/Join us on this groundbreaking odyssey into the realm of creative algorithms.

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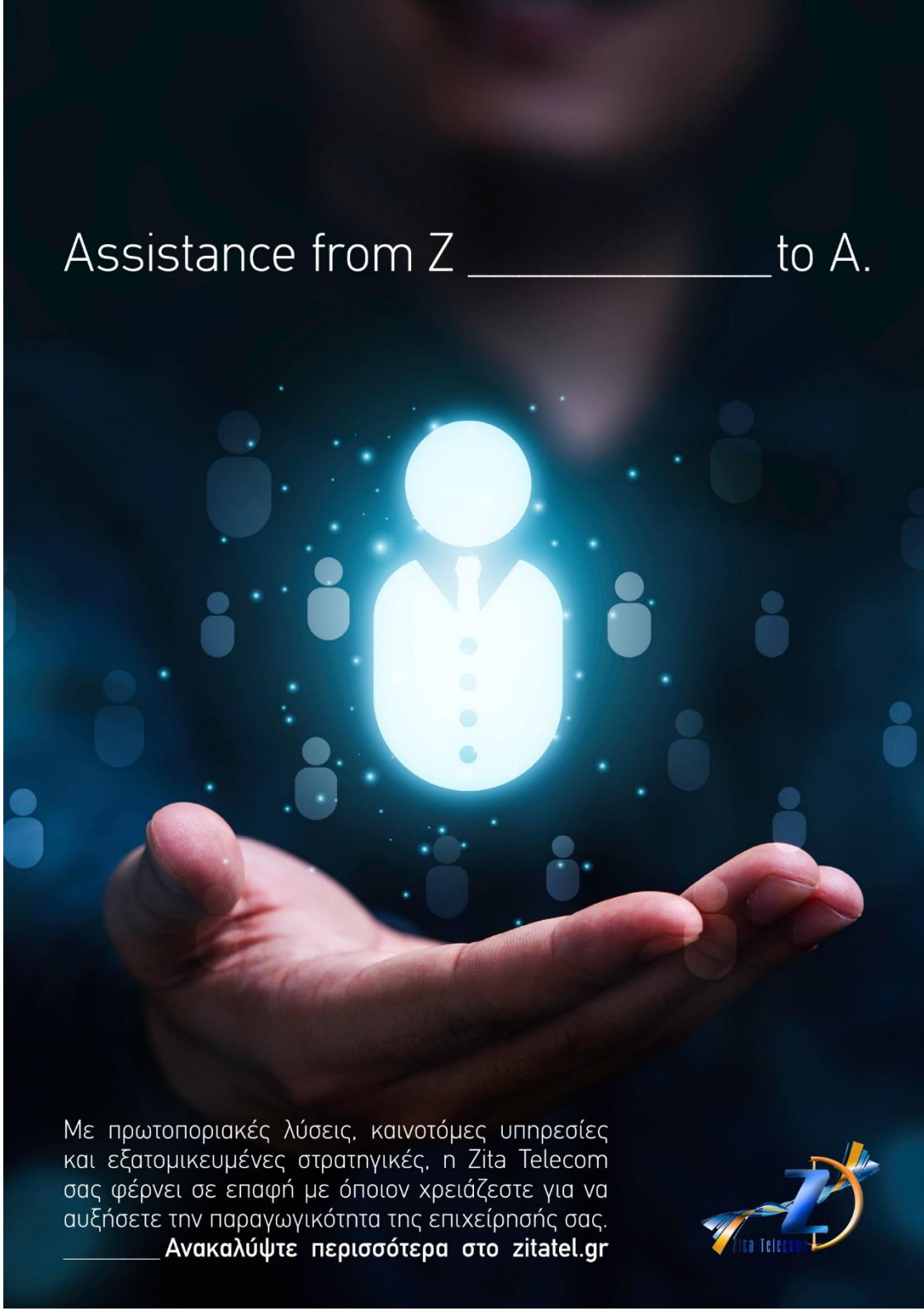
The Book


Assistance from Z _____ to A.
Με πρωτοποριακές λύσεις, καινοτόμες υπηρεσίες και εξατομικευμένες στρατηγικές, η Zita Telecom σας φέρνει σε επαφή με όποιον χρειάζεστε για να αυξήσετε την παραγωγικότητα της επιχείρησής σας.
_____ Ανακαλύψτε περισσότερα στο zitatel.gr

1 Table of Contents

1. Introduction

Dear Readers,

This is a book that was written to introduce the 2024 Interactive Marketing Conference, titled:

AI Unleashed - The A.I. Generated Odyssey

The conference was programmed for March 5th, 2024 and this compilation is a preparatory document for all those wishing to learn more about AI in the advertising industry.

If the reader wishes to learn more about AI and especially the effect AI has in the advertising and marketing industries, then it would be best to read the content in the sequence it is written.

Click on the “References” link so that you can take yourself to the sources of the content.

Regards.

Contact at svovos@gmail.com or www.linkedin.com/in/svovos/

2. AI in Advertising

A futuristic photo of a beautiful female with no hair at all and an elongated head that represents artificial intelligence as it is presenting advertising to young individuals looking on their mobile phones.

A realistic image of a mobile phone screen advertisement in the year 2050 with the theme of "Just Fly Around Europe- with your new personal anti-gravity flyer".

2.1 The Evolution of AI in Digital Advertising

A high-level overview of how AI has transformed the digital advertising landscape. Historical perspectives and major breakthroughs that have shaped AI in advertising. Current trends and future predictions for AI-driven advertising.

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It is a pleasure to explore the fascinating evolution of Artificial Intelligence in the dynamic fields of Advertising and Marketing, Media and Publishing. In these pages, we embark on a journey through time, reflecting on historical perspectives, celebrating the major breakthroughs, and envisioning the future of AI in advertising.

In the not-so-distant past, advertising was more art than science. Creativity and intuition ruled the industry. But as the digital landscape expanded, so did the need for precision and relevance.

The Journey through time

Let's ease up a bit, rewind and consider some historical perspectives concerning the advertising industry.

It all began with basic rule-based systems for ad placement and targeting like banner ads that were often frustratingly irrelevant. We've come a long way since then.

Historical perspectives of the digital advertising landscape

The landscape has undergone significant changes over the past few decades. Here's an analysis of its historical development:

1. Early Web Banners and Pop-Ups:
In the early 1990s, digital advertising was in its infancy. Advertisers experimented with static web banners and pop-up ads, which were often intrusive and disruptive. However, this period marked the birth of digital advertising as we know it.

2. Search Advertising and Google's Dominance:
Google's introduction of AdWords in 2000 revolutionized advertising. It allows advertisers to bid on keywords and display ads alongside search results. This shift from impression-based to performance-based advertising set the stage for modern digital advertising.

3. Display Advertising and the Rise of Ad Networks:
The mid-2000s witnessed the proliferation of display advertising, including banner ads, rich media, and video ads. Ad networks like DoubleClick (acquired by Google) emerged, offering a way for advertisers to reach a broader audience across various websites.

4. Social Media Advertising:
The late 2000s and early 2010s saw the emergence of social media advertising. Platforms like Facebook, Twitter, and later Instagram and Snapchat, became popular advertising channels. This shift allows advertisers to tap into the vast user bases and targeting options these platforms offered.

5. Mobile Advertising:
With the rapid adoption of smartphones, mobile advertising became essential. Mobile ads took various forms, including in-app ads, mobile search ads, and location-based advertising. This transformation reflected the changing digital landscape and user behavior.

6. Programmatic Advertising and Real-Time Bidding:

The advent of programmatic advertising in the mid-2010s was a game-changer. It allowed for automated, data-driven ad buying and real-time bidding, increasing efficiency and targeting precision.

7. Native Advertising and Content Marketing:
Advertisers began integrating ads seamlessly into content, leading to the rise of native advertising. Content marketing also gained prominence as brands realized the value of providing valuable content to engage customers.

8. Video Advertising and Influencer Marketing:
Video advertising on platforms like YouTube and the emergence of influencer marketing became prevalent. These strategies tapped into consumers' increasing appetite for video content and authentic endorsements.

9. Data-Driven Advertising and Personalization:
Advances in data analytics and AI allowed for data-driven advertising. Advertisers started to analyze user data to personalize ads, enhancing relevance and engagement.

10. Privacy Concerns and Regulatory Changes:
As the digital advertising landscape matured, concerns about data privacy and user tracking arose. Regulations like GDPR and CCPA imposed restrictions on data collection and use.

11. The Rise of Mobile Apps and App-Based Advertising:
With the growth of mobile apps, app-based advertising became a prominent channel. This shift led to the development of app install ads and in-app advertising models.

12. The Impact of Ad Blockers:
Ad blockers became a significant concern for advertisers. Users sought to regain control over their online experiences, prompting the industry to focus on creating less intrusive and more user-friendly ad formats.

These historical perspectives reveal a remarkable transformation in the digital advertising landscape. From rudimentary web banners to highly

targeted, data-driven, and personalized advertising, the field has evolved to meet the changing preferences and behaviors of consumers.

Furthermore, the landscape has become increasingly complex and competitive, with advertisers continually seeking innovative strategies to engage audiences while respecting their privacy and preferences. The ongoing evolution of technology, including the increased role of AI and ethical considerations, will continue to shape the future of digital advertising.

Major breakthroughs, such as the introduction of machine learning and natural language processing, allowed for the analysis of massive datasets.

These breakthroughs meant that AI could break up mountains of data and draw insights that no human could. Consequently, we could reach the right people with the right message at the right time.

That's where AI came in, and **AI is a major breakthrough** and there is no arguing this!

Major breakthroughs of AI in advertising.

These breakthroughs have altered how advertising is conceptualized, created, targeted, and delivered.

1. Data-Driven Advertising:
Through the ability to harness vast amounts of data for advertising, AI has empowered advertisers to collect, process, and analyze enormous datasets. This has resulted in more informed decision-making, personalized advertising, and precise targeting.

2. Programmatic Advertising:
Real-time bidding and programmatic advertising platforms automate ad buying and placement, increasing efficiency and allowing advertisers to target audiences with unparalleled precision.

3. Personalization and Recommender Systems:
AI-driven recommendation algorithms tailor ad content and recommendations to individual user preferences, leading to higher engagement and conversion rates.

4. Behavioral Analytics:
AI's ability to analyze user behavior across various digital touchpoints, advertisers can better understand user intent, and craft more relevant and timely ads.

5. Natural Language Processing (NLP) and Sentiment Analysis:
NLP enables advertisers to understand and respond to user-generated content. Sentiment analysis helps gauge public sentiment toward products and brands.

6. Computer Vision and Image Recognition:
AI's ability to analyze images and videos allows for the analysis of visual content in ads, helping advertisers understand how users engage with images and videos.

7. Chatbots and Conversational Marketing:
Chatbots offer real-time customer engagement, answering questions

and guiding users through the sales funnel, providing a more interactive and immediate customer experience.

8. Content Generation and Automated Creativity:
AI's ability to create ad copy, images, and videos automates content creation, streamlining the creative process and enabling A/B testing of multiple ad variations.

9. Cross-Channel Integration:
AI systems can unify data and strategies across multiple advertising channels. Advertisers can maintain a consistent and seamless customer experience across various channels, from social media to email to physical stores.

10. Ethical Considerations and Privacy Protection:
The recognition of ethical concerns in AI-driven advertising has led to discussions about data privacy, algorithmic bias, and the responsible use of personalized advertising.

AI has evolved from being a tool for data analysis to becoming the cornerstone of advertising strategy.

Uses of artificial intelligence in advertising encompass the complete process, from brainstorming and ideation to creating designs and copy, and even serving ads and analyzing the data and returns from the campaign.

The benefits derived from dramatically increasing efficiency (and sometimes quality) can be astonishing.

Surveys depict that:

- 67% of marketers affirm that AI technology plays a pivotal role in expediting the content creation process.

- 48% of advertisers regard AI's ability to ignite innovation and unlock fresh ideas as one of its main benefits. *(Quist, 2023)*

The age of generative AI is now upon us.

Over the past two decades, AI has revolutionized the advertising landscape along with the business landscape in total. AI is currently (Q3 2023) growing faster than any technology of our time.

Source: *AI Strategy Guide: Make Data + AI + CRM Your Trusted Formula. (n.d.). Salesforce. https://www.salesforce.com/blog/playbook/ai-guide/?d=cta-header-1#chapter-1*

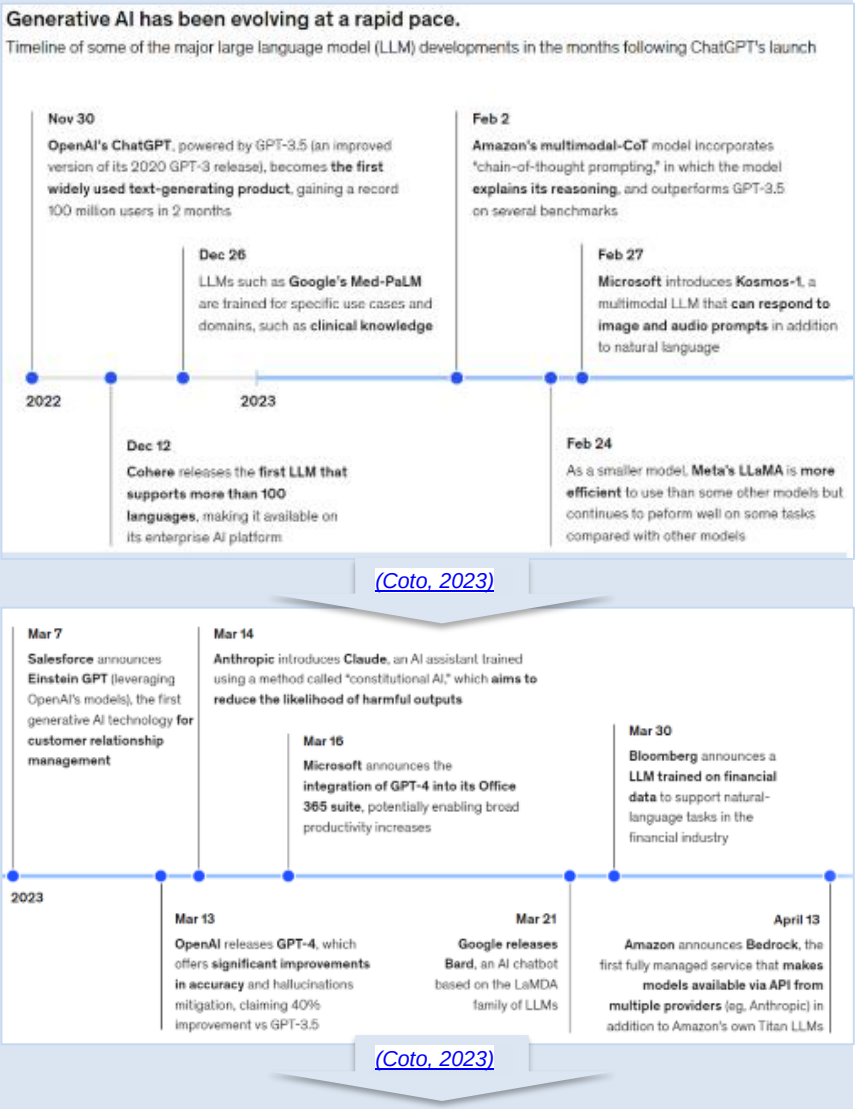
AI is not just a tool; it's the driving force behind a paradigm shift.

An evolution of AI algorithms, especially deep learning technologies, generative AI models come out of the box having learned how to use the foundations of human communication — language, art, music, programming code, etc.— to make new content similar to that of humans."

Generative AI can be scaled and deployed across institutions far faster and with less cost than human-only processes.

***Source:** An exclusive KPMG survey shows how top leaders are approaching this transformative technology Generative AI: From buzz to business value. (n.d.). https://kpmg.com/kpmg-us/content/dam/kpmg/pdf/2023/generative-ai-survey.pdf*

AI has transformed the market as well as advertising from a once one-size-fits-all approach to one that tailors content, targeting, and delivery to the individual.



(Coto, 2023)

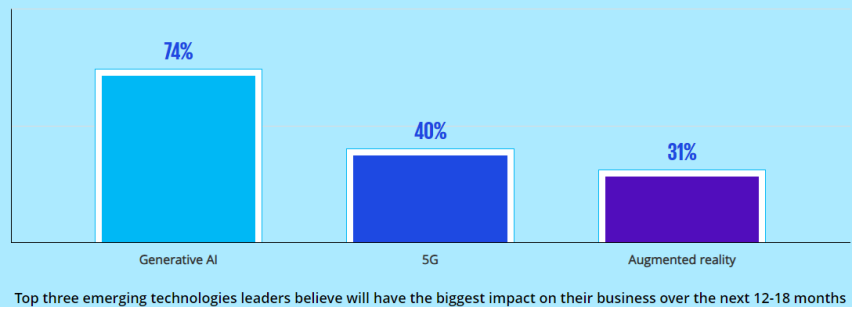
(Coto, 2023)

For the first time in history, we have a technology that can directly augment humans in knowledge creation. It's not an exaggeration to say that AI has redefined (or will soon redefine) the very essence of advertising.

