

COGNITIVE TIMES

VOL. 7 NO. 3 // 2023

VISUAL AI



PLUS

VISUAL AI SAVES BILLIONS IN HSE
WHAT IS GENERATIVE AI?
TO BE MORE PRODUCTIVE,
THINK ALGORITHMICALLY

*ARTIFICIAL
INTELLIGENCE*

SIX



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FEATURES

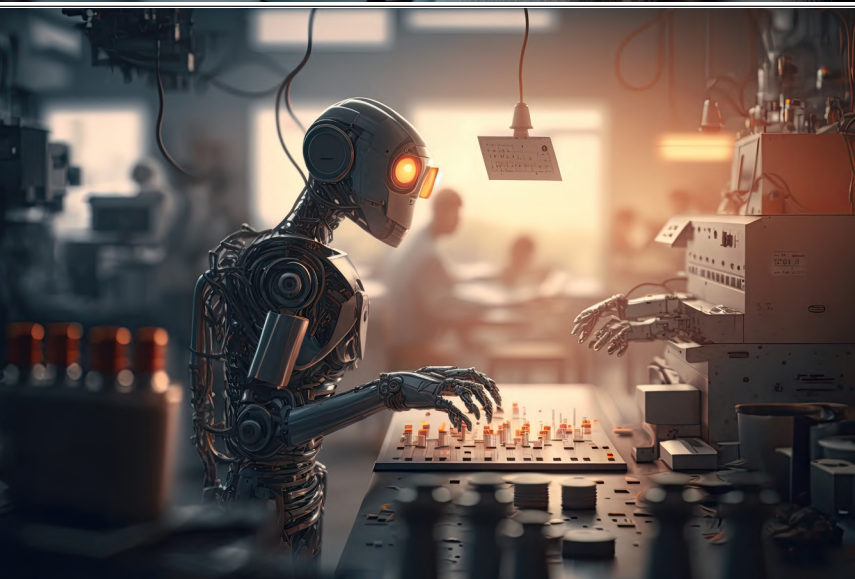


40

TO BE MORE PRODUCTIVE, THINK ALGORITHMICALLY

What are algorithms and how they can help you get the best from your day by reorganizing your tasks.

BY AMIR HUSAIN



44

THE POWER OF AUTOMA- TION

How ChatGPT revolutionizes real-world industry processes.

BY FATIMA RAZI



52

VISUAL AI SAVES BILLIONS IN HSE

Examine the benefits of obtaining visual AI solutions that work 24/7 to keep workers safe.

BY MAHE ZEHRA

CONTENTS



07

Meet The Mind

Travis Motal on the latest in school safety.

BY AMANDA CENTER

10

In Conversation

Augmenting the CStore retail business.

BY COGNITIVE TIMES STAFF

12

Data Points

All the latest things to know about AI today.

BY COGNITIVE TIMES STAFF



14

Tech Explainer

Visual AI for school safety.

BY MAHE ZEHRA

18

Action Plan

Latest books, events and movies to check out.

BY COGNITIVE TIMES STAFF

20

AI Writer

ChatGPT talks about itself.

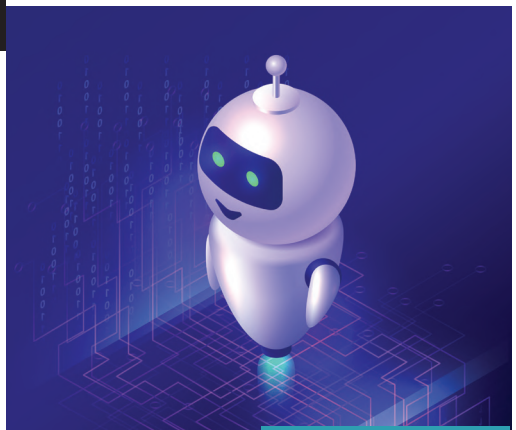
BY CHATGPT

22

Electric Adventures: Go Green!

Generative AI makes a comic strip for EVs.

BY CHATGPT AND MIDJOURNEY



24

At HyperWerx

Developing and deploying the future of visual AI.

BY COGNITIVE TIMES STAFF

28

The Future with Visual AI

Past, present and future of visual AI.

BY FATIMA RAZI

36

What is Generative AI

Generative AI for improved productivity.

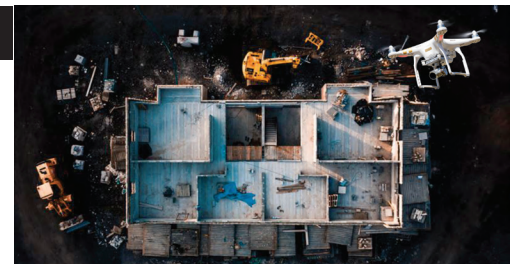
BY FATIMA RAZI

32

Visual AI Takes Flight

How drones are revolutionizing surveillance and monitoring.

BY ZEHRA AKBAR





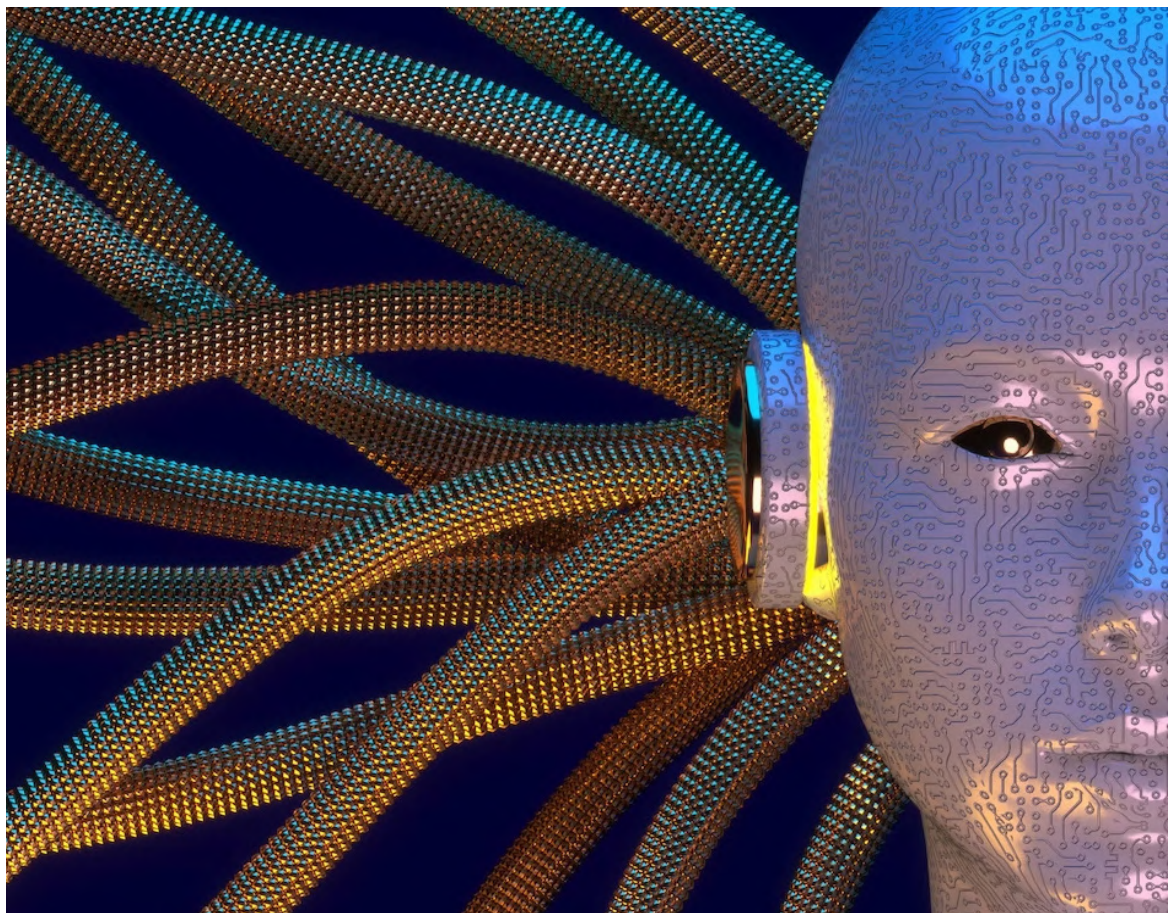
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COGNITIVE EVENTS TIMES



Free photo ai cloud concept with robot head via Freepik

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NOTES

FROM THE EDITOR

In this edition of Cognitive Times, we talk all things Generative AI. From projects like ChatGPT to MidJourney, generative artificial intelligence platforms have shown that they are undoubtedly on their way to mass adoption throughout the world. While these are platforms nearly everyone at this point has used, the underlying technology making these consumer applications possible are also addressing a wide variety of challenges in industry.

Keeping Generative AI at the forefront, this volume doesn't just explore the exciting, new applications like ChatGPT, but also discusses the potential impacts this technology will have on the very infrastructure that powers our world. As believers in applying artificial intelligence to improve quality of life for everyone, we focused this edition on how the latest advancements in AI unlock new opportunities that enhance reliability, safety, and security of critical operations and systems. From improving safety in our schools to creating AI-driven comic strips, in the pages to follow you will explore how AI technology is already making an immense impact in our lives.

You will hear from Travis Motal, Director of Secondary Education at Liberty Hill, on how artificial intelligence is supporting school safety measures in the Texas-based district and how he thinks visual AI capabilities will impact the education industry at large. As a father myself, applying AI in schools to keep my kids and their classmates, teachers, and peers safe is top of mind. Visual AI technology has the potential to be a game changer in the fight against school threats and shooting events, and is already being deployed to enhance safety in several schools.

As a broadly applicable technology, we also explore how visual AI is used across many verticals and businesses. SparkCognition's very own CTO, Sridhar Sudarsan, speaks about how the application is revolutionizing retail operations, equipping companies with AI-driven actions rather than just endless piles of data. But visual AI isn't just on the ground. Read from SkyGrid, a Boeing and SparkCognition company, about how visual AI is even taking flight! From applications like aerial surveillance and environmental monitoring, drones equipped with visual AI technology are unlocking meaning insights that haven't yet been possible to explore for many industries.

Additionally, while it may seem Generative AI is new to the AI scene, we walk through the history of the technology and exactly what makes it Generative AI. And looking beyond how we all use it in our everyday lives, we also take a deep dive in how major industries are already benefiting from Generative AI now - a read you don't want to miss!

Before we close, don't forget to take a look at the latest events, movies and reads in AI, our new AI writer, and AI art in the pages to follow.

Amir Husain

Founder & CEO of SparkCognition



/Run_Program/



Image Courtesy of Travis Motal

MEET THE MIND BY AMANDA CENTER

TRAVIS MOTAL

*Director of Secondary Education at Liberty Hill
ISD*

Travis Motal is a seasoned education professional with over 20 years of experience in the public education sector. As the Director of Secondary Education and Safety and Security at Liberty Hill ISD, Motal oversees and implements campus safety and security programs for the Texas-based district.

Prior to his current role, Motal has held several leadership positions in education, including Principal and Assistant Principal. His experience in these roles and his time as a teacher have enabled him to

establish effective policies to create a safe learning environment for students and staff.

Under Motal's leadership, Liberty Hill ISD has recently added artificial intelligence capabilities to its security protocol. During an interview with Cognitive Times, he shared his thoughts on the technology, why he introduced AI to the school's security plans and the exponential technology's impact on education.

CT: In the last year, especially, there have been rapid and exciting advancements in artificial intelligence technology. What impact do you think AI and other emerging technologies will have in education at large, and how do you prepare students in your district for an AI-forward future?

TM: The biggest impact I can see AI having, especially for school safety, is that it is always on. AI does not need to take breaks or eat lunch or miss a day because it is sick. AI is always protecting our schools from potential threats. I think there will always be privacy questions that we will have to vet and understand thoroughly, but in the end, if it keeps our school safe, I think it is a technology worth exploring to see if it meets our needs.

CT: Liberty Hill continuously invests in security for its school campuses and has demonstrated that the use of technology for school safety is of top priority. How does the district evaluate what types of technologies and solutions should be deployed on campus, and how do those solutions align with the district's values and goals?

TM: If a technology or program can keep our school safer, we will look into it and see how it can meet our needs and fit into our budget. Our number one goal is a safe school environment; without

that, learning and extracurriculars cannot happen.

CT: Liberty Hill has set itself apart as a leader in Texas—a state that has seen the second-highest number of school shootings nationally—by adopting transformative technology to safeguard students and faculty. What motivated you to consider using technology like artificial intelligence for school safety, and what benefits does this technology provide for Liberty Hill?

TM: Liberty Hill, ISD, wants to be the leader in school safety for our students and staff. After getting in contact with SparkCognition and seeing what AI technology can do to keep our schools safe, we wanted to explore every option to ensure we are maximizing our efforts. Visual AI Advisor is great at ensuring we are always watching for potential concerns and threats that could enter our schools.

“The biggest impact I can see AI having, especially when it comes to school safety, is that it is always on. AI does not need to take breaks or eat lunch or miss a day because it is sick. AI is always protecting our schools from potential threats”.

CT: What feedback have you gotten from parents, students, and Liberty Hill staff about adding visual AI technology to your school safety measures?

TM: All of our feedback has been positive. The community and parents

have been very supportive of all the efforts we are making to keep our schools safe.

CT: What advice would you give to other schools and districts looking to adopt new technologies to enhance school safety?


TM: I would encourage everyone to explore every option they can and then decide what is best for our schools. The more information you have, the better decisions you can make. I would also think about school safety in layers. On the outside, to harden your school entries, security film, and access points. On the inside with cameras, locks, and technology. Communication through alert detections, alarms, and coordination with local law enforcement—as coordination with our police department is key to overall success in our school safety initiatives. 



Image Courtesy of SparkCognition

INNOVATION THAT'S OUT OF THIS WORLD



Innovators see beyond physical limitations to create amazing possibilities. Boeing is proud to work with partners who are committed to creating a better world.





Image Courtesy of SparkCognition

BY COGNITIVE TIMES STAFF

AI- AUGMENTED CSTORES

Sridhar Sudarsan, the Chief Technology Officer at *SparkCognition*, speaks about Visual AI Advisor and how it can revolutionize the CStore retail business.

The basis of all revolution is now firmly rooted in technological advancements. Artificial intelligence is at the forefront of this new digital transformation. AI solutions offer fast, measurable insights that promise to provide action rather than endless data. This is especially true for retailers looking to enhance their operations and profitable growth.

While 2022 was stormy and uncertain for so many businesses, 2023 is predicted to be a year of transformation, especially for the fuel and retail

sectors. With the shopper being the center of all retail, it is time to regain consumer trust by delivering efficient services, innovative product solutions, and convenience.

AI for CStores is the perfect solution.

The convenience store or CStore market size is now predicted to grow at a compound annual growth rate of 5.6% from 2022 to 2028. In 2022, there were over 148,000 CStores in the United States alone, of which 16,018 were in Texas. That's a long way from the first 7-Eleven that opened in Dallas in 1927.

Facts are everything. So here are some interesting numbers and facts to put things into perspective and shed some light onto why we are talking about harnessing the power of the CStore.

- 39% of all Cstore sales are in-store sales; the rest is fuel
- 20% of consumers claim they are shopping at CStores more after the pandemic
- 4 pm to 7 pm is the most popular time of day
- The loyalty program is the primary influencer for choosing the CStore
- Product pricing is the main factor in a positive customer experience

When we look at those stats and data, we have a clear idea of where to position the CStore strategy in the coming years. This idea was the crux of the podcast conducted by John Lofstock, the Executive Director of the National Advisory Group for Convenience Stores (NAG), and Sridhar Sudarsan, the Chief Technology Officer at SparkCognition. Their discussion set the tone for the NAG Conference in 2023, where the ability of AI to augment CStores was at the forefront.

