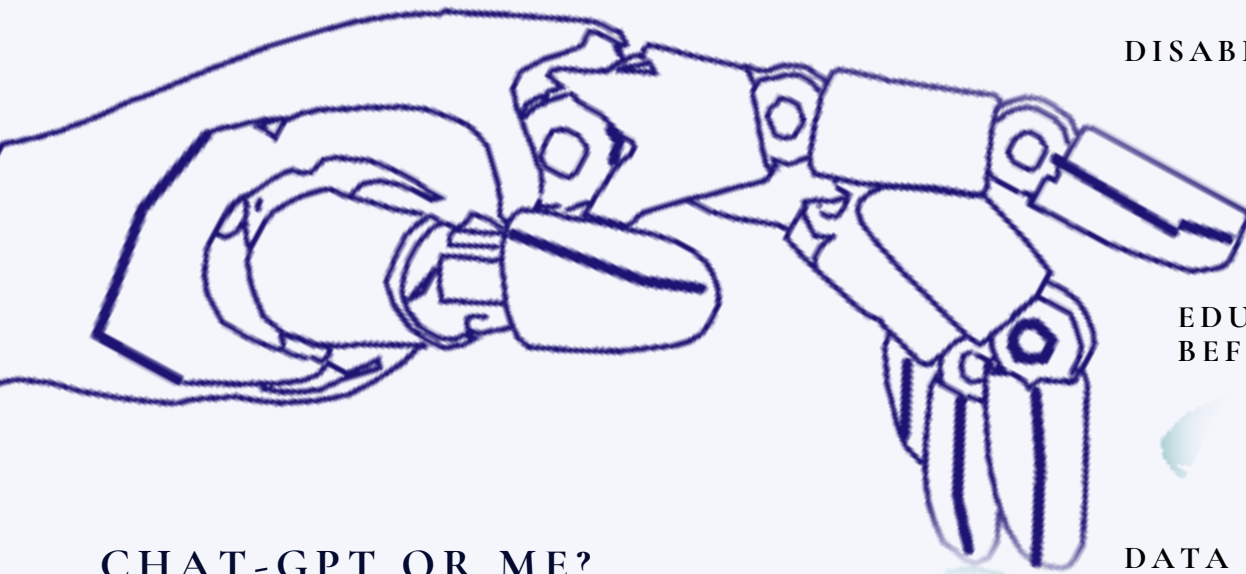


May 2024

LEGACY GAZETTE

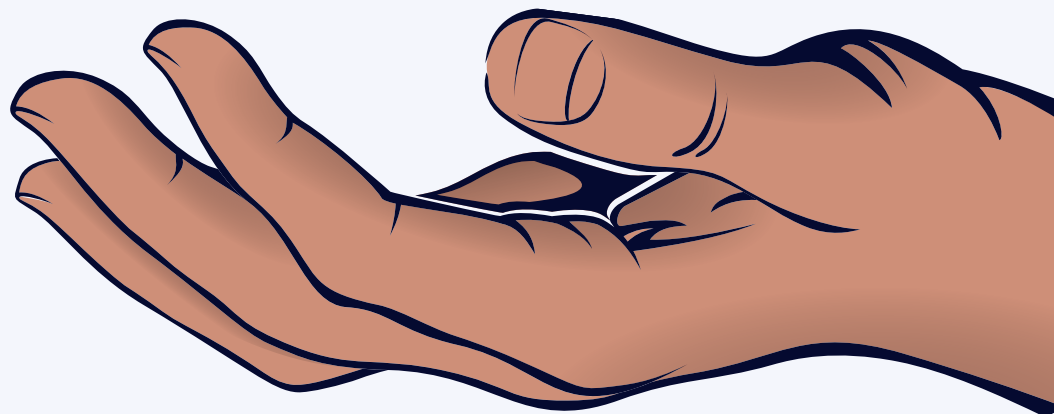


DISABILITIES AND AI

EDUCATIONAL TECH
BEFORE AI

CHAT-GPT OR ME?
GRAPPLING WITH AI
IN EDUCATION

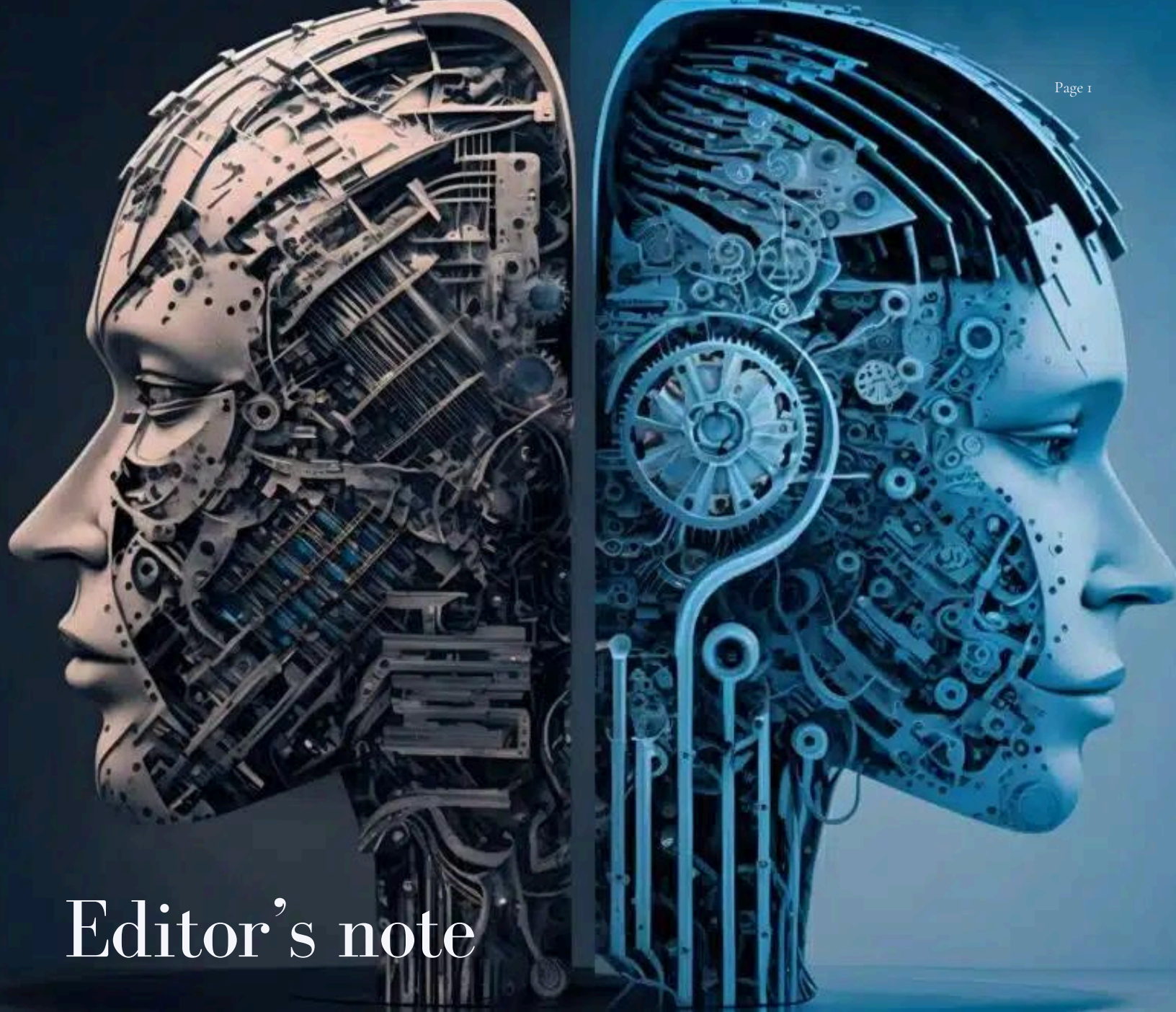
DATA PRIVACY IN
EUROPE



CHAT-GPT OR ME?