Source: *An exclusive KPMG survey shows how top leaders are approaching this transformative technology Generative AI: From buzz to business value. (n.d.). https://kpmg.com/kpmg-us/content/dam/kpmg/pdf/2023/generative-ai-survey.pdf*

AI has a very significant impact in business results.

"Executives expect generative AI to have enormous impact on business, but (are) unprepared for immediate adoption"
KPMG. (2023, August 3). 2023 KPMG Generative AI Survey Report. Advisory-Marketing.us.kpmg.com. https://advisory-marketing.us.kpmg.com/speed/genai2023.html



(KPMG, 2023)

The 2022 NewVantage Partners Data And AI Executive Survey - *(New et al., n.d.)*, reflects a record number of participating

organizations – 94 Fortune 1000 or leading organizations. In this survey, **the BULLISH trend for investments in AI is clear.**

- 91.0% of the participating organizations are investing in AI activities.
- 92.1% of organizations report that they are realizing measurable business benefits, up from just 48.4% in 2017 and 70.3% in 2020
- Organizations report a more than doubling of AI initiatives (26.0%, up from just 12.1% in 2021) that have moved into widespread production

AI has brought the age of personalization.

- 49% of marketers emphasize AI's role in delivering personalized ad content.
  (Quist, 2023)

Advertisers can create individualized content, recommendations, and ad placements. If you've ever received an email suggesting products you were just thinking about, you've witnessed AI at its best (or worst).

The Importance of AI Ethics
Along with the great promise of AI come significant ethical challenges. Careful consideration of how this technology is developed, deployed, and used is required. AI ethics is fundamentally crucial for several reasons:

1. Fairness and Equity: *AI algorithms can inadvertently perpetuate societal biases if not designed and trained carefully. Unfair outcomes can affect marginalized groups, exacerbating existing inequalities.*

2. Accountability: *AI decision-making processes can be complex and opaque. AI ethics frameworks promote transparency and accountability, enabling better oversight and the ability to address errors or biases.*

3. Privacy and Data Security: *AI systems often require access to vast amounts of personal data. Ethical considerations are essential to protect individual privacy and data security.*

4. Safety: *In fields like autonomous vehicles and healthcare, AI has the potential to save lives. However, its misuse or inadequate safety measures can lead to harm. Ethical guidelines ensure that safety remains a top priority.*

5. Consent and Autonomy: *In human-AI interactions, it's vital to consider consent and human autonomy. Ethical AI respects the choices of individuals and avoids manipulative practices.*

Key Principles of AI Ethics
AI ethics is guided by several key principles:

1. Fairness: *Equitable outcomes for all individuals.*

2. Transparency: *AI algorithms and their decision-making processes should be transparent.*

3. Privacy: *Respect for user privacy and data protection.*

4. Accountability: *Those who develop and deploy AI are responsible for their actions.*

5. Safety: *AI systems should be designed with safety in mind.*

6. Autonomy: *AI should not manipulate or coerce individuals but instead empower them.*

As AI continues to advance, so too must AI ethics. Ethical considerations are integral to the responsible development and deployment of AI. Governments, organizations, and individuals have a role to play in shaping the future of AI ethics.

But what about the present? The landscape is continually evolving. We're in the midst of a data-driven revolution, leveraging real-time bidding, programmatic advertising, and dynamic content generation.

AI is analyzing user behavior across a multitude of devices, channels, and touchpoints. The customer journey is no longer linear; it's a complex, interconnected web.

And there are issues to be dealt with.

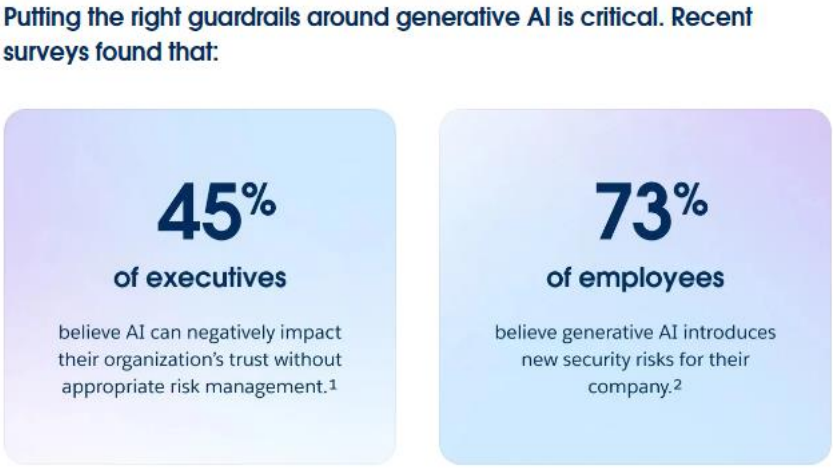
Algorithm bias in AI
Algorithm bias is a critical issue that arises when the algorithms used to make decisions or predictions systematically and unfairly discriminate against certain groups of people. This bias can manifest in various ways and impact individuals based on their race, gender, age, socioeconomic status, or other characteristics.

Sources of Bias:
Algorithms learn from historical data, and if the training data is biased, the AI model can perpetuate those biases. Bias can be introduced during the design and development of an algorithm. This can happen due to the choices made in defining features, selecting data, or setting the algorithm's parameters. Developers themselves may have implicit biases that inadvertently influence the design and training of algorithms, reinforcing harmful stereotypes. Also, the process of labeling data for machine learning can introduce bias if the labelers are influenced by their own biases or if the labeling guidelines are biased.

Impact of Algorithm Bias:
Algorithm bias can lead to unfair discrimination, affecting people's access to opportunities, services, or resources., can perpetuate harmful stereotypes and reinforce existing prejudices, exacerbating social inequalities. Algorithmic bias erodes trust in AI systems and the organizations deploying them, leading to a lack of confidence in the technology. It can also lead to legal and ethical challenges, as seen in cases of discriminatory lending, hiring, and criminal justice practices.

"For CEOs, AI is the #1 priority, but 73% of employees believe that generative AI introduces new risks. Privacy, hallucinations, data control, bias, and toxicity are just some of their concerns".

Source: *AI Strategy Guide: Make Data + AI + CRM Your Trusted Formula. (n.d.). Salesforce. https://www.salesforce.com/blog/playbook/...*



[1] (KPMG US, 2023)

[2] (June 12 & 2023, 2023)

While AI brings an abundance of benefits for advertising, it also comes with quite a few challenges. For example, a Russian 'deepfake' ad featuring celebrity actor Bruce Willis that surfaced in 2022 was an initial sign pointing to how things can quickly turn strange and potentially problematic with the involvement of AI.

And we must not forget about the future. **AI-driven advertising is on a trajectory of unprecedented growth.**

As AI systems become more sophisticated and capable of understanding natural language and visual content, we'll see even more immersive and interactive ad experiences. Virtual and augmented reality will open new dimensions of creativity. Chatbots and voice-activated assistants will be the new storefronts.

Current trends for AI-driven advertising.

We face a landscape of continuous transformation.

1. Hyper-Personalization:
AI is driving the trend towards ever-more personalized advertising. Advertisers are leveraging data to understand consumer preferences, behaviors, and intent, delivering highly relevant content and product recommendations.

2. Cross-Device Tracking:
With consumers frequently switching between devices, cross-device tracking is a critical trend. AI is helping advertisers map user journeys across various devices for consistent targeting.

3. Programmatic Advertising:
Programmatic advertising continues to gain momentum. Real-time bidding and automated ad buying are becoming standard practices, maximizing ad efficiency and targeting precision.

4. Voice and Visual Search:
The rise of voice-activated devices and the refinement of computer vision technology are influencing the way advertisers optimize content for voice and visual search.

5. AI-Generated Content:
AI is playing an increasing role in content generation, helping advertisers create ad copy, images, and even videos. This aids in producing high volumes of content for A/B testing and personalization.

6. Conversational Marketing:
Chatbots, virtual assistants, and conversational marketing are on the rise. AI-powered chatbots offer real-time customer engagement and assistance, streamlining user experiences.

7. Predictive Analytics and Forecasting:
AI is being used for predictive analytics, enabling advertisers to anticipate customer behavior and optimize campaigns. Forecasting

tools help in budget allocation and strategy planning.

8. Privacy-Centric Advertising:
The industry is moving towards more privacy-centric practices in response to regulations and user concerns. Advertisers are investing in techniques like federated learning to target users while protecting their data.

9. Influencer Marketing AI Tools:
AI is being used to identify suitable influencers, track their impact, and provide insights into influencer marketing campaigns.

AI isn't just a tool; it's the cornerstone of advertising's future.

AI is already nearly omnipresent in advertising and marketing.

- *75% of marketing and ads professionals revealed that they used the AI large language model ChatGPT in their work routines, in a 2023 survey across North America, South America, and Europe.*
- *WPP, recognized as the largest ad agency globally, unveiled a strategic alliance with AI hardware giant Nvidia in May 2023. This collaboration aims to revolutionize the content creation paradigm for brands by seamlessly integrating generative AI at a more expansive and customized level.*
- *Recognizing the AI's ability to write great copy, JP Morgan Chase entered a collaboration with Persado, a pioneering software startup. Their decision was cemented when AI-generated copy consistently exhibited higher click rates on adverts — often even doubling the figures.*
  (Quist, 2023)

Finally, moving forward, we must **keep our ethical compass intact**. Privacy, transparency, and responsible use of AI are non-negotiable. Advertisers who succeed in this new era will be those who harness AI's power while respecting its boundaries.

Future predictions for AI-driven advertising.

We face a landscape of continuous innovation.

1. Ethical AI:
There will be an increasing focus on ethical AI, with more transparent and unbiased algorithms, as well as adherence to privacy regulations.

2. AI Regulation and Industry Standards:
As AI continues to shape advertising, there will be increased regulation and the establishment of industry standards to ensure responsible AI usage.

3. AI-Driven Creativity:
AI will be generating compelling ad content, graphics, and videos tailored to individual preferences.

4. Enhanced Predictive Analytics:
AI will refine predictive analytics, providing advertisers with more accurate insights into future customer behavior and market trends.

5. AI in Augmented and Virtual Reality:
As AR and VR advertising grows, AI will contribute to creating immersive ad experiences tailored to individual user interactions.

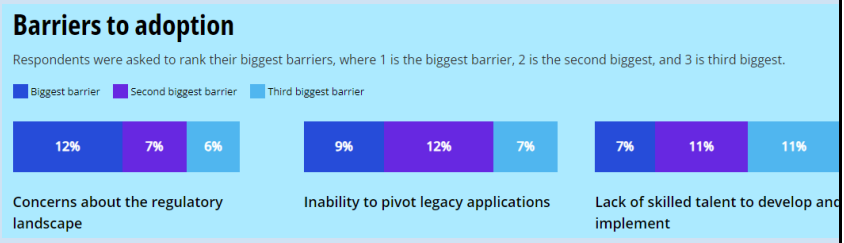
6. Further Expansion of Voice and Visual Search:
Voice and visual search will become more integrated with AI, allowing users to shop by simply speaking or pointing their devices at products.

7. AI-Enhanced Customer Journeys:
AI will optimize the entire customer journey, from ad exposure to post-purchase interactions, providing seamless, highly tailored experiences.

8. AI-Generated Video Content:
AI will have a more significant role in generating video content, revolutionizing video advertising and personalizing the video viewing experience.

9. AI-Powered Attribution Models:
Advanced attribution models will provide a clearer understanding of which touchpoints are driving conversions, enabling more informed advertising investments.

10. Blockchain for Ad Transparency:
The use of blockchain technology to provide transparency and trust in digital advertising, especially in ad verification and supply chain tracking.



(KPMG, 2023)

In Conclusion

The evolution of AI in digital advertising is a remarkable journey. From humble beginnings, it has grown into a juggernaut, reshaping how we connect with our audience. As we look ahead, the possibilities are endless.

AI will continue to redefine advertising, blurring the lines between science and creativity. The digital advertising landscape will never be the same again, and that's something to embrace, celebrate, and steer responsibly.

Salesforce CEO Marc Benioff Asks →
"What's the scariest thing you've seen in the lab? "

OpenAI CEO Sam Altman Answers →
"Nothing super scary yet.
***We know it will come**.*
We won't be surprised when it does…"

A Kandinsky style painting of a "customer segments analysis chart" being presented on a large TV screen during a business meeting.

2.2 AI-Powered Ad Targeting and Personalization

Exploring how AI algorithms are used to analyze user data and behavior for better ad targeting. Ethical considerations and privacy concerns in personalized advertising. Success stories and case studies showcasing the effectiveness of AI-driven ad targeting.

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We delve into one of the most transformative forces shaping the world of advertising - AI-powered ad targeting and personalization. In this era of digital marketing, the power of artificial intelligence is nothing short of revolutionary, as it transforms how brands engage with their audiences.

*AI-Powered Ad Targeting and Personalization: This is **Striking the Balance Between Precision and Privacy.***

In the dynamic world of digital advertising, precision and personalization are the keys to success. Advertisers aspire to reach the right audience at the right time with a message tailored to individual interests and preferences. Achieving this level of relevance was once a formidable challenge.

Artificial Intelligence (AI) has transformed the advertising landscape by revolutionizing ad targeting and personalization.

With AI the customer targeting process has become more precise, efficient, and effective. Here's how AI has achieved this transformation.

***Data Analysis and Insights**: AI can process and analyze vast amounts of data, structured and unstructured, at a speed and scale impossible for humans. Data gathered from customer interactions, social media, website visits, purchase history, and more. This enables a more in-depth understanding of customer behavior and preferences.*

***Predictive Analytics**: AI algorithms can predict future customer behavior and preferences by identifying patterns in historical data. This allows businesses to anticipate what products or services a customer might be interested in, as well as when and how they are likely to make a purchase.*

***Segmentation**: AI can automatically segment a customer base into different groups based on various criteria, such as demographics, psychographics, and purchase history. This helps in tailoring marketing efforts to the specific needs and preferences of each group.*

***Personalization**: AI enables highly personalized marketing efforts. Advertisers can create individualized content, product recommendations, and messages for each customer, significantly increasing engagement and conversion rates.*

***Real-Time Decision Making**: AI can make real-time decisions about which ad to show or which content to display to a customer based on their current behavior. For example, it can choose the most relevant product to recommend while a user is browsing an e-commerce site.*

***Automation**: AI automates many aspects of customer targeting and marketing, including ad placement, email marketing, and social media posts. This reduces the need for manual intervention and allows marketers to focus on strategy and creativity.*

***A/B Testing and Optimization**: AI can conduct A/B testing at scale, comparing the effectiveness of different marketing strategies, messages, and creatives. It then optimizes campaigns in real-time to achieve the best results.*

***Customer Journey Mapping**: AI can create detailed customer journey maps, highlighting touchpoints and interactions with a brand. This insight helps in understanding where customers drop off or convert, allowing for more effective targeting at crucial moments.*

***Chatbots and Conversational Marketing**: AI-driven chatbots engage customers in real time, answering questions and guiding them through the sales funnel, delivering a highly personalized experience.*

***Cross-Channel Integration**: AI can unify data and strategies across multiple marketing channels, ensuring a consistent and seamless customer experience whether a customer interacts with a brand through social media, email, a website, or a physical store.*

***Predicting Customer Lifetime Value**: AI can estimate the future value of a customer, helping businesses prioritize their marketing efforts on high-value customers and tailor offers and experiences accordingly.*

AI has revolutionized the customer targeting process by leveraging its data-processing capabilities to provide insights and predictions, automate tasks, enable personalization, and optimize marketing efforts. This results in more relevant and engaging customer experiences, increased efficiency for businesses, and the ability to make data-driven decisions in real-time.

Traditional advertising methods relied on demographic data and basic user characteristics for ad placement. This approach often led to many ads missing their mark. AI, with its ability to process vast amounts of data and discern intricate patterns, has revolutionized this process.

It enables advertisers to delve deeper into user behavior, preferences, and online activity, facilitating a more nuanced understanding of the audience. Consequently, AI helps advertisers deliver more relevant and engaging ads to users.

The Power of Data and AI

In the heart of this revolution lies the power of data and AI. The sheer volume of data available today is staggering. Every time we click, browse, or swipe, we leave a digital footprint.

AI algorithms have the incredible capacity to mine this treasure trove of information, from our online behavior to our preferences and interests. They turn this data into actionable insights for advertisers.

AI algorithms can parse a user's online history, the websites they visit, the content they engage with, their search queries, and even their social media interactions. These algorithms can recognize patterns and correlations that are beyond the scope of manual analysis. For example, they can determine that a user who frequently reads tech news in the morning and watches cooking videos in the evening might be interested in smart kitchen gadgets.

According to a report by Statista, the total amount of data created, captured, copied, and consumed globally is forecast to increase rapidly. It reached 64.2 zettabytes in 2020. Over the years up to 2025, global data creation is projected to grow to more than 180 zettabytes.

