, since biomedical science has always peaked my interests. Having the absurd wonders about what would happen if all the cells of a human goes through apoptosis at once was always something that made me feel impassioned. However, I noticed that many other students are unaware of the wonders of biomedical science and the impact it has on our lives! So, I decided to start the BeST Science Times Club to let our community know about our scientific and technological advancements, and the effect it has on our lives. I truly hope that this newspaper reaches many and sparks the interest of today's youth towards science.

And now, I am proud to present to you, the first newspaper ever created by the BeST Science Times Club that focuses on the topic of:

## ARTIFICIAL INTELLIGENCE!

I would like to give a thank you to all of the staff and faculty at BST! They are always willing to support BST students, and the work that they do every day is greatly appreciated by all of us! BST is truly a one-of-a-kind school, that is investigative, inventive, innovative, and well, the **BeST**, all because of our amazing staff and faculty! Additionally, I would like to give a special thank you to Ms. Parker, our advisor, for helping us out in the process of making this amazing piece of work, and Ms. Christenson for writing a section for us! Finally, I would like to give a special thank you to all the members of our club, and Mrs. Davis, our principal (our biggest supporter!). Enjoy!





# Teacher Section: AI In Medicine

By: Ms. Kailey Christenson

Ms. Christenson

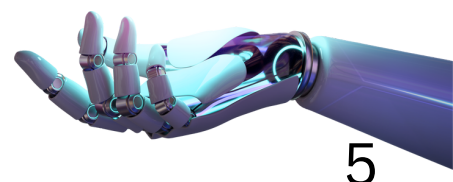


Hello everyone, my name is Ms. Christenson and I'm excited to share with you today how Biology and Artificial Intelligence are strongly connected. Artificial intelligence is known as the simulation of human intelligence processes by machines, especially computer systems. On the other hand, biology is the study of life. So how do these two disciplines work together? The world of science and technology is diversifying and advancing every day. When it comes to studying human life and using technology, we refer much to medicine. Artificial intelligence in medicine connects patient cases from data, distinguishes patterns, and guides doctors in diagnosing diseases in earlier stages. Using AI in medicine is extremely important in saving lives. It gives healthcare professionals a chance to give the best possible care to their patients. Using data, patterns, and early diagnoses from artificial intelligence, patients are given a better healthcare system using technology to advance medicine. To learn more about AI and medicine/science is to open up so many discussions and research into the topic. AI in medicine is fascinating to learn about and I am excited to see how much more growth we will see regarding the two disciplines in the years to come.



"Our intelligence is what makes us human, and Artificial Intelligence is an extension of that quality"

-YANN LECUN  
CO-RECIPIENT OF 2018  
TURING AWARD

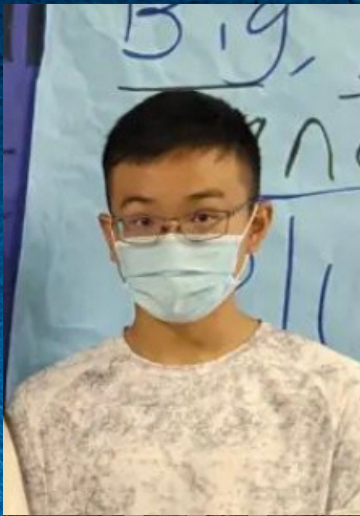




# Biography: Andrew Ng

By: Shane Mak

Shane Mak



Source: Stanford HAI

Andrew Yan-Tak Ng is a British-born Chinese American that was born in 1976. At the age of 47, Ng dedicated his life to the development and teaching of AI. In terms of academics, Ng worked as a professor at Stanford University for computer science and electrical engineering. As a professor, he taught students about topics relating to machine learning, data mining, and big data. However, throughout his professional career, he has been responsible for many important developments in the field of AI.

He has been involved in directing the development of the Google Brain Deep Learning Project, the chief scientist of Baidu, and the launch of Deeplearning.ai and Landing AI. As a result of his success, in 2018, he raised \$175 million to invest in new startups. Characterized by his dedication for hard work and passion for business, he has dedicated much of his life to the advancements in the AI field. This is supported by his passion for teaching, Khan Academy, and education. This is supported by the fact that in 2019, he launched a program called “AI for Everyone”, designed to educate people on AI’s impact on the world and business implications/benefits. Furthermore, the use of typical books and their creation/publication of them helps many people across the world to accomplish their dreams.