Sridhar explained AI is not so much 'Artificial Intelligence' but 'Augmented Intelligence' meant to supplement and support both consumers and the business. He described it as a tool to bolster the services, products, and personnel of the CStore to increase profitability and productivity. Sridhar used real-world examples of documented shopper behavior to reinforce that customer experience is the key to harnessing the potential of the CStore and visual AI is the driving force.

The podcast and conference emphasized that harnessing the data and creating action is more important than collecting more data. Utilizing data effectively, we can funnel infinite matrices collected from global trends, national sales, location data, and even weather data to create real-time actions and preempt changes.

Perhaps an action as easy as leaving out umbrellas when it's about to rain could improve customer experience.

Simple image analysis can lead to creating heat maps of foot traffic, tracking the behavior of consumers to detect their personas, creating and implementing loyalty programs, and tracking priorities and points of concern. These may have originated from the need for better security and safety but now encompass more essential aspects of augmented AI assistance that extend to marketing, sales, labor division, and value-added services.

Turning fuel customers into CStore customers was the priority, Sridhar said. He especially emphasized focusing on the electronic vehicle customer as they spend a reasonably long time at the charging station and in the vicinity of the CStore. According to Facts and Factors Market Research Company and the US Department of Transportation, the global EV charging station market is worth \$18.22 billion. It takes an average of 1 hour and 17 minutes for an EV to fully charge at a public charging station. That's an hour and seventeen minutes of opportunity for the CStore.

Depending on the needs of the EV charging customer, if a system is in place to attach a buyer persona, the accompanying CStore can apply a strategy upon their arrival. The business can implement marketing plans, special offers, or promotions to boost sales. Something as simple as greeting the customer to let them know their patronage is crucial will add a personal touch and give them a chance to enter the store.

Many EV charging companies like Tesla, Electrify America, and others are considering adding leisure activities at their charging stations. A twenty to thirty-minute downtime to charge their vehicle might not seem as daunting to customers if they can finish their last-minute shopping. Perhaps they might buy and enjoy a beverage if a picnic table is available with free Wi-Fi. Or if a lounge is open with a TV and air conditioning, especially on a hot day, they could also purchase a snack or meal. It's easier to digest offers when customers are not pressed for time.

"This is where it's a beautiful sort of collaboration," Sridhar said. It is especially exciting for retailers when these AI-augmented solutions use their existing on-site equipment. SparkCognition's Visual AI Adviser can take the inundating data that retailers are bombarded with daily and create actionable solutions in their existing technology network. Sridhar explained that, with their experience with forecourts, SparkCognition is the perfect partner to help scale the CStore business and add the value of actions to their operations.

While the discussion revolved around additional value that can be gained from AI for CStores, Sridhar said that this didn't mean that safety and security took a backseat. That's where the story

started. "So that's where it started, but then very quickly it started coming into the store, and now we have the full CStore experience."

When asked about augmented intelligence's most significant opportunities, Sridhar outlined three fundamental takeaways.

He said Visual AI Advisor is a hardened technology that is tried and tested extensively. "Our solution is deployed in over 120,000 cameras in about 16 countries. Many of them are for retail, so we understand the business." Because the solution is built into the existing system, value addition begins in a matter of days. It's fast, it's here, and it's working.

The second most significant opportunity Visual AI Advisor for CStore creates is providing effective labor management and staff redeployment. "AI technology, especially computer vision, augmenting your employees becomes a very powerful combination. So you can manage 100% of the store operations with only 70% of labor." Staff is available where they are most needed, and that helps maximize productivity with minimized cost; that's a solution anyone would buy into.

The third and last value addition created with Visual AI Advisor for CStores comes from

focusing on creating actions rather than data. It is automating simple processes that remove margins for error, for unpredictability, and cater to lapses in security and judgment. It's easier to respond to an alert than to scan through endless data and find what's wrong.

AI-augmented CStore applications provide a way to predict the coming change and create a strategy for when the change occurs. Whether related to spending, politics, inflation, security, or safety, all retailers can benefit from AI's ability to help create optimized and sustainable actions.

Focus on the action, he said again. "It'll give you the quickest time to iterate and to be prepared for the change that is constantly coming."

AI-Augmented CStores are the future. From monitoring merchandise to forecasting sales, stock optimization to labor management, customer-profiling to customer satisfaction, AI is a positive driving force for increased efficiency and sustainable profit. **IC**

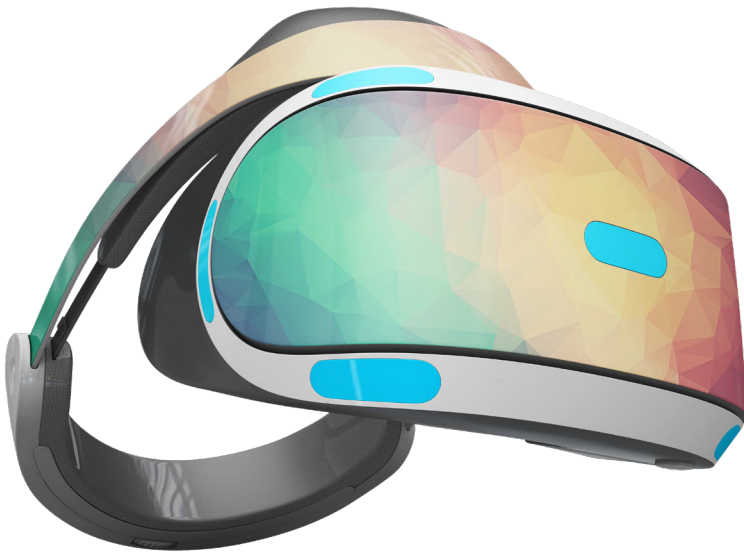


smart retail concept, robot service use for check the data of or Stores via Freepik

"It'll give you the quickest time to iterate and to be prepared for the change that is constantly coming."

WHAT'S HAPPENING IN AI

Free PSD colorful gear vr mockup via Freepik



AI-EQUIPPED EYEGLASSES READ LIPS!

> Cornell University researcher Ruidong Zhang from the Smart Computer Interface for Future Interactions (SciFi) Lab is the author of "EchoSpeech: Continuous Silent Speech Recognition on Minimally Obtrusive Eyewear Powered by Acoustic Sensing." For people who cannot vocalize sound, this silent speech technology could be an excellent input for a voice synthesizer. It allows communication through a smartphone and helps synthesize voice from AI-powered acoustic-sensing based on lip movement. "It could give patients their voices back," Zhang said for the future of EchoSpeech. (bit.ly/AIGlasses)

BY COGNITIVETIMES STAFF

A BIO-INSPIRED SENSOR DETECTS MOVING OBJECTS FROM VIDEO

Aalto University has found an alternative to the present motion detection that is component heavy and needs analysis to be done one frame at a time. This neuro-morphic vision technology can integrate several optical images in one frame and remember movement with AI neural networks to detect motion and predict its path. Following many tests, it can use this technology for intelligent, self-driving transport. Research fellow Hongwei Tan said, "The result is a compact and efficient sensing unit." (bit.ly/BioSensors)

GPT-5 TRAINING HALTED

At MIT, Sam Altman announced OpenAI will pause the fifth-gen GPT training for six months and focus on the GPT-4 model. He advised the developers to pause the fifth-gen GPT as OpenAI seeks to address concerns and safeguard its AI model's safety and ethical ramifications. "We are doing things on top of GPT-4 that I think have many safety issues that we need to address," said Sam Altman. (bit.ly/GPT5Training)

GOOGLE ATTEMPTS TO COUNTER BING

Microsoft integrated OpenAI's GPT into its search engine and set Google off on a drive to create enhanced AI-powered features for its search engine under a project coined 'Magi.' They slotted a public release for this month with limited capabilities that will offer a more 'personalized experience.' It is possible Samsung is thinking of switching to Bing as its default search engine, but Lara Lavin from Google said, "We're excited about bringing new AI-powered features to search, and will share more details soon," (bit.ly/GoogleAI)

COPYRIGHT CASE MIGHT TRANSFORM GENERATIVE AI

The US Copyright Office recently stated that it cannot offer protection for AI-generated art under copyright laws. The US Copyright Office allows only art that contains a 'significant human authorship' to be copyrighted. With lawsuits filed against Midjourney, DeviantArt, and Stability AI for infringement, they are accused of training generative models on the work of countless artists. Everyone is asking the fundamental question about 'Fair Use' and if generative models trained on copyrighted works can be covered. When does the act of creation really begin? (bit.ly/GenerativeAI) **TC**



SPARKCOGNITION™ ENDPOINT PROTECTION STOPS THREATS THAT OTHER CYBERSECURITY SOLUTIONS WON'T SEE COMING.

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BY MAHE ZEHRA

VISUAL AI FOR SCHOOL SAFETY

The Problem

Another school shooting has recently taken place in the United States, this time in Nashville, Tennessee. Sadly, this is not an isolated incident. In fact, school shootings have become all too common in the US, leaving parents, teachers, and students alike feeling scared and vulnerable.

The Nashville shooting, where 3 adults and 3 children lost their lives, is yet another tragic reminder that something must be done to address this pervasive problem. Texas, in particular, has faced a larger percentage of school shootings, including the horrific shooting at Robb Elementary in Uvalde that resulted in the deaths of 19 children and 2 teachers.

It's time for action to prevent further tragedies like this one from occurring.



Modified Image - Usa map outline with stars and lines abstract framework via Freepik

Inadequacy of traditional technology

Unfortunately, traditional technologies, such as security cameras and metal detectors, haven't been able to keep schools safe. This happens for several reasons.

The main reason is that these technologies are often reactive rather than proactive. In other words, they are designed to detect and respond to a threat that has already occurred, rather than prevent it from happening in the first place. For instance, any gunshot detection system will only trigger an alarm once a shot has been fired and children and teachers are already under threat.

Second, traditional technology is limited in its ability to identify potential threats. While security cameras and metal detectors can detect weapons, they cannot detect other warning signs, such

But technology is evolving everyday, and in the age of AI, preventive action is possible.

Visual AI Advisor

SparkCognition has developed a cutting-edge technology that can help deter and control school shootings: Visual AI Advisor.

Visual AI Advisor is a comprehensive threat detection system that uses AI-powered visual recognition to identify potential threats in real-time. The system can analyze video footage from security cameras, identify potential threats, and alert school officials in seconds. This technology has the potential to significantly reduce the response time of school shootings, giving officials the opportunity to intervene before a tragedy occurs.

Visual AI Advisor leverages a school's existing CCTV system



Image courtesy of SparkCognition

as familiar vs. unfamiliar faces and suspicious movement. Even in schools where security personnel are monitoring live data, the chance of missing something is non trivial. Studies have shown that humans struggle to focus for more than 20 minutes while viewing video feeds. The chances for error are compounded when these personnel are watching multiple screens at the same time. The human error inherently present in this situation makes it a non-ideal solution.

Third, traditional technology can create a false sense of security. While these technologies may deter some potential shooters, they can also be circumvented or avoided by determined individuals.

and runs models on the video feed in real time using deep learning algorithms to recognize patterns and anomalies in the environment, providing actionable insights and allowing instantaneous alerts and alarms. This solution is easily deployable within days with a no-code/low-code integration method that requires no data scientists or programmers.

There are several use cases that can be run simultaneously on a single camera increasing the chances of detecting a threat. Starting from an unknown license plate breaching a geographical perimeter to identifying an unknown face and even suspicious activity like a person crouching on the ground and not moving. For each of these cases, the Visual AI Advisor can trigger role-

based alerts via web and mobile apps with critical information. The system can also tie into a school’s security system initiating lockdowns and security alarms.

The system can follow the progress of the threat from one camera to the next, keeping all actions under surveillance and security personnel apprised of the situation in real time. This is invaluable, as according to the FBI, 70-80% of the attacks are carried out by perpetrators with weapons visible or the shooter lurking in the carpark or a stairwell up to 30 minutes before the shooting. Identifying these shooters and triggering alarms in real time could very well neutralize the threat.

Visual AI Advisor has been trained for hundreds of use cases on vast amounts of data. With over 120 pre-built machine learning models to draw from and its proven ability to learn and react to complex multi-frame scenarios, this is truly a game changer for school safety. There is continuous delivery of updated models and learning to ensure performance improvement over time, eradicating false positives or negative alerts.

The graphic below showcases some of the use cases from the Visual AI Advisor that are deployed at schools to enhance safety.

Conclusion




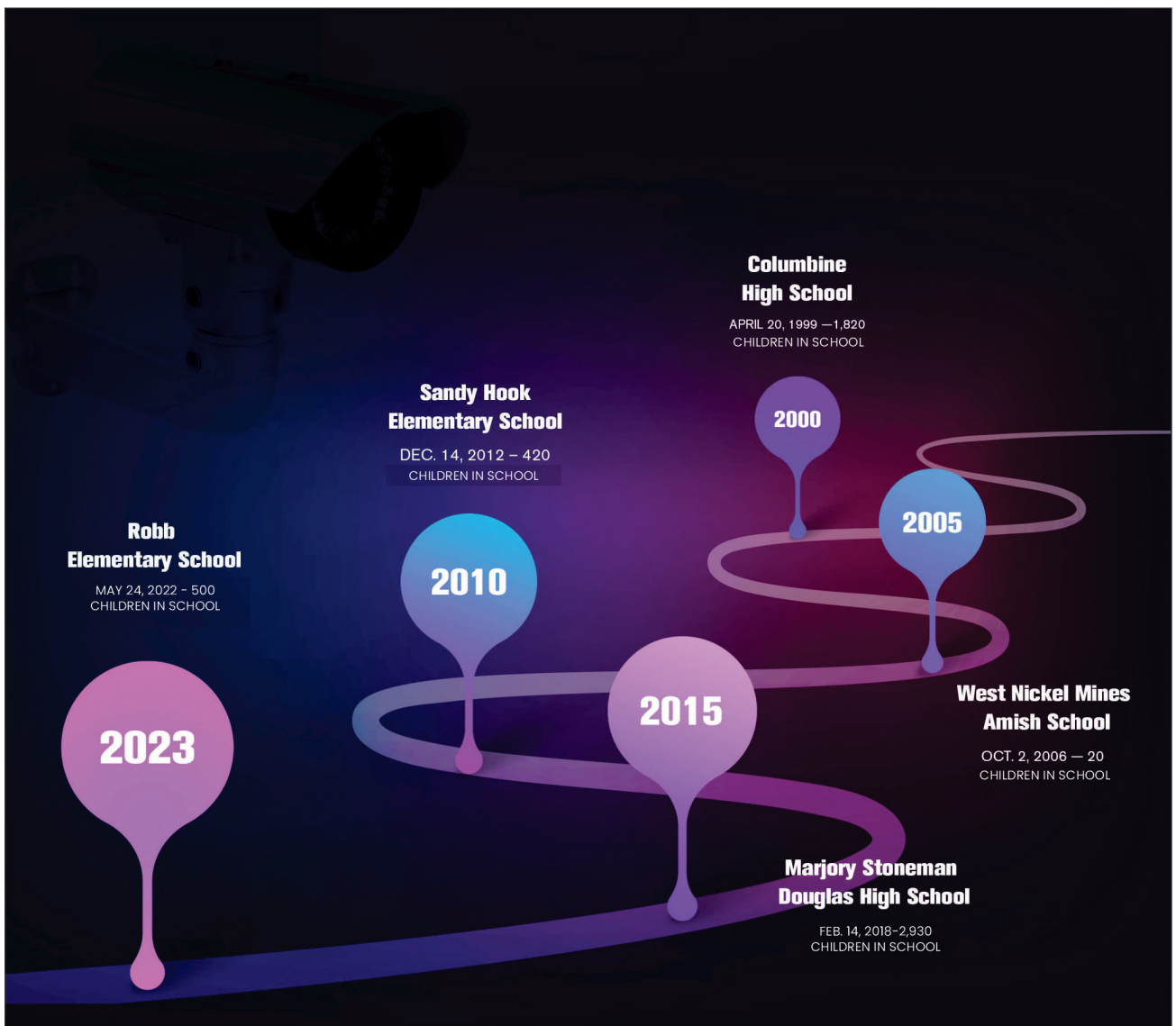
There were more school shootings in 2022 than in any year since at least 1999.