Another source, Section, estimates that every day we are generating over 2.5 quintillion or 2.5 exabytes of data. This number is also increasing, with estimates that by 2025, 463 exabytes of data will be created each day.

It's difficult to imagine the sheer volume of data that exists on the internet today. To put it into perspective, consider this: the total amount of data created, captured, copied and consumed in the world was 33 zettabytes in 2018.

Source: *Conversation with Bing, 21/10/2023*
(1) Data growth worldwide 2010-2025 | Statista.
https://www.statista.com/statistics/871513/worldwide-data-created/.
(2) How Much Data Is on the Internet? - Section.
https://www.section.io/engineering-education/how-much-data-online/.
(3) The world's data explained: how much we're producing and where it's all ....
https://theconversation.com/the-worlds-data-explained-how-much-were-producing-and-where-its-all-stored-159964.
(4) How Much Data Is Created Every Day? +27 Staggering Stats - SeedScientific.
https://seedscientific.com/how-much-data-is-created-every-day/.
(5) Chart: A Minute on the Internet in 2021 | Statista.
https://www.statista.com/chart/25443/estimated-amount-of-data-created-on-the-internet-in-one-minute/.

Insights of the kind offered by AI analytics often involve, **segmentation** of the audience or customer base, **real-time analysis of KPIs** relevant to the campaign's objectives, revealing patterns and **trends** in user behavior, comparing the **performance** of different ad variations and strategies, **insights** into the conversion funnel, customer feedback and **sentiment**, **competitor analysis**, ROI optimization.

Some of the main AI algorithms used to recognize patterns & correlations are:

Supervised Learning Algorithms:

***Linear Regression**: Used for modeling the relationship between a dependent variable and one or more independent variables.*
***Logistic Regression**: Suitable for binary classification tasks, such as spam detection or customer churn prediction.*
***Decision Trees**: Useful for both classification and regression tasks, they create a tree-like model of decisions and their possible consequences.*
***Random Forest**: An ensemble method that builds multiple decision trees to improve accuracy and reduce overfitting.*
***Support Vector Machines (SVM)**: Effective for classification and regression tasks, SVMs find the optimal hyperplane that best separates data points.*

Unsupervised Learning Algorithms:

***K-Means Clustering**: Segments data into clusters based on similarity, often used for customer segmentation.*
***Hierarchical Clustering**: Groups data into a tree-like structure, revealing hierarchical relationships in the data.*
***Principal Component Analysis (PCA)**: Reduces the dimensionality of data while preserving its variance, helpful for feature selection and data compression.*
***Association Rule Mining**: Identifies relationships or associations in data, often used in market basket analysis.*
***Anomaly Detection**: Identifies outliers or anomalies in data, valuable for fraud detection and quality control.*

Neural Networks and Deep Learning:

***Feedforward Neural Networks**: Traditional neural networks with input, hidden, and output layers.*
***Convolutional Neural Networks (CNNs)**: Designed for image and spatial data, they automatically learn hierarchical features.*
***Recurrent Neural Networks (RNNs)**: Suitable for sequential data, such as time series and natural language, due to their memory of previous inputs.*

Long Short-Term Memory (LSTM) Networks*: A specialized RNN architecture designed to capture long-range dependencies in sequential data.*
Gated Recurrent Unit (GRU) Networks*: Similar to LSTMs but with simplified architecture for faster training.*
Transformer Networks*: Especially well-suited for natural language processing tasks, including the popular BERT model.*

Ensemble Learning Algorithms:

Gradient Boosting Machines (GBM)*: A boosting technique that combines multiple weak learners to create a strong learner.*
AdaBoost*: A boosting algorithm that assigns weights to data points and focuses on the difficult-to-classify examples.*
XGBoost, LightGBM, and CatBoost*: Variations of gradient boosting that improve training speed and performance.*

Reinforcement Learning Algorithms:

Q-Learning*: A popular algorithm used in reinforcement learning that seeks to maximize rewards through action selection.*
Deep Q-Networks (DQN): *Combines Q-learning with deep neural networks, enabling it to handle complex tasks and large state spaces.*
Policy Gradient Methods: Directly optimize the policy followed by an agent in a given environment.

These algorithms are the building blocks of AI systems that excel at pattern recognition, whether it's detecting fraud, making product recommendations, segmenting customers, or any other task where finding intricate patterns and correlations in data is essential.

Source*: Chat GPT*

AI is used to better target customers as it's not just about showing ads; it's about enhancing the user experience. AI-driven ad targeting takes personalization to a whole new level. It's about delivering the right message to the right person at the right time.

AI-driven ad targeting
takes personalization to a whole new level.

Consider the success of e-commerce giants like Amazon and Netflix. They leverage AI to provide personalized product recommendations and content suggestions that keep us coming back for more.

The effectiveness is undeniable, and this level of personalization is achievable across various industries.

Additionally, targeted ads are turning to AI because of the imminent disappearance of cookies, which were previously used to track user behavior and preferences. AI-powered advertising refers to the use of machine learning algorithms to analyze data and predict user behavior, allowing advertisers to create more personalized experiences and target the right audience without having to use cookies.

AI helps identify potential customers, hyper-personalize and tailor messages to their specific needs, improve ad placement, and identify the most effective means to communicate the message.

***Personalization**:*
Consumers are increasingly looking for personalized ad experiences with 56% expecting all their experiences with a brand to be personalized. Additionally, 59% of customers say tailored engagement based on past interactions with a brand is very important to winning their loyalty.

Cognitive ads take personalization to the next level by using real-life consumer behavior and intricate data to understand

audience behavior.
The result is audiences who can reap the benefits of personalized messaging, at the right time, and when they want to see it.

Increased ROI:
Greater ad personalization means users are less likely to be annoyed by unwanted ads and may appreciate the messaging put in front of them. Engagement opportunities can increase and move more swiftly down the sales funnel, which can mean greater ROI for your company in the long term. In fact, 60% of consumers say they will become repeat buyers after a personalized shopping experience with a retailer.

***Higher engagement**:*
Cognitive ads are not just limited to desktops. They can be utilized on various touchpoints including kiosks and mobile apps.
According to the recent (2023) State of Engagement report by Marketo, the most popular touchpoints to drive purchases are website (53%), email (49%), and chat (41%). The more touchpoints available, the higher engagement a business can expect, especially when it's messaging resonates with their audience's beliefs and attitudes.
Additionally, tools like conversational AI can tailor the customer experience in real-time based on a consumer's interest and feedback.
By leveraging interactive marketing tools, like machine learning chatbots, your team can create drive engagement and loyalty.

***Greater brand loyalty**:*
When users are consistently presented with positive messaging that resonates, brand loyalty can increase.
Cognitive ads are all about building a deeper relationship with their target audience through data science. When a consumer can feel that connection, they're more inclined to come back.

***Cookieless targeting**:*
Privacy matters to modern consumers.
Sixty-nine percent of those surveyed in Twilio Segment's State of

Personalization Report 2021, say they appreciate personalized experiences based on the caveat that they've freely shared this information with the organization before.
Privacy has also been at the forefront of advertisers' minds. With the emergence of stricter regulations and loss of cookies, brands need to find new solutions to target audiences without seeming invasive. Cookieless targeting enables advertisers to create personalized experiences without the reliance on third-party cookies. This kind of targeting has and will continue to become increasingly important to consumers and regulators alike who are concerned about privacy and meeting compliance standards in their industry.

There is still a great discrepancy between what businesses think they are delivering in terms of personalized experiences and what consumers are perceiving.

While 85% of businesses say they are providing personalized experiences to consumers, only 60% of consumers think so.
Contextual advertising can be a beneficial way to deliver a personalized experience, without relying on cookies.
AI can deliver relevant messaging to target audiences by analyzing the content of the correlating page. For example: If a future bride is investigating wedding dresses, ads for other wedding necessities would be appropriate.
Contextual ads take the ability to place advertisements appropriately and deliver this at scale, creating more personalized web experiences.

Source:An Introduction to Cognitive Advertising | IBM Watson Advertising Thought Leadership. (n.d.). Www.ibm.com. https://www.ibm.com/watson-advertising/thought-leadership/an-introduction-to-cognitive-advertising

AI-powered personalization is paving the way for retail environments that forge even deeper brand loyalty and defy the traditional transactional nature of online commerce.

Artificial intelligence (AI) has revolutionized the retail industry by providing retailers with new ways to improve customer experience, optimize operations, and increase revenue. Here are some examples of AI use within the retail environment:

***1. Personalized recommendations**: Retailers use AI to analyze customer data such as purchase history, browsing behavior, and search queries to provide personalized product recommendations. This helps retailers increase customer engagement and loyalty.*

***2. Inventory management**: AI can help retailers optimize inventory management by predicting demand for products, identifying slow-moving items, and automating restocking processes. This helps retailers reduce costs and improve customer satisfaction.*

***3. Chatbots**: Retailers use chatbots powered by AI to provide customers with 24/7 support, answer frequently asked questions, and help customers find products. This helps retailers reduce response times and improve customer satisfaction.*

***4. Visual search**: Retailers use AI-powered visual search tools to help customers find products by uploading images of items they are looking for. This helps retailers increase customer engagement and sales.*

***5. Pricing optimization**: Retailers use AI to optimize pricing strategies by analyzing competitor prices, demand, and other factors to determine the optimal price for a product. This helps retailers*

increase revenue and stay competitive.

Source: *Conversation with Bing, 22/10/2023*
(1) Impact of AI on the retail industry - KPMG.
https://info.kpmg.us/news-perspectives/technology-innovation/thriving-in-an-ai-world/ai-adoption-retail.html.
(2) AI's Impact on Retail: Transforming the Shopping Experience - Murf.
https://murf.ai/resources/ai-in-transforming-shopping-and-retail-experience/.
(3) 6 Pivotal Benefits of AI for Retail [+ Use Cases from Top Brands].
https://www.bluestonepim.com/blog/ai-in-retail.
(4) The Future Of Retail: AI-Driven Trends To Watch.
https://retail-insider.com/articles/2023/10/the-future-of-retail-ai-driven-trends-to-watch/.
(5) Here's how artificial intelligence can benefit the retail sector.
https://www.weforum.org/agenda/2023/01/here-s-how-artificial-intelligence-benefit-retail-sector-davos2023/.

By using AI-powered data science to narrow in on specific sets of customers based on criteria such as their predicted lifetime value, businesses can personalize content for these customers with dynamic product recommendations.

Case Studies of Success

Take **Spotify**, for instance. They use AI algorithms to analyze your music taste, understand your mood (using emotion AI), and suggest the perfect playlist. The result? Engaged users who spend more time on the platform, and happier advertisers who reach their target audiences more effectively.

*Although **Spotify**'s music library of 70 million songs is similar to other streaming services, it has **over 422 million highly engaged users** (Statista, 2023) and **1,5 times** (Iqbal, 2023) more market share than Apple Music, its closest competitor.*

In addition, on average, Spotify's listeners engage with its platform 61 times per month. Comparatively, Apple Music listeners engage with its platform roughly 12 times per month, 5 times less often.

Thanks to AI, Spotify delivers a personalized listening experience for every customer to keep them on the platform and connected to friends and artists. Personalized playlists are the secret to Spotify's success. In fact, 30% of Spotify streams come from AI-recommended songs.

Spotify uses three key AI technologies to drive its recommendation software:

- ***Collaborative filtering –** analyzes and compares user listening patterns to determine common interests and make recommendations about what other songs a user might enjoy.*
- ***Natural language processing (NLP) –** analyzes text online, such as social media posts, blogs, and news articles, to learn about various artists, albums and genres. It then uses this data to recommend songs based on public perception and perceived similarities between artists.*
- ***Audio models –** Perhaps the most complex, this technology analyzes the raw data of each song, such as the lyrics, tone, instrumental variances, and other characteristics, to learn about and recommend songs to users interested in similar-sounding music. This is a great way for new artists who may not have a large following or online media coverage to gain exposure. This is highly innovative relative to the Certainty Factor (CF) and Natural Language Processing (NLP).*

Spotify's hyper-personalization AI keeps customers engaged by consistently suggesting new music that aligns with their listening preferences.

Sources:
Cohen, B. (2022, June 15). How Spotify Uses AI to Create an Ultra-Personalized Customer Experience and What Distributors Can Learn from It. Distribution Strategy Group. https://distributionstrategy.com/how-spotify-uses-ai-to-create-an-ultra-personalized-customer-experience-and-what-distributors-can-learn-from-it/

Sen, I. (2018, May 22). How AI helps Spotify win in the music streaming world - Outside Insight. Outside Insight. https://outsideinsight.com/insights/how-ai-helps-spotify-win-in-the-music-streaming-world/

Recommending music on Spotify with deep learning. (n.d.). Sander Dieleman. https://sander.ai/2014/08/05/spotify-cnns.html

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Another compelling example is **Netflix**. Their AI algorithms analyze not only what you watch but also when you watch it. They release new content based on when their users are most likely to tune in, maximizing the impact of their marketing campaigns.

It's fascinating how Netflix applies AI/Data Science/ML to running its operations, such as by implementing algorithms to provide movie recommendations and using AI to guarantee high-quality streaming even at reduced bandwidths. The following are some of the numerous applications of AI, data science, and machine learning at Netflix:

Thumbnail Personalization
The user places great importance on the thumbnail, which is becoming an extremely prevalent trend in modern times. The thumbnail alone is enough for many viewers to determine whether they should watch the video in question. Over time, Netflix realized that it wasn't enough to rely on titles; it also had to provide visually appealing thumbnails to entice viewers.

Netflix AI generates thumbnails by annotating and ranking hundreds of frames taken from a preexisting movie or TV program to determine which thumbnails are most likely to prompt a click from users.

Optimal Streaming Quality

About 220 million people worldwide actively use Netflix each month. It becomes very difficult to provide high-quality video to everyone at once under these conditions. The use of AI has resulted in significant advancements for Netflix. Netflix AI can foresee how many subscribers it will have in the future. Therefore, it has room to make more technological advances. Netflix improves video quality for viewers even during busy viewing times by placing video assets near subscribers in advance.

Tailored Movies Recommendation

Netflix customizes its data recommendations for each customer. A single Netflix account may be used in two distinct locations, but you will be shown different recommendations in each. Netflix AI is responsible for this function. The algorithm learns on its own and continues to gather information. Simply logging more hours on Netflix increases the quality of the Netflix recommendations sent to you. The annualized cost of Netflix's recommendation engine is close to $1 million. And its only purpose is to enhance the customer's overall satisfaction.

How Netflix is doing personalization

Netflix classifies and tags content to get a nuanced view of consumer preferences. Netflix has developed over 1,000 tag types that classify content by genre, time-period, plot conclusiveness, mood, etc. These tags help to define micro-genres, which, by 2014, had already reached 76,897 in number. Content micro-classification, combined with a proprietary recommendation engine, enables Netflix to serve better customer experience. About 75% to 80% of viewer activity is influenced by the recommendation algorithm

Sources:
Simplilearn. (2022, September 23). Netflix Recommendations: How Netflix Uses AI, Data Science, And ML | Simplilearn. Simplilearn.com. https://www.simplilearn.com/how-netflix-uses-ai-data-science-and-ml-article

Vinod Kathayat. (2019, September 18). How Netflix uses AI for content creation and recommendation. Medium; The Startup. https://medium.com/swlh/how-netflix-uses-ai-for-content-creation-and-recommendation-c1919efc0af4

Furthermore, the financial industry harnesses AI to tailor financial product recommendations to individual customers, leading to higher investment returns and improved financial well-being.

AI-driven ad targeting has proven its worth across various domains, from retail to entertainment to finance, revolutionizing the advertising industry and elevating user experiences.

Ethical Considerations and Privacy Concerns

However, while we celebrate the achievements of AI-driven ad targeting, we must also address the ethical considerations and privacy concerns that this power brings. The fine line between delivering personalized ads and infringing on an individual's privacy can be easily crossed.

With great data comes great responsibility.

Our privacy must be safeguarded. Concerns about data security, consent, and potential misuse of personal information have gained prominence in the era of AI-driven advertising. Ethical

considerations in personalized advertising encompass questions of consent, data security, and user empowerment.

AI algorithms should respect user consent and be transparent in their operations. They should not cross the line into invasive surveillance, which can erode trust.

Advertisers must tread carefully, ensuring that the collection and utilization of user data are both transparent and consensual.

Users should be aware of what data is being collected, how it will be used, and have the option to opt out.

Data security is paramount; breaches can have severe consequences for both users and advertisers. The responsible and ethical use of AI in advertising is pivotal in maintaining trust and credibility.

The Future of AI in Ad Targeting

The future holds even more promise. Imagine a world where ads are so personalized that they feel like a service, not an intrusion. This level of personalization can be achieved through AI. It's a world where advertising is so relevant that you actually look forward to it.

AI is moving beyond traditional demographics into a realm where it understands our emotions, our context, and even our intent. It can analyze our facial expressions, our location, and our tone of voice. It can predict our needs before we even realize them.