The Battle to Set Limits on AI in Education





Editor's note

We are very proud to bring you this inaugural issue of the Legacy Gazette. In this issue, we chose to shine a spotlight on artificial intelligence, exploring the various ways that the expansion of AI's everyday use has impacted us. Specifically, we chose to deep dive into the impact of and interaction between AI and education. This is an increasingly pertinent subject in today's world and views diverge wildly on this matter. Our editorial team attempts to present all of these opposing viewpoints, with no subjective overlay, so that you, our dear reader, can choose for yourself where you stand.

This issue also covers AI-adjacent matters, like data privacy in an increasingly interconnected world, and use of AI in healthcare.

We hope that you will enjoy reading this issue as much as we enjoyed writing it. Don't forget to browse through the Classifieds section, which includes information about tons of opportunities that could be of interest to you!

from Maya



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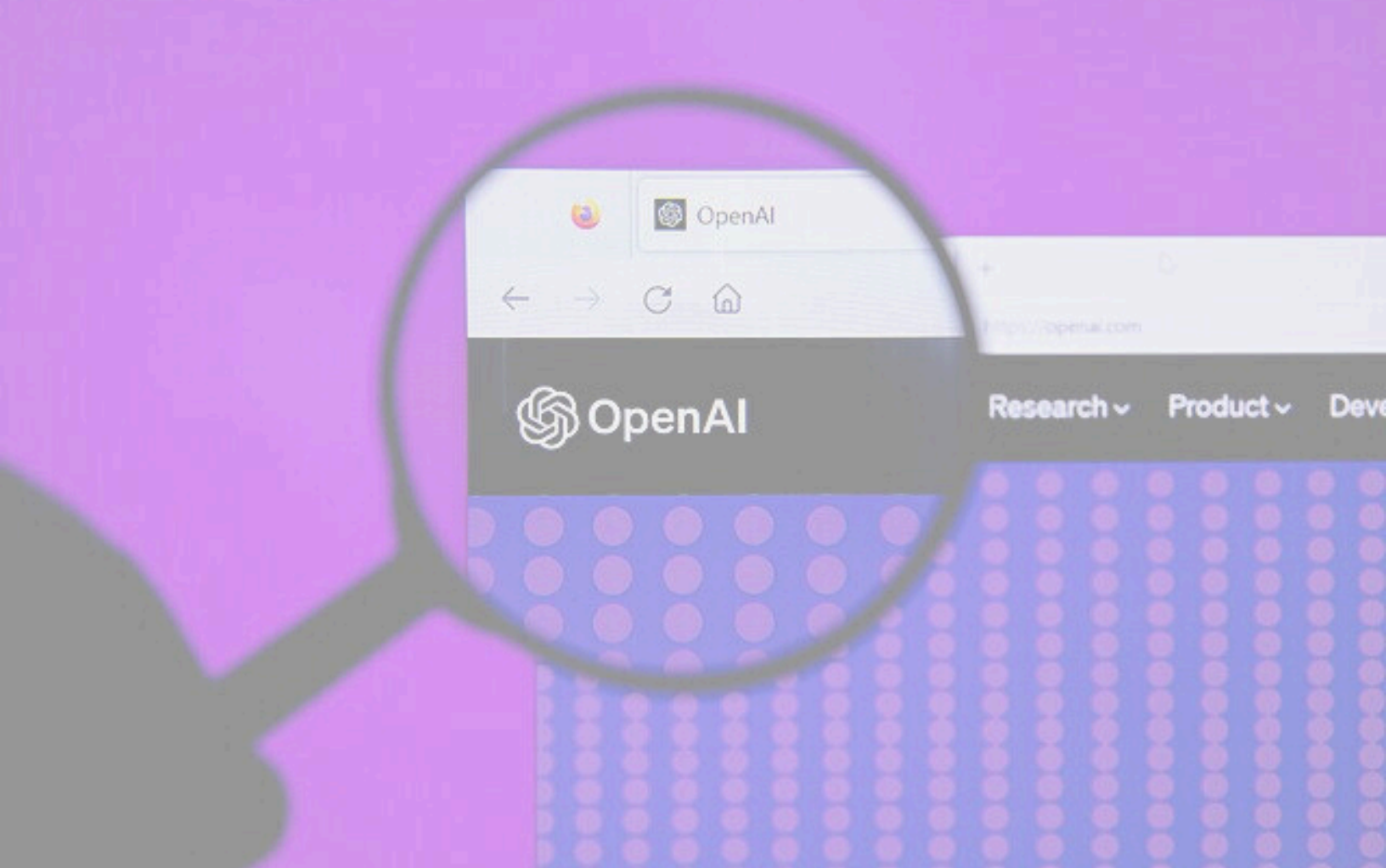
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ChatGPT or Me?

Grappling With AI in Education

By Lily Zheng and Eleanor Huang

With the rise of ChatGPT, more and more students are starting to use AI tools to complement their learning experiences, and—in some cases—complete their assignments. Among college students that use AI tools to complete assignments and exams, 50% of them use it for only portions of their work, 30% use AI for the majority of their assignments, and 17% turn in AI-generated works without any edits. The latter behavior has caused backlash and hostile opinions towards AI in education. In fact, studies have shown that 41% of university students consider using AI tools to help complete assignments or exams “morally wrong.” Importantly, the use of AI is not limited to Large Language Models like ChatGPT. When used wisely, AI can drastically enhance students’ learning experiences.

Lay of the Land - How is AI Impacting the Educational Landscape?

Continued

1. Personalized Learning

Everyone's learning habits are different, and it is hard for traditional classrooms to accommodate all the needs. This is where AI comes into play. AI-powered tools are able to recognize individual learning needs by collecting data from the user, whether by directly asking users questions or performing big data analysis on users' habits when using the platform. With the information gathered, AI can give users recommendations on what to learn and how to learn. Additionally, AI is also capable of monitoring students' learning performance and engagement, and assist schools in providing interventions when necessary.

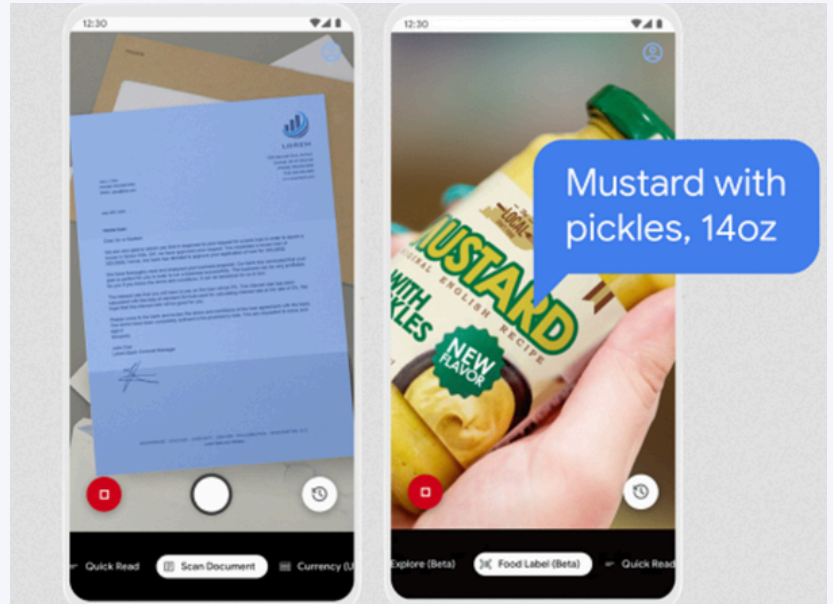
Studies have shown that key benefits of using AI to customize learning include improved learning outcomes, scalability and global accessibility and data-driven decision making. When used in the workforce, AI also helps with personalized career development, enhancing accessibility and inclusivity, and building a culture of continuous learning in a corporation.