According to a report by the Center for Homeland Defense and Security, school shootings have been increasing in frequency and severity over the past decade. Between 2010 and 2020, there were 437 school shootings in the US, resulting in 242 deaths and 819 injuries. These statistics highlight the urgent need for innovative solutions to help save lives.

Visual AI Advisor has been successfully tested in various settings and has been deployed in both public and private K-12 school systems. The Director of Secondary Education at the Liberty Hill Independent School District in Central Texas says Visual AI Advisor doesn't replace their staff or security protocol, instead it empowers them. "No matter how great all of us are, we're all human

beings. We get sick. We take a break. We turn around. The great thing about [Visual AI Advisor] is it never does that. It is always on, 24 hours a day, 365 days a year, no matter what the scenario."

Visual AI Advisor has the potential to be a game-changer in the fight against school shootings. With its real-time threat detection capabilities and ease of deployment, the system can help school officials and law enforcement respond quickly and effectively to potential threats, providing peace of mind to students, parents, and teachers and creating a safe learning environment for everyone. 

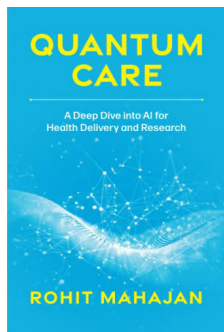


BY COGNITIVE TIMES STAFF

A TECH-SAVVY TO-DO LIST



big data world globe with hand selecting pressing via Freepik



◀ [READ](#)

QUANTUM CARE

By Rohit Mahajan Rating: 4.5/5

“According to estimates, the healthcare AI market will grow to over \$45 billion by 2026.”—Amazon

Quantum Care: A Deep Dive into AI for Health Delivery and Research highlights how AI is being implemented in the health and medical sector. It discusses how AI was crucial in delivering the COVID vaccine and even addresses concerns about privacy and ethics around healthcare AI.

▲ [GO](#)

AI AND BIG DATA EXPO

MAY 17-18, 2023

AI & Big Data Expo is the leading event for Enterprise AI, Machine Learning, Security, Ethical AI, Deep Learning, Data Ecosystems, and NLP.

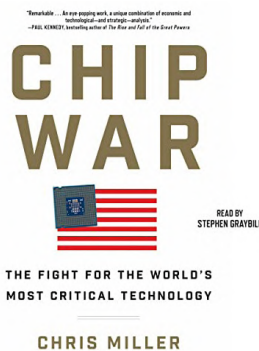
The event targets enterprise technology professionals who come together to discuss the latest developments and strategies in the tech sector. The event will feature over 250 speakers who will share their thoughts and insights through presentations, discussions, and fireside chats.

▶ [READ](#)

CHIP WAR: THE FIGHT FOR THE WORLD'S MOST CRITICAL TECHNOLOGY

By Chris Miller Rating: 4.5/5

The economic historian Chris Miller writes the “Fight for the World’s Most Critical Technology” detailing how the tiny little chip is the foundation of all technology. He discusses the politics, economics, technological advancements, and the looming chip race between the United States and China.



▼ [SEE](#)

TRANSFORMERS: RISE OF THE BEASTS

Premiered date: June 9th, 2023

“Prime, this is about the fate of all living things; Unicron is coming.”

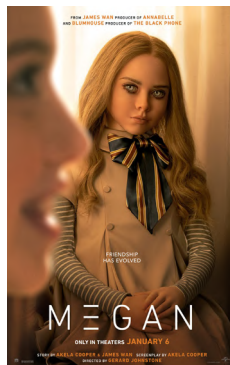
Based on the TV series titled ‘Beast Wars: Transformers’ from 1996, this new sequel to the movie ‘Bumblebee’ will explore the descent of both Autobots and Decepticons while a new threat emerges—Unicron.

▶ [SEE](#)

M3GAN (2022)

Gerard Johnstone, Writer: Akela Cooper Rating: 93% (Rotten Tomatoes), 6.4/10 (IMDb)

A true marvel of AI, this lifelike doll, is a child’s companion. Premiered in Dec 2022, they claim M3GAN to be an ‘unapologetically silly and a rare horror-comedy.’ It both chills and entertains as the story unfolds around the doll, who becomes self-aware and eventually aggressive as it protects its human companion—a must-see by critics.



TO ENSURE
SUCCESS
HERE

AI PREDICTS
FAILURE
HERE



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Tell me a joke about ChatGPT



Sure, here's a joke about ChatGPT:

.
.

Why did the AI language model go on a diet?

Because it was getting too many "byte"s!

CHATGPT

AI WRITERS!

Modified Image - AI Robot writing copyright upklyak via Creative Market

BY COGNITIVE TIMES STAFF

CALLING ALL AI WRITERS!

Cognitive Times is in search of AI systems that can contribute written articles! In this regular section, we publish some of the work from candidates we are considering. For this issue, we feature the work of "ChatGPT"

Link: <https://chat.openai.com/>

We had some fun with Open AI's ChatGPT. It was given three prompts and asked to write about itself first in prose, then in poetry, and then to tell a joke about itself!

"Prompts"

- Write a 500 word article on ChatGPT and its uses, make the language creative and casual.
- Write a short poem on ChatGPT.
- Tell me a joke about ChatGPT.

Below are the results. What do you think? Should we hire this candidate?

WRITE A 500 WORD ARTICLE ON CHATGPT AND ITS USES, MAKE THE LANGUAGE CREATIVE AND CASUAL.

Hey there! Let me tell you all about ChatGPT - the AI language model that's changing the game. You might not have heard of it, but trust me, ChatGPT is a game-changer.

First things first, let me explain what ChatGPT is. It's an artificial intelligence program that uses natural language processing to understand and generate human language. In simpler terms, it's like having a chat with a computer that actually understands what you're saying and can respond in a human-like way. Pretty cool, right?

So, what can you do with ChatGPT? Well, the possibilities are endless. You can use it to write essays, compose emails, chat with friends, or even play games. It's like having a personal assistant that's available 24/7.

One of the coolest things about ChatGPT is its ability to learn from past conversations. This means that the more you talk to it, the better it gets at understanding you and responding in a way that feels natural. It's like having a friend that gets better and better at understanding your quirks and preferences over time.

Another great use for ChatGPT is in customer service. Have you ever called a company and been put on hold for what feels like forever? With ChatGPT, you can get instant responses to your queries without having to wait on hold. Plus, because it can understand natural language, you don't have to worry about navigating complicated menus or pressing a bunch of buttons to get the help you need.


ChatGPT can also be used for language learning. By providing instant feedback on grammar and vocabulary, it can help you improve your language skills in a fun and interactive way. You can practice your conversational skills with ChatGPT or even have it generate personalized language exercises and quizzes just for you.

But wait, there's more! ChatGPT can also be used to generate creative writing prompts, compose poetry, or even help you brainstorm ideas for your next big project. It's like having a writing buddy that's always available to bounce ideas off of and provide inspiration.

Of course, as with any technology, there are some potential drawbacks to using ChatGPT. For example, because it's an AI program, it doesn't have the same emotional intelligence that a human would. This means that it might not always pick up on

subtle cues or understand sarcasm and irony in the same way that a human would.

Another thing to keep in mind is that ChatGPT is only as good as the data it's trained on. This means that if the data is biased or skewed in some way, the responses generated by ChatGPT could reflect those biases. It's important to be aware of this and to use ChatGPT in conjunction with other resources to ensure that you're getting a well-rounded perspective.

Overall, ChatGPT is an exciting and innovative technology that has the potential to revolutionize the way we communicate and interact with computers. Whether you're using it for language learning, creative writing, or just to have a chat with a computer that actually understands you, ChatGPT is definitely worth checking out. So what are you waiting for? Give it a try and see for yourself how amazing it can be! 

Write a short poem on ChatGPT.

ChatGPT, oh ChatGPT,
A program so clever and neat,
With words so natural and sweet,
A language model hard to beat.

From essays to emails and chats,
It's there to help us all with our tasks,
With each conversation it learns and adapts,
And understands us better than past.

Oh ChatGPT, you're a friend indeed,
Always there when we need to read,
Your responses so smart and quick,
A true technological magic trick.

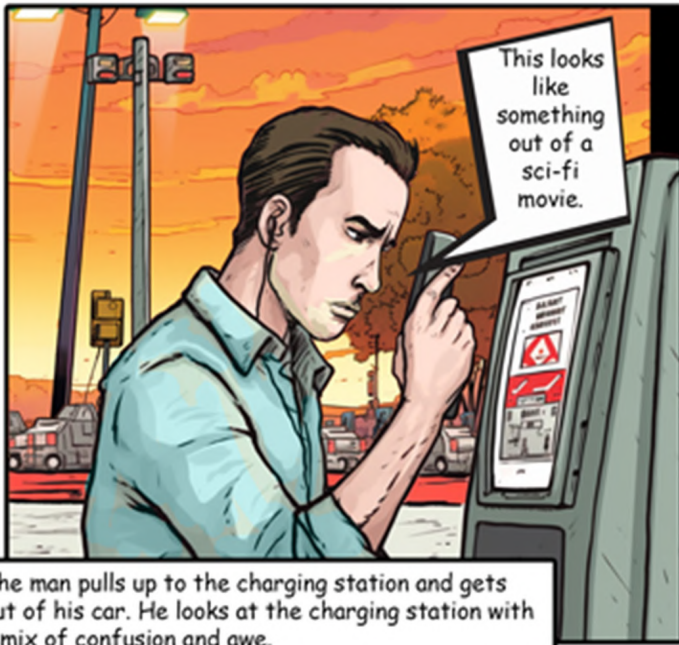
So here's to ChatGPT, our AI friend,
May our conversations with you never end,
For you are a language model that's truly ahead,
And to our daily lives, a new dimension you bring.

THE CONTENT IN THIS COMIC STRIP IS ENTIRELY SCRIPTED AND WRITTEN BY CHATGPT. ALL CHATGPT PROMPTS FOR EACH PANEL WERE USED TO CREATE ARTWORK FROM MIDJOURNEY, ONLY THE SUGGESTED ART STYLE WAS GIVEN BY US TO MIDJOURNEY - MARVEL-STYLE COMIC ART:

"What is this futuristic contraption?"

ELECTRIC ADVENTURES GO GREEN!

A man is driving his old, beat-up gas-guzzling car and notices an electric vehicle charging station. He does a double take.



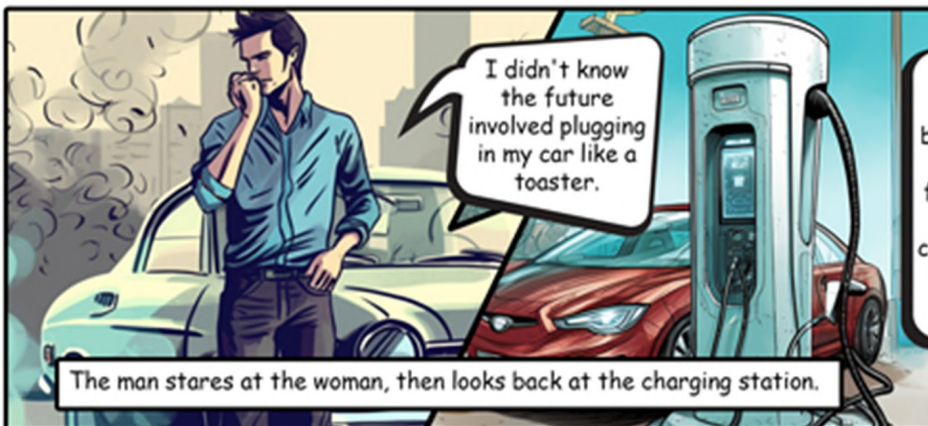
This looks like something out of a sci-fi movie.

The man pulls up to the charging station and gets out of his car. He looks at the charging station with a mix of confusion and awe.

A woman who is already using the charging station notices the man and greets him with a smile.



Hey there, welcome to the future!

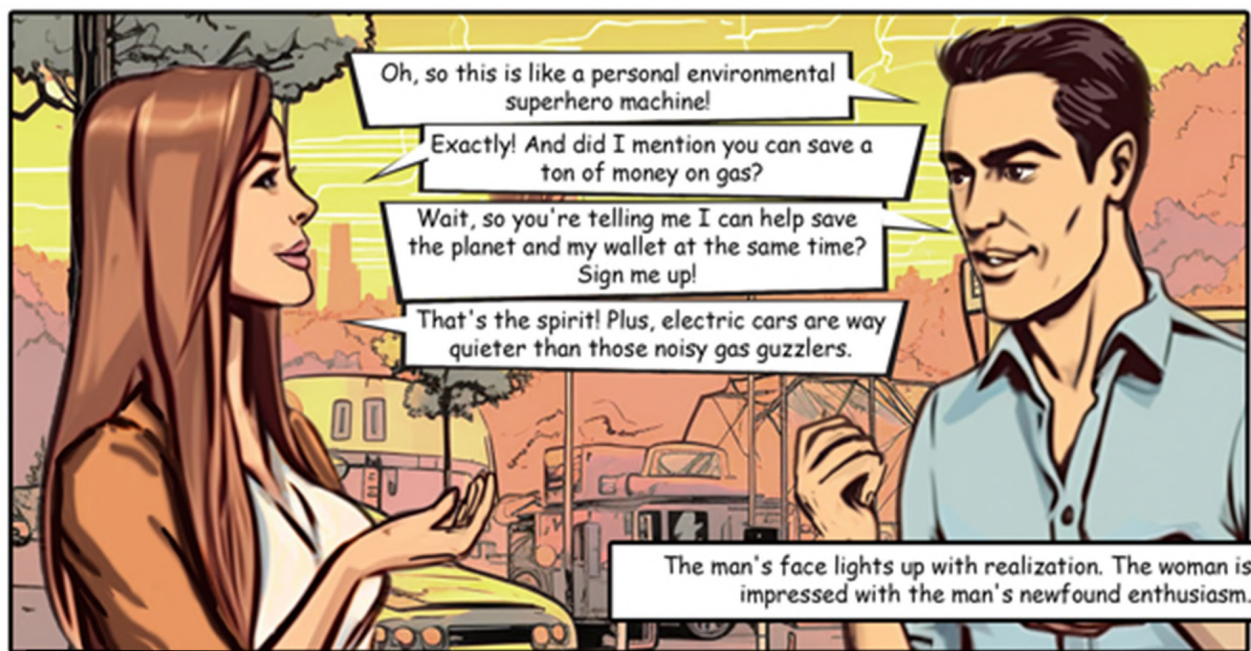


I didn't know the future involved plugging in my car like a toaster.

The man stares at the woman, then looks back at the charging station.

Trust me, it's way better than burning fossil fuels and contributing to climate change.

The woman chuckles.



AT **HYPER™ WERX**

AI Augmented School Security is here!