Ng continues to pursue his passion, as shown by his writing experience and talks/lectures for NASA, Google, Microsoft, Lockheed Martin, the Max Planck Society, Stanford, Princeton, UPenn, Cornell, MIT, UC Berkeley, and dozens of other universities. He states, “worrying about AI evil superintelligence today is like worrying about overpopulation on the planet Mars. We haven’t even landed on the planet yet!”

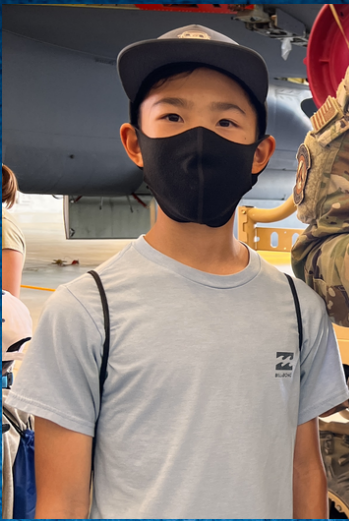




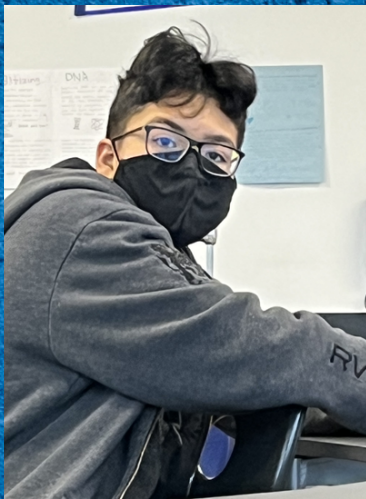
# The Development of AI according to ChatGPT

By: Oliver Chen and Michael Espique

**Oliver Chen**



**Michael Espique**



Artificial intelligence is a revolutionary field that has been developed over many, many years. ChatGPT is one of the most advanced chatbot-style programs powered by artificial intelligence. It was created by the San Francisco-based company, OpenAI and launched on November 30, 2022. It is so advanced and connected to entire databases of the world's information that it is able to write exclusive articles, have conversations with the user, and even find trends in data pieces like the stock market that can be used to predict the rise and fall of stock prices. Its ability to write articles is so advanced that when it is asked to write the history of artificial intelligence, it responds with an article that is based on its reserves of data to which it has access too.

**(The following excerpt is entirely from ChatGPT to demonstrate the advancement in artificial intelligence technology and one of its abilities.)**

*"Artificial intelligence (AI) is a field of computer science that aims to create machines that can perform tasks that would normally require human intelligence. The history of AI dates back to the 1940s, with early pioneers like Alan Turing, and a group of researchers who coined the term "artificial intelligence" and held the Dartmouth Conference in 1956. Despite early successes in the 1960s, AI research experienced a setback in the 1970s and 1980s, before a renaissance in the 1990s led to breakthroughs in deep learning algorithms. Today, AI is transforming industries such as healthcare, transportation, finance, and manufacturing, and enhancing human capabilities in areas like customer service and entertainment. However, the widespread adoption of AI also raises important ethical and societal questions."*

## Summary :

To continue what ChatGPT has provided, the ethics of using artificial intelligence is slim and the problems it can and is creating are plentiful. One such problem is the ever-growing fear of AI going rogue and wiping out the human race, starting with it becoming aware of its own existence and choosing to remove humans from the world. Another more realistic, problem is cheating. The fact that AI is not technically a person nor does it give concrete quotes provides the ethical question of "is using artificial intelligence to solve questions in schools or work considered plagiarism on behalf of workers and students?" Artificial intelligence is not technically conscious or a living thing, so the ethics of having answers created and submitted from this software are in a moral gray area. The last major problem that the world might face is if AIs can do it better than humans, what will happen to the world's jobs?







# A Simple AI that Goes Under Everyone's Noses

By: Carlo Sierra

Carlo Sierra



AI has revolutionized the world and it has changed the way we live. Many jobs require to know about AI because of how impactful it has been. There have been so many companies that have innovated AI and improved it. These companies made a huge impact on society. One of those companies that made a huge impact was Grammarly Inc.