2. Empowering students with special-needs

The adaptability of AI caters to people with various needs, including those with disabilities. AI has been used to create content for people with visual or hearing impairments, dyslexia, and ADHD. For example, Lookout by Google was created to help people with visual impairments. Lookout uses computer vision (a branch of AI) to provide information about one's surroundings. The cameras and sensors are able to recognize objects and texts on the device. Users can take pictures or videos of content they wish to read but otherwise could not. The contents can range from texts, objects in the environment, food labels, documents, currency, to images. Lookout will read out loud any text involved and give a description of the objects.

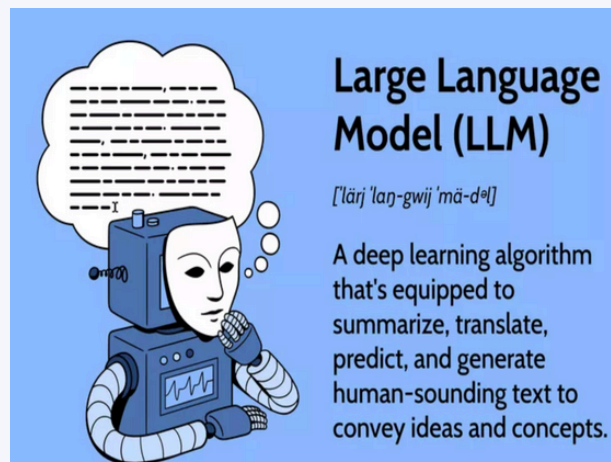
3. Cost-effective learning platform

By using Large Language Models to generate content and assessments, online learning platforms can operate in a more cost-effective and efficient way. LLMs reduce the need for human power and make content creation happen a lot faster. There are a lot of emerging products in this area, including some ingenious works by high-school students.



Demonstration of Lookout by Google's functionality. Source: Voicebot.ai

Built by Krishiv Thakuria, a high schooler in Mississauga, AceFlow is an education platform that uses AI-powered evidence-based learning tools for K-12 students. It uses AI to turn study materials (PDFs, URLs, and YouTube videos) into unlimited practice questions to help students study smarter, and a custom AI tutor to fill knowledge gaps fast. Students start by entering the subject area or topic they wish to learn, and then uploading the materials they wish to generate questions for.



What is a Large Language Model? Image credit: Investopedia

It can be a PDF of a class slideshow, an educational Youtube video, or any other content that can live in a link. After uploading the material, AceFlow generates a quiz within 15 seconds (depending on the size of the package).

While doing the practice, there is also an AI chatbot available to answer students' questions that has learned everything from the materials uploaded. Based on beta testing, it is able to reduce students' study time by half with the same, if not better, outcome.

Let's hear from those with skin in the game

Continued

Part 1: Examples in support of ChatGPT/AI usage

In a digital age where technical evolution marches inexorably forward, the International Baccalaureate (IB) organization has taken a progressive stance on Artificial Intelligence integration. Delineating the waves of outright bans seen in other educational institutions, the IB's rather one-of-a-kind approach to AI instruments like ChatGPT signals a forward-thinking philosophy. This conviction stems from a belief that when technology is used with ethical stewardship, it can substantially enhance educational efficacy and equip students for a future where AI is ever-present.

The IB's decision regarding AI applications can also be interpreted as a pragmatic rationale in acknowledging technology's role in shaping our lives. From grammar checkers to image generators, AI tools have long been integral to the learning processes of many. The IB organization's approach is not to resist, but to adapt and transform educational programs to bring the use of these new tools under control with the principles of academic integrity.

Feedback from IB educators reveals a tentatively optimistic view of AI's integration into the classroom. Many note a net positive effect on student performance in which AI is shown to encourage critical thinking, and even in a more personalized learning experience. Through this approach, the IB is setting a new standard for educational institutions in an ever-evolving digital world.

Part 2: Saying YES to ChatGPT?

A lot of education institutions are taking a very hostile approach towards ChatGPT. It is understandable because academic integrity can suffer with the overuse of AI tools. Yet, there are also university professors suggesting that integrating AI into classrooms wisely is able to boost students' learning experience

by helping them embrace the future world of technology and teaching them how to work with AI. For example, for papers submitted to the College Board for AP Seminar, students are allowed to use Generative AI in the "exploration of potential topics of inquiry, initial searches for sources of information, confirming their understanding of complex texts, or checking their writing for grammar and tone."

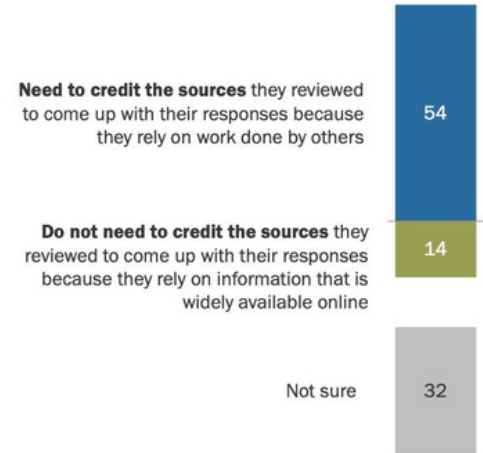
While AP Seminar still requires students to perform primary and secondary source analysis, information synthesis and communication choice-making, it has provided freedom to those who choose to use GenAI in academic writing. Some scholars even go further by suggesting that consulting ChatGPT for source analysis and using the contents it generates for cross-examination with human-generated response is a good way of learning.

How does ChatGPT Affect Ability and Academic Integrity?

While previous sections discussed numerous benefits to using ChatGPT and Generative AI in education, there are certainly drawbacks and risks. Firstly, information generated by AI can be inaccurate or misleading—ChatGPT makes stuff up! This can obscure students' comprehension of the subject matter and therefore undermine their learning process. GenAI also has the problem of not giving credit to the sources and authors that it takes its information from. This lack of attribution makes it especially hard to navigate academic integrity when using AI to complete assessments. Over-reliance on AI also has profound implications as students step into the workforce. For example, students that are so used to writing their codes with AI tools such as GitHub Copilot are likely to face severe consequences as they start to code for technology firms. The most essential step for code maintenance and modification is understanding its structure, which AI code writers fail to teach students. In addition to the hard skills, overusing AI also jeopardizes students' critical thinking skills.

Should generative AI programs credit the source material they reviewed?

% of U.S. adults who say **generative AI programs** that produce text and images ...



Note: Respondents who did not give an answer are not shown.
Source: Survey of U.S. adults conducted Feb. 7-11, 2024.

PEW RESEARCH CENTER

Should GenAI credit source material?
<https://www.pewresearch.org/short-read/2024/03/26/many-americans-think-generative-ai-programs-should-credit-the-sources-they-rely-on/>

With most of their assessments completed by GenAI, students can lose their ability to critically evaluate information, synthesize long texts, reflect on their work, and think from diverse and comprehensive perspectives. It is important to remind students that AI is trained on real-world data, which can be biased and perpetuate stereotypes. Students need to learn to detect the racial, gender, class, and many other biases in AI-generated content.

On the other hand, as educators are becoming more aware and sensitive about using AI for completing assignments, the problem of over-detection arises. Some high-schoolers are falsely accused of using AI in their work. Should students change their writing style if it resembles AI's? Should students be concerned if so? Is it students' responsibility to purposely avoid writing in an "AI style," even if that is their genuine work? What should educators and AI-detector tools do to minimize misdiagnosing AI-generated work? These are all questions worth exploring in the AI age.