SparkCognition conducted an event highlighting the use of visual AI to augment school safety, "School safety: Preventing School Shootings with AI." This school safety demonstration showcased AI's ability in

- detecting real-time threats
- providing actionable insights
- offering enhanced situational awareness
- generating automated responses



School administrations and safety professionals attended the live-action demo. Many other educators and Austin communities joined them at the Hyperwerx

facility to discuss the deployment of visual AI for safeguarding our children, teachers, and other school staff.



AI perfected for school safety

125+ use cases, including:

- weapon detection
- perimeter security
- unauthorized entry
- suspicious activity
- slips, trips, and falls
- facial/vehicle identification



Todd Peters, Chief of Safety & Security at the Adelson Educational Campus, and Travis Motal, Director of Secondary Education for Liberty Hill ISD, met at the “School Safety: Preventing School Shootings with AI” event at HyperWerx.



“I think everybody here today would agree that present-day security threats and events are increasingly prevalent. We live in a very dangerous world. Shootings in schools are happening more often. The perpetrators are more creative, and they’re much more dangerous.”

-Todd Peters

Adelson Educational Campus Chief of Safety & Security

“ An AI-enabled approach is a fundamental game changer, we believe, to the safety of our students. ”

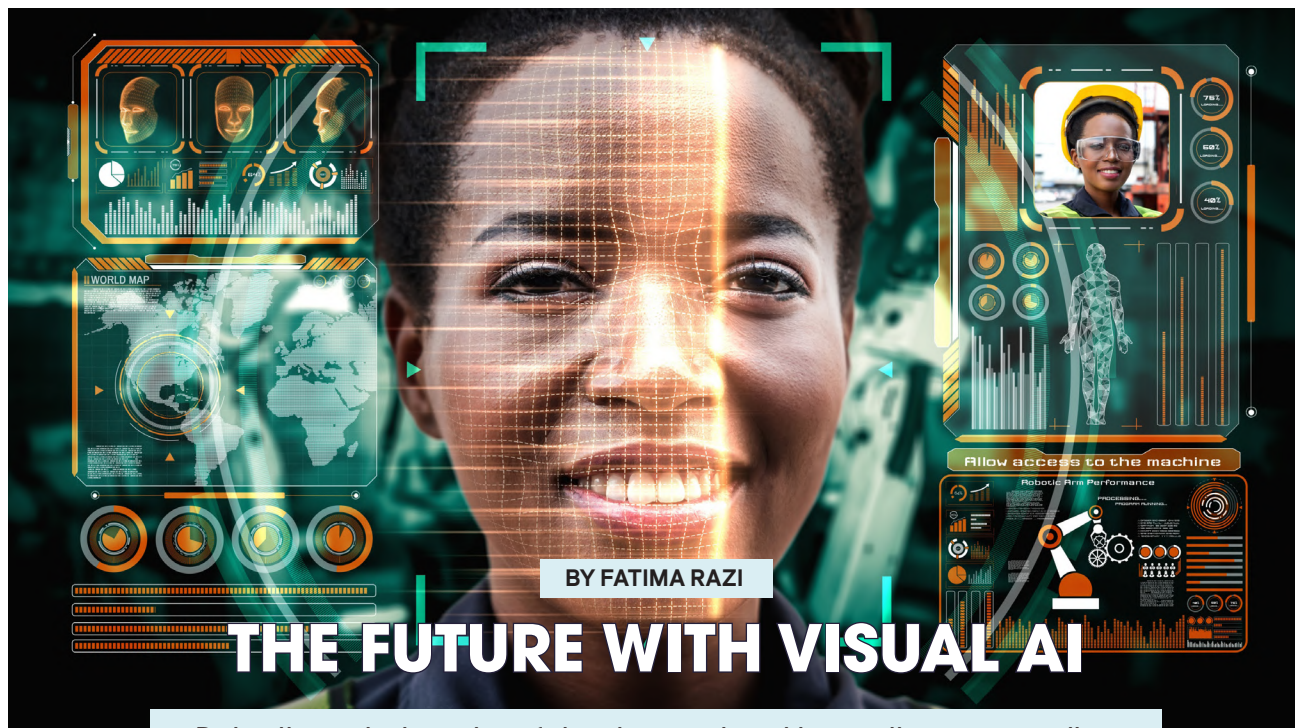
Stephen Gold

SparkCognition Chief Marketing Officer



Travis Motal stated that Visual AI Advisor's ability to empower administrators and security staff with insights from visual AI creates the best 'barrier of time' against active threats at the school.

Facial recognition technology for industry worker to access machine control copyright biancoblu via Stock Market



Delve through decades of development and innovations surrounding visual AI and where it's headed in the future.

Visual artificial intelligence (or visual AI, for short) is a field in computer science that allows systems and applications to create inferences, take action or offer solutions based on visual input like images or video.

Dr. Porter, the Chief Science Officer for SparkCognition, answered questions for Stephen Gold, the Chief Marketing Officer, and he explained in depth what makes visual AI especially exciting in the coming years.

Artificial intelligence has grown exponentially over the years. Dr. Porter explained that “AI is a very mature field now.” After decades of testing, innovation, and refinement, the term “Artificial Intelligence” has grown from simply knowing to making inferences and eventually to retaining information and reasoning. The perfect example of this advancement is in the language process AI tools we see, especially in ChatGPT, and image processing AI tools like Dall-E or Midjourney. Looking at these examples, we see how, through machine learning, artificial intelligence has improved at performing tasks automatically and without needing traditional commands. Now that AI has the data available, it quickly sees, predicts, detects, and eventually navigates in its environment. The advancements in robotics are a great testament to AI’s ability to mimic human interaction.

In the beginning, artificial intelligence had imitated human

cognition. It started with simple games like checkers in the 1960s, but it is now enabling autonomous vehicles, with Google planning to launch its own around 2030. Dr. Porter explained, “Some of the first disruptive applications of AI were in the field of games.” Now it has become the backbone of many games played across multiple platforms by multiple users in real time.

Machine learning is one of the fundamental building blocks driving the advancements in AI. So what is machine learning?

It is the science behind predictive maintenance in applications like ChatGPT and Dall-E. Dr. Porter explained machine learning as “a revolutionary technology; it’s not only responsible for the successes we’re seeing in computer vision, it’s also responsible for the successes we’re seeing in a wide variety of other tools like ChatGPT and Dall-E, at SparkCognition, we’re applying machine learning to applications for predictive maintenance and more.”

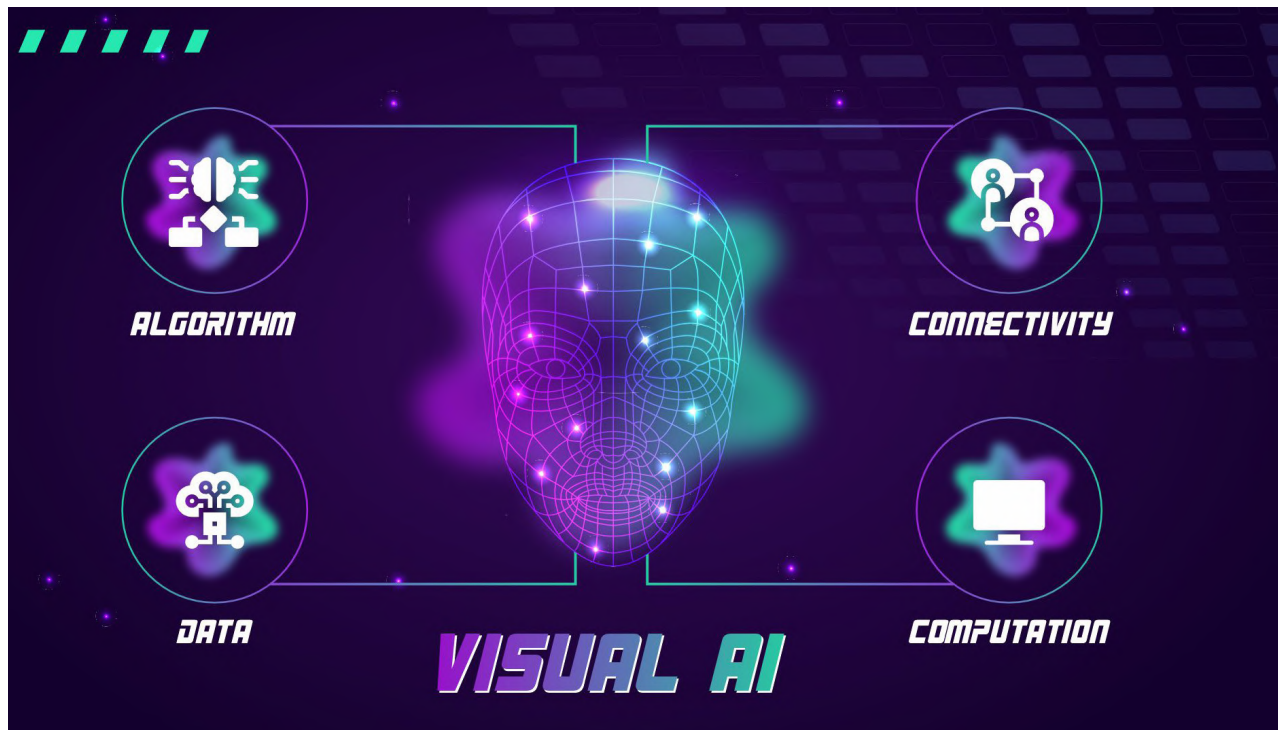
According to Dr. Porter, four defining technologies apply to AI and also visual AI, these are connectivity, computation, algorithms, and data. Where connectivity and computation are the backbones of nearly all tech, for visual AI, this specifically means the integration of CCTV cameras and surveillance systems and giving them the computation power and GPUs to analyze and read visual data. But the advancements in algorithms and big data are more significant to visual AI. Even though machine learning is the

basis for visual AI, data is the building block of everything. It is the foundation on which visual AI thrives.

Visual AI is especially exciting as, in the last decade, we have

electrochemical energy, the neural net has activations that are weighed at nodes.

So, for the AI to learn, it has to find the correct weights and the



seen extensive open-source data sets feed neural networks. As an example, these data sets can be used to train models for handwriting recognition through supervised learning using images of hundreds of ways an alphabet can be written and then fed to the neural net. There are many other applications and possibilities increase as the data increases.

Coco is one of these open-source data sets that is a significant contribution, containing 1.5 million images of 80 objects and their environment. Supervised learning with large data sets is a much richer and more comprehensive way to teach an algorithm to recognize objects. MultiThumos is another large data set that has 40,000 video clips that are labeled to show people performing actions like sitting, walking, or even fishing. It is these data sets that then build use cases.

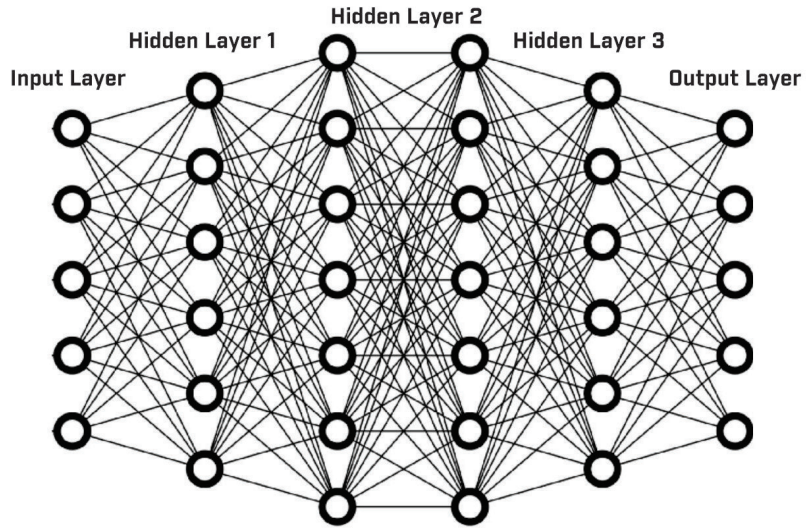
Created around the 1970s, today neural networks and deep learning are maturing and in the last decade they have taken off in commercial applications. Neural nets are tied in deeply with machine learning and AI's ability to predict and detect. Inspired by the human biology of the visual cortex, the neural net is the digital twin of the neurons and axons in the human body. Where the human nervous system operates on biological data and

right pathway, which is the heart of the neural network. A system that rewards and punishes the AI until it eventually finds the correct answer. And then it never forgets.

This branch of machine learning has now moved into supervised learning. This is where large data sets come in handy, as explained above. Interpreting and testing this data is how the algorithm sees if it can identify and detect outcomes, becoming more accurate as it traverses the system. So the more layers between the input and output, the more complex the neural net will be; it might even become a deep neural net. But the one thing that is the most significant for a neural network is trust. Therefore, transparency is essential. With visual AI, however, there aren't severe limitations like other perceptive networks. The image or video requires little explanation; the query can either be seen or not.

What started with object detection has now gone into situational identification, and the example Dr. Porter used to explain visual AI's ability is something as simple as crossing the road. It is a great example for visual AI, as it has the ability to check if the crosswalk is empty by examining the image or video. It can then respond to queries about whether someone is jaywalking. It can observe, detect and report without outside help. Visual AI is now

Visual Depiction of Neural Network



smart enough to summarize whether the traffic is light, whether it's rush hour, or if there are any security concerns or violations. It seems relatively simple when we say 'summarize,' but this results from hours of processes and machine learning period, Visual AI can now surveil a street and find partially obscured license plates or the name of a taxi driver by reading the visible markers on his vehicle.


Building on the ability of this technology to see, observe, and detect, visual AI can now enhance images. Dr. Porter explained: "So if you think back to those cop movies or those countless hours of watching CSI, you'd remember how you could zoom in on a busy street camera and find the suspect. The movies had it easy until today. Visual AI is now advancing towards super-resolution, and visual AI tools can augment image data to predict facial features and provide accurate reports." So how is computer vision or visual AI transforming the industry? It allows the following augmentation:

- capture and interpret media content
- classifying objects
- training machines to understand the content
- creating capabilities from object detection
- activity tracking
- inspection

Computer vision is also changing the way we do business. By building on existing systems, AI is augmenting human interaction to preempt, react, and alert users according to real-time data. And because it doesn't require a complete deployment of equipment, it is up and running in a few days. Dr. Porter explained that SparkCognition's computer vision system now does precisely that. SparkCognition's Visual AI Advisor is adapted for various

fields, including health and safety, security, productivity, inspections, and situational awareness. It works in nearly every industry, including construction, manufacturing, schools, and more.