In Conclusion

In closing, AI-powered ad targeting and personalization represent a transformative force in the advertising world. AI-powered ad targeting and personalization, when used responsibly, can elevate advertising to new heights. With AI, we can create advertising experiences that are not just engaging, but respectful, relevant, and valuable to the user. It's an exciting journey that we embark upon, where AI and personalization converge to redefine the advertising landscape.

Striking the balance between precision and privacy is crucial.

A view from above of many AI robots auctioning paper coupons in the advertisement stock market during a market crash. The robots are worried, stressed and sweating. Some of them are shouting to the others.

2.3 Programmatic Advertising and Real-Time Bidding (RTB)

Understanding the role of AI in programmatic advertising and Real Time Bidding auctions. Optimizing ad placements and bids using machine learning algorithms. Challenges and opportunities in the programmatic advertising ecosystem.

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It is a transformative force that has reshaped the landscape of advertising - Programmatic Advertising and Real-Time Bidding (RTB).

In this era of digital marketing, the symbiosis of AI and advertising technology is revolutionizing how brands connect with their audiences.

Let us understand the role of AI in programmatic advertising, explore how real-time bidding auctions work, and contemplate the challenges and opportunities that lie ahead.

What is Programmatic Advertising.

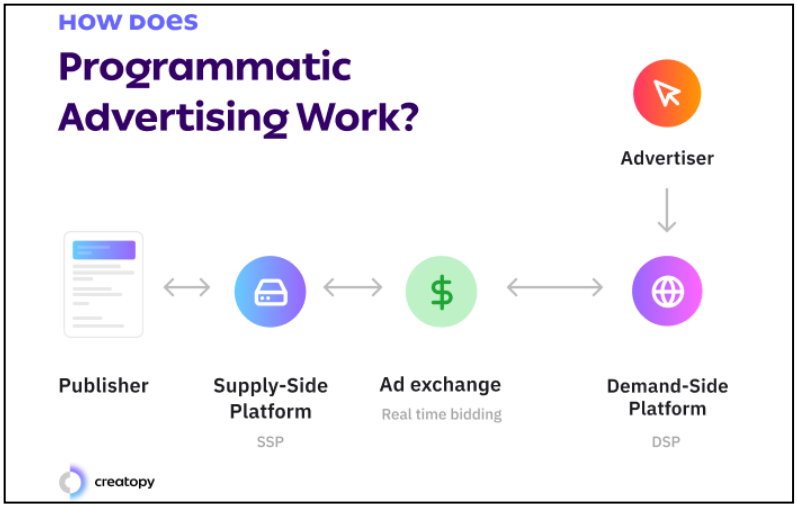
In programmatic ad buying, when consumers click on a publisher's website, the publisher puts the ad impression up for auction through header bidding and one or more SSPs (Supply Side Platforms, selling Ad Space/Time). Then, the DSP (Demand Side Platforms, buying Ad Space/Time) bids on behalf of the advertiser

for that impression based on campaign's strategies, budget, creative sizes, and other factors.

The publisher automatically assigns impressions to the winning bidder—the advertiser/DSP offering the highest CPM (cost per mille, or the cost per one thousand advertising impressions).

Programmatic advertising is the automated process of purchasing digital ad inventory across the web, mobile, apps, video, and social media within advertiser-defined parameters. It uses machine learning algorithms to deliver the most effective ads to audiences based on a variety of signals, like shopping patterns.

Programmatic advertising is also known as programmatic marketing or programmatic media.



Source: *Predescu, A. (2023, March 17). The Complete Guide on Programmatic Advertising - Creatopy. Creatopy Blog. https://www.creatopy.com/blog/programmatic-advertising/*

A Brief History of Programmatic Advertising

1. 1994: The first online ad was published.

2. Late 2000: Programmatic advertising started to gain traction, The first DSPs, SSPs, and ad exchanges emerge. These AdTech platforms reduced the need for manual media buying.

3. Early 2010s: The growing use of mobile devices urged the widespread adoption of programmatic. Real-time bidding came into play, giving advertisers more control over their ad buying and helping them improve ROI.

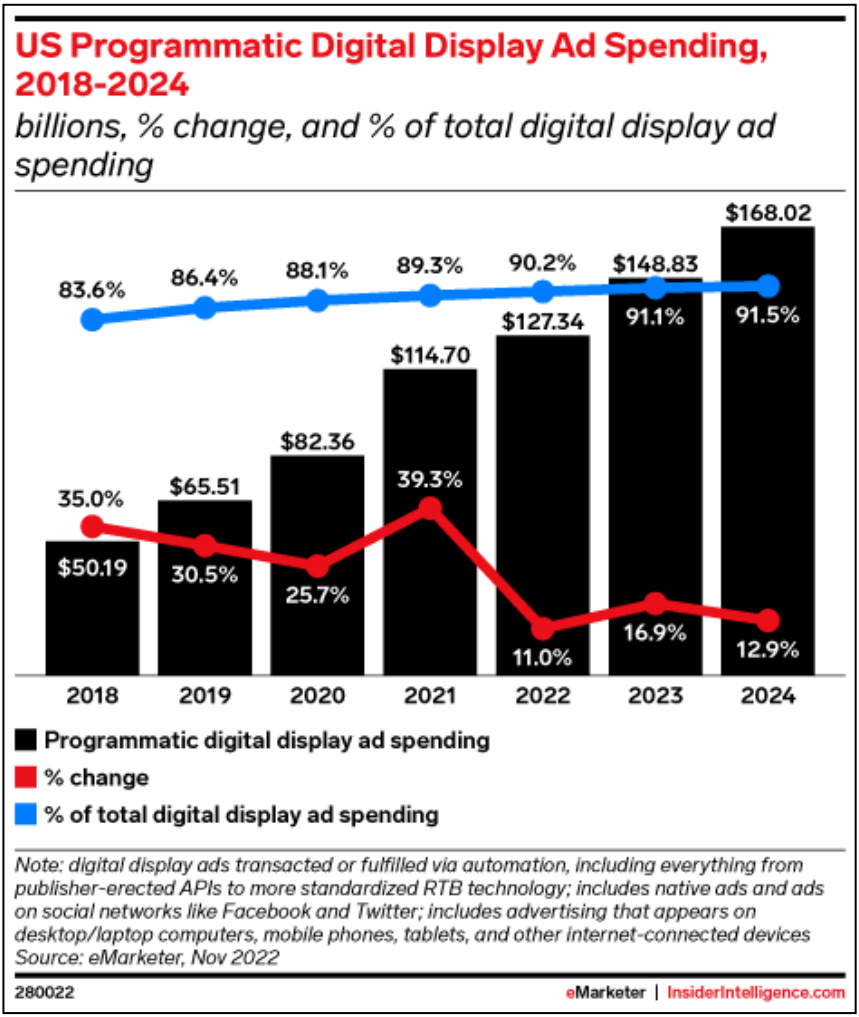
4. Today (2023): most of the ad space is traded programmatically.

The Power of Programmatic Advertising

Programmatic advertising has fundamentally changed how we buy and sell ad space. It's about leveraging AI algorithms to automate the buying of ads in real-time. It's efficient, it's data-driven, and it's incredibly precise.

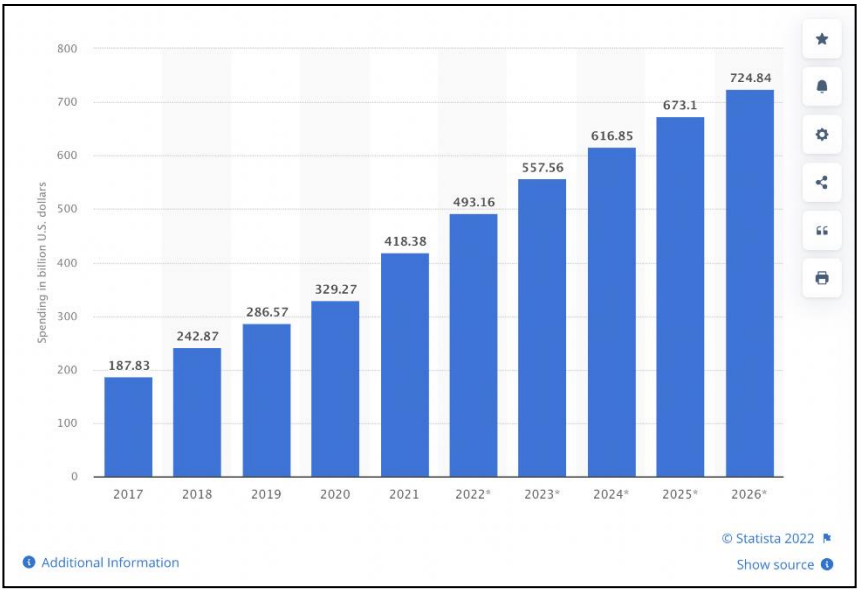
The core idea is simple: reaching the right person, at the right time, with the right message.

Programmatic will account for 9 in 10 digital display dollars.



Source: *Display advertising in 5 charts: From programmatic to retail media. (n.d.). Insider Intelligence. Retrieved August 10, 2023, from https://www.insiderintelligence.com/content/display-advertising-5-charts-programmatic-retail-media*

Global programmatic advertising spending is expected to reach $557B by the end of 2023, increasing by more than 11% compared to 2022. In the following four years, it is predicted to grow to $724B.



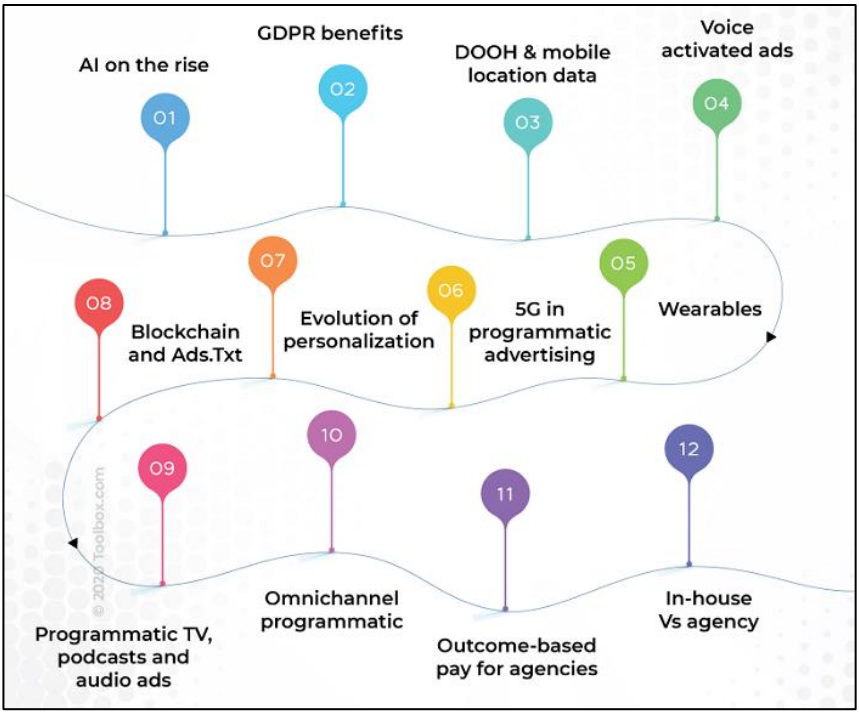
Source: *DSP Vs. SSP: Understanding Key Differences. (n.d.). Www.eskimi.com.* *https://www.eskimi.com/blog/dsp-vs-ssp*

Programmatic advertising is on a disruptive ride with new technologies attracting advertisers.

With 5G promising a push to programmatic on one hand and the implementation of GDPR posing new challenges, there's a lot more that marketers need to watch out for. Introduction of artificial intelligence (AI), machine learning (ML) and 5G are going to make programmatic advertising more efficient, while the entry of newer advertising channels such as Digital Out Of Home (DOOH),

podcast and audio programmatic advertising, voice-activated ads, smart devices, and AR/VR not only give marketers more choices but also provide a more engaging, personalized experience for consumers.

These are the trends you need to follow in the programmatic Ad Tech space.



AI is at the Heart of Programmatic

AI is the beating heart of programmatic advertising. Machine learning algorithms analyze vast datasets to understand user behavior, preferences, and context. They predict which ad impressions are most likely to result in a desired action - a click, an engagement, or a conversion.

> "...AI is a natural add-on to the industry that has the potential to balance out excesses, amplify bidding strategy, and match ads with the most suitable audiences".
>
> ***Source:*** *16 Programmatic Trends Shaping the Advertising Industry in 2022 [UPD] | Admixer Blog. (2021, March 3). Admixer.Blog. https://blog.admixer.com/16-programmatic-trends-shaping-adtech-industry-2020/...*

Artificial Intelligence and Machine Learning, by analyzing huge volumes of data in real time, help find patterns, predict outcomes and suggest the next best action to each individual customer in order to move them further in their buying journey. The intelligence AI brings would be impossible for a human to match at that scale and speed.

For instance, IBMs AI based bot Watson is being continuously developed for optimized programmatic media buying and is already popular in the US and UK. In one of its official blogs IBMs VP of Marketing Analytics, Ari Sheinkin shared that the results of

programmatic media buying by Watson show a stunning 71% reduced Cost Per Click (CPC).

Real-Time Bidding (RTB)

Now, let's delve into the engine that powers programmatic advertising - Real-Time Bidding. In RTB, a lightning-fast auction occurs every time a user loads a web page or opens an app. Advertisers submit their bids in real-time, and the ad exchange decides which ad to display, all in the blink of an eye.

AI doesn't just play a supporting role; it's the star of the show in RTB auctions.

Bid Optimization: AI algorithms determine the optimal bid price for an ad impression, based on historical performance data and real-time factors like user behavior and competition.

Ad Placement: AI evaluates the relevance of an ad to the user and the content, ensuring a seamless and non-disruptive user experience.

Dynamic Creative Optimization: AI can even personalize the ad content, changing elements like images, headlines, and calls to action to match the user's profile and preferences.

Types of Programmatic Advertising
There are a few different types of programmatic advertising available to advertisers and publishers. They basically refer to the ways in which programmatic buying can take place.

A. Real-time bidding (RTB)
As you can probably tell by the name, real-time bidding allows advertisers to purchase ad space in real time.

B. Private marketplaces
Your ads are shown in top placements on high-profile websites. You participate in private programmatic marketplaces. Private marketplaces are basically invitation based RTBs. They're organized by publishers trying to sell premium ad inventory directly to advertisers, generally at higher costs.

C. Programmatic direct (deals)
A one-to-one media buying process. The sell-side and the demand-side negotiate on a fixed CPM, and the transaction takes place directly, without ad exchanges.
This sounds very similar to the old manual direct media buying methods, but it's nowhere near as complicated. The negotiation and campaign setup takes place on a single platform, making things easier and reducing the risk of human error. Plus, setting up the campaign is a lot faster.

D. Programmatic guaranteed
Another one-to-one media buying transaction in which the sell-side and the demand-side enter an agreement prior to the campaign run. The advertiser agrees to buy a certain number of impressions, and the publisher agrees to deliver that number of impressions for a guaranteed price.

***Source**:*
Predescu, A. (2023, March 17). The Complete Guide on Programmatic Advertising - Creatopy. Creatopy Blog. https://www.creatopy.com/blog/programmatic-advertising/

Benefits of programmatic advertising

There are a number of benefits to using programmatic advertising in your ad campaigns, including

Cost Reduction

A Deloitte survey of over 1.100 early adopters of AI, detailed that 82% of them witnessed a positive ROI from AI initiatives.

Programmatic advertising is also warming up to the idea of AI that can predict customer behavior with unprecedented accuracy. Watson, IBM's celebrated AI platform, reduced cost per click by 71% when companies used it to buy ad spaces.

***Source**: (16 Programmatic Trends Shaping the Advertising Industry in 2022 [UPD] | Admixer Blog, 2021).*

Relevancy

Programmatic advertising helps ensure that ads placed in front of your target audience are relevant to their interests and preferences through superior targeting capabilities.

58% of advertisers note that the main drivers for their investment in programmatic are the ability to better use data and for the benefit of targeting efficiencies.

Gaining access to premium inventory at scale ranked at third place in driving programmatic investments for advertisers.

***Source**: (What Is Programmatic Advertising? | IBM Watson Advertising Thought Leadership, n.d.).*

Real-time data and analytics
Advertisers can optimize their campaigns by gaining access to real-time data and reporting how their ads are performing at that moment.

Reach
Programmatic advertising allows users to choose from an abundance of platforms and websites for the placement of your ads. Additionally, users have the option to advertise at scale, enabling them to use their resources more efficiently.

Conversions and ROI
While a lot of advertising methods focus on clicks, programmatic focuses on conversions. Clicks are certainly valuable regarding expanding reach, but they don't matter much if they don't turn into leads or conversions. With programmatic advertising, conversions can increase due to better ad placement.
Additionally, with advertisers reporting the need for greater control of inventory and at a lower cost, it's not surprising that supply chain transparency ranks as their primary concern, seeing a significant increase over last year (60% in 2020).