Continued

Countering AI with AI - Diving into detection methods

In the middle ground where AI-generated content blurs the lines between human and machine-produced works, a new and vital player has emerged—GPTZero. In the pervasive shadow of generative AI, GPTZero stands against the tides of AI-authored texts. Its mission is to discern and differentiate the subtle, often invisible threads of AI across a wide spectrum of literary works, including essays, articles, and even an entire book. This then aims to preserve the essence and integrity of human intellect in the new digital era.

The co-founder of GPTZero, a young University of Toronto graduate, and his staff exemplify the impact of youth innovators in artificial intelligence. GPTZero showcases the potential of young minds to confront the dilemmas of AI ethics and advocates for the authenticity of digital creation.

Ethical Implications and Representation

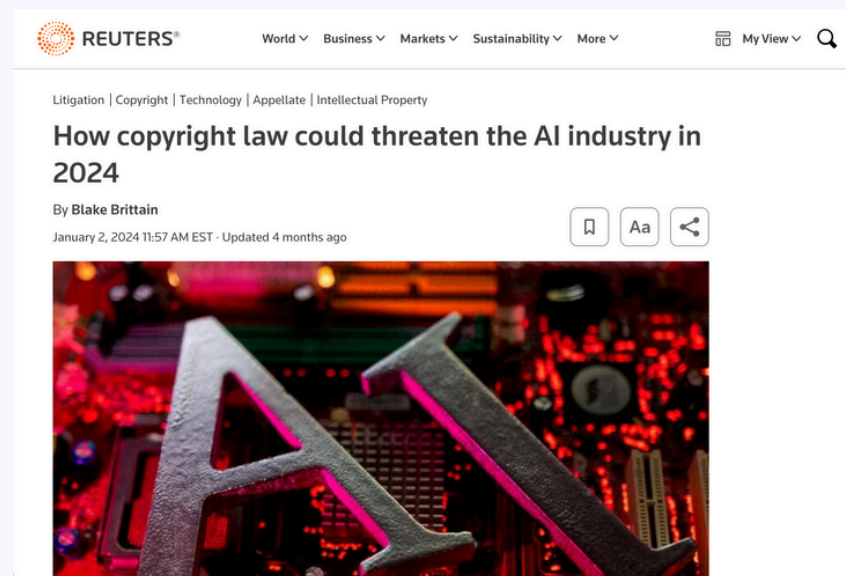
GitHub Copilot, developed in collaboration with OpenAI, is an AI-driven companion that has transformed how the new generation of programmers write code. By auto-completing code snippets based on existing ones, Copilot accelerates the coding process exponentially, but not without raising eyebrows over copyright issues. The tool's reliance on vast open-source codes for training brings the risk of inadvertently reproducing licensed code and potentially breaching copyright laws. Despite GitHub's efforts to flag possible plagiarized content, it still leaves considerable legal uncertainty in AI-generated code



Photo source: <https://www.spintadigital.com/blog/the-great-princeton-trick-on-open-ai>

Additionally, as they are trained on datasets reflective of real-world biases, these models can unwittingly contain stereotypes, as exemplified by DALL-E's predisposition to depict CEOs as predominantly white, middle-aged males. This bias has the potential for far-reaching consequences especially with the growing usage of AI by younger adults. The question of how these biases affect children's perceptions of the world is both urgent and complex. In fact, it raises critical questions about the responsibility of AI developers to mitigate these biases.

Addressing these biases and copyright issues is not merely a technical challenge but a societal obligation. Possible solutions from training datasets to implementing copyright filters are vital to ensure AI tools like Copilot and LLMs not only advance technological progress, but also uphold the principles of equity and justice.



Reuters
article
headline
regarding
copyright laws
threatening
the AI
Industry

The Excuse for Ableism

By Alina Huang

A pristine vase falls and shatters. Immediately, it becomes worthless; its broken pieces are swept from the rug, never to be seen again. What about a broken person? What if someone takes a fall, mentally or physically, and parts of them shatter? They become disabled, and society can't get rid of them as easily as they can sweep up shards of ceramic. Instead, society tells them to get "fixed." This is an assumption that has been wrongly applied for decades, and it needs to be challenged. Not only is the idea of being "fixed" based on subjective experiences and illogical stereotypes, but it's also not a holistic measure of character or physical ability. By reversing disabilities, we reverse diversity. First, the assumption that disabled people are broken and wish to be able, a symptom of ableism, is based on a purely subjective standpoint.

By asserting disabled individuals should be "fixed," we assume that the ideal version of a human is upright, walking, and dextrous. However, distance from this ideal differs from one person to the next—where a doctor might deem a healthy disabled person a success, Western media stereotypes would encourage us to look down upon them. This same media has perpetuated a culture where there is one sole form of perfection, and it can only be achieved by being white, male, or able. In the labor industry, this means hiring managers automatically decline those with disabilities, translating "disability" to mean "higher costs."



Ishona Charles, Grenada's first registered Paralympian Source: InsideTheGames



Todd Hodgetts Pictured with his gold medal for Shotput at the 2012 Summer Olympics in London

Source:Wikimedia Commons

2016 Rio Paralympics Women's Judo Podium finishers (70 kgs). Pictured left to right Alana Maldonado, Lenia Ruvalcaba, Naomi Soaza, and Gulruh Rahimova

Source:Wikimedia Commons



This anti-disability mindset closes doors in industry, as happened when North Carolina's Walmart fired a disabled employee who needed accommodations; it's seen in the employment-population rate, a whopping 75% for able people and a measly 37.1% for the disabled (Tamaray, 2022; Bureau of Labor Statistics, 2024). In sports, an impairment translates to a much lower likelihood of finding a coach, making a school team, or getting extra academic help (NCHPAD, n.d). Yet, despite the blatant ableism that is indirectly encouraged worldwide, impaired people like Sangita Desai are still able to run businesses worth \$1.82 million; people like Trishcha Zorn can still break eight World Records in the Paralympic games, the Olympics for the less able (Pirouz, 2021; Tracxn, 2024; Jiminez, n.d.). In short, there's nothing that necessarily needs to be "repaired" with regard to a disabled person; rather, it is society's faulty perceptions that need to be rectified because there is no one type of perfection, nor is perfection always desired. If a homogeneous Western society—one that is white, male, and able—is the definition of "fixed," then most of the world must be broken.

Second, social assumptions about disability do not hold logical weight. From an elderly person in a wheelchair to an autistic child, the modern world associates "disability" with "disadvantage." While this may be true for certain aspects of a disability that involve going places or getting dressed, especially in a capitalist, work-obsessed culture, the able masses fail to recognize that a disadvantage in some areas can mean an advantage in others. Whether it's a physical or mental deviation from the "norm," not all changes are defects. Take a physical disability—in pursuing physical excellence, we forget that there's perfection in things we cannot directly see, like a person's character. Whether it be exercising or doing a math problem, an impaired person faces challenges in tasks that able people breeze through. However, that is precisely how disabled individuals are able to gain a higher level of resilience and adapt to their new ability (Scheffers et al., 2020). Society merely focuses on the difficulty of the tasks, not the personal growth that stems from eventually achieving them. And what about empathy? Adversity facilitates understanding and has led millions of impaired people to become advocates for others. Active empathy appears in commercial industries, like when business founder Simon George paved the road to accessible tourism for those like himself (Purohit, 2018; Special Holidays, 2018). It's seen in sports, where millions of coaches and athletes have poured their energy into the Paralympics to ensure sports are inclusive. It's seen everywhere, yet the average person eventually fixates on the impediment that can come with a disability.