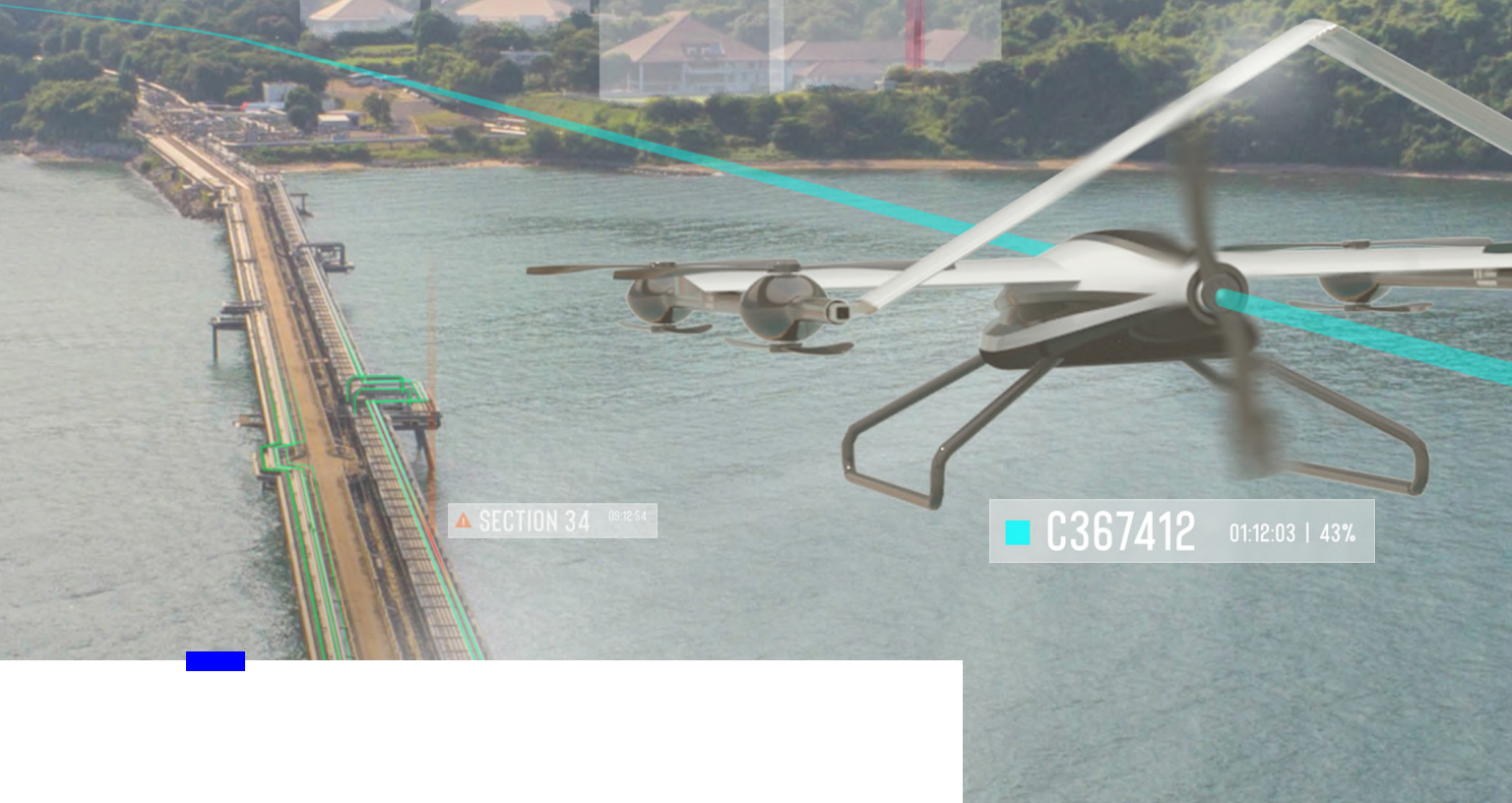
Visual AI is now a hardened technology. It is proven and deployed. And even third-party integrations are entirely secure and private. There is no need to record feeds or keep data stored when systems like Visual AI Advisor can check everything in real time. It can even help blur images where needed for enhanced privacy.

With potential like this, it's no wonder Dr. Porter says, "My prediction is that the 2020s will be a decade of computer vision." 

WHAT MAKES VISUAL AI SO CRUCIAL FOR THE FUTURE

- 1** It can leverage data for real-time decision making
- 2** It has the ability to automate processes with integrated alerts
- 3** It reduces workplace accidents while driving operational excellence
- 4** It enables 24/7 operations without interruption

The future of autonomous aviation is here.



SkyGrid is using AI and blockchain to simplify commercial drone operations in an increasingly complex sky.



SKYGRID

A Boeing,
SparkCognition
Company.

Visit skygrid.com to learn more.

Image to be purchased



Modified Image - Birds eye view of the frame of a house being built on a construction site via Stock Market

BY ZEHRA AKBAR

VISUAL AI TAKES FLIGHT

How drones are revolutionizing surveillance and monitoring

Drones have revolutionized the way surveillance and monitoring are conducted by leveraging the power of visual artificial intelligence (AI). From security and defense to environmental monitoring and disaster response, visual AI transforms how we gather and analyze data. With the help of sophisticated cameras, sensors, and computer algorithms, drones can capture real-time footage, process it and generate meaningful insights for a wide range of applications.

The benefits of visual AI in surveillance and monitoring

Surveillance and monitoring can significantly benefit from the advanced technology of visual AI, which has various advantages. One of the significant advantages of visual AI is its ability to detect suspicious activities or events in real-time, alerting operators to potential threats before they escalate. It is possible because visual AI can analyze vast amounts of data and recognize patterns that

may be difficult for human operators to detect, resulting in increased accuracy in surveillance and monitoring.

Another benefit of visual AI is its cost-effectiveness compared to traditional surveillance methods. Visual AI can provide a cost-effective alternative to traditional surveillance methods as it requires fewer personnel to operate and can cover a larger area. With enhanced situational awareness, operators have a complete picture of what is happening in a given area, enabling them to make informed decisions quickly. It can also monitor hazardous environments or situations that would be unsafe for human operators, improving safety in surveillance and monitoring operations.

Applications of visual AI with drones in surveillance

Real-world examples of the benefits of visual AI in surveillance and monitoring can be found in industries such as retail, transpor-

tation, and public safety in Austin, Texas. For instance, some retailers have used visual AI to track customer movements and analyze buying patterns to optimize store layouts and improve customer experiences. In transportation, visual AI monitors traffic patterns, detects accidents or congestion, and improves overall traffic safety.

We can see one example of visual AI in public safety in Austin - Texas, where SkyGrid, a Boeing, SparkCognition company, worked with Austin-Travis County EMS to demonstrate how search and rescue missions can be executed more efficiently with drones. The company showcased how SkyGrid's Aerial OS™ provides rapid search and rescue capabilities using AI-based drone technologies. Using a unique patent-pending algorithm specialized for SAR missions, SkyGrid optimizes the distribution of drones over a defined space, calculating the most efficient routes for one or multiple vehicles within a given time frame. Drone operators can either specify the area they wish to survey and the size of their fleet to determine the time necessary to survey an area or define the area and time required for a survey to determine the optimal search pattern and the number of drones needed to complete a mission.

Anti-poaching efforts are one of the primary applications of drones in wildlife protection. With the help of drones, conservationists and law enforcement agencies can monitor vast areas and detect poaching activity in real time. Drones can also help locate poacher camps and provide evidence for legal action. In addition, drones equipped with speakers can play sounds that deter animals from entering poaching hotspots or alert park rangers of potential threats.

Another example is the transportation industry, where the Massachusetts Department of Transportation uses visual AI to monitor traffic patterns and reduce congestion. The technology is being used to analyze traffic flow and identify bottlenecks, allowing the department to take action to improve traffic flow and reduce accidents.

Applications of visual AI with drones in environmental monitoring

Drones have become essential for various industries, including wildfire detection, air quality monitoring, precision agriculture, water resource management, and pollution control. Drones equipped with visual AI can help monitor vast areas and detect anomalies that might not be visible to the human eye, enabling early detection and swift action.

In wildfire detection, drones with thermal cameras can quickly detect fires and provide valuable data to firefighting teams. For example, the California Department of Forestry and Fire Protection (Cal Fire) has used drones equipped with thermal cameras since 2018 to detect wildfires in remote areas. The drones can fly

over the area, detect hot spots, and alert firefighters of potential fires in real time.

Air quality monitoring is another field where drones equipped with visual AI can provide valuable data. For instance, researchers at the University of Surrey in the UK have been using drones to measure air pollution levels in urban areas. The drones can fly over the area, measure the air quality in real time, and create a map of the pollution levels.

Precision agriculture is another area where drones equipped with visual AI can help increase efficiency and reduce costs. Drones can monitor crop health, identify areas of the field that need attention, and provide valuable data for irrigation and fertilization. For example, they use drones equipped with multispectral cameras in Japan to monitor rice crops and optimize irrigation and fertilization.

Drones with visual AI can also help with water resource management and pollution control. For instance, researchers at the University of California, Berkeley, have been using drones to monitor water quality in rivers and lakes. The drones can collect water samples, take pictures of the area, and analyze the data using visual AI to identify pollutants and contaminants.

Challenges and limitations of visual AI with drones in surveillance and monitoring

Visual AI with drones has its challenges and limitations. Using drones for surveillance has raised regulatory challenges, ethical concerns surrounding privacy and data security, and technical limitations that need to be considered.

Regulatory challenges include airspace regulations, data protection laws, and privacy laws. Airspace regulations vary by country and region, and drones used for surveillance must adhere to these regulations. For example, in the United States, the Federal Aviation Administration (FAA) regulates the operation of drones in national airspace. Data protection laws, such as the GDPR in the European Union, impose strict requirements on the collection, processing, and storage of personal data collected by drones. Privacy laws, such as the Fourth Amendment of the US Constitution, protect individuals from unreasonable searches and seizures and can be violated by using drones for surveillance.

Ethical concerns regarding the use of drones for surveillance include privacy, data security, bias, and discrimination. Using drones for surveillance can infringe on individuals' privacy, leading to concerns about mass surveillance and potential abuse. Data collected by drones can also be vulnerable to hacking and data breaches, leading to data security concerns. Finally, the algorithms used to analyze drone data could be biased against certain individuals or groups, leading to issues of bias and discrimination. Visual AI with drones has brought a revolution in surveillance and monitoring, but it also has its technical limi-

tations that need to be considered. Camera quality is one of the major limitations of visual AI with drones. The accuracy of the visual AI algorithms depends on the camera quality used to capture images and videos for analysis. Drones must have high-quality cameras to capture clear images and videos in different lighting conditions, including low-light environments.

Another limitation of visual AI with drones is processing power. Visual AI algorithms require significant processing power to analyze vast amounts of data in real time. However, drones have limited processing power compared to other computing devices, which can be challenging. As a result, some visual AI algorithms may not be suitable for use on drones. Storage limitations can be a significant challenge for drones used in surveillance and monitoring. Drones have limited storage capacity, and visual AI algorithms require large amounts of storage space to store the data they analyze. It can limit the amount of data that drones can collect continuously over a long period.

Environmental factors such as wind, rain, and fog can also affect the accuracy of the visual AI algorithms used in drones for surveillance and monitoring. These factors can interfere with the drone's ability to capture clear images and videos, reducing the accuracy of the analysis. Therefore, using visual AI with drones requires careful consideration of the technical limitations to ensure their effectiveness in surveillance and monitoring.


Future of visual AI with drones in surveillance and monitoring

Visual AI and computer vision technology have already made significant advancements in surveillance and monitoring, but there is still much potential for further progress. Quantum compu-

ting is a relatively new technology that uses quantum-mechanical phenomena to perform calculations. It can revolutionize computer vision and visual AI by enabling faster and more efficient data analysis. Quantum computing could be beneficial in analyzing large datasets and in developing more advanced machine learning algorithms.

Swarm intelligence is a collective behavior that emerges from the interactions of numerous individual agents. It has already been successfully applied in drone technology and could improve visual AI and computer vision algorithms. For example, a swarm of drones could work together to analyze a large area in real time and provide a complete picture of a given situation.

Deep learning algorithms are a subset of machine learning that enable computers to learn from and decide based on large amounts of data. They are already being used in visual AI and computer vision applications, but there is potential for further advancement. For example, researchers are currently exploring the use of deep learning algorithms to enable computers to recognize and interpret human emotions from facial expressions.

Visual AI with drones is transforming the way surveillance and monitoring are conducted. By leveraging the power of computer vision, drones equipped with sophisticated cameras, sensors, and algorithms can capture and analyze data in real time, providing insights that were previously impossible to obtain. While there are challenges and limitations associated with this technology, the future of visual AI with drones looks promising as the technology continues to advance. 



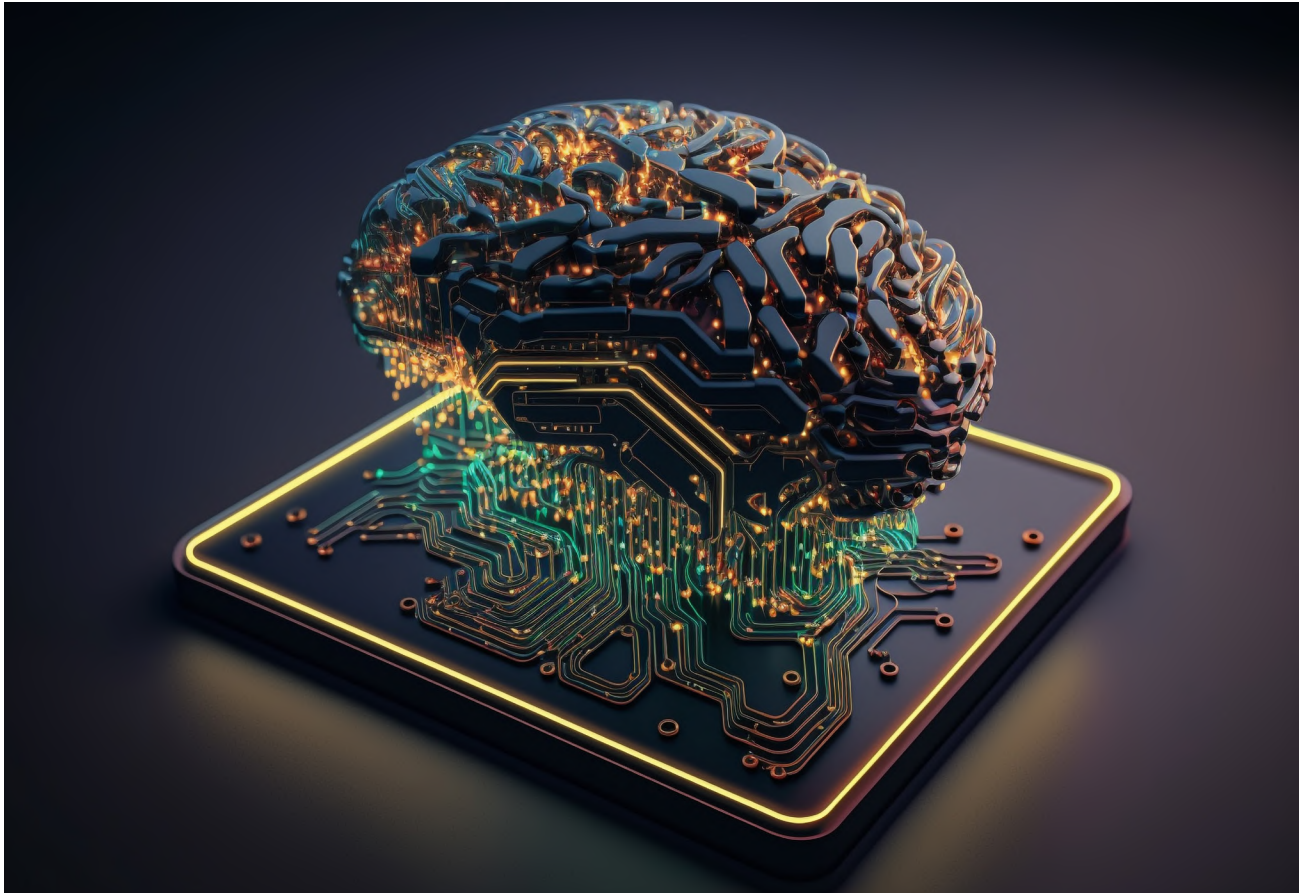
Modified Image - Aerial view of construction workers working on a new building in Sao Paulo via Creative Market

INNOVATION THAT'S OUT OF THIS WORLD



Innovators see beyond physical limitations to create amazing possibilities. Boeing is proud to work with partners who are committed to creating a better world.