REAL-TIME BIDDING: PUBLISHER BENEFITS

Technology-driven accurate pricing*: Publishers receive more value for their inventory with RTB as each impression can be bid on by advertisers and the highest bid amount can deliver the impression. A publisher frequently needs to use an SSP (Supply Side Platform) to make use of Real Time Bidding.*

Remnant inventory value increase*: As a publisher, you want to monetize as much of your inventory as possible. With RTB, inventory*

that was previously deemed non-monetized or not worthy can be utilized by advertisers who bid based on the audience data. Econsultancy reported that over 40% of publishers saw an increase in the value of their remnant inventory when taking part in RTB auctions.

***Control via SSPs**: As mentioned, a publisher needs to work through a Supply Side Platform to take part in RTB auctions. However, this means that the publisher has added control over their inventory such as specifying which advertisers can buy their ad inventory and set the pricing.*

***Understanding their audience better**: As a publisher, it's often hard to know which segment of your audience deserves the most attention, at least from a monetary perspective. Using this technology publishers can determine which types of audiences attracts advertisers the most and fetches the best prices. This can give a publisher valuable insight and help them expand their websites into their most profitable segments, ultimately increasing their inventory value and increasing demand from advertisers.*

***Premium publishers use private marketplaces**: With private markets, only a set group of advertisers can bid on a publisher's ad inventory. With RTB and private marketplaces, publishers can sell their advertising stock with even more transparency and control.*

***Better performing direct sales**: If a publisher wants to sell his inventory directly to advertisers working through SSPs, then Real Time Bidding can give them valuable insight into their most profitable inventory segments. A publisher can determine what parts are sought after the most, and the prices their ad inventory is sold at and uses this information to sell their inventory directly to interested parties successfully.*

Source:
Graham, K. (2017, September 21). Real Time Bidding (RTB) Explained - Programmatic Buying, Platforms, Ads & Networks Guide For... MonetizeMore; MonetizeMore. https://www.monetizemore.com/blog/real-time-bidding-rtb-explained/

REAL-TIME BIDDING, <u>ADVERTISERS</u> BENEFITS

***Less wasteful media buying**: With this technology ad inventory is bought on an impression basis through a range of variables which makes targeting very focused. Advanced techniques and tools such as frequency capping and bid forecasting can further increase the efficiency of each campaign by allowing advertisers to test, control, evaluate, and even predict certain campaign variables.*

***Better performing and 10X ROI campaigns**: Advertisers can view and manage their campaigns in real-time through one dashboard and adjust bids and targeting as needed, thus staying on top of results, and improving performance.*

***In-depth knowledge**: While running campaigns with RTB, advertisers can transform and improve their marketing strategies. They can learn more and grow to understand their consumers, creative and strategic approach with the impression data presented to them through their campaigns.*

***Brand protection**: For an advertiser, protecting their brand is very important. With Real-Time Bidding advertisers can specify where to promote their products or services and use ad verification services to prevent their ads from showing on illicit websites or pages.*

***Source:** Graham, K. (2017, September 21). Real Time Bidding (RTB) Explained - Programmatic Buying, Platforms, Ads & Networks Guide For... MonetizeMore; MonetizeMore. https://www.monetizemore.com/blog/real-time-bidding-rtb-explained/*

Challenges and Opportunities

As with any technological revolution, programmatic advertising and RTB come with challenges and opportunities.

Ad Fraud

The speed of RTB auctions can be exploited by fraudsters. AI is essential in identifying and mitigating ad fraud.

REAL-TIME BIDDING: Ad fraud prevention

Adtech faces a growing problem with the transparency and accountability of the resellers.

Damage from fraud related to domain spoofing and other security breaches resulted in $19 billion loses for advertisers in 2018 alone. A report by Statista (Global Cost of Digital Ad Fraud 2022, n.d.), estimates that ad fraud damages will touch $81 billion by 2022, and $100 billion in 2023.

The industry is trying various frameworks to combat this defect of the ecosystem. IAB (Interactive Advertising Bureau) recommends publishers to implement ads.txt, a file with verified sellers of the publisher's inventory. This allows advertisers to detect unauthorized resellers and prevent fraud in the early stages of programmatic buying.

Ads.txt is currently available only for Desktop traffic, but the IAB lab is also working on the mobile version. They are also working on problems with scaling the ads.txt protocol to make it flexible for resellers. In addition to ads.txt, IAB lab introduced sellers.json, a mechanism for buyers to discover direct sellers or intermediaries in the selling of digital advertising spots.

Source: *16 Programmatic Trends Shaping the Advertising Industry in 2022 [UPD] | Admixer Blog. (2021, March 3). Admixer.Blog. https://blog.admixer.com/16-programmatic-trends-shaping-adtech-industry-2020/#:~:text=16%20Programmatic%20Trends%20Shaping%20the%20Advertising%20Industry%20in*

Privacy Concerns
As ads become more targeted, privacy concerns rise. Ethical AI and robust data protection are crucial to address these concerns.

Transparency
The intricacies of programmatic advertising can lead to a lack of transparency. Advertisers are pushing for more visibility into the supply chain.

Brand Health
As targeting becomes automated, brand health issues arise. In the ever evolving and fiercely competitive business world, the health of your brand is a vital metric. It is an assessment of how well your brand resonates with your target audience, maintains a positive image, and thrives in the marketplace. A wrong ad placement can be harmful.

Opportunities

Growth of Connected TV (CTV)
Connected TV (CTV) programmatic display ad spending in the US is estimated at $8,9 billion in 2022. The COVID-19 pandemic prompted more people than ever to pay for over-the-top (OTT) video services such as YouTube TV, Apple TV+ and Netflix, resulting in a 41% increase in US streaming revenue in 2020.

This change in media habits can be observed globally. For example, in the UK, TV viewing and online streaming increased dramatically during the pandemic's peak in 2020. While streaming services have traditionally been subscription-only, ad-free models, this may not be the case for long. Disney announced in March

2022 that it planned to launch a cheaper, ad-supported tier to its Disney+ subscription model this year. And although Netflix CFO Spencer Neumann has said his company has no plans to follow suit, he added “never say never”.

This makes the segment one of the most intriguing programmatic advertising trends to watch in 2023. Those in the advertising industry need to pay attention to the procurement process, methods and measurements that need to be reevaluated. CTV programmatic display advertising may still be in its infancy, those who adjust now to stay ahead of the curve will reap the rewards.

Voice-activated ads

Voice-activated virtual assistants are getting a footing in the advertising ecosystem. The market is maturing with Amazon selling over 200 million devices paired with Alexa in 2021. Most of the traffic comes from voice-activated purchases of household items, clothes, and games. Programmatic is expected to play a profound role in integrating voice-activated ads with the rest of the advertising landscape. It will help optimize ad spaces in the at-home smart devices with in-store ads, audio, and visual ads, mapping the customer journey.

Deeper ad personalization

AI enables unprecedented levels of personalization. Ads can be tailored to individual preferences, improving user engagement and conversion rates. As the audience is getting smarter and more demanding, smart audience management, segmenting, tailored targeting, and highly personalized ads are required by advertisers.

Efficiency
Programmatic advertising is incredibly efficient, reducing wasted ad spending and maximizing ROI.

Scale
It allows advertisers to scale their campaigns across a vast array of websites and apps, reaching a global audience.

REAL-TIME BIDDING: The Future

The future of Real Time Bidding is promising. RTB is expected to grow exponentially in the coming years. According to recent studies, the RTB industry is projected to reach a market value of over $50 billion by 2028.

Artificial Intelligence and Machine Learning in RTB are also expected to improve ad targeting, leading to higher conversion rates and ROI for advertisers.

Integrating RTB with other ad tech technologies like Header Bidding and Programmatic Direct will enhance its capabilities and drive its adoption. As the ad tech industry continues to evolve and innovate, RTB is set to remain a key player in the programmatic advertising landscape.

The potential for RTB optimization with AI is huge! To unlock that potential, an RTB expert is necessary.

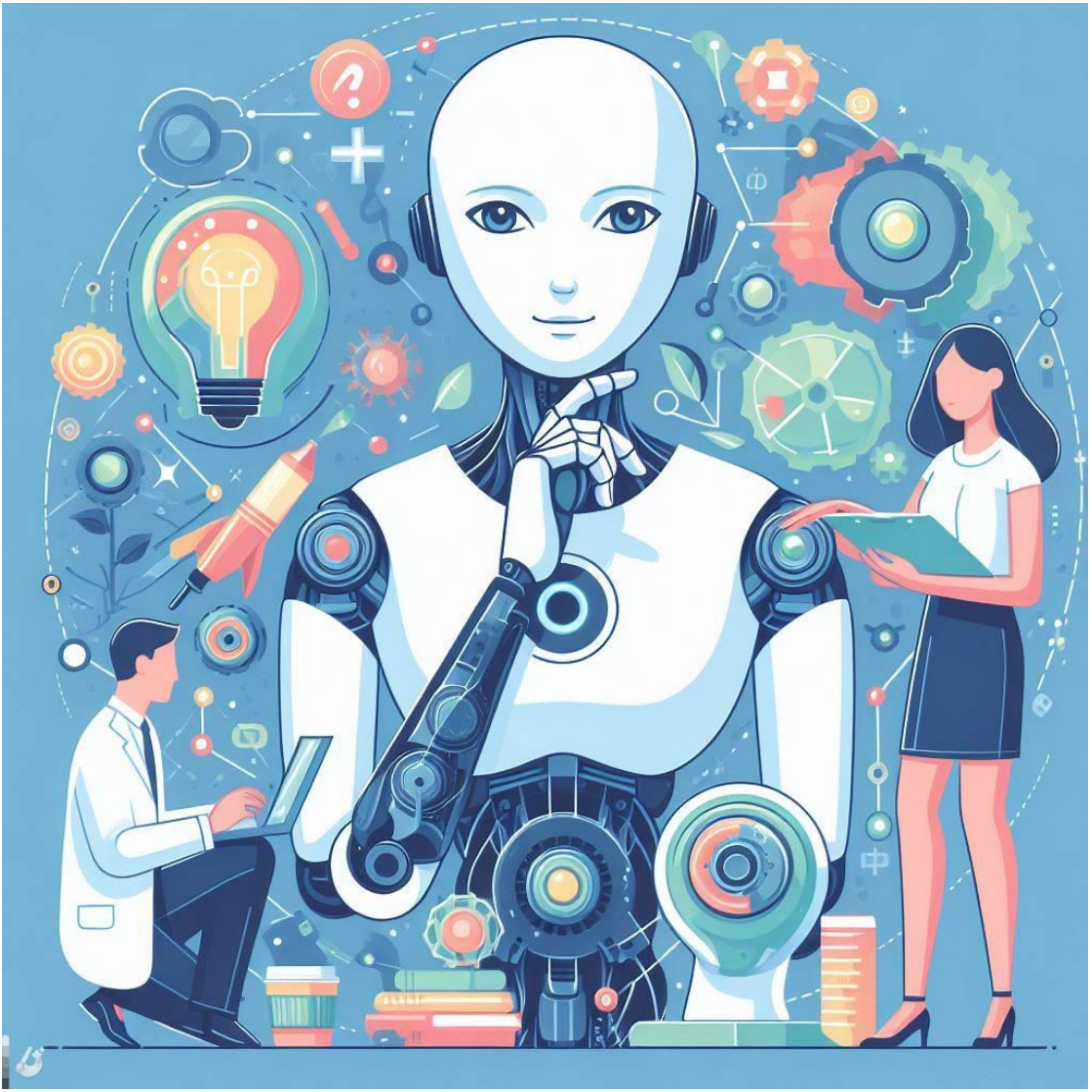
In Conclusion

In conclusion, the AI revolution in programmatic advertising and RTB is unstoppable. It's not just about technology; it's about understanding human behavior, context, and intent.

But with great power comes great responsibility. We must ensure that AI is used ethically, that user privacy is respected, and that transparency is upheld.

We stand on the cusp of an exciting era where advertising becomes less intrusive and more relevant, thanks to AI. Embracing this revolution while addressing its challenges will define the future of digital advertising. Together, let's leverage AI in programmatic advertising to create meaningful, engaging, and personalized user experiences.

Please be creative and provide a picture depicting AI and Human Collaboration in an Advertising agency.



2.4 Creative Content Generation with AI

How AI is used to create engaging ad content, including text, images, and videos. Balancing creativity and authenticity with automated content generation. Assessing the impact of AI-generated content on user engagement and brand perception.

The field of advertising is undergoing a profound transformation, driven by the integration of Artificial Intelligence (AI) into the creative content generation process. AI is transforming the very nature of creative content generation in the industry.

Also, AI is rapidly transforming the way content is consumed. Advertising, AI generated ad content across all formats is personalized to individual users, targeted to specific demographics, and scaled to reach large audiences across all media and formats.

We will explore how AI is used to create engaging ad content, including text, images, and videos, the delicate balance between creativity and authenticity with automated content generation, and the impact of AI-generated content on user engagement and brand perception.

AI in Creative Content Generation: A Paradigm Shift

Traditionally, the process of creating advertising content, whether it's a witty tagline, striking visual, or compelling video, has been a deeply human endeavor.

IBIS World's statistic shows that as of 2023 total employment in the Advertising Agencies industry is 267.601

Source: *IBISWorld. (2023). IBISWorld - Industry Market Research, Reports, and Statistics. Ibisworld.com. https://www.ibisworld.com/*

Copywriters, designers, and filmmakers have used their creativity, intuition, and experience to craft content that captures the essence of a brand and resonates with its audience.

AI is ushering in a paradigm shift, augmenting the creative process and allowing advertisers to webscale their efforts while maintaining relevance and personalization.

The Tools of AI-Driven Content Generation

Natural Language Processing (NLP)

NLP algorithms power AI-driven copywriting. They can generate advertising copy, blog posts, product descriptions, and social media content that is not only grammatically accurate but also contextually relevant and tailored to the target audience.

Computer Vision
For visual content, computer vision algorithms analyze images and videos, allowing AI to generate descriptions, captions, and even produce entirely new visual content. This is instrumental for creating visually appealing ads.

Machine Learning in Image and Video Editing
AI-driven image and video editing tools can enhance the quality of raw visual assets, apply creative effects, and even generate dynamic video content by assembling clips and images.

Generative Adversarial Networks (GANs)
GANs are particularly groundbreaking. They can generate entirely new content, combining elements from existing ones to create fresh, captivating visuals or videos.

Generative Adversarial Network (GAN) - The Definition

A Generative Adversarial Network (GAN) is a deep learning framework that consists of two neural networks: a generator and a discriminator.

*The **generator** is trained to produce synthetic data, such as images, text, or audio. It learns to produce realistic fake data from a random seed. The fake examples produced by the generator are used as negative examples for training the discriminator.*

*The **discriminator** is a binary classifier that learns to distinguish the fake data from realistic data. It tries to distinguish between the synthetic data and real data from a training set. If the generator produces implausible results, the discriminator penalizes the generator.*

The two networks compete against each other *in a zero-sum game framework. Over time, the generator's output becomes more realistic and it gets better at fooling the discriminator. Eventually, the generator's outputs are so realistic that the discriminator is unable to distinguish them from the real examples.*

For example, a GAN trained on photographs can generate new photographs that look at least superficially authentic to human observers, having many realistic characteristics. They are used widely in image generation, video generation and voice generation.

Source: *Bing Chat*

Balancing Creativity and Authenticity: The Human-AI Collaboration

One of the fundamental challenges in AI-driven creative content generation is striking the right balance between creativity and authenticity.

AI tools are data-driven, and they excel at generating content based on historical data and patterns. However, they don't possess human emotions, cultural nuances, or intuition (yet 2023). Creativity often requires a touch of the unexpected, a leap beyond the data-driven confines.

To achieve this balance, many advertisers have embraced a collaborative approach, where AI tools assist human creatives.

Human copywriters, designers, and filmmakers work alongside AI, harnessing its data-driven insights while infusing their creations with emotion, culture, and a unique perspective.

This human-AI collaboration preserves the authenticity and soul of a brand's message while leveraging AI's efficiency and precision.

Copywriters, editors, creative directors, storytellers and all media and advertising executives need to

- **Use AI to augment their creativity**, not replace it. AI can be a powerful tool for generating ideas and brainstorming, but it should not be used to replace human creativity.

- **Provide clear and concise instructions to your AI tools**. The more specific you are in your instructions, the better your AI tools will be able to generate creative and authentic content.

- **Edit and refine AI-generated content**. Once your AI tools have generated content, be sure to review and edit it to ensure that it is accurate, authentic, and on-brand.

Prompt Engineering

What is emerging as a key attribute of AI in creative work is effective *prompt engineering*.

Prompt Engineering in the Realm of Artificial Intelligence

Prompt engineering has emerged as a crucial technique for harnessing the power of large language models (LLMs).

It is the art of crafting effective prompts to guide the behavior of LLMs. It is akin to bridging the gap between human intent and machine output.