Third, the fact that a disability can be difficult does not mean the person who has it must be “fixed.” Adversity is a staple of regular life; every day, billions of able-bodied individuals fight biological diseases, lifelong family debt, or emotionally-crippling commitments, yet society does not assume they need to be repaired in the same way. Adversity propels us to strive for more rather than settle in a fixed comfort zone—and this especially applies to the impaired, who learn to adapt and surpass their challenge. A prime example are athletes in the Paralympics, who have to hone to their disabilities to a point an able person might not.

Another example of our erroneous perspective on disability comes from my personal experience. Last summer, I worked alongside a disabled girl who actively fought ableism, gender discrimination, and a rare disease called LHON+. Despite her pronounced gait and slurred speech, she was still able to open a regional company for disability showers called Autonomia. There were more roadblocks in her path than in the average person’s, like pitching to investors with a restricted voice. Instead of letting her disability define her, though, she used her adversity to make her company possible. Clearly, difficulties push progress. If all perceived impediments, including disabilities, were fixed, where would the world be?

In the end, the assumption that disabilities need fixing serves only as a pitiful excuse to justify ableism. A disability does not translate to a “broken” person, but rather a diverse one whose lack of ability does not warrant stigma. This tendency to embrace the “normal” also lies at the heart of many other inclusivity issues. Whether it be female equity, racial bias, or Indigenous discrimination, this desire to “fix” others has become an essential misstep in Western thought—a disability holding back the abled. In the West, we forget and abandon difficult things and call them broken as an insult, a notable contrast to the Japanese art of kintsugi, which highlights in gold the unique cracks in reconstituted objects. To abandon the unconventional is to abandon beauty itself.

We are all affected by exclusivity in one form or another, and it is time to take a step forward for those who cannot and a step toward a world of true inclusivity.

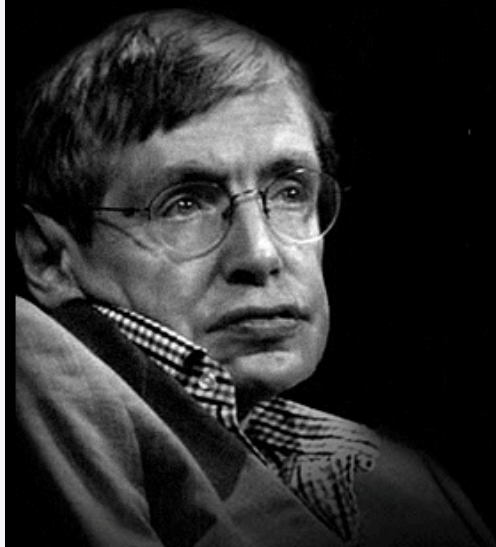


"Disability need not be an obstacle to success (...) We have a moral duty to remove the barriers to participation, and to invest sufficient funding and expertise to unlock the vast potential of people with disabilities.

Governments throughout the world can no longer overlook the hundreds of millions of people with disabilities who are denied access to health, rehabilitation, support, education and employment, and never get the chance to shine.

It is my hope that (...) this century will mark a turning point for inclusion of people with disabilities in the lives of their societies."

Professor Stephen Hawking



Empowering Special Education Through Artificial Intelligence

By Yuko Xiao

According to the United Nations International Children's Emergency Fund (UNICEF) in November 2021, there were about 240 million children globally suffering from a multitude of disabilities that stem from the complex interplay of genetic, environmental, and socio-economic factors. The typical understanding of disability among those without disabilities often focuses on physical or cognitive impairments that are visible or easily identifiable. But the realm of disabilities reaches far beyond such impairments—it dramatically affects a child's potential access to education, healthcare, and positive social interaction.

In the face of these obstacles, artificial intelligence (AI) emerges as a potentially useful tool for improving the quality of life in children with disabilities. As technology develops, AI can modify educational programs to better meet the specific requirements of disability populations. This creative application of AI is transforming education by delivering tailored solutions that significantly improve learning outcomes and provide unparalleled support.

Compared with children without disabilities, children with disabilities are:

- 24 per cent less likely to receive early stimulation and responsive care;
- 42 per cent less likely to have foundational reading and numeracy skills;
- 25 per cent more likely to be wasted and 34 per cent more likely to be stunted;
- 53 per cent more likely to have symptoms of acute respiratory infection;
- 49 per cent more likely to have never attended school;
- 47 per cent more likely to be out of primary school, 33 per cent more likely to be out of lower-secondary school and 27 per cent more likely to be out of upper secondary school;
- 51 per cent more likely to feel unhappy;
- 41 per cent more likely to feel discriminated against;
- 32 per cent more likely to experience severe corporal punishment.

Statistics in comparison to quality of life between abled disabled children

Source: UNICEF official website

These learning aides are not the distant future but the present reality. The following AI tools and software are already helping educators and policymakers make significant strides in supporting students with disabilities.

1. Visual Recognition Tools for Vision Impairment: AI leverages computer vision and natural language processing to transform visual information into accessible formats for students with vision impairments. It can scan textbooks, images, graphs, or videos and provide captions or summarization in audio/text format, making educational content more accessible.
2. Speech Recognition for Hearing Impairment: For students with hearing impairments, AI employs speech recognition and synthesis technologies to convert audio information into text or sign language. This includes transcribing lectures, podcasts, or videos into notes and summaries, enabling students to access information through reading or sign language.
3. Robotics and Brain-Computer Interfaces for Mobility Impairment: AI utilizes robotics and brain-computer interfaces to facilitate physical interaction and participation for students with mobility impairments. By controlling robots or prosthetic devices, AI assists in tasks like writing, drawing, or playing instruments, enhancing the educational experience.
4. Data Mining and Machine Learning for Cognitive Impairment: To support students with cognitive impairments, AI applies data mining and machine learning techniques to offer personalized and adaptive learning experiences. By analyzing a student's learning profile, behaviour, and performance, AI tailors feedback and guidance to match their learning style, pace, and objectives.

However, despite AI's ubiquitous usage for disability populations, it does present some challenges. One of the most critical obstacles to overcome is the digital divide, a term that references the gap in technology access based on socioeconomic factors. This division is worrying because it can create significant disparities in terms of benefits accrued from AI-supported education. Assistive technologies may be beyond reach for disadvantaged students who could most benefit from such educational tools. Another challenge presents itself in integrating AI technology effectively into the classroom environment: Teachers and students need to have adequate training. This requires a major shift away from traditional teacher preparation programs toward a new emphasis on technology integration. Without appropriate training or professional development opportunities, AI tools will remain unused or misused, despite their potential. Lastly, a significant concern for any use of AI is data safety. To function well, AI systems need to obtain and access sensitive personal information, which can include personal identification and health information. released, it can lead to a multitude of adverse consequences; those whose data is compromised become victims of identity theft, financial fraud, and even cyberbullying. With thoughtful regulation and careful consideration, AI has the potential to revolutionize special needs education. By offering novel possibilities for children with disabilities to receive a quality education, AI aids society in forming inclusive and productive learning environments. With education being a cornerstone of a free society, it is remarkable that we now possess technology that holds promise for shaping a bright future for special education. Although AI is currently in a developmental phase and faces some overarching challenges, with careful attention and prudent action, these obstacles can be overcome. By doing so, we not only enhance special needs learning experiences but also prepare an inclusive educational landscape for future generations. If, by any chance, that private information is accidentally or maliciously

Educational Technology: What Came Before ChatGPT

By Grace Li

ChatGPT and similar language models are different from earlier iterations of artificial intelligence in the way that they are able to simulate human writing because of its ability to learn from a huge amount of information without supervision. Before the advent of ChatGPT, numerous other technologies and AI tools were introduced to the education system. Why were these earlier forms of educational technology not only permitted, but also encouraged in the classroom, and how could we encourage a similar open-mindedness to ChatGPT? The following technological advancements and tools have influenced learning experiences within and beyond the classroom environment and impacted the modern education industry.