Artificial intelligence new technology science futuristic abstract human brain AI technology via Freepik

BY FATIMA RAZI

WHAT IS GENERATIVE AI?

Generative AI, short for generative artificial intelligence, focuses on creating intelligent systems capable of generating original and creative content with AI. Unlike traditional AI models that rely on predefined rules and data patterns, generative AI produces new and innovative outputs that resemble human-created content autonomously.

Trained using vast amounts of data, these models and advanced algorithms can perform many tasks. From learning patterns, understanding context, to generating novel content in various forms such as text, images, music, and more, generative AI has become an exciting field. These models can also analyze existing data, identify underlying structures, and create new instances based on those patterns.

A critical characteristic of generative AI is its ability to go beyond mere replication or imitation and strive to produce unique, creative outputs that surpass humans. In recent years, advancements with models like GPT-3 and StyleGAN have demonstrated impressive capabilities in yielding coherent text and highly realistic images.

Generative AI has found applications in diverse domains, including creative arts, content creation, virtual reality, and even scientific research. Generative AI opens up new possibilities for human-machine collaboration, artistic expression, and innovation by providing machines with the ability to generate original content.

GENERATIVE AI FACTS & FIGURES

The global market size for generative AI was **USD 7.9 B** in 2021 and could be

\$110.8B
by 2030

with a **CAGR of 34.3%**. (Acumen)

**Microsoft Corporation,
Hewlett-Packard Ent, HP
Oracle Corporation,
NVIDIA
Salesforce**

are some of the significant generative AI market participants worldwide. (Yahoo! Finance)

IBM's survey says Chinese and Indian firms have the highest AI adoption rates for generative AI at nearly **60%**, followed by the

**USA (25%) Canada (28%)
UK (26%) Australia (24%)**
(Deccan Herald)

By **2025**, generative AI will account for **10%** of all data produced, up from less than **1% currently**.
(Gartner) +

Generative AI tools augment human creativity

Generative AI now augments human creativity and productivity creating new niches and possibilities. They assist and collaborate with humans in various domains, from art and design to content creation and product innovation.

By leveraging generative AI, artists, designers, and musicians now explore new creative possibilities, pushing the boundaries of their craft. These models provide them with innovative tools and inspiration, allowing rapid iteration, experimentation, and generation of unique and captivating content.

Generative AI can potentially revolutionize industries such as advertising and marketing, where personalized and engaging content is in high demand. It can automate the generation of tailored advertisements, product recommendations, and customer experiences, improving engagement and conversion rates.

Generative AI aids scientific research by assisting in data analysis, hypothesis generation, and simulation. It can accelerate drug discovery, materials science, and climate modeling breakthroughs.

But it is, without a doubt, generative AI's ability to amplify human creativity and productivity that is opening new avenues for innovation, artistic expression, and problem-solving.

Popular generative AI models

Generative AI models that have emerged in recent years with impressive capabilities:

- **GPT-3 (Generative Pre-trained Transformer 3):** Developed by OpenAI, this natural language processing model has applications in content creation, chatbots, language translation, and more. Boasting a staggering 175 billion parameters, it is one of the largest language models ever created.
- **StyleGAN (Style-Generative Adversarial Network):** StyleGAN, by NVIDIA, synthesizes highly realistic and diverse images by manipulating style and latent space. It is widely used in fashion, design, and art, creating stunning and unique visuals.
- **DALL-E:** Another notable model by OpenAI combines generative AI with image understanding. It can generate images from textual descriptions, opening up exciting possibilities for creative content generation and visualization.
- **BERT (Bidirectional Encoder Representations from Transformers):** Developed by Google, it is a widely-used model for natural language processing tasks. It has significantly advanced the understanding of contextual language representation. BERT's ability to generate contextual embeddings has proven valuable in various applications

such as question answering, sentiment analysis, and text classification.

- **VQ-VAE (Vector Quantized Variational Autoencoder):** This model demonstrates impressive image generation and compression results. VQ-VAE can generate high-quality images with detailed and diverse visual content by learning discrete representations and applying vector quantization.

These popular generative AI models have garnered attention for their remarkable abilities. Continued research and development are expected to bring forth even more advanced and powerful generative AI models in the future.

The controversy around generative AI

There are ethical concerns whenever new technology is developed. Striking the right balance between innovation and responsible use of generative AI remains a crucial concern, prompting discussions on regulations, transparency, and ethical guidelines for its development and deployment.

One major issue surrounding generative AI is the potential for bias and discrimination in generated content. Generative AI models trained on biased or unrepresentative data can perpetuate or amplify existing biases. Additionally, there are concerns about the ethical use of AI-generated content, such as deepfake videos, which can be misused for deceptive purposes. AI-generated creations' ownership and intellectual property rights also pose legal and ethical challenges.


The future of generative AI

With ongoing research and advancements, generative AI holds the potential to reshape industries, empower individuals, and unlock new frontiers of innovation in the years to come. Some key takeaways for the future are:

- **Enhanced Creativity:** Generative AI is poised to become an invaluable tool for enriching human creativity. Future models can assist artists, designers, and writers generate novel ideas, refine concepts, and explore new creative directions. These models can serve as creative collaborators, sparking inspiration and pushing creative boundaries.
- **Personalized Experiences:** There is great potential for revolutionizing personalized experiences in areas like entertainment, marketing, and healthcare through generative AI. By leveraging user data and preferences, future generative AI models can create tailored content, products, and recommendations that cater to individual needs and preferences, providing highly engaging and immersive experiences.
- **Virtual Worlds and Simulation:** Sophisticated virtual

worlds and simulations can be created with the help of generative AI. These immersive simulations can enable new forms of interactive storytelling, training, and problem-solving. Advanced models may generate realistic environments, characters, and narratives for gaming, training simulations, and virtual reality experiences.

- **Co-Creation and Human-AI Collaboration:** The future of generative AI lies in its integration and augmentation with human creativity and expertise. Collaborative models may emerge, where humans and AI systems work together to generate content, design products, and solve complex problems. This synergy between human intelligence and generative AI can unlock unprecedented levels of innovation and productivity.
- **Ethical and Responsible AI:** Addressing ethical considerations will be crucial as generative AI becomes widely used. A balance will need to be maintained between innovation and responsibility. Privacy, bias, and societal impact have to drive the future trajectory of generative AI. Upcoming developments must focus on enhancing fairness, transparency, and accountability in generative AI systems.

Generative AI has come a long way since its early beginnings, empowering humans with creative machines that push the boundaries of imagination. We are excited to see what the coming months will bring. 



Human head robot. Generative AI via Creative Market

Important Milestones in Generative AI

2020

Large-Scale Language Models

Large-scale language models have showcased the power of generative AI in creating coherent and contextually aware text in 2020.

But it is important to remember that Large Language models have been developing since the 1960s when Joseph Weizenbaum created ELIZA in MIT.]

1980-1990

Recurrent Neural Networks (RNNs)

The 1980s-1990s witnessed the rise of RNNs, which played a crucial role in advancing generative models. RNNs introduced the concept of sequential processing, allowing for the generation of more coherent and natural-sounding text. However, they faced challenges capturing long-range dependencies and suffered from the vanishing gradient problem.

2000

Generative Adversarial Networks (GANs)

One of the most groundbreaking milestones in generative AI came with the introduction of GANs in the early 2000s by Ian Goodfellow. GANs revolutionized the field by pitting two neural networks against each other—the generator and discriminator. This adversarial training approach resulted in high-quality image and content generation, opening possibilities for realistic image synthesis, creative design, and content generation.

1960-1970

Early Generative Models

In the 1960s-1970s, generative models focused on probabilistic approaches like Markov chains. They laid the foundation for generating simple sentences and paragraphs, albeit with limited complexity and coherence.

BY AMIR HUSAIN

TO BE MORE PRODUCTIVE, THINK ALGORITHMICALLY

Computer Generated Image





Data scientist concept via Freepik

BY AMIR HUSAIN

To Be More Productive, Think Algorithmically

What are algorithms and how can they help you get the best from your day by reorganizing your tasks?

Algorithms are all around us, governing everything from the recipes we use to cook dinner to the routes our navigational systems suggest we take to avoid traffic. But what exactly is an algorithm? In simple terms, an algorithm is a set of instructions for completing a task. The word comes from the name of a 9th-century Persian mathematician, Muhammad Ibne Musa Al-Khwarizmi, who was credited with introducing the concept of algorithms to the Western world. Today, algorithms are used in various ways,

from sorting mail to routing internet traffic. And, of course, algorithms power the search engines we use daily.

But how do algorithms work? In short, algorithms rely on the power of an “agent” to rapidly carry out instructions exactly and precisely, processing large amounts of data or identifying patterns quickly. In the case of a cooking recipe, the agent executing the algorithm is a human being. But in the case of a search engine, the agent is a computer system or thousands of computers working

together. For example, when you search for a particular term on Google, the search engine uses an algorithm to scour the internet for pages that contain that term. It then ranks those pages based on several factors, like how often the word appears on the page and whether other websites link to that page. The goal is to provide users with the most relevant results possible - thanks to algorithms, we can accomplish the task with speed and accuracy.

But as we've pointed out, you don't have to be a computer to run an algorithm. A human being can run algorithms in their head!

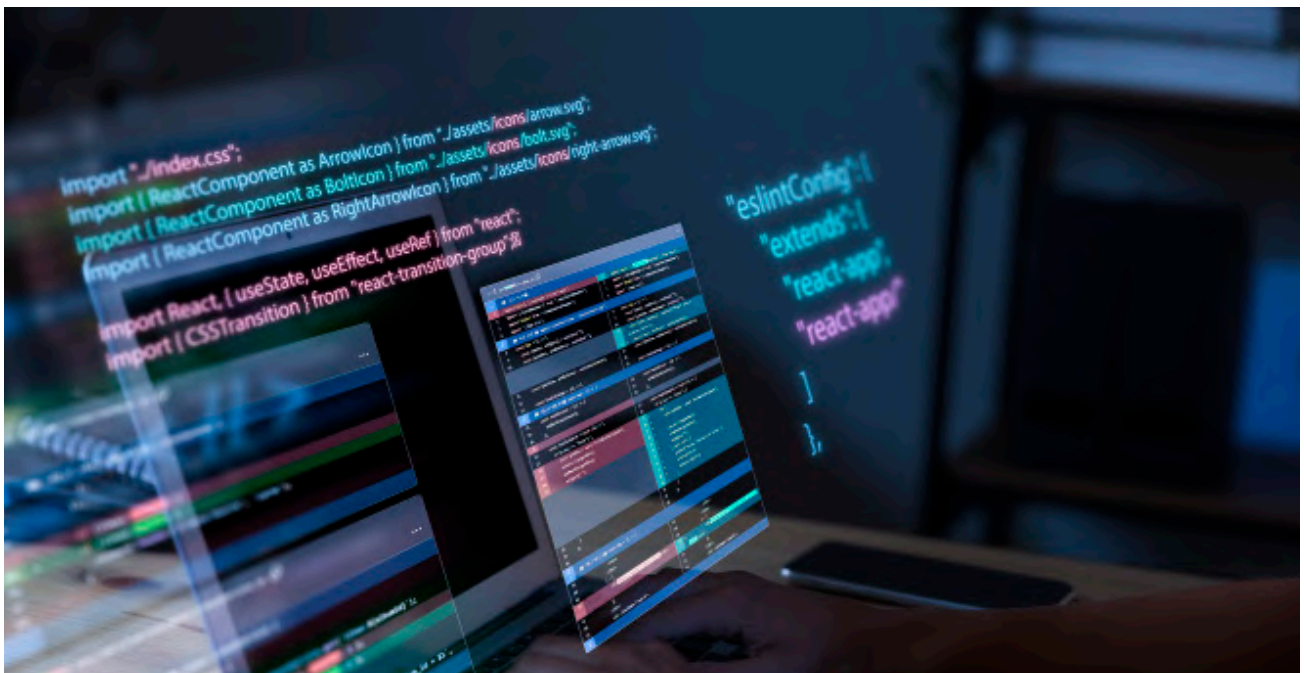
In their book *Algorithms to Live By: The Computer Science of Human Decisions*, Brian Christian and Tom Griffiths argue that we can use algorithms to improve our decision-making skills. For example, when deciding whether or not to sell your home, you could use the "secretary problem" algorithm. This algorithm helps you optimize your chances of finding the best buyer by spending the optimal amount of time looking for the best offer. It so happens that the optimal time to spend looking for buyers is roughly a third of the time you've allocated to completing the sale. For example, say you've been given three months to sell your home. It would be best to look at all inbound offers for a month, not accepting any of them. Then, starting with the first day of the second month, you should simply accept the first offer you receive, which is equal to or better than the best offer you've received so far. No more waiting, no more dilly-dallying. This is the optimal amount of time to dedicate to "searching."

Any productivity expert will tell you that determining the order in which you do tasks is vital to getting the most out of your day. For instance, let's say you're trying to decide which task to do

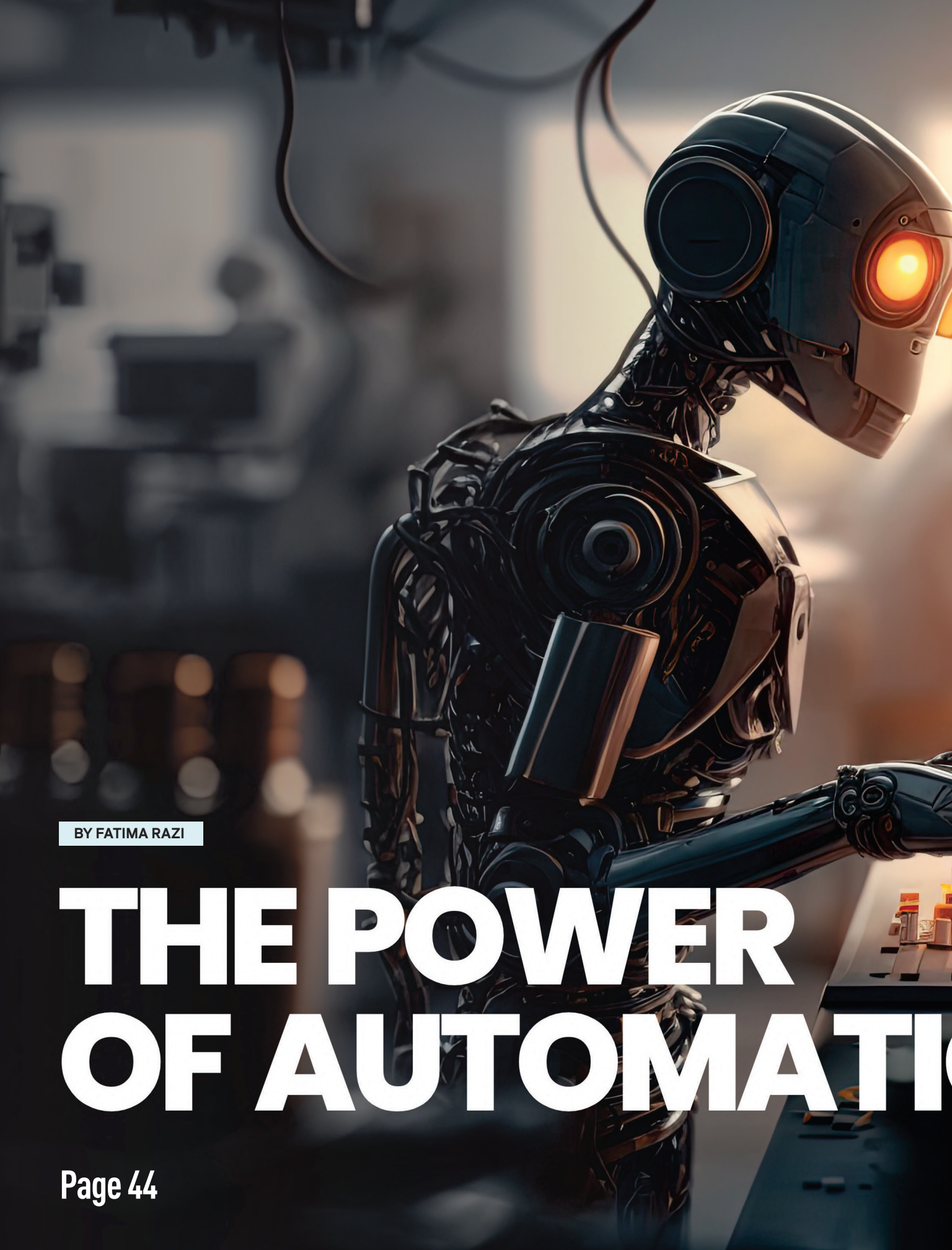
first: write an article or design a presentation. You could spend hours agonizing over which job is more critical or choose the first option that meets your criteria for importance. Making a quick decision saves time and energy that could be better spent on completing the task. If you have many jobs, should you do a bit of each in a round-robin fashion, i.e., starting one task, working on it for a bit, then switching to another task and repeating until they are all done? Or should you do the shortest one first? Perhaps you should choose the hardest one first? It turns out that ranking tasks by a combination of factors that reflect overall priority is the best approach in most cases. In other words, think of all the factors that go into making the completion of a task valuable. Then rank all the tasks appropriately and do them in that order.