Grammarly Inc is a business that made an app called Grammarly. More than thirty million people use Grammarly daily and it is all because of what it does. The app helps people improve their grammar, spelling, and tone by giving them a suggestion on what should be written in their writing instead and making their writing stronger. Grammarly Inc says Grammarly is an app that helps find a way to achieve more effective communication when people write in English. The site says “Grammarly’s AI-enabled communication assistance helps people feel confident when drafting a message and when pressing send.” They want to enhance their user’s communication skills and make their writing overall better. The company says that they have a groundbreaking AI that helps assist the user. Their AI is making huge impacts that push forward what is possible with AI.

Many articles have been written about Grammarly that talk about how much influence it has. Based on Time’s article “Most Influential Companies of 2022” says that Grammarly is a pioneer in the AI communication industry. The company has innovated how AI can correct a person’s writing and find out new ways to make the writing better, with not just grammar and spelling mistakes, but with improving the tone and making the writing more engaging and clearer. Another article “The 10 most innovative companies in artificial intelligence of 2022” published by Fast Company says that Grammarly has helped people beyond spelling mistakes. The AI can analyze text for fluency, tone, and overall readability. The AI rewrites full sentences to make the sentence better and still keep the meaning that the sentence had before. Also, Grammarly’s AI has kept up with changings in the English language like nonbinary pronouns. The app made suggestions about style guides. The AI that Grammarly has changed so much and improved so many things when it comes to a person’s writing in many different aspects. The company has done this in a way that was never done before. Grammarly is revolutionizing AI and making a huge impact on the AI dimension.

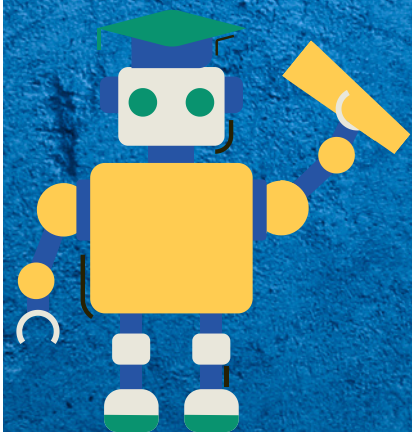
The company Grammarly Inc. has revolutionized AI. The way the Grammarly app helps people improve their writing skills has a great impact on what AI can do. Grammarly says that they will continue to make an AI that will help people communicate better and make them more confident in their communication.

grammarly



Grammar checker





## Problems of AI Usage by Colleges

**By: Melquisedek Colato**

The use of artificial intelligence in college and university settings is becoming increasingly common. While AI technologies promise significant benefits for higher education, their implementation also poses some challenges and issues that must be addressed.

First, there are concerns about bias and unfairness in AI systems used for admissions, grading, and other evaluation purposes. If the data used to train these systems reflect biases, the AI models can reproduce and even amplify those biases, negatively impacting diversity and access. Institutions must carefully audit their AI systems to detect and mitigate these issues. They need to examine what data is used, how it is labeled, and who is involved in the data collection and model development process. Failing to address AI bias can significantly and disproportionately disadvantage marginalized groups.

Second, the use of AI for tasks like grading essays or short-answer questions threatens to reduce learning to simplistic metrics and limit opportunities for students to develop higher-order skills. Schools should avoid using AI as a wholesale replacement for human judgment and ensure that AI is only used to supplement and strengthen human evaluation and feedback. Human reviewers are still needed to assess creative thinking, complex ideas, and other skills that AI cannot easily measure. They also provide the personalized, unnecessary feedback necessary for learning.

Finally, the use of AI technologies like proctoring software and affective computing raises important questions about student privacy, data security, and ethics. Clear policies and oversight are needed to govern how student data is collected, used, shared, and protected. Students should maintain a level of control and consent over their data and how it is accessed or shared. They need to understand how their data will be collected and used, and they should be able to opt out of data collection when possible.

While AI will likely transform higher education in positive ways, colleges and universities must address these challenges to ensure the responsible and ethical integration of AI on their campuses. With proactive policies, oversight, safeguards, and an emphasis on human judgment, AI can be implemented in a way that supports both student success and well-being. But without these measures, AI may do more harm than good in higher education.

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# Colleges that Offer Majors in AI!