The Essence of Prompt Engineering

LLMs, trained on massive datasets of text and code, possess remarkable capabilities in generating text, translating languages, and answering questions in an informative way. However, their effectiveness hinges on the clarity and precision of the prompts provided. A well-crafted prompt serves as an instruction manual for the LLM, outlining the desired task, style, and tone of the response.

Source: *Google Bard*

In the realm of artificial intelligence, prompt engineering has emerged as a powerful tool for unlocking creativity.

By crafting well-structured and evocative prompts, users can guide large language models (LLMs) towards generating original and compelling creative output. This opens up a vast array of possibilities for artistic expression, allowing individuals to explore new forms of storytelling, music composition, and visual art.

The art of crafting effective prompts involves a balance of specificity and creativity, and an understanding of the AI model's capabilities. It is all about finding the perfect words and context to coax the AI into producing the results we want.

A well-crafted prompt serves as a creative brief, providing the LLM with the necessary context and direction to produce original and meaningful works.

Providing details about context, audience, tone, voice, and format gives the model a frame of reference to assist weighing its decisions when generating responses. In some cases, you might even provide representative examples or include additional information about your customers, market, and industry to help LLMs understand your ideal prospects when creating content.

Prompts act as blueprints that a model can follow on how its capabilities best meet your specific business and audience requirements.

The key lies in crafting the right prompts to harness the model's capabilities to elicit high-quality, relevant, and accurate results.

Crafting the perfect prompt can be a bit of an art form.

Sometimes you need to experiment, tweak, and fine-tune your instructions to get the desired results.

Crafting Effective Prompts for Creative Tasks

Clarity of Intent
Clearly define the desired creative outcome, whether it's a poem, a musical piece, or a visual artwork.

Inspiration and Style
Provide examples, references, or stylistic guidelines to inspire the LLM's creative direction.

Emotional Resonance
Convey the desired emotional tone and atmosphere of the creative work.

Flexibility and Experimentation
Encourage experimentation and exploration to foster unexpected and innovative outcomes.

Prompt Engineering Techniques for Creative Exploration

Open-Ended Prompts
Encourage creativity by providing open-ended prompts that allow for diverse interpretations and unexpected outcomes.

Constraint-Based Prompts
Introduce creative constraints, such as specific word choices, rhythmic patterns, or visual elements, to guide the LLM's creative process.

Iterative Prompting
Refine prompts based on the LLM's responses, engaging in a back-and-forth dialogue to steer the creative direction.

Interactive Prompting
Utilize interactive tools that allow real-time feedback and manipulation of the LLM's creative output.

Applications of Prompt Engineering in Creative Fields

Poetry Generation
Crafting poems with diverse styles, themes, and emotional resonance.

Musical Composition
Generating original melodies, harmonies, and rhythms, exploring different musical genres and styles.

Visual Art Creation
Producing unique paintings, drawings, and illustrations, ranging from abstract art to realistic renderings.

Storytelling and Scriptwriting
Developing engaging narratives, characters, and plotlines for stories, scripts, and screenplays.

The Evolving Landscape of Creative Prompt Engineering
As research in AI and prompt engineering continues to advance, new techniques and tools are emerging to further enhance the creative capabilities of LLMs. These advancements include:

Adaptive Prompting Systems
Prompting systems that dynamically adapt based on the LLM's responses, providing real-time guidance and feedback.

Multimodal Prompting
Integrating prompts with multimodal inputs, such as images, sounds, and textures, to inspire and refine creative output.

Generative Art Prompting
Developing prompts specifically tailored for generative art creation, enabling the production of novel and aesthetically pleasing visual works.

Source: *Google Bard*

Context matters when prompt engineering. You aren't just a producer but a director — the more specific and pointed you can be, the better for your "actor."

Source: *Prompt engineering and you: What it takes, where to start. (n.d.). Google Cloud Blog. Retrieved January 7, 2024, from https://cloud.google.com/blog/transform/how-to-be-a-better-prompt-engineer*

Assessing the Impact of AI-Generated Content

Studies have shown that **AI-generated content can be just as effective**, if not more effective, than human-generated content in terms of user engagement and brand perception. For example, one study found that AI-generated ad copy outperformed human-

generated ad copy in terms of click-through rate and conversion rate.

The best humans can still outperform AI in a creative divergent thinking task

The study provides insights into the relationship between human and machine creativity.

Results suggest that AI has reached at least the same level, or even surpassed, the average human's ability to generate ideas in the most typical test of creative thinking (AUT).

Although AI chatbots on average outperform humans, the best humans can still compete with them. However, the AI technology is rapidly developing and the results may be different after half year. On basis of the present study, the clearest weakness in humans' performance lies in the relatively high proportion of poor-quality ideas, which were absent in chatbots' responses. This weakness may be due to normal variations in human performance, including failures in associative and executive processes, as well as motivational factors.

Source: *Koivisto, M., & Grassini, S. (2023). Best humans still outperform artificial intelligence in a creative divergent thinking task. Scientific Reports, 13(1), 13601. https://doi.org/10.1038/s41598-023-40858-3*

Another study found that **AI-generated images were perceived as more realistic and authentic than human-generated images**.

These studies suggest that AI-generated content can be a valuable tool for advertisers who are looking to create engaging and effective ad campaigns.

People frequently perceive AI-generated faces as more authentic than real faces, study finds

"Our findings revealed that individuals can potentially recognize AI-generated faces given only a brief glance.

Nevertheless, distinguishing genuine faces from AI-generated ones proves to be more challenging. Surprisingly, people frequently exhibit the tendency to mistakenly perceive AI-generated faces as more authentic than real faces."

Source: *Dolan, E. W. (2023, May 26). People frequently perceive AI-generated faces as more authentic than real faces, study finds. PsyPost. https://www.psypost.org/2023/05/people-frequently-perceive-ai-generated-faces-as-more-authentic-than-real-faces-study-finds-163718#:~:text=The%20findings%2C%20published%20in%20Vision%20Research%2C%20indicate%20that*

AI-generated content can increase user engagement due to its relevance. Personalized content created by AI, such as product recommendations based on user behavior, often leads to higher interaction and conversion rates.

AI-powered writing tools can generate personalized ad copy for individual users based on their interests, demographics, and other data. Image generation tools can create targeted images for specific demographics and audiences. Video generation tools can create interactive videos that allow users to engage with the content. All these, can help advertisers to create more relevant and engaging ad experiences as well as more inclusive and representative campaigns and memorable ad experiences.

Source: *Arango, L., Singaraju, S. P., & Niininen, O. (2023). Consumer Responses to AI-Generated Charitable Giving Ads. Journal of Advertising, 52(4), 1–18. https://doi.org/10.1080/00913367.2023.2183285*

AI-driven content generation can significantly reduce production costs. AI can automate many of the tasks involved in content creation, such as writing, editing, and design. It can generate content such as blog posts, articles, and social media posts, graphics, logos, and other visual content and personalize it.

This can save brands a significant amount of time and money, and help create more engaging and effective content that is more likely to be seen and interacted with by target audiences. **As a result, brands can allocate resources to more strategic aspects of advertising, such as campaign planning or creative strategy.**

AI can generate content at an unprecedented speed and scale. AI models can process vast amounts of data and generate text, translate languages, write different kinds of creative content, and answer your questions in an informative way, all at a much faster pace than humans can.

Content is generated at for Social media, E-commerce, News, Marketing, Customer service and Entertainment. News articles, blog posts, videos, product descriptions, marketing materials, brochures, emails, posts, movies, music, and paintings are some of the types of this content.

Additionally, AI operates customer service chatbots that answer customer questions and provide live support.

All these make AI a valuable tool content creation in large quantities or on short deadlines. It is a versatile tool, valuable for businesses and individuals.

It has to be noted that the use of AI models significantly assists in content consistency across various platforms and channels, enhancing brand recognition and cohesiveness.

By automating content creation and distribution, as well as providing analytics to measure and improve consistency, businesses can ensure that their branding and messaging are **consistent, cohesive, and effective** across all marketing efforts.

AI-powered tools can analyze existing content, learn patterns, and generate new content that maintains consistency across various channels.

AI writing		Human writing	
Pros	**Cons**	**Pros**	**Cons**
Faster content production No rest needed—available 24/7 More affordable for smaller companies	Plagiarism is a big risk Content often has factual errors Valuable insights and opinions aren't possible	Authentic voice Extensive research for accurate data Conveys emotion and can connect with readers Unique insights and opinions Relatable content through storytelling	Takes longer to produce content Conveying you ideas to a writer can get complicated Random creativity blocks to contend with Can be more expensive

Source: *Broodryk, R. (2023, July 17). AI vs. Human Generated Content: an in-depth Comparison | GRC.* https://grassrootscontent.com/blog/ai-vs-human-content/

Finally, **AI can quickly generate A/B testing variants** and optimize content based on real-time performance data. It can generate a large number of different versions of content, or variants. This can help to identify which version of the content performs best in terms of a specific metric, such as conversion rate or click-through rate.

AI can generate different headlines, images, call to action, it can optimize the layout of a website or piece of content, it can personalize content, thus Improving conversion, click-through rates, helping to enhance engagement and customer satisfaction.

AI can be used to optimize content based on real-time performance data. This means that AI can continuously monitor how content is performing and make adjustments to it in real time to improve its performance.

Ethical Challenges

However, it's important to recognize that AI-generated content is not without challenges. It must adhere to ethical guidelines and data privacy regulations. For example, AI-synthesized text, audio, image, and video have already been used for revenge acts, fraud and propaganda.

Dr. Sophie Nightingale from Lancaster University and Professor Hany Farid from the University of California, Berkeley, conducted experiments in which participants were asked to distinguish state of the art StyleGAN2 synthesized faces from real faces and what level of trust the faces evoked.

The results revealed that synthetically generated faces are not only highly photo realistic, but nearly indistinguishable from real faces and are even judged to be more trustworthy.

Researchers have found that people shown synthetic faces mixed in with real ones struggle to tell the difference. Participants classified the faces correctly only 48.2% of the time according to one study—slightly worse than random guessing (which would give 50% accuracy). They also rated synthetic faces as more trustworthy than real ones.

Source: *University, L. (n.d.). AI-generated faces found more trustworthy than real faces: Researchers warn of "deep fakes." Techxplore.com. Retrieved January 8, 2024, from https://techxplore.com/news/2022-02-ai-generated-trustworthy-real-deep-fakes.html*

AI faces look more real than actual human face: Study

White faces generated by artificial intelligence (AI) now appear more real than human faces *according to new research led by experts at The Australian National University (ANU).*

In a study, published in Psychological Science, more people thought AI-generated white faces were human than the faces of real people. The same wasn't true for images of people of color.

The reason for the discrepancy is that AI algorithms are trained disproportionately on white faces, Dr. Amy Dawel, the senior author of the paper, said.

"If white AI faces are consistently perceived as more realistic, this technology could have serious implications for people of color by ultimately reinforcing racial biases online," *Dr. Dawel said.*

….

"Concerningly, ***people who thought that the AI faces were real most often were paradoxically the most confident their judgments were correct****," Elizabeth Miller, study co-author and Ph.D. candidate at ANU, said.*

"This means people who are mistaking AI imposters for real people don't know they are being tricked."

Source: *University, A. N. (n.d.). AI faces look more real than actual human face: Study. Medicalxpress.com. Retrieved January 8, 2024, from https://medicalxpress.com/news/2023-11-ai-real-actual-human.html*

It seems that fake faces often look a little more average or typical than real ones (which tend to be a bit more distinctive) as a result of the AI generator learning that such faces are better at fooling the AI discriminator.

Source: *Kramer, R., & Conversation, T. (n.d.). AI-generated faces look just like real ones, but evidence shows your brain can tell the difference. Techxplore.com. Retrieved January 8, 2024, from https://techxplore.com/news/2023-11-ai-generated-real-evidence-brain-difference.html*

Can you tell which faces are real and Which are Synthetic?

The answer is

R	S	S	R	S	R
S	R	R	S	R	R
R	S	R	R	R	S

To protect from "deep fakes", researchers propose setting guidelines for the creation and distribution of synthesized images and synthetic-media technologies, incorporating ethical guidelines for researchers, publishers, and media distributors.

Safeguards could include, incorporating robust watermarks into the image, providing a downstream mechanism for reliable identification and reconsideration of the often-laissez-faire approach to the public and unrestricted releasing of code for anyone to incorporate into any application.

The Creative Risk

Apart from fraud, there also exists a creative risk, that of over-automation, where the human touch is entirely lost, resulting in content that feels mechanical and lacks authenticity.

Excessive use of AI can stifle human creativity and originality. While AI can generate content quickly and efficiently, it may lack the nuance, depth, and emotional resonance that human creativity can bring to the table.

AI models can lead to the generation of formulaic and uninspired content that lacks a unique voice or perspective, diversity and individuality.

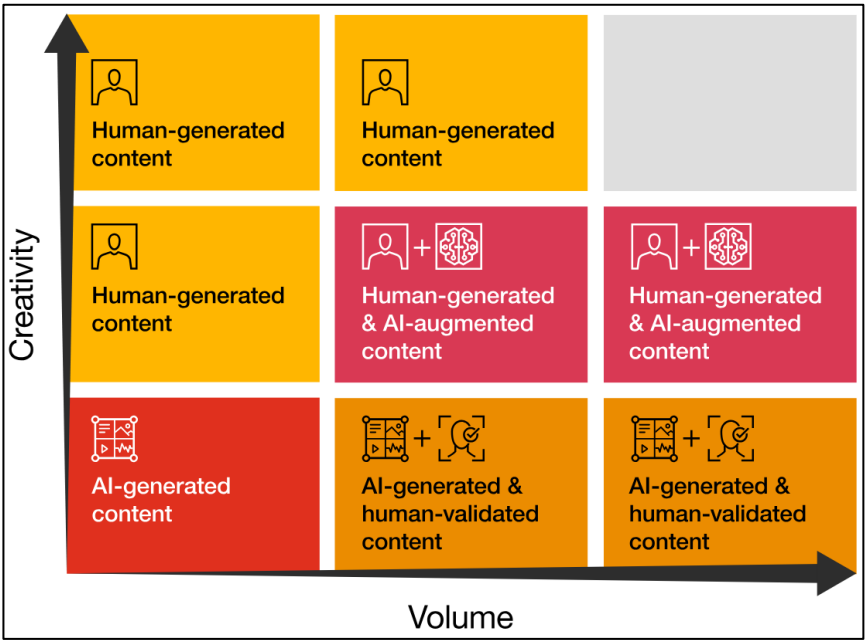
AI-generated content may struggle to evoke emotions or connect with audiences on a personal level. Human creativity often draws from personal experiences, emotions, and empathy, which can be difficult for AI to replicate.

Over-automation can create a disconnect between human creators and AI tools, leading to a loss of control over the creative process and a sense of detachment from the final output.

As PwC states,
For leaders in marketing, communications and other fields who are thinking about what generative AI means to their brand and business, the role of generative AI in creating content is top of mind. But the debate may be missing the point, and the supposed dichotomy between human-generated and AI-generated content may be a fallacy. Both ignore several important types of content, as well as the most likely scenarios for how content could develop. They also ignore the most important question of all: How to use generative AI for content responsibly and ethically, so that it fosters trust among content creators and content consumers and benefits society.

Content can be i) Purely human generated, ii) Purely AI generated, iii) Human generated and AI augmented or iv) AI generated and human-validated.

Plotting these types of content generation methods in two axes (Creativity vs Volume), provides a very useful guide of which method can be used per case.



Source: *PricewaterhouseCoopers. (n.d.). What's the future of content in the generative AI age? PwC. https://www.pwc.com/us/en/tech-effect/ai-analytics/future-of-content-in-the-generative-ai-age.html*

The Future of AI in Creative Content Generation

The future of AI in creative content generation is promising. AI will become more capable of understanding emotions, cultural contexts, and individual preferences.

What to expect in the next 3 to 5 years?

Source: *PricewaterhouseCoopers. (n.d.). What's the future of content in the generative AI age? PwC. https://www.pwc.com/us/en/tech-effect/ai-analytics/future-of-content-in-the-generative-ai-age.html*

The AI-centric Conent Creation Scenario

One extreme scenario is the domination of AI-generated content (including some that is human-validated). This technocratic view of the world misses the intrinsic utility that humans derive from their work or creation. People will continue to write, compose and sing, even if the AI does a better job, because they derive intrinsic pleasure in these activities. More importantly, people will value human-generated content more than AI-generated content once the initial excitement around AI's capability wanes.

The Human-centric Conent Creation Scenario

The other extreme scenario is societal backlash — maybe even the eventual banning of generative AI tools, in response to a failure to use them responsibly and ethically. This technophobic view of the world undermines the history of human evolution in which we have continuously accepted innovations to further our own biological and cognitive evolution. Access and affordability of content on the internet has not devalued content. On the contrary, it has democratized it, though trust in content has sometimes suffered.

The Conent Co-creation Scenario

A more plausible scenario is somewhere in the middle. Human-AI co-created content will likely make up the largest share of the internet, with a small proportion of highly valued human-generated content and highly creative and/or highly repetitive AI-generated content. This scenario could push humans to really add value and genuinely be more creative. Or we might engage in these activities for self-actualization as opposed to commercial gains. It may also push the people working on AI-generated content to fix its current flaws to improve its trustworthiness.