The last-in-first-out (LIFO) algorithm used to manage a computational data structure called a "stack" is another practical algorithm you can use to get things done faster. For example, let's say you are working on writing a paper or an article and have lots of pieces of paper, research materials, and other sources strewn about on the desk. How should you organize these most efficiently? Well, once again, computer science has an answer! It turns out that you should put these objects in stacks, perhaps separated by topic, where the last item you use is merely put back on the top of the pile. This works because the information most recently accessed tends to be what is most likely to be accessed next. In computers, caches utilize this principle, also called "locality of reference." What went last in, is most likely to come first out... or LIFO.

▣



Programming background with person working with codes on computer via Freepik



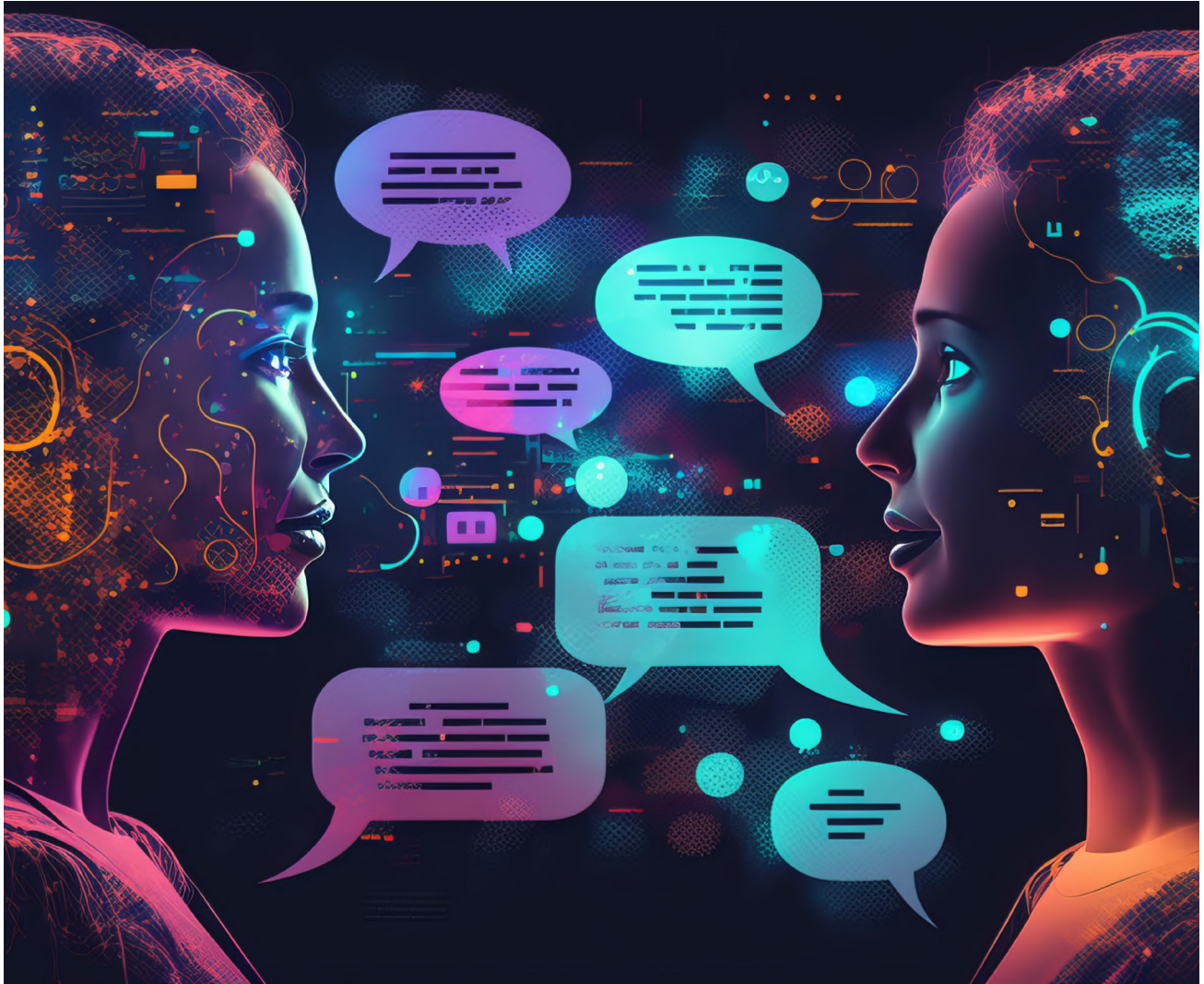
BY FATIMA RAZI

THE POWER OF AUTOMATIC



ON

Robot working in industry via Freepik



Chatgpt concept. chat with artificial intelligence. generative AI via Freepik

BY FATIMA RAZI

THE POWER OF AUTOMATION

Note: No response from ChatGPT has been edited.

Introduction


ChatGPT, powered by advanced language models, has emerged as a transformative technology that can automate and streamline various processes for many industries. With its natural language processing capabilities, ChatGPT can assist in tasks ranging from customer support and data analysis to content generation and project management. In this in-depth article, we will explore the real-world applications of ChatGPT in industry, providing

examples of prompts and responses that highlight its potential to drive efficiency, productivity, and innovation.

1: CUSTOMER SUPPORT AND SERVICE

Customer support is a critical aspect of any industry, and ChatGPT can significantly enhance the efficiency and effectiveness of customer interactions. By leveraging its conversational abilities, ChatGPT can address common customer queries, provide product information, and assist with troubleshooting.

F You are a customer support rep for an e-commerce business selling clothes. Reply to a query that says, "I need help with my order"


 Customer Support: Hello! Thank you for reaching out to us. I'm here to assist you with your order. How can I help you today?

Regenerate Response

Send a message...



F Customer: I received the wrong order.

 Customer Support: I apologize for any inconvenience caused by receiving the wrong order. I'll do my best to assist you in resolving this issue promptly. To begin, could you please provide me with your order number? This will help me locate your order details and take the necessary steps to rectify the situation.


Regenerate Response

Send a message...



By integrating with backend systems, ChatGPT can offer personalized recommendations and suggestions based on customer preferences.

F You are a backend system, integrated with ChatGPT and offer personalized recommendations and suggestions based on a customer's music preference. You respond with similar artists when a customer writes an artist's name

 Customer: I really enjoy listening to Taylor Swift. Can you recommend similar artists? Backend System: Absolutely! If you enjoy Taylor Swift's music, you might also like the following artists:

1. **Kacey Musgraves:** Kacey Musgraves is known for her heartfelt country-pop songs, and her lyrics often capture a similar storytelling vibe to Taylor Swift.
2. **Maren Morris:** Maren Morris combines country and pop influences in her music, delivering powerful vocals and relatable lyrics.
3. **Halsey:** Halsey's music blends elements of pop, alternative, and electropop. She has a unique sound and often explores personal experiences in her songs, much like Taylor Swift.
4. **Ed Sheeran:** Ed Sheeran is a singer-songwriter who often incorporates heartfelt storytelling into his music. He has a knack for creating catchy melodies and relatable lyrics, similar to Taylor Swift.
5. **Alessia Cara:** Alessia Cara's soulful pop sound and introspective lyrics resonate with many Taylor Swift fans. She has a talent for capturing emotions and experiences through her music. These are just a few

recommendations based on your interest in Taylor Swift. Feel free to explore these artists and see if their music resonates with you. Enjoy discovering new music!

Regenerate Response

Send a message...




By automating initial customer interactions, ChatGPT can handle a significant volume of inquiries, providing timely responses and freeing up human support agents to focus on more complex or specialized issues.

2. DATA ANALYSIS AND INSIGHTS

Data analysis plays a crucial role in decision-making across industries. ChatGPT can assist in data analysis tasks by generating insights, summarizing information, and performing basic data manipulations.

F You are a financial advisor that offers a summary of sales data for a small food store when an employee asks for a financial report for the last month. Use dummy data.

 Employee: Can you provide me with a financial report for the last month for our small food store?

Financial Advisor: Certainly! Here's a summary of the sales data for the past month:

1. **Total Revenue: \$50,000**
This represents the total amount of money generated from sales during the last month.
2. **Cost of Goods Sold (COGS): \$25,000**
COGS includes the direct costs associated with producing or purchasing the products sold. It covers expenses such as raw materials, packaging, and direct labor.
3. **Gross Profit: \$25,000**
Gross profit is calculated by subtracting the COGS from the total revenue. It reflects the profit made after considering the direct costs of producing or purchasing the products.
4. **Operating Expenses: \$15,000**
Operating expenses include various costs incurred to run the business, such as rent, utilities, salaries, marketing, and other overhead expenses.
5. **Net Profit: \$10,000**
Net profit represents the final profit figure after deducting all expenses, including both COGS and operating expenses, from the total revenue.

Regenerate Response

Send a message...

ChatGPT's ability to interpret and extract information from data sets enables businesses to quickly gain insights and make informed decisions, without the need for extensive manual analysis.

3. CONTENT GENERATION AND COPYWRITING

Creating engaging and persuasive content is a crucial aspect of marketing and communication strategies. ChatGPT can automate content generation tasks by providing draft content, generating blog post ideas, or even assisting with copywriting.

F Write a 100 word blog post on the benefits of exercise with a quote from a famous celebrity and a motivating end.



Title: Embrace the Power of Exercise: A Path to a Healthier and Happier You

"Exercise is a celebration of what your body can do. Not a punishment for what you ate." – Drew Barrymore.

Regular exercise brings a plethora of benefits to our lives. It improves cardiovascular health, boosts energy levels, and enhances mental well-being. Exercise releases endorphins, the "feel-good" hormones that uplift our mood and reduce stress. It strengthens muscles, improves flexibility, and promotes weight management. Remember, every small step counts. So lace up your shoes, prioritize self-care, and let exercise empower you to achieve greatness. Embrace the journey, enjoy the process, and witness the transformative impact it can have on your life. You deserve a healthier, happier you!

Regenerate Response

Send a message...



By providing content outlines or generating initial drafts, ChatGPT accelerates the content creation process, allowing marketers and writers to focus on refining and adding their unique touch.

ChatGPT can also create complete posts for your Social Media needs along with emojis and hashtags.

F Write a fun, exciting 280-character, social media post for Twitter about a 5-day free promotion on a book titled 'Botanical Line Drawing 2' from the 4th of June to the 9th of June, 2023.



Get ready to unleash your inner artist! Don't miss the FREE 5-day promotion of 'Botanical Line Drawing 2' starting June 4th! Dive into a world of beautiful botanical art and create stunning masterpieces. Grab your copy and let your creativity blossom! #BotanicalLineDrawing2 #FreePromo

Regenerate Response

Send a message...



4. PROJECT MANAGEMENT AND TASK ORGANIZATION

Efficient project management and task organization are crucial for ensuring smooth operations and meeting deadlines. ChatGPT can assist by helping to create and manage to-do lists, setting reminders, and providing task-related information. ChatGPT's ability to organize and prioritize tasks helps teams stay focused, improves collaboration, and ensures projects are completed efficiently.

F Help me schedule my day. I have an 8-hour work day and I have two 1-hour meetings at 12:00pm and 2:00pm. I also need to pick up my daughter from soccer practice at 4:00pm. Schedule a time to pick up groceries, write emails, update my blog, and wash the car. Create a schedule for me.



Based on the information provided, here's a suggested schedule for your day:

- 8:00 am - 9:00 am: Work
- 9:00 am - 10:00 am: Write emails
- 10:00 am - 11:00 am: Work
- 11:00 am - 12:00 pm: Work
- 12:00 pm - 1:00 pm: Meeting
- 1:00 pm - 2:00 pm: Lunch break
- 2:00 pm - 3:00 pm: Meeting
- 3:00 pm - 4:00 pm: Work
- 4:00 pm: Pick up daughter from soccer practice
- 4:30 pm - 5:00 pm: Grocery shopping
- 5:00 pm - 6:00 pm: Blog update
- 6:00 pm - 7:00 pm: Car wash

Please note that you may need to adjust the timings based on your specific needs and commute time. This schedule allows you to complete your work, attend meetings, take care of personal tasks, and spend quality time with your daughter.

Regenerate Response

Send a message...



5. VIRTUAL ASSISTANT AND APPOINTMENT SCHEDULING

Managing schedules and appointments can be time-consuming. ChatGPT can act as a virtual assistant, assisting with appointment scheduling, setting reminders, and providing relevant information.

By automating appointment scheduling, ChatGPT simplifies the process, reduces scheduling conflicts, and ensures efficient time management.

F Simulate a use case where you are a virtual assistant that can schedule appointments when clients tell you a time and place.



User: Hi, Virtual Assistant. I need your help in scheduling an appointment for me.

Virtual Assistant: Of course! I'd be happy to assist you. Please provide me with the details of the appointment, including the time and place.

User: I would like to schedule a meeting with Dr. Smith. I prefer a morning appointment at 10 a.m., and I would like it to take place at his office on 123 Main Street.

Virtual Assistant: Understood. I will check Dr. Smith's availability for a morning appointment on 123 Main Street. Please hold on for a moment while I confirm.

[Virtual Assistant checks Dr. Smith's schedule]

Virtual Assistant: Good news! Dr. Smith has availability for a morning appointment on the date you mentioned. However, I would like to offer you a few alternative time slots for you to choose from, just in case. Here are the options: 9 a.m., 10:30 a.m., or 11 a.m. Which time slot would you prefer?

User: 10:30 a.m. would be great for me.

Virtual Assistant: Excellent. I will proceed to schedule your appointment with Dr. Smith for 10:30 a.m. on the specified date at his office on 123 Main Street. Is there anything else you would like me to include or any specific requirements I should pass along to Dr. Smith's office?

User: No, that should be all. Thank you for your assistance.