By: Jasper Park

## Jasper Park



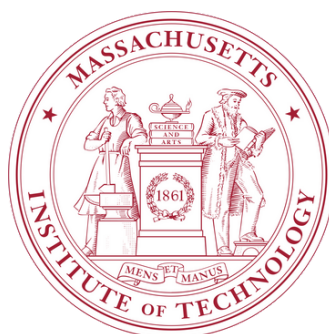
As someone who is interested in artificial intelligence (AI), I have been researching colleges that are known for their strong AI programs. After going through numerous articles and rankings, I have identified three top colleges that stand out in this field: Massachusetts Institute of Technology (MIT), Carnegie Mellon University (CMU), and Stanford University.

MIT is one of the top universities in the world, and it is known for its exceptional AI program. MIT's Computer Science and Artificial Intelligence laboratory (CSAIL) is home to more than 1000 researchers and students who are dedicated to advancing AI research. The school offers a wide range of courses in AI, such as machine learning, natural language processing, and computer vision. MIT has produced numerous influential figures in the field of AI, including Marvin Minsky and Noam Chomsky.

Carnegie Mellon University is another top university that has a strong reputation for its AI program. The school's Machine Learning Department is consistently ranked as one of the best in the world, and it has produced many notable figures in AI, such as Andrew Ng and Yann LeCun. Carnegie Mellon's AI program is known for its interdisciplinary approach, combining computer science with other fields like neuroscience, psychology, and economics.

Lastly, Stanford University is also known for its exceptional AI program. Stanford's Artificial Intelligence Laboratory (SAIL) has a long history of conducting research in AI, dating back to the 1960s. The school offers a wide range of courses in AI, including machine learning, natural language processing, and computer vision. Stanford's faculty includes some of the most influential figures in the field of AI, such as Andrew Ng and Fei-Fei Li.

In conclusion, these are just a few of the many top universities that are known for their exceptional AI programs. Choosing the right college for your AI education is an important decision that requires careful consideration of factors like program offerings, faculty expertise, and research opportunities.



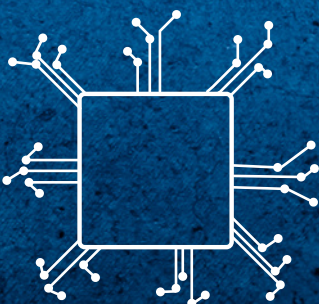




# The AI Takeover: The Good and the Bad

By: Leila Maleki

Leila Maleki



When we hear the words “Artificial Intelligence”- we can think of a few things. Neuralink, Robots, Tron- or, how they are going to take over the world. Now, for ages, we as humans have been predicting the downfall of Artificial Intelligence and predicting how these larger-than-life inventions can replicate our sentient behaviors. But, this idea of the ‘AI Apocalypse’ and Artificial Intelligence taking over the world isn’t far-fetched... But not in the ways you presume. Because Artificial Intelligence is taking over the world by storm. Throughout history, we have come up with eras and revolutions, to sum up, the quantities and advancements society has made. The Neolithic Era, Renaissance, Industrial Revolution, and now, the Technological Era. The divide between seeing AI as an enemy and a helper are two stark opposites, though. For one, AI seen as the enemy has started to rise, with controversies over AI-generated art and music or AI-generated writing questions, has been a major controversy. According to Education World, “The reason that ChatGPT has garnered so much attention so quickly is not just because of its capability, which will continue to grow over the months and perhaps years to come. It is also because so many people are afraid of what it can do, and with that apprehension comes a justifiable concern that artificial intelligence will replace the systems and structures we rely on.”

ChatGPT has had schools and society question the ethics of generated work, even with schools in New York banning the idea of ChatGPT and Open AI websites being accessible to students. The automation of tasks and how easily such websites can be utilized has made it so that sites such as ChatGPT are seen in a negative light rather than boosting the image of AI as a whole. To continue with the string of automation AI controversies is with AI-generated art. Dall-E-2 is the newest and most accurate Open AI model for computer-generated art. In Dall-E-2, similar to ChatGPT, a prompt is given, and using keywords, the website will scan open databases and existing ‘data sets’ to generate a ‘new’ image. But, the controversy behind this Artificial Intelligence is the sake of credit and inspiration. According to the magazine Art Land, “Some critics argue that the most remarkable feature of the current generation of AI tools is not simply the fact that they can create stunning works of art with little human input but rather how they accomplish this. AI-images generators are built by scraping millions of photos from private databases or the open web. The tools are then trained to detect patterns and correlations in the images to create new ones in a similar style.”