From the videotapes of the 1950s to the calculators of the 1970s, items we now consider ordinary were once innovative. Schools around the world adopted computers at different times once the first computer was introduced around the 1980s. Since then, the ubiquity of computers and computerized technology has led education into a new era. There are still concerns regarding students' use of computers to this day, such as their potential for causing distraction, but technological acumen has proved to be an unbeatable tool in all stages and areas of study. Since the start of the COVID-19 pandemic, many aspects of education have moved online. Though online education was initially a forced adaptation rather than a natural evolution, technology and schooling are ideal companions. Practices like handing-in homework digitally and self-exploration through online courses gained broader acceptance, which many schools retained even once in-person teaching resumed. The accelerating positive progress in educational technology halted when the controversial ChatGPT arrived on the scene in 2022.

Therefore having these examples that were at one point uncertain but became helpful tools allows us to reframe our perspective of ChatGPT in a similar way. Although it's true that ChatGPT can exacerbate academic dishonesty and reduce engagement of students in the actual process of learning, if used with integrity, ChatGPT would be a net positive for the field of public education by making learning more accessible and improving learning efficiency. With the further development of newer versions and set usage guidelines, ChatGPT can turn into a great educational assistance tool to improve, rather than limit, our learning experiences. As advanced technologies continue to reshape our world, the changes students will face in the future will remain a mystery.

Just as computers occupy the primary and leading position in educational technology today, though ChatGPT might seem questionable at this moment to many, AI tools are the inevitable future. Effectively using technologies such as ChatGPT could enable students to learn and create in a new way that the world will soon expect. By encouraging this effective use, we are taking on the perspective that this history of educational technology gives us. Ultimately, AI should be used to assist education, not hobble it.

Europe: Leading the World in Protecting Data Privacy

By Ryan Zhu

While technological advancement brings significant improvements to quality-of-life, we have often unintentionally left our privacy in the hands of people who are not supposed to possess it. Some people might respond to this by saying "my information is too unimportant for anyone to care about", while others may be more concerned but unsure about modes of protection that prevent these circumstances. While governments and businesses around the world continue to collect more and more biometric data on individuals, Europe is leading efforts to protect individuals' privacy.

Biometric facial data collection has significantly improved in recent years with newer camera and facial mapping technology. Applications include facial recognition to unlock personal computing devices or as a faster alternative to traditional passwords for logins. Other uses of facial imagery are primarily utilized by governments to verify government-issued identification, such as at boarding gates in some airports, to identify every unique passenger and avoid stowaways. However, neither form of collection—by companies or governments—makes individuals' information secure because the organizations collecting the biometric data are often the same ones that use it for surveillance.

The lack of regulations on such surveillance practices poses significant safety concerns. Companies fall prey to hackers, and hackers can also turn individuals' data over to governments that then use it for surveillance. Some companies also sell customers' biometric data, and bury warnings about doing so in the fine print, as recently noted by Jeramie D. Scott, director of the Project on Surveillance Oversight at the Electronic Privacy Information Center. Scott mentions that a scenario like this "could echo the 'Black Mirror' episode 'Joan Is Awful,' in which a fictional streaming service uses its terms-and-conditions agreement to hijack the main character's life for a TV series."

On one end of the spectrum, China has adopted an all-out approach in terms of data collection. During the pandemic, the Chinese government imposed tracking mandates on telecommunication companies that required them to report every user's location at all times when connected to cellular networks, in order to tell whether someone had been to an area with low, medium, or high exposure to the virus. This is one of the most extreme and widespread examples of privacy violation, with the potential to severely impact individual freedom. In addition, facial recognition from surveillance cameras is very advanced in China, but its capabilities are only possible given the amount of data that is captured by surveillance of every individual, and there are concerns about whether data collected by governments is stored safely.

Europe, in contrast, is leading the world in terms of privacy protection for its citizens and their biometric data. New facial recognition technology is helping border control personnel to identify immigrants, and it can pinpoint when fake identification documents are being used. Europe has a heightened need for such systems, as most of the continent has opted out of a border system between the countries bound by the Schengen Agreement. Therefore, a traditional port of entry into a single country has now become an entry point for access to an entire continent.

Article 41.2 of Regulation 45/2001, which preceded the current General Data Protection Regulation (GDPR), established an independent supervisory authority responsible for safeguarding individuals' data within the EU starting in the year 2000. This authority oversaw the data protection and privacy matters for all members. With the introduction of GDPR in 2016, this supervisory role was succeeded by the European Data Protection Board. This history demonstrates Europe's commitment to data protection, as these regulations began nearly a quarter-century ago, when data privacy issues were much less prevalent than they are today.

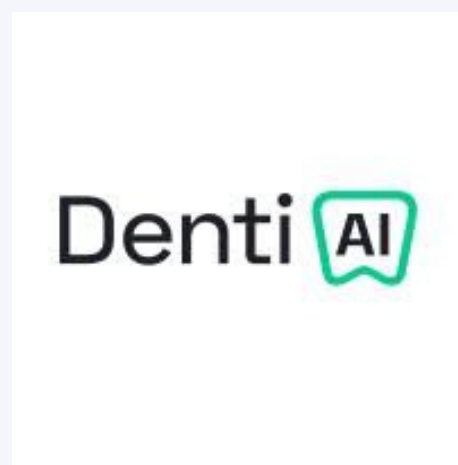
The EU has also established e-privacy rules to safeguard confidentiality in electronic communications, particularly concerning the storage of cookies to track individuals. Prior consent is generally required to track users through cookies, and the European Data Protection Board (EDPB) states that if the stored information on users' devices is personal data, the e-Privacy Directive takes precedence over certain GDPR articles regarding storing or accessing this data. In 2017, the European Parliament proposed banning cookie-walls, implementing do-not-track presets in browsers and smartphones, and requiring consent for offline tracking. Through these efforts, the EU strengthens its commitment to protecting individual's privacy through its world-leading legislation.

The European Union is the pioneering force in the protection of digital privacy. Through the robust GDPR system, they have set a high standard for safeguarding citizens and their personal information, especially with regard to the recent development of biometric authentication. Although it is true that surveillance data provides users with conveniences that older generations could only dream of, there should be no compromises with protecting user's private data. Europe's leadership in this realm should inspire the world to move toward a more secure future for everyone, as the world grows more digitally interconnected every day. Global cooperation is needed to help make this a reality, and Europe has given us all the blueprint.

The Role of Artificial Intelligence in Dentistry By Renee Jia

Artificial intelligence, commonly known as AI, is reshaping commercial industries, including the healthcare industry, where it is transforming diagnosis, treatment, and patient care. Dentistry, specifically, has the potential to benefit significantly from the integration of AI. This essay explores current applications of AI in the field of dentistry, discusses potential future applications of AI, examines diverse opinions about AI advances in dentistry, and evaluates the pros and cons of utilizing AI in the healthcare industry.

AI is already revolutionizing dentistry. Two primary types of AI-assistive technologies are already making waves in dentists' offices: (1) platforms for patients, providers, and payers that focus on using AI to interpret and analyze imaging, and (2) AI software that automates patient engagement, scheduling, and other time-consuming "back office" tasks for dental practices (Harvard Medical School, 2023). Among all the AI applications in dentistry, the most popular one was created to improve the process of delivering a diagnosis. AI can produce more accurate and efficient diagnoses than a human expert, thus proving itself a useful tool for reducing dentists' workload and efficiently improving patient health. AI-powered algorithms can analyze dental radiographs, including X-rays and cone-beam computed tomography (CBCT) scans, to detect dental abnormalities, caries (a common chronic infectious disease), and periodontal diseases with remarkable accuracy. For instance, AI-based software such as Denti.AI can detect and classify different types of dental conditions, aiding dentists in making timely and accurate diagnoses. A clinical study revealed a notable enhancement in disease detection by all of the two-dozen participating dentists, unlocking 26% extra treatment opportunities with Denti.AI Detect (Denti.AI, 2023). Some tools even enable patients to see AI-powered, life-like simulations of how their teeth, mouth, and face will look after dental work or braces.