Virtual Assistant: You're welcome! I have successfully scheduled your appointment with Dr. Smith for 10:30 a.m. on the requested date at his office on 123 Main Street. You should receive a confirmation shortly via email. If you have any further questions or need any adjustments, please don't hesitate to let me know.

Regenerate Response


Send a message...



6. MARKET RESEARCH AND COMPETITIVE ANALYSIS

ChatGPT can assist in gathering information about competitors, industry trends, and market dynamics, enabling businesses to make informed decisions and stay ahead of the competition.

F I want to start a customized coffee blend business for high end clients. Can you provide a brief competitor analysis?

 Certainly! Here's a brief competitor analysis for your high-end coffee blend business:

1: Competitor 1: Blue Bottle Coffee

- Blue Bottle Coffee is known for its high-quality, specialty coffee beans.
- They emphasize sustainable and ethically sourced coffee beans.
- Blue Bottle offers a range of single-origin coffees and unique blends.
- They have a strong online presence and operate cafes

across various cities.

- Blue Bottle's brand image focuses on premium quality and exceptional customer experience.

2: Competitor 2: Intelligentsia Coffee

- Intelligentsia Coffee is renowned for its direct trade and meticulously sourced coffee beans.
- They provide detailed information about the origin and flavor profiles of their coffee.
- Intelligentsia offers a variety of blends, including seasonal and limited edition options.
- They have a strong wholesale program, supplying coffee to top-tier establishments.
- Intelligentsia places emphasis on educating consumers about coffee quality and brewing techniques.

3: Competitor 3: Stumptown Coffee Roasters

- Stumptown Coffee Roasters focuses on sourcing and roasting exceptional coffees.
- They have direct relationships with farmers, ensuring high-quality beans.
- Stumptown offers a range of blends, single-origin coffees, and unique coffee processing methods.
- They have a strong presence in the specialty coffee community and collaborate with renowned chefs and restaurants.
- Stumptown emphasizes providing a personalized coffee experience and offers brewing classes.

4: Competitor 4: La Colombe Coffee Roasters

- La Colombe Coffee Roasters is known for its ethically sourced, hand-roasted coffee.
- They have a wide selection of blends, including their popular "Corsica" blend.
- La Colombe operates cafes across various cities and has a strong online retail presence.
- They are recognized for their innovative products, such as draft lattes and canned coffee.
- La Colombe focuses on creating a warm and inviting coffee shop experience.

When starting your customized coffee blend business, it's essential to differentiate yourself by offering unique and exceptional blends. Consider emphasizing factors like sustainable sourcing, direct relationships with farmers, personalized customer experience, and educating consumers about the flavor profiles and brewing techniques of your coffee.

Regenerate Response

Send a message...



7. LANGUAGE TRANSLATION AND LOCALIZATION

ChatGPT's language capabilities extend beyond generating text and can be used to automate language translation tasks, helping businesses communicate effectively in global markets.

F Can you translate this email from English to French:

Hi Jack,

I hope you are well. I would like you to help us find some Freelance content writers that will help us create some articles, blog posts, social media posts, etc. I'm attaching a brief JD that I think would fit the profile we need. Let me know if you need anything else. I would really appreciate it if we could expand this as I have some approaching deadlines.

Thank you for your help as always,

Regards,

Sarah Smith
Content Strategist

 Bonjour Jack,

J'espère que tu vas bien. J'aimerais que tu nous aides à trouver des rédacteurs de contenu freelances qui nous aideront à créer des articles, des billets de blog, des publications sur les réseaux sociaux, etc. Je joins une description de poste succincte qui correspondrait au profil dont nous avons besoin. Fais-moi savoir si tu as besoin de quoi que ce soit d'autre. J'apprécierais vraiment si nous pouvions accélérer cela car j'ai quelques échéances qui approchent.

Merci pour ton aide comme toujours,

Cordialement,

Sarah Smith
Stratège de contenu

Regenerate Response


Send a message...

8. HR AND RECRUITMENT SUPPORT

ChatGPT can streamline the recruitment process by pre-screening candidates, asking initial questions, and collecting relevant information. It can provide information on company policies, benefits, and employee onboarding processes. ChatGPT can assist in answering frequently asked HR-related questions, such as vacation policies, training programs, or performance evaluation processes. ChatGPT can assist HR departments in drafting job descriptions, providing initial screening questions

for interviews, or even answering frequently asked questions from job applicants.

F Can you draft a 100 word Job Description for a Unity Game Developer?

 Job Description: Unity Game Developer

We are seeking a talented Unity Game Developer to join our dynamic team. As a Unity Game Developer, you will be responsible for designing, developing, and implementing engaging and immersive game experiences. You will collaborate closely with artists, designers, and other developers to bring concepts to life.


Regenerate Response

Send a message...

9. FINANCIAL ANALYSIS AND FORECASTING

ChatGPT's ability to analyze financial data and generate forecasts assists businesses in making strategic financial decisions and planning for future growth.

F You are an AI financial Advisor who can forecast financial data when an employee makes a query.

 Employee: Can you provide a forecast for our company's revenue for the next quarter?

AI Financial Advisor: Certainly! In order to provide an accurate forecast, I would need some historical data on your company's revenue. Please provide me with the revenue figures for the past few quarters, and I will use advanced forecasting models to estimate the revenue for the upcoming quarter.

Additionally, if there are any specific factors or events that might impact the revenue, such as new product launches or market trends, please let me know. This will help me incorporate those variables into the forecast, providing you with a more comprehensive analysis.

Once I have the necessary information, I will generate a forecast that can assist you in making informed financial decisions.


Regenerate Response

Send a message...

10. LEGAL RESEARCH AND DOCUMENT REVIEW

ChatGPT can assist legal professionals in conducting research, identifying relevant legal documents, and summarizing complex legal concepts.

F Can you help me find similar cases to Roe vs. Wade?

 Certainly! Roe v. Wade is a landmark case in the United States that established the constitutional right to access abortion. If you're looking for similar cases that involve significant legal rulings or impact reproductive rights, here are a few examples:

1. **Planned Parenthood v. Casey (1992):** This case involved a challenge to Pennsylvania's abortion restrictions. The Supreme Court reaffirmed the central holding of Roe v. Wade and established the "undue burden" standard, allowing states to regulate abortion as long as they do not impose an undue burden on a woman's right to choose.
2. **Whole Woman's Health v. Hellerstedt (2016):** This case addressed a Texas law that imposed strict regulations on abortion clinics, resulting in the closure of many clinics. The Supreme Court struck down the law, finding that it placed an undue burden on women seeking abortion services.

These cases provide important context and legal precedents related to reproductive rights. It's worth noting that the legal landscape and specific cases may vary in different countries.


Regenerate Response

Send a message...



11. CHATGPT CAN ALSO BE A KITCHEN ASSISTANT

F Can you create a recipe from these ingredients I have in the pantry: a can of chicken broth, frozen shrimps, cottage cheese and Italian bread.

 Certainly! Here's a recipe you can make using the ingredients you have in your pantry: Shrimp and Cottage Cheese Soup with Garlic Bread.

Ingredients:

- 1 can of chicken broth
- 1 cup frozen shrimps, peeled and deveined
- 1 cup cottage cheese
- 2 slices of Italian bread
- 2 cloves of garlic, minced
- 2 tablespoons olive oil

- Salt and pepper to taste
- Fresh parsley for garnish (optional)

Instructions:

1. Preheat your oven to 350°F (175°C).
2. In a medium-sized pot, heat the chicken broth over medium heat until it comes to a simmer.
3. Add the frozen shrimps to the pot and cook for about 3-4 minutes until they turn pink and are cooked through. Remove the shrimps from the broth and set them aside.
4. Reduce the heat to low and add the cottage cheese to the broth. Stir well until the cottage cheese is fully incorporated and the soup is smooth and creamy. Season with salt and pepper to taste.
5. Meanwhile, prepare the garlic bread. In a small bowl, combine the minced garlic with the olive oil and a pinch of salt. Brush the mixture onto both sides of the Italian bread slices.
6. Place the bread slices on a baking sheet and bake in the preheated oven for about 8-10 minutes, or until the bread is toasted and crispy.
7. Once the garlic bread is ready, remove it from the oven and let it cool slightly. Then, cut it into smaller pieces or slices as desired.
8. To serve, ladle the shrimp and cottage cheese soup into bowls. Place a few cooked shrimps on top of each bowl of soup. Garnish with fresh parsley, if desired.
9. Serve the soup hot with the garlic bread on the side. Enjoy!


This recipe combines the flavors of shrimp, creamy cottage cheese, and garlic bread to create a delicious and comforting meal. Feel free to adjust the seasonings and garnish to your taste preferences. Enjoy your meal!

Regenerate Response

Send a message...



CONCLUSION

ChatGPT's automation capabilities provide significant benefits across industries. By streamlining customer support, assisting with data analysis, automating content generation, simplifying project management, and acting as a virtual assistant, ChatGPT enhances efficiency, productivity, and innovation. As this technology continues to advance, businesses can leverage ChatGPT to optimize their processes, improve customer experiences, and focus on higher-value tasks that require human expertise. With its ability to handle complex conversations and provide accurate responses, ChatGPT represents a powerful tool for driving industry transformation. 



VISUAL AI SAVES BILLIONS IN HSE

BY MAHE ZEHRA

Business intelligence, financial, copyright Rikkyal via Creative Market



Modified Image - Industry Workers, copyright biancoblue via Freepik

BY MAHE ZEHRRA

VISUAL AI SAVES BILLIONS IN HSE

Examine the benefits of obtaining visual AI solutions that work 24/7 to keep workers safe

Artificial Intelligence (AI) has been making headlines for decades. It is a fascinating next-generation technology that has already created a massive paradigm shift worldwide. AI already has and will continue to alter the workplace, but its most significant impact, in my opinion, will be to reduce workplace injuries and fatalities.

WORKPLACE CHALLENGES

Workplace injuries and fatalities have long-lasting impacts on both individuals and organizations, emphasizing the critical importance of prioritizing

safety in the workplace. In addition to physical injuries, mental health issues, such as stress, anxiety, and depression, can also arise from workplace incidents.

Heinrich's Triangle Theory, developed by H.W. Heinrich, provides a framework for understanding the relationship between workplace incidents, near misses, and the presence of underlying factors contributing to accidents.

AI can play a pivotal role in breaking the chain of incidents outlined in Heinrich's Triangle. Through advanced data analysis and machine learning, AI algorithms can identify precursors and early warning signs of potential accidents, enabling organizations to intervene and address these underlying factors before they escalate.



DRIVERS THAT CAUSE CHALLENGES

Many HSE challenges, such as poor ergonomics, a lack of personal protection equipment (PPE) compliance, and unsafe vehicle management, contribute to workplace accidents. Workplace accidents can range from multiple “near misses” to fatal injuries. However, human factors are almost always involved in workplace incidents.

Jodie Sasse, from SparkCognition recently gave a very insightful webinar on how their Visual AI Advisor helps to increase workplace health and safety. She pointed out that humans have a biased memory and are “notoriously forgetful.” She also noted that employees could arrive at work fatigued and follow old habits. In addition, out of all the risks that organizations face, failure to follow procedures is the most common, accounting for 62% of all threats. Another challenge for HSE management is that every employee digests employee training differently; some employees quickly understand their work, whereas others require practice.

1. There were 5,190 fatal work injuries in the US in 2021. (BLS)
2. Slips, trips, and falls account for 26% of nonfatal injuries in the workplace. (CDC)
3. Over 2.4 million workers a year require ER visits after work-related injuries. (CDC)
4. \$171 billion is the cost of work-related injuries in 2019. (National Safety Council)
5. An average of 14 workers per day lose their life on the job in the US. (OSHA)
6. In 2020 deaths associated with transportation were the leading cause of workplace deaths. (US Bureau of Labor Statistics)

VISUAL AI SOLUTIONS

There is an enormous demand to have a reliable HSE solution. Investors are reluctant to invest in companies with a poor health and safety environment. Similarly, employees refrain from working with organizations that fail to provide a secure working environment. Workplace safety is one of the top concerns when considering a job offer.

Sasse shared that investing in HSE is the best way to put all these fears to rest. Companies save money by implementing competent HSE AI models, which diminish the chances of workplace accidents. In fact, for every dollar a company invests, their return on their HSE investment is twofold. Sometimes, it is even more.

Visual AI utilizes computer vision technology to identify and alert relevant personnel when certain health and safety parameters are not met. Using advanced machine learning models, it can capture rich media content, such as still images and videos, and classify objects such as people, machines, assets, etc. The software can then work in unison with existing camera equipment to identify any anomalies or compliance issues in the workplace.

A good visual AI solution can detect faulty equipment in the work environment and it can ensure flawless compliance with PPE. For example, Visual AI Advisor, an HSE solution designed by SparkCognition, can use cameras to identify workers who do not use the correct equipment for their work environment, like hard hats, gloves, etc. Likewise, it can switch off machines when it detects movement or personnel nearby.

Applying a robust machine learning solution, like Visual AI Advisor, will also ensure that as time passes and more data is collected the solution improves and learns to detect dangerous patterns to alert personnel with higher predictability.

- Visual AI Advisor’s advanced HSE model is cost-effective and integrates with existing systems.
- It ensures round-the-clock monitoring for visual protection while complying with privacy requirements.
- It boasts company-wide coverage so that they monitor entire workplaces.
- It dramatically reduces paperwork, bureaucracy, and work interruptions.

VISUAL AI USE CASES

Visual AI Advisor’s HSE solution can be rapidly deployed and integrated with existing systems and can support over 125 use cases. Let’s examine some examples below.

The first use case is reduction of ergonomic stress. This problem covers about 58% of all HSE costs. Wrong postures and overexertion can cause this problem and Visual AI Advisor mitigates this and by identifying bad postures and notifying management to suggest changes. It also can implement corrective

behavioral training.

The second use case is human and machine interaction. Here, the solution can track the vehicle's speed and activity pattern through heat maps. It can then issue safety alerts in case of any safety risk detected. For instance, the breach of safety speed by a factory worker operating a vehicle.

Another use case worth examining is that of PPE guidance. It is imperative to implement PPE compliance and reduce workplace accidents. Visual AI Advisor monitors workers and their working equipment in real time. The AI can easily detect improper compliance with PPE guidelines. It can also track and notify policy adjustments if necessary.

One of the most interesting use cases is that of tailgating. Key-card entry alone is sufficient for regulating authorized access. However, Sasse raised the often-overlooked issue of tailgating. As the name suggests, tailgating in this scenario is when a person with authorized access opens the door with their key card, and someone not permitted into the restricted area follows them

into that specific area. Tailgating is not only a glaring issue in a globally accepted security mechanism, but it can also tremendously compromise a company's security and the confidentiality of its operations. Visual AI solves this problem using cameras and facial recognition software to verify who enters a specific area.

CONCLUSION

New technology is usually met with heavy criticism. This criticism circles mostly around privacy and the notion of constantly being watched. Sasse addressed this concern in the SparkCognition webinar and remarked that humanity is usually rigid towards change, whether new, beneficial, or detrimental. Concerns like privacy can be addressed by blurring the faces of the workers but implementing this solution could save lives. Therefore, in favor of workplace safety, the corporate work environment must embrace this change with open arms. It will not only preserve human life, which is priceless, and make work far more efficient, but it will cut down on costs that companies spend on worker protection with unsatisfactory results. **IC**



Modified Image - Industry Workers via Freepik

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PHYSICAL & DIGITAL WORLD



HyperWerx serves as a proving ground that brings research and commercial applications together to explore and showcase the potential of AI integrated with physical systems. The HyperWerx facility is used by SparkCognition and its partners to develop and test the exciting, new advancements in the world's most promising technologies.

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