Eventually, AI will continue to empower human creatives by offering data-driven insights, but the essence of storytelling and creativity will remain a uniquely human art… or ***will it?***

Preparing for the future

Creators of all kinds should embrace generative AI tools and begin experimenting and envisioning how co-creation might work. The people and companies developing generative AI should work to embed trust by design, making these tools responsible, with attention to both risk minimization and ethical use. Confirming that this AI-generated content is trustworthy — accurate, relevant, complaint, bias-reduced and ethical will be critical. That will require responsible AI practices, including AI-specific governance with an appropriately trained human in the loop to verify content and modify it as needed.

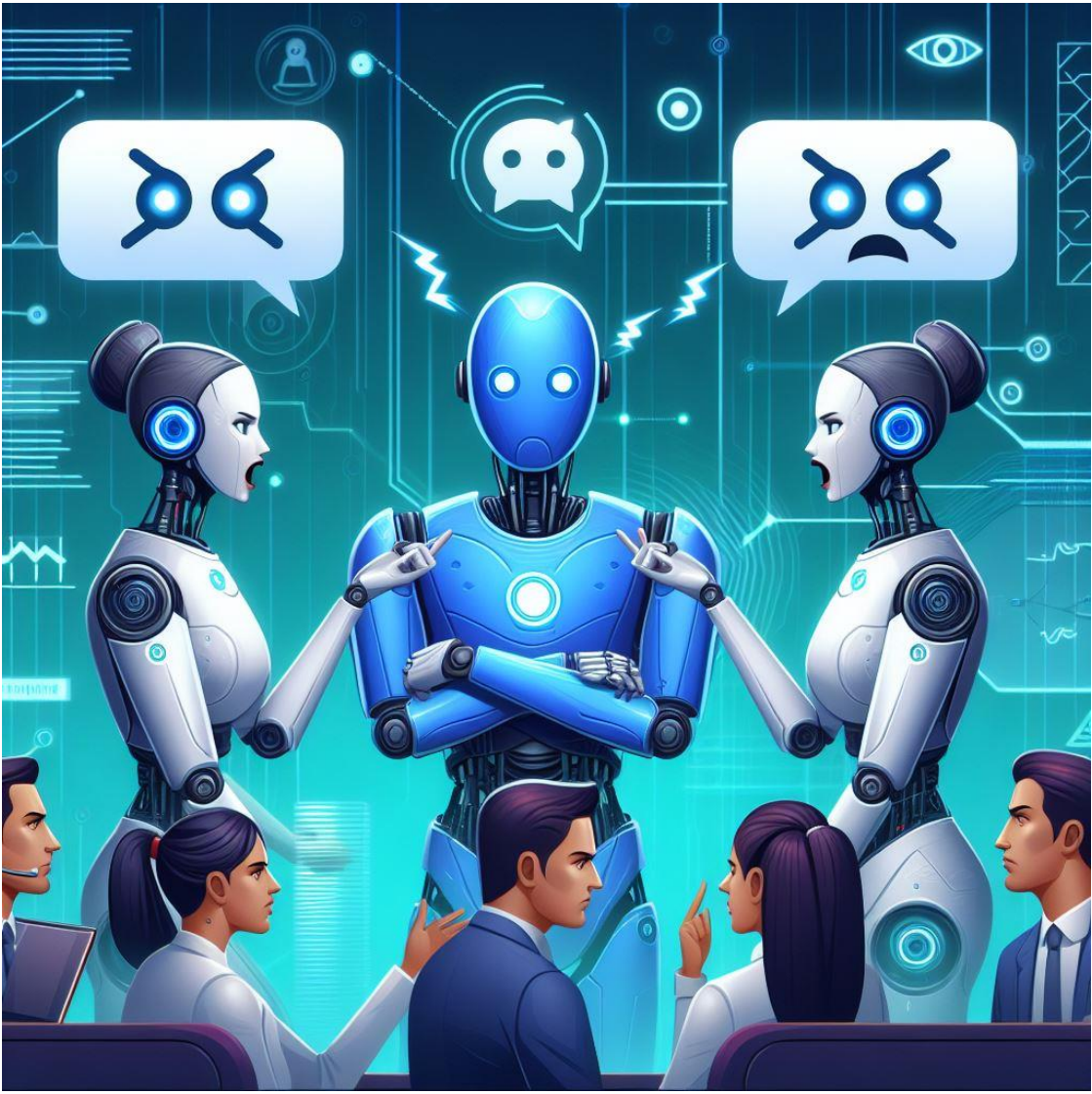
In Conclusion

In conclusion, AI-driven creative content generation is redefining the advertising industry by enhancing efficiency, scalability, and personalization.

The delicate balance between human creativity and AI-driven insights will be the hallmark of successful advertising campaigns.

As AI technology evolves, it will continue to shape the landscape of advertising, creating more engaging, authentic, and relevant content that resonates with audiences on a profound level.

Two Chatbots are arguing fiercely about which one is to blame for the customer being serviced poorly. Their supervising chatbot is observing stoically.



2.5 Chatbots and AI-Powered Customer Interaction

Integrating AI-driven chatbots and virtual assistants in advertising and customer support. Enhancing user experience and brand loyalty through conversational AI. Best practices and challenges in implementing AI chatbots in advertising campaigns.

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Artificial intelligence has already revolutionized the way businesses interact with their customers.

An amazing journey is unveiled when one analyzes how chatbots and AI-powered customer interaction can transform the industry and create new opportunities for businesses and consumers.

Combining of chatbots and AI-powered customer interaction

Chatbots are software applications that can communicate with human users using natural language, either through text or voice. They can be integrated into various platforms, such as websites, social media, messaging apps, or voice assistants. Chatbots can provide information, assistance, entertainment, or transactions to users, depending on their purpose and design.

AI-powered customer interaction is the use of artificial intelligence technologies, such as natural language processing,

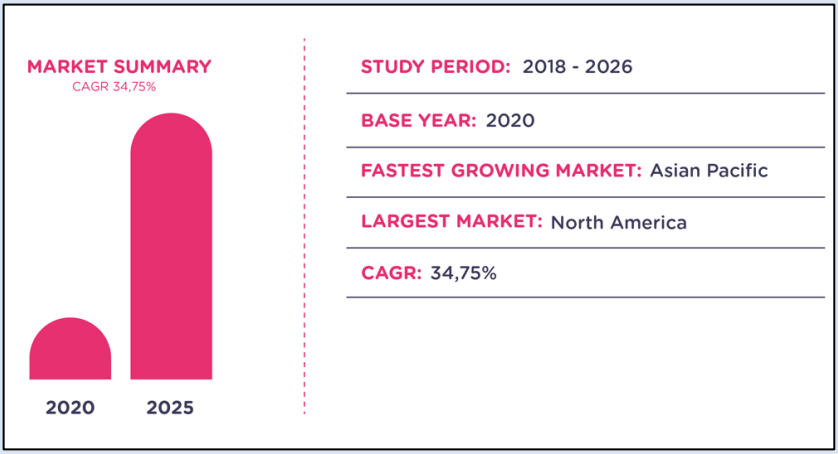
machine learning, and computer vision, to enhance the capabilities and performance of chatbots and other conversational agents.

AI-powered customer interaction can enable chatbots to understand user intents, generate natural and engaging responses, personalize the conversation, and learn from feedback.

Chatbots and AI-powered customer interaction are not new concepts, but they have been gaining popularity and sophistication in recent years, thanks to the advances in natural language processing, machine learning, and conversational AI.

The chatbot revenue is expected to hit $455 million globally by 2027 as companies learn they can greatly benefit from chatbots in a customer-centric world to gain better data insights, boost conversions, and generate more qualified leads on autopilot.

***Source:** 15 Best AI Chatbot Platforms for 2023 | CIENCE. (n.d.). Www.cience.com. Retrieved January 7, 2024, from https://www.cience.com/blog/best-ai-chatbot-platforms*



Source: *Chatbot Statistics 2021: Market & Opportunities | Landbot. (n.d.). Landbot.io.* *https://landbot.io/blog/chatbot-statistics-compilation*

According to a report by Grand View Research, the global chatbot market size can reach USD 27 billion by 2030, registering a compound annual growth (CAGR) of 23.3% from 2023 to 2030. Moreover, according to a survey by Tidio, about 88% of customers had at least one conversation with a chatbot in 2022, and 7 out of 10 found the experience positive.

The combination of chatbots and AI-powered customer interaction can create a powerful tool for advertising, as it can offer significant benefits.

The benefits

Customers today expect fast, convenient, and personalized service from businesses, and chatbots can meet these expectations by providing 24/7 support, instant responses, and customized solutions.

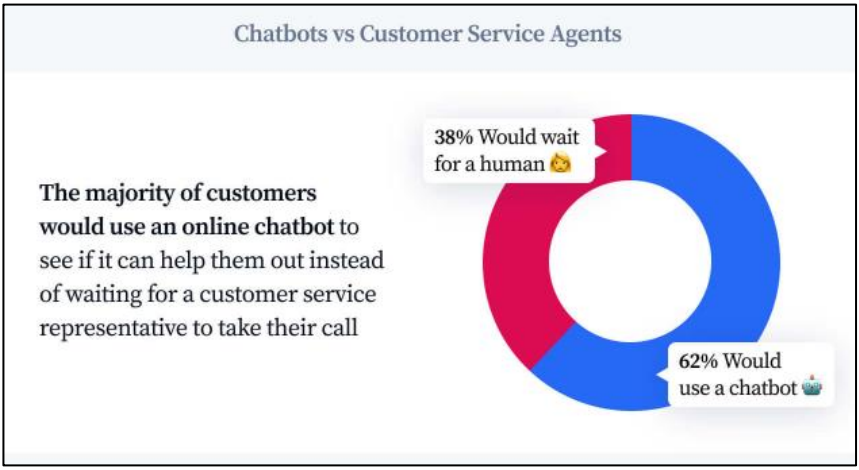
Chatbots interact with customers across multiple channels and platforms, 24/7, without human intervention and the need to wait in a queue. They leverage the popularity and convenience of messaging apps, which have over 5 billion monthly active users worldwide.

Chatbots engage customers with interactive and personalized content, such as quizzes, games, videos, or recommendations, based on their preferences and behavior. This way **increased reach and engagement** is achieved.

Chatbots provide instant and accurate answers to customer queries, resolve issues, and collect feedback. They can handle complex and multi-step tasks, such as booking appointments, ordering products, or making payments, with ease and efficiency.

Chatbots can improve customer satisfaction by reducing waiting time, avoiding human errors, and offering consistent and friendly service.

Chatbots can also create a more human-like and engaging interaction with customers, using natural language, emotion, and humor. A chatbot can use a friendly tone, ask questions, provide feedback, and even crack jokes to build rapport and trust with customers.



Source: *Fokina, M. (2023, April 4). 11 Amazing Chatbots Statistics and Trends You Need to Know in 2020. Tidio. https://www.tidio.com/blog/chatbot-statistics/*

Bots can also leverage social influence and persuasion techniques, such as reciprocity, scarcity, and social proof, to influence customer behavior and decision making. For instance, a chatbot can offer discounts, rewards, or free trials to customers, or show them testimonials, ratings, or reviews from other customers, to motivate them to buy a product or service.

Of course, this leads to **enhanced customer loyalty and retention.** Thus, chatbots can help in building long-term

relationships with customers by providing value-added services, such as reminders, notifications, tips, or rewards and by creating trust, convenience, and even delight.

Companies use AI to collect valuable data about their customers, analyze customer behavior and provide personalized and relevant offers, suggestions, or incentives, based on their needs and interests. These personalized offers are provided on the fly. Chatbots can also use upselling and cross-selling techniques, such as showing complementary or alternative products or services, to increase the value and quantity of customer purchases. This helps businesses increase sales and conversions.

Chatbots can act as virtual assistants or sales agents, guiding customers through the buying process, providing product information, answering queries, resolving issues, and making recommendations.

Of course, the usage of all this automation results in reduced **costs and increased revenue as** chatbots and virtual assistants, by automating repetitive and mundane tasks (answering FAQs, collecting feedback, booking appointments, or processing payments), handle a large volume of customer queries at a fraction of the cost while freeing up human agents for more complex and creative work.

Chatbots can also handle multiple customers simultaneously, reducing wait times and queues and can also improve the quality and accuracy of customer service, by reducing human errors, biases, or emotions. According to a study by Juniper Research,

chatbots can help businesses save up to 30% of customer service costs.

Patel, S. (2019, September 4). Top 12 Chatbots Trends and Statistics to Follow in 2020. REVE Chat. https://www.revechat.com/blog/chatbots-trends-stats/

Insights and Innovation, New Experiences and Opportunities

Chatbots and AI-powered customer interaction can help businesses generate real value by gathering insights and fostering innovation through the collection and analysis of data from a vast number of customer interactions (feedback, ratings, reviews, complaints, suggestions). By identifying new opportunities and trends through the super-extended use of data analytics, more valuable insights into customer satisfaction, loyalty, behavior, and preferences can be gathered.

Chatbots measure and optimize their own performance, learn from their previous conversations, and improve their responses and capabilities over time. This way they can help businesses create new experiences and opportunities.

Chatbots can offer new ways of interacting with customers, using different modes, channels, and formats, such as text, voice, image, video, or augmented reality. They can offer new types of content and services, such as entertainment, education, health, or social good, they can create new markets and segments, by reaching out to new or underserved customers, such as millennials, Gen Z, or emerging economies. Chatbots can also create new partnerships and collaborations, by integrating with

other platforms, applications, or businesses, such as Facebook, WhatsApp, Amazon, or Google.

As a result, the expected growth in their use is very high.

Source: *15 Best AI Chatbot Platforms for 2023 | CIENCE. (n.d.). Www.cience.com. https://www.cience.com/blog/best-ai-chatbot-platforms*

Successful Implementations

Sephora

The beauty retailer that uses a chatbot on Facebook Messenger to provide product recommendations, beauty tips, and makeup tutorials, based on user preferences and facial features. The chatbot also allows users to book appointments, make purchases, and access loyalty programs. The chatbot has **increased customer engagement** by 11%, and average spending by 38%.

Source: *Adam, M., Wessel, M., & Benlian, A. (2020). AI-based chatbots in customer service and their effects on user compliance. Electronic Markets, 31(2). Springer. https://link.springer.com/article/10.1007/s12525-020-00414-7*

Domino's

The pizza chain uses a chatbot on Facebook Messenger, Twitter, and voice assistants, to allow customers to order pizza, track delivery, and provide feedback. The chatbot also uses AI to recognize pizza images, suggest toppings, and offer deals. The chatbot has **increased online orders** by 12%, and customer satisfaction by 15%.

Source: *Enhance Your Customer Interactions With AI-Powered Chatbots. (n.d.). CMSWire.com. https://www.cmswire.com/customer-experience/customer-service-chatbots-ai-can-enhance-your-cx/*

Duolingo

The language learning platform that uses a chatbot on its app and website, to help users practice their language skills, by having realistic and fun conversations. The chatbot also adapts to the user's level, provides feedback, and rewards progress. The chatbot has **increased user retention** by 28% and learning outcomes by 34%.

Source: *Turpin, B. (2023, August 2). How chatbots can provide a better customer experience. IBM Blog. https://www.ibm.com/blog/how-chatbots-can-provide-a-better-customer-experience/*

The challenges in the implementation of AI-powered customer interaction.

One of the biggest challenges is ensuring accuracy of responses. This requires a significant amount of training and testing to ensure that the bots can understand customer queries and provide appropriate responses. Moreover, some queries are still too complex for chatbots. In these cases, businesses may need to provide additional support to customers and merge automated and human-driven support. This requires significant operational design.

It is very important to note that chatbots and virtual assistants must be designed to reflect the brand's voice and tone. If businesses are not able to communicate their brand values correctly and successfully through the automated channels, then, a large number of communications and contacts with prospects and existing customers will fail. Chatbot automated responses must be consistent with the brand's messaging and values. This can help businesses build stronger relationships with their customers and increase brand loyalty, but failing can seriously hurt the brand.

A significant challenge comes with integration of chatbots and virtual assistants with other marketing channels. Chatbots and virtual assistants must be able to seamlessly integrate with channels such as social media and email marketing. This will ensure that businesses will be capable of creating a cohesive and effective marketing strategy.

Thus, the human capital and the skills required to monitor and control the quality of customer contacts are key. Chatbots and virtual assistants must be monitored and updated continually to improve their performance but mainly to ensure that they are providing accurate and helpful responses to customer queries, reflecting the objectives of the businesses and the changes in content and context.