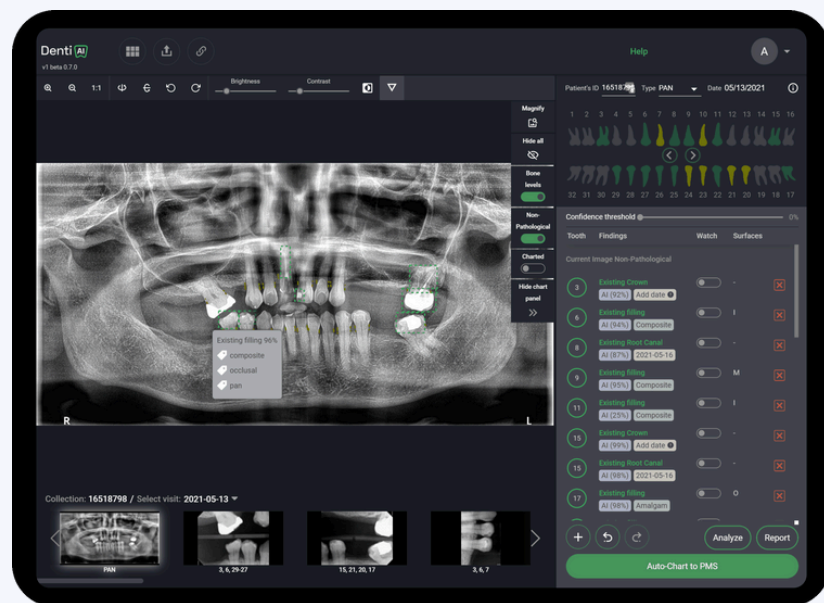


Denti.AI Official Logo

Source: Denti.AI official website

Denti.AI Program Operation Example

Source: Denti.AI official website



AI-powered virtual assistants and chatbots can also enhance patient management and engagement in dental clinics. For instance, some companies offer AI-driven virtual assistants that streamline administrative tasks and improve patient communication in dental practices. Virtual assistants can schedule appointments, answer patient queries, provide post-treatment instructions, and even offer personalized oral health advice based on individual patient data.

The future of AI in dentistry holds immense promise, with ongoing research focusing on autonomous dental procedures performed by AI-driven robots. These robots could revolutionize dental surgery by offering unparalleled precision, efficiency, and safety. For example, researchers at the University of Maryland School of Dentistry have developed a robotic dental surgery system that can perform tooth extractions with minimal human intervention, showcasing the potential of AI in enhancing surgical outcomes (University of Maryland, 2023). Furthermore, AI integrated with emerging technologies like virtual reality (VR) and augmented reality (AR) could transform dental education and training by providing realistic simulations for skill development.

Opinions regarding AI integration in dentistry are mixed. Some view AI as a valuable tool to enhance diagnostic accuracy, treatment outcomes, and patient experience. Others, however, express concerns about potential biases in algorithms, data security, and patient privacy issues associated with AI adoption. When discussing the integration of AI technology into the world of healthcare, challenges such as ethical considerations, data privacy concerns, and disparities in access to AI technology must be addressed. Moreover, the risk of over-reliance on AI and potential biases in algorithms are valid concerns as well. Therefore, in order for AI to be successful in the healthcare field, quality data and interdisciplinary collaboration between computer scientists and clinicians is critical. Ensuring data privacy, reducing (and, hopefully, erasing) biases in algorithms, and addressing disparities in access to AI technology are critical issues to solve before AI becomes widespread in healthcare.

AI holds immense potential to transform dentistry and the healthcare field by enhancing diagnostic precision, treatment planning, and patient care. However, realizing its potential requires addressing ethical, privacy, and accessibility concerns. By leveraging AI responsibly, dentistry can embrace innovation while upholding a high standard of patient-centered care. As AI continues to evolve, its integration into dentistry promises to revolutionize oral healthcare, improving patient outcomes and significantly advancing the field of dentistry as we know it.

Food For Thought

By Alicia Li

When I was little, the first Chinese poem my mom introduced to me was called The Pitiful Peasant. It explained how grains and food are the blood, sweat, and tears of hardworking farmers, encouraging people to finish their plates as a show of respect to the effort put into producing every single grain of rice. Humming the rhymes under my breath, before long I had memorized the poem. To this day, I can still see that textbook page in my head, characters arranged neatly, all crowned with pinyin.

I was inspired to delve deeper into food waste from something that occurs at home, actually: my family sometimes buys items that end up expiring before they're consumed, so we have to throw out food that was perfectly usable. Upon doing a bit of research, I realized that food waste has much larger implications than most people would think.

Besides discounting the efforts of those in food production industries, wasting food wastes tons of natural resources and is a significant contributor to environmental issues such as global warming.

With my project, Food for Thought, my goal is to help reduce food waste through an educational program and an accessible food tracking system. After all, education lies at the heart of change, and I hope that spreading awareness regarding the dangers of food waste encourages my students to actively make waste-conscious decisions at home and in school. This process is greatly aided by my AI model, SmartFridge, a website serving as a food log so you'll never forget what you have.

I designed SmartFridge with many artificial intelligence elements to streamline the user interface. Instead of having to manually input every single food item, its name, and an expiration date, users can simply upload a picture of their fridge or a scan of their grocery receipt. The AI is able to identify all your items and compile them into a list for you. Based on information from a collection of databases, SmartFridge assigns each item a food ID, a name, puts it into a food category, calculates a shelf life, and finally, sets an expiration date based on the time of input. When food is about to expire within three to five days, they will appear at the top of the list in red. SmartFridge isn't just a log.

Another key aspect is the "Find Recipes" feature, where users can select any number of items from their list to obtain recipes. These recipes are designed to optimally include the selected items, which becomes especially helpful for those that are about to expire. Right now, I have SmartFridge in two languages, English and Chinese. When using the English version, a user tends to get more recommendations for western dishes, and in Chinese, one might get more recommendations for Asian recipes.

I'll continue to improve SmartFridge's accessibility by adding in new languages. To ensure the maximum accuracy, I'd like to incorporate manual inputting and expand the type of pictures that the AI can process, e.g. individual photos of each item. I'm also hoping that with more data, and therefore more training, SmartFridge can just get better and better. SmartFridge is my first major AI project.

I've been learning about AI, including its mechanisms and code, for about half a year now, but starting the project was overwhelming at first. I had to coordinate between the front and back ends of the website and make sure information was transported correctly between the two. On the front end, I learned new code for specific buttons, formatting, and navigation. In the back, I struggled to incorporate my methods of identification. After a couple months of editing the code, I was very happy with my first draft of SmartFridge. It can now be accessed online via my website. I'll continue to expand and revise as bugs come up and I have new ideas to make the model more successful.

Even though I've been quite interested in exploring AI the past couple years, I used to be afraid of the subject, afraid that it'd be too advanced. On the news you mainly hear about AI breakthroughs from huge companies like OpenAI or from notable universities that have come out with groundbreaking research. I always thought AI would be something I could try in or after college, when I had some more math and machine learning courses under my belt. There have been many bumps in the road in my AI journey. I still encounter so many knowledge points I'm unfamiliar with even in introductory material. Despite this, it's been incredibly rewarding to learn about something I've always wanted to try, and now I have SmartFridge. As Guy Kawasaki, chief evangelist of Canva, once said, "the hardest thing about getting started, is getting started."