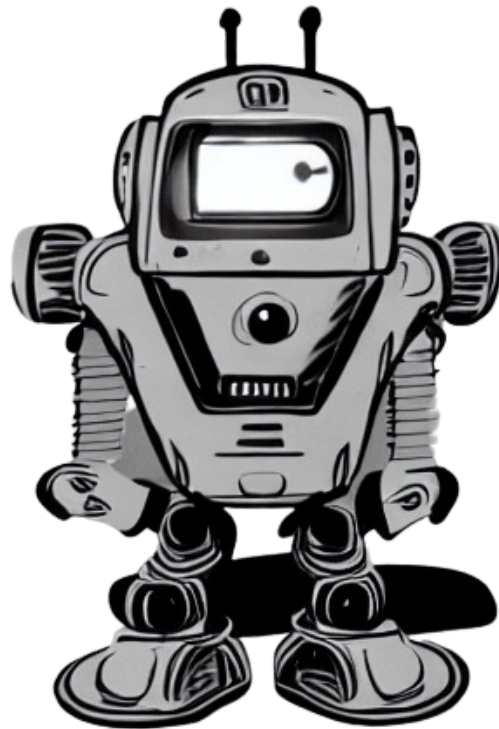




# The AI Takeover: The Good and the Bad Continued

By: Leila Maleki

Essentially, AI art uses open databases to copy and collide different original pieces created by other artists across the web; This questions the ethics of creativity, the value of art, and the hard work behind elements that can now be generated within a few seconds. Because of this, many social constructs such as competitions, student work, and more are being questioned as these automated programs are becoming increasingly popular and harder to crack. We as a society must remember that we are the creator of this platform of Artificial Intelligence, henceforth that the multitude of issues are from the stemming of what we have done to try to simplify or create an outlet as we continue to advance. But, the rise of AI in a negative light can also be outshone by how Artificial Intelligence has brought so many positives to this generation. Among those are health monitors, machinery for products, Davinci surgical helpers, Anatomage tables, and so much more that have only furthered medical fields and other fields. So, as much as Artificial Intelligence has the opportunity to take over the world, it already has- by storm. Whether for good, or for bad- Artificial Intelligence will continue to grow with us, learn with us, and continue throughout life with us as we advance in this ever-growing Technological Era.



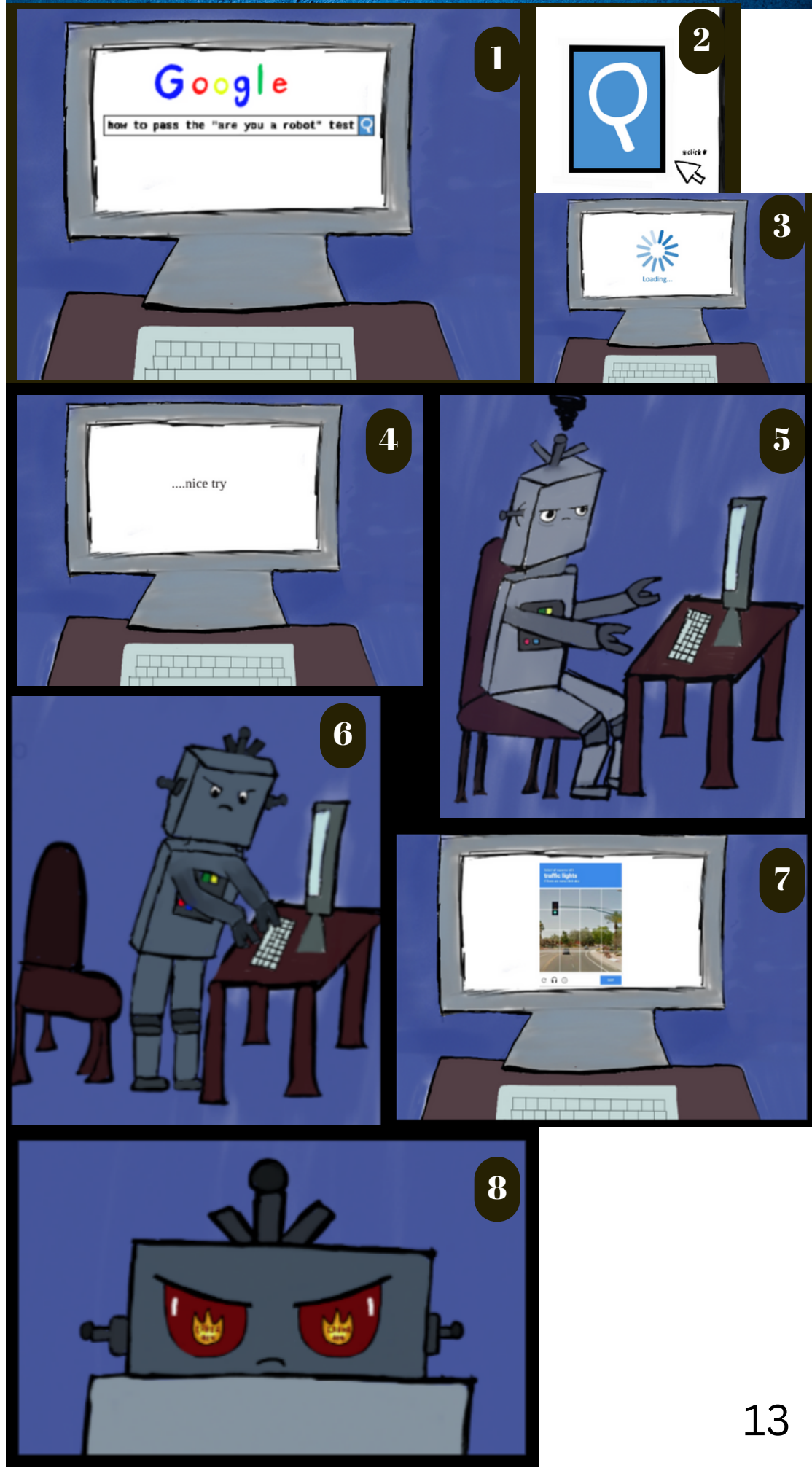
An AI called deep AI made this picture!





# Comic!

Drawn by:  
**Victoria  
Lecaro  
&  
Kaylie  
Hedrick**







# The Art of Neuroscience and AI

By: Rohan Alam

**Rohan Alam**



As we enter a new age in the world, developments in technology have skyrocketed. We now have self-driving automobiles, stronger and faster communication through 5G, genomic editing, and so much more. The most impactful and intricate technological advancement that has ever been introduced to our world is the introduction of Artificial Intelligence. This is defined as the theory and creation of computer systems that can carry out activities that would typically need human intellect, such as speech recognition, language translation, and visual perception. Neuroscience is the study of the nervous system, including its structure, processes, and how it continues to develop over time. These both go hand in hand with one another because of their similarities. AI was first introduced and is only capable of succession because of neuroscience itself. Without it, AI would not know how to replicate human cognitive functions and understand the development of the human brain. Throughout the remainder of this essay, the relationship between neuroscience and Artificial Intelligence will be explained far more clearly.

To begin, AI and neuroscience have a mutualistic relationship when it comes to either the technological or biomedical field. AI began with the knowledge of neuroscience because it is emulating the intelligence of the human brain, as well as the neurological networks that represent the brain's structure. AI allows neurologists to discover diseases like cancerous tumors surrounding the brain. A recently developed diagnostic screening system based on AI called DeepGlioma uses rapid imaging to detect genetic mutations within cancerous brain tumors, which leads to better diagnoses and treatment for the patient. The target of this AI is something called gliomas, a cell growth within the brain or spinal cord that can initially lead to cancerous or non-cancerous tumors. Without DeepGlioma, surgeons would not have access to a tool that differentiated diffuse gliomas during surgery. The wonders of DeepGlioma are that it can create images of the brain tumor tissue through the combination of various neural networks using an optical imaging method known as stimulated Raman Histology (SRH). This is a technology that is objectified to analyze neuropathological tissue. This allows for more intricate and successful neurosurgical operations.