锄禾日当午，汗滴禾下土。
谁知盘中餐，粒粒皆辛苦。

李绅

[Poem entitled "The Pitiful Peasant", by
Tang Dynasty poet Li Shen]

Empowering Hackathon Success: Introducing Hackpost.guide

By Alex Wang

In the fast-paced world of hackathons, where innovation and technology converge, newcomers and enthusiasts alike often find themselves at a crossroads — excitement mixed with uncertainty. Recognizing this challenge, Alex Wang, a rising senior with extensive experience in organizing competitions, has launched Hackpost.guide, an open source web app designed to transform hackathon preparation and participation.

Alex has been instrumental in organizing numerous significant events, including Linghacks IV and his own school's hackathon, HSN Hacks. His role as a judge at McHacks and as an organizer of the USACO Guide Informatics Tournament underscores his deep involvement in the hackathon and competitive programming communities. Moreover, Alex serves as a director of the Competitive Programming Initiative, the nonprofit behind the USACO Guide, which has partly inspired the creation of Hackpost.guide. His commitment for making competitive environments accessible and enriching for all participants drives the vision behind Hackpost.guide.

"Our mission is simple," the young founder explains. "We want to democratize the process of preparing for hackathons. It's about giving everyone a fair shot at excelling, whether it's their first hackathon or their tenth. We also want to ensure that low-income minorities have equal opportunities — by leveling the playing field in terms of accessibility, we hope that anyone interested in creating and joining the hacking community can do so successfully." This mission stems from Alex's own experiences organizing and participating in hackathons, where he saw firsthand the disparity in preparation and resources available to participants.

Hackpost.guide is not just another online platform; it's a community-driven hub that offers free, open-source resources tailored for hackathon participants. From detailed guides on setting up the right tech stack to tips on presenting projects effectively, the platform ensures that everyone, regardless of their experience level, has the tools to succeed.

Hackpost.guide allows users to create accounts, post articles, and share experiences, creating a rich repository of collective knowledge. It's a place where veterans can share their hard-earned insights and beginners can learn the ropes before diving into the competitive yet exhilarating world of hackathons.



As the platform is still in early access and rapidly expanding, Hackpost.guide is actively recruiting for new positions in outreach, curriculum development, and web development. This is a unique opportunity to contribute to a growing project that's shaping the future of hackathon participation. Interested individuals can apply through this [link](https://www.hackpost.guide).

As hackathons continue to grow in popularity, platforms like Hackpost.guide play a crucial role in leveling the playing field. They not only enhance participants' technical skills but also foster a sense of community and collaboration.

The web app is now live and accessible to all, though it's still in early access. Whether you're looking to sharpen your coding skills, understand project management, or simply connect with like-minded tech enthusiasts, Hackpost.guide is the go-to resource. To learn more, visit www.hackpost.guide today to start your journey toward hackathon mastery.

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Cherry Tree Young Writers' Conference



Deadline
June 15



Cherry Tree Young Writers' Conference
Our motto is "Write Your Truth." Creative writing workshops at the Cherry Tree Young Writers'...
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The world's largest
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arts



International Essay Contest for Young People



Deadline
June 15



Young Edison Challenge

Deadline TBD



Young Edison Challenge

Young Edison Challenge Are You a Student Inventor?
Each year, students in grades 9-12 are invited to showcase their creativity by creating a new,...

Edison Awards

New York Times/Learning Network Podcast Contest

Deadline May 15



Our 7th Annual Student Podcast Contest

By The Learning Network March 28, 2024

We invite students to create an original podcast of five minutes or less that informs or entertains. Contest dates: April 17 to May 15.

The New York Times



THE ADROIT PRIZES FOR POETRY & PROSE

Deadline May 1



A Voice for Animals Essay Contest

<https://www.hennet.org/contest.php>



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AI For Good Youth Challenge

Deadline
June 1



Earth Chronicles Contest

Deadline
June 15



<https://earthchronicles.org/2022-earth-chronicles-contest/>

JASNA Essay Contest



Essay Contest » JASNA

Bio, Portraits, & Places; Austen's Works; Screen Adaptations; Austen Chat Podcast; Related Links

jasna.org



Deadline
June 1

Nature Contest Get to Know

Deadline
June 1

Get to Know Contest - Natures Wild Neighbours Society
The Get to Know Contest is a project of the Natures Wild Neighbours Society which encourages youth to...

"In 2000, the Get to Know project was established to provide an innovative way for students to connect with nature, develop an understanding, appreciation, and respect for biodiversity, and share their experience through artistic interpretation in an online Gallery. The Get to Know Contest/Exposition specifically targets School Districts and Youth organizations across Canada and the United States, as well as individuals who want to become involved with this artistic environmental program. The results are a creative collaboration of youth artwork unique to each of their personal environments and experiences, as well as a platform to express their concerns for the environment, and possible ideas and solutions to make our earth healthier."

Canadian Only!! Frasier Institute Essay Contest

Deadline June 5

Student Essay Contest

The Fraser Institute's 2024 Student Essay Contest is NOW OPEN! Join the conversation and showcase your ideas on public policy by entering our Student Essay Contest for the chance to win the grand cash prize!

fraserinstitute.org / jan 17



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Teen Health & Medicine Society

- teen-run & teen-oriented
- founded by IGP student Eleanor Day
- aims to promote health education
- Looking for students
 - to start local chapters & fundraise
 - to contribute to the blog

email

elliceday@gmail.com

follow

@teenhmsociety



U.S.–China Relations Student Research Survey

contribute to help
your IGP fellows

Doohickey Young Writers' Collective

- founded by IGP student Luke Zhang
- student-driven seminar
- aims to foster community and support among young writers
- Looking for members
 - who wish to develop their writing skills
 - who wish to analyze writing
 - who wish to get feedback & publication assistance

email

lukezhang061209@gmail.com

to learn more

Packet of Life

- founded by IGP student Ria Shivam
- aims to spread awareness about water access & distribute relevant supplies
- Looking for Ambassadors
 - to distribute packets
 - to contact gov't officials
 - to amplify educational resources
 - to spread awareness



click to join

<---

Experienced in UI/UX design?

Enable Together, a project by IGP student Danny Huang, helps job seekers with disabilities & the team needs a techie!

Interested?

email dannyhuang15@crescentschool.org

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ART FOR FOOD'S FUTURE an art competition for sustainable food development

Submissions due 7.30.24

Winner receives prize money!

Artwork must be related to one of the following categories,
though it may take many forms:



click the graphic to submit

contact **kellyh9988@gmail.com**
for more information


**Hackpost
Guide**

🔍 www.hackpost.guide

Hackpost.guide

- free, open-source web app that equips hackathon participants with essential resources & community insights to excel in their projects
- discover guides, tips & share your experiences to master every aspect of hackathon success
- FREE - always was, always will be.

Hackpost.guide is looking to expand its team, apply [here!](#)

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THE GREEN SOCIETY'S SECOND ANNUAL ENVIRONMENTAL & CLIMATE FICTION WRITING CONTEST

SUBMISSION DEADLINE:
JULY 1ST, 2024 @ 11:59 PM EST

WINNERS ANNOUNCED:
AUGUST 1ST, 2024

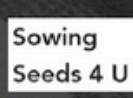
PRIZES

Junior (Gr. 6-8):

Winner - \$300 USD
Runner-Up - \$150 USD
Honorable Mention - \$75 USD

Senior (Gr. 9-12):

Winner - \$600 USD
Runner-Up - \$300 USD
Honorable Mention - \$150 USD



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