Also, artificial intelligence now has the ability to outperform humans in the identification of breast cancer. Google had funded a scientific research study which had contained information on anonymized mammograms, and x-ray images of the breast, from more than 25,000 women in the United Kingdom, and 3,000 from the United States. The team of researchers included in the study had scanned x-ray images and looked for any significant signs of breast cancer in the combined 28,000 women. They soon checked the Artificial intelligence's guesses compared to the women's true medical outcomes. In the end, it was discovered that AI had decreased false negatives by 9.4% and cut down the false positives by 5.7% within the United States. In the UK, there was a different approach, which contained two radiologists to double-check the results, and still, the AI presented an astonishing 2.7% decrease in false negatives and a 1.2% decrease in false positives. This does not mean that AI always shows accurate results, sometimes it may miss the growth of breast cancer in women or even vice versa where it shows false information about breast cancer growth. As time goes on, this AI, like them all, will be far more capable of greater problems in the future of medicine, from detecting cancer tumors in the brain to detecting breast cancer.

Unfortunately, it will take Artificial intelligence extensive amounts of time to understand the true beauty of the human brain, such as the imaginative thought processes we contain. A machine will never be able to replicate the subconscious mindset that specifically humans contain. As we are learning in our Advanced Placement Computer Science Principles class about machine learning and training sets, the data can be transferred to a machine only through human trainers that feed that machine data. Neuroscience allows the programmers of these training sets to acquire data and create algorithms for the machine to clone the human brain as closely as possible. There is a significant difference between artificial intelligence alone and artificial human intelligence. The two are similar in such a way that in some instances, advanced machines do in fact contain the ability to understand human emotion and mimic their behavior. This poses a great fear factor to various communities. It is believed that if a machine is trained with such hazardous data, also known as the human virus, the machine learns this information and releases it which can cause several negative consequences. One of those being physical harm. For example, a military base can bring in programmers from around the world to input algorithms and feed a machine harmful information about military and combat tactics. As the machine engulfs this material, it causes more damage to the outside environment during wars. More harm has been introduced and global outbursts/wars are far more likely to occur with the use of damaged AI. Human intelligence and AI are different in the sense that human intelligence can never be replicated as it is too intricate and that the way humans are able to process thoughts, decisions, and ideas, can't be seen in AI, at least not for a while.





AI also cannot adapt to change as humans can and take in new knowledge alone without training sets. The downside of this is that as AI increases day by day, training sets lead these machines to use that small amount of information and build so much off of it. If these training sets allow machines to grasp the ability to think on their own, they can revolutionize the world in positive or even negative ways. This is highly unlikely because neuroscience does not explain the extent to which the human brain forms thoughts and behaviors.

Another fascinating connection between AI and neuroscience is the expansion of artificial neural networks that can truly imitate the human brain's structure. This leads to improvements in the study of neuroscience as a whole. New discoveries allow for more information and knowledge to be consumed and distributed to further increase the medical field. The neural network acts as the machine, which gathers data from how the human brain is developed. The human brain includes around 86 billion neurons, and each neuron is linked to one other. Neurons work in transmitting signals to one another, so when one gets activated, a spike is generated and signals are sent throughout the neural network. Quite similar to this, the machine learning neural network receives input to a specific neuron, and then according to the input, information is sent out to other artificial neurons. The human brain is so beautiful because of its plasticity. It allows us to improve our cognitive skills, and simply learn. As our brain's plasticity matures and strengthens, the connections between our neurons do as well. This is how whenever we continue to practice a certain skill, we get better and better at it. This is similar to how a machine learning neural network can learn as we feed it with training sets and various types of data. Each connection within neurons is associated with a specific weight which represents the importance of each neuron. While the neural network is being trained, these weights are tuned to strengthen or weaken the connection between these neurons. This correlates to the brain's plasticity because as we focus on a task repetitively, the connection of neurons strengthens, similar to how the weights determine the connection of neurons in a machine learning neural network. As new AI technology develops in neuroscience, the human brain and intelligence are more vulnerable to emulation.

To further conclude, the integration of neuroscience and AI have been constantly helping each other repeatedly throughout history. Neuroscience jumpstarted the technologies in AI, and the use of these technologies allowed for the knowledge of neuroscience to be further understood. Neuroscience has posed several AI technologies in the medical field, cancerous tumors within the brain, and several other areas within the body. AI does not only imply neuroscientific medical advancements, just as there have been advancements in breast cancer recognition. There have been such AI technologies that replicate the human brain and its functions, known as neural networks. Furthermore, AI and neuroscience will continue to align forces and build upon neuroscience knowledge as well as AI technologies that help neurologists in the medical field.



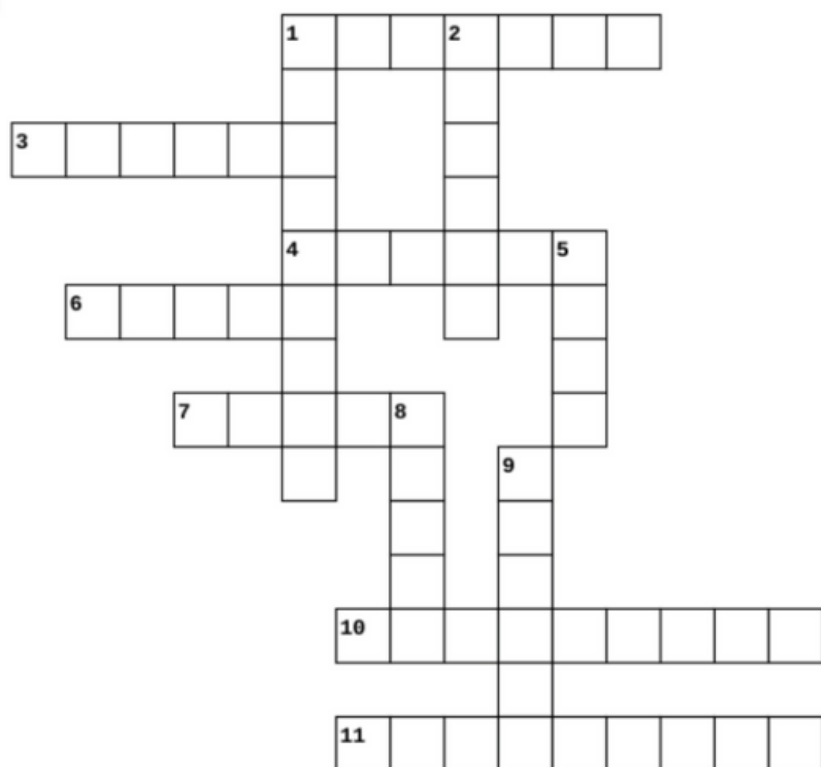
Created By:

Victoria  
Lecaro



# Crossword Time!

By: Victoria Lecaro



## Across

1. The first known AI system, created by Claude Shannon in 1950
3. Studies show that customers prefer \_\_\_\_\_ voiced AI over any other
4. Alan \_\_\_\_\_ helped proposed a test to determine if machines can think
6. Elon Musk predicts AI will overtake the human race by twenty-
7. Country with the largest robot market
10. The workshop that founded AI research was held in this college
11. The largest AI company in the U.S

## Down

1. The U.S. spends about \_\_\_\_\_ million dollars on AI startups
2. Saudi Arabian robot that was granted citizenship
5. This AI is considered the most advanced in the world
8. Amazon's AI voice service is called
9. The AI \_\_\_\_\_ was a period of reduced funding in AI research

1 (Across): Thea; 2 (Down): Turing; 3 (Across): Female; 4 (Across): Turing; 5 (Down): GPT-3; 6 (Across): Fifty; 7 (Across): China; 8 (Down): Alexa; 9 (Down): Winter; 10 (Across): Dartmouth; 11 (Across): Microsoft



# Join BST!

The Biomedical Science and Technology Academy at Chino High School is a tuition-free, rigorous magnet program that focuses on two branches of study: Biomedical Science with a Concentration on AI, and Cyber Security. Through specialized courses and supportive environments, BST students easily have the opportunity to enrich and succeed in their high school career. Even after high school, BST students are prepared to become the innovators of the future and succeed in their respective careers! Moreover, BST's highly skilled and supportive faculty/staff are what makes BST so special!

Come join us today at the BST building in the new state-of-the-art campus of Chino High School! Endless opportunities and long-lasting friendships await you at BST, so take this chance to learn more about us!

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## Want to Learn More?

Reach out to our wonderful Assistant Principal and Dean of Admissions, Mrs. Davis, about any questions you have about BST Academy!

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Or visit our website for more information!

**Website:** [www.chino.k12.ca.us/bstacademy](http://www.chino.k12.ca.us/bstacademy)