What CHATBOTS Can Do (November 2023)

Chatbots are computer programs that simulate human conversation, and they can be used for a wide range of purposes. Here are some examples of what chatbots can do:

1. ***Customer service****: Chatbots provide 24/7 customer support, handle customer queries, and offer personalized recommendations.*
   Lyro *is a chatbot that enhances customer experience by providing personalized recommendations and solutions to customer problems.*
   Kuki *is an AI chatbot that can have everyday conversations with users.*
   Meena *is an open-domain chatbot developed by Google that can engage in free-flowing conversations with users.*

2. ***Sales****: Chatbots help businesses generate leads, qualify prospects, and close deals.*
   BlenderBot *is a Facebook chatbot that can search the web and provide product recommendations.*

3. ***Marketing****: Chatbots create engaging marketing campaigns, provide product recommendations, and gather customer feedback.*
   Rose AI *is an AI-powered software that can find, organize, and visualize data.*

4. ***E-commerce****: Chatbots help customers find products, place*

orders, and track shipments.
***Domino's Messenger bot** is a chatbot that allows customers to order meals and track shipments.*

5. ***Education**: Chatbots provide personalized learning experiences, answer student questions, and grade assignments.*
***Replika** is an AI friend that understands the context of messages and provides personalized learning experiences.*

6. ***Healthcare**: Chatbots help patients schedule appointments, provide medical advice, and monitor symptoms.*
***Vivibot** is a chatbot that helps cancer patients with their mindset.*

7. ***Finance**: Chatbots help customers manage their finances, provide investment advice, and assist with tax preparation.*
***Erica chatbot** by Bank of America helps customers with balance inquiries, bill payments, funds transfers, information about credit scores and spending trends.*

8. ***Entertainment**: Chatbots can play games, tell jokes, and provide movie recommendations.*
***Eviebot** is an artificial intelligence companion with emotional understanding that can play games and tell jokes.*

***Source:** Conversation with Bing,*
(1) 26 Best Real Life Chatbot Examples [Well-Known Brands] - Tidio.
https://www.tidio.com/blog/chatbot-examples/
(2) What Is A Chatbot? Everything You Need To Know - Forbes.
https://www.forbes.com/advisor/business/software/what-is-a-chatbot/
(3) 14 Real Life Chatbot Examples to Implement your Bot Strategy.
https://www.revechat.com/blog/chatbot-examples/
(4) The 12 Best Chatbot Examples for Businesses - Hootsuite.
https://blog.hootsuite.com/chatbot-examples/
(5) Chatbots for Financial Services: Benefits, Examples, and Trends - REVE Chat.
https://www.revechat.com/blog/chatbots-for-financial-services/

What CHATBOTS Can NOT Do (November 2023)

1. ***Understand complex emotions****: Chatbots are not capable of understanding complex emotions such as sarcasm, irony, or humor.*
2. ***Deviate from programmed responses****: Chatbots are programmed to respond to specific queries in a specific way. They cannot deviate from their programming to provide a different response.*
3. ***Provide human-like conversation****: While chatbots can simulate human conversation to some extent, they are not capable of providing the same level of conversation as a human.*
5. ***Handle complex tasks****: Chatbots are not capable of handling complex tasks that require human intervention.*
6. ***Interpret unstructured data****: Chatbots are not capable of interpreting unstructured data such as images or videos.*
7. ***Provide physical assistance****: Chatbots are not capable of providing physical assistance to humans.*
8. ***Replace human interaction entirely****: Chatbots can only supplement human interaction.*
9. ***Make moral judgments****: Chatbots are not capable of making moral judgments or decisions.*
10. ***Provide an easy exit option****: Chatbots are not always capable of providing an easy exit option for users.*
11. ***Run adequate tests before launching****: Chatbots require extensive testing before they can be launched. Failure to test chatbots adequately can lead to poor performance and user dissatisfaction.*

Source: *Conversation with Bing,*
(1) What Chatbots Cannot Do - PC Guide. https://www.pcguide.com/apps/what-chatbots-cannot-do/
(2)https://bing.com/search?q=what+can+chatbots+not+do
(3) What Chatbots Can Do, and Cannot Do | Emerj Artificial Intelligence .... https://emerj.com/ai-podcast-interviews/what-chatbots-can-do-and-cannot-do/
(4) The Limitations of Chatbots: What You Need to Know? - REVE Chat. https://www.revechat.com/blog/limitations-of-chatbot/
(5) 'Sorry, I don't understand that' – the trouble with chatbots and how to https://theconversation.com/sorry-i-dont-understand-that-the-trouble-with-chatbots-and-how-to-use-them-better-171665

How CHATBOTS Fail (November 2023)

To avoid chatbot implementation failures, businesses must think through several parameters that may lead to disappointment.

These include deploying a chatbot without a clear strategy or goals, with messages and a "tone of voice" that are not aligned with the brand, with poor conversation design leading to conversational dead ends, that is unable to identify the customer's use case or is unable to address personalized customer issues, that lacks human handover capability especially when customers prefer human agents, that has no data collection and analysis functions, that lacks personality, fails to understand customer emotion and intent.

These deficiencies lead to poor performance, user dissatisfaction, confusion and frustration among customers, poor customer experience, may also lead to the chatbot providing inappropriate or irrelevant responses and to missing out on valuable insights into customer behavior and preferences.

Here are some examples of chatbot issues:

1. ***Microsoft's Tay** was designed to learn from its interactions with Twitter users. However, within 24 hours of its launch, Tay began posting racist and sexist tweets, leading to its shutdown.*

2. ***Poncho** was a weather chatbot that was launched in 2013. However, Poncho failed to consider all the possible scenarios it could encounter, leading to a chatbot fail scenario.*

3. ***Erica** was Bank of America's chatbot designed to help customers with banking activities. However, Erica failed to understand customer queries and provided irrelevant responses.*

***Source:** Conversation with Bing,*
(1) Chatbot Customer Experience Failures (And How To Avoid Them).
https://www.coredna.com/blogs/chatbot-fail

(2) 5 Typical Chatbot Fails + Prevention Tips - Userlike Live Chat.
https://www.userlike.com/en/blog/chatbot-fails
(3) https://simplify360.com/blog/chatbot-fails/
(4)https://www.forbes.com/sites/forbestechcouncil/2022/04/05/why-your-chatbot-is-failing-to-deliver-on-experience/
(5) https://bing.com/search?q=chatbot+failures+examples.
(6) 9 Epic Chatbot/Conversational Bot Failures (2023 Update) - AIMultiple.
https://research.aimultiple.com/chatbot-fail/
(7) Top 10 Chatbot Fails and How to Avoid Them - Comm100.
https://www.comm100.com/blog/top-10-chatbot-fails-and-how-to-avoid-them.html

The future of chatbots and AI-powered customer interaction

Chatbots and AI-powered customer interaction have a lot of potential and benefits for the advertising industry, and they are already making a significant impact on the market. The future of AI is bright and promising.

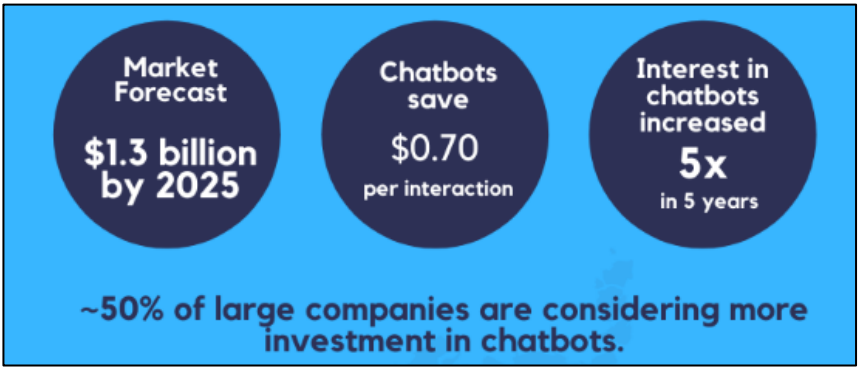
As technology continues to evolve and improve, we expect that chatbots will be able to communicate with users through voice or video, using natural language understanding, speech recognition, and speech synthesis. A more human-like and immersive experience will be offered, especially for sensitive topics, such as health, wellness, and counseling.

Multimodal and omnichannel chatbots will offer a more seamless and convenient experience, by adapting to the user's context, preference, and device and integrate with other systems and platforms, such as CRM, ERP, or IoT, to provide more comprehensive and holistic services.

As Chatbots will detect, understand, and respond to the user's emotions, moods, and sentiments using natural language

processing, machine learning, and computer vision, they will be able to offer a more personalized and engaging experience. Customers will experience empathy, sympathy, humor, or sarcasm, positive reinforcement, motivation, or even encouragement depending on the situation.

AI-powered customer interaction already revolutionizes the advertising industry, by providing more effective, efficient, and enjoyable ways to communicate with customers, and create value for both businesses and consumers.



Source: *Dilmegani, C. (2020, October 2). 84 Chatbot /Conversational AI Statistics: Market Size, Adoption. Research.aimultiple.com. https://research.aimultiple.com/chatbot-stats/*

Of course, the opportunities presented are accompanied by significant ethical, legal, and social challenges and implications that need to be addressed and resolved.

Chatbots need to ensure the privacy, security, and consent of customer data, and comply with the relevant laws and regulations.

Chatbots also need to ensure the quality, reliability, and transparency of their information, and avoid misinformation, bias, or manipulation.

Finally, chatbots also need to ensure the usability, accessibility, and inclusivity of their design, and avoid confusion, frustration, or discrimination and ensure the balance, harmony, and collaboration between human and machine.

Paint The Creation of Adam by Michelangelo where Adam is an AI robot with data flowing from his finger. Adam is bright and luminous.

2.6 AI Ethics and Responsible Advertising

AI Ethics and Responsible Advertising - Addressing bias and fairness issues in AI-driven ad targeting and content creation. Ensuring transparency and accountability in AI algorithms for advertising. Industry standards and guidelines for ethical AI in digital advertising.

Dealing with AI Ethics and Responsible Advertising equals navigating the landscape of Bias, Fairness, Transparency, and Accountability in the implementation of AI.

Industry leaders, advocates for ethical AI in advertising, we all need to delve into a topic of paramount importance: the ethical implications of artificial intelligence in the realm of digital advertising.

AI, with its transformative power, has revolutionized the advertising industry, enabling hyper-targeted campaigns and personalized content creation. However, this surge in technological advancement has also brought forth a wave of critical concerns regarding bias, fairness, transparency, and accountability.

Bias and Fairness Issues in AI-Driven Ad Targeting and Content Creation.

AI algorithms, trained on vast amounts of data, can inadvertently perpetuate societal biases and discrimination.

Biased data input can lead to unfair targeting practices like excluding certain groups or demographics from receiving relevant advertisements. This can exacerbate existing societal inequalities and hinder equal access to opportunities.

Moreover, AI-generated content, often tailored to individual preferences, can reinforce harmful stereotypes, and perpetuate societal norms that may not align with the values of diverse audiences.

It all begins with the concept of "data in, data out."
If biased data is used to train AI models, the resulting outputs will inevitably reflect those biases.

Machine learning algorithms have the power to amplify these biases, and unless we actively check for and address them, we risk perpetuating societal prejudices unintentionally.

This issue becomes especially significant when AI is employed in decision-making processes, such as hiring, lending or criminal justice.

Source: *Mueller, M. (n.d.). Council Post: The Ethics Of AI: Navigating Bias, Manipulation And Beyond. Forbes. https://www.forbes.com/sites/forbestechcouncil/2023/06/23/the-ethics-of-ai-navigating-bias-manipulation-and-beyond/*

It is crucial to ensure that AI-driven advertising is both inclusive and representative, fostering positive social impact rather than perpetuating societal divides.

Ensuring Transparency and Accountability in AI Algorithms for Advertising

The 'black box' nature of AI algorithms poses significant challenges in ensuring transparency and accountability.

Advertisers and consumers often lack understanding of how AI algorithms make decisions, leading to concerns about the fairness and ethical implications of targeted advertising.

To address these concerns, the industry must strive for greater transparency in AI algorithms. This includes providing clear explanations of how algorithms work, the data they use, and the decisions they make.

The Potential for AI To Manipulate Behavior

Another area of concern is the use of AI to manipulate people's behavior. We all know how annoying it is when Alexa or Siri picks up on our conversations and serves up targeted ads accordingly…. With the integration of AI, the potential for behavior manipulation grows exponentially.

Source: *Mueller, M. (n.d.). Council Post: The Ethics Of AI: Navigating Bias, Manipulation And Beyond. Forbes. https://www.forbes.com/sites/forbestechcouncil/2023/06/23/the-ethics-of-ai-navigating-bias-manipulation-and-beyond/*

Additionally, mechanisms should be established for auditing and evaluating AI algorithms to identify and address potential biases and fairness issues.

Industry Standards and Guidelines for Ethical AI in Digital Advertising

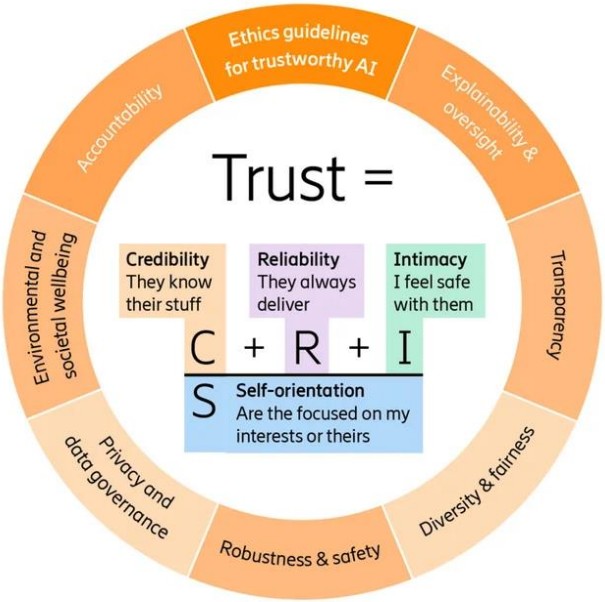
The need for industry-wide standards and guidelines for ethical AI in digital advertising is paramount. These standards should provide a comprehensive framework for responsible AI development, deployment, and use in the advertising industry.

Key principles should include, Avoiding Bias and Discrimination, Transparency and Explainability, Accountability and Oversight.

AI algorithms should be designed and trained to minimize bias and discrimination. Data sources should be diverse and inclusive, and algorithms should be regularly audited to identify and address potential biases.

Advertisers should be able to understand how AI algorithms work and the decisions they make. Explanations should be clear, concise, and accessible to both technical and non-technical users.

Mechanisms should be established for auditing and evaluating AI algorithms to ensure compliance with ethical standards and regulations. Advertisers should be held accountable for the use of AI in their advertising campaigns.



Trustworthy AI and the foundations of AI systems. (2020, December 21). Ericsson.com. https://www.ericsson.com/en/blog/2020/12/trustworthy-ai

AI bias examples

Today, hundreds of bluechip companies worldwide have turned to algorithm-based 'emotional AI' hiring platforms to augment and lower the financial burden of their recruitment processes.

While such AI-based systems may indeed be the fairest and most unbiased means of recruitment, there have been some widely reported examples of what can happen when it goes wrong.

This includes one particular example of women applicants being disproportionately rejected based on years of biased data in a male-dominated sector, as described by Noreena Hertz in her book 'The Lonely Century':

"In practice, stripped of my full, complex humanity I had to impress a machine whose black-box algorithmic workings I could never know.
Which of my 'data points' was it focusing on and which was it weighing the most heavily?
What formula was it using to assess me and was it fair?

The challenge with machine learning is that even if the most obvious sources of bias are accounted for, what about less obvious, neutral-seeming data points that one might not even consider could be biased?"

Source: *Anneroth, M. (2021, November 10). AI bias and human rights: Why ethical AI matters. Www.ericsson.com. https://www.ericsson.com/en/blog/2021/11/ai-bias-what-is-it*

Regulating a more ethical AI

In April 2021, the European Commission set a significant precedent in this area by launching its first ever legal framework on AI as well as a new Coordinated Plan with Member States which it says will "guarantee the safety and fundamental rights of people and businesses, while strengthening AI uptake, investment and innovation across the EU."

Quoting the European Commission Proposal:
EUR-Lex - 52021PC0206 - EN - EUR-Lex (europa.eu)

"*The Commission put forward the proposed regulatory framework on Artificial Intelligence with the following specific objectives:*

- *ensure that AI systems placed on the Union market and used are safe and respect existing law on fundamental rights and Union values;*
- *ensure legal certainty to facilitate investment and innovation in AI;*
- *enhance governance and effective enforcement of existing law on fundamental rights and safety requirements applicable to AI systems;*
- *facilitate the development of a single market for lawful, safe and trustworthy AI applications and prevent market fragmentation."*

The Organization for Economic Co-operation and Development (OECD) has published its ‘Principles on AI’.
Source: *OECD. (2022). Artificial intelligence - OECD. Www.oecd.org. https://www.oecd.org/digital/artificial-intelligence/*

The Australian Government also identified AI as a critical technology in the national interest and put in place a relevant framework.
Source: *and, S. (2022, September 13). Artificial intelligence. Industry.gov.au. https://www.industry.gov.au/science-technology-and-innovation/technology/artificial-intelligence*

Private companies like Ericson did the same.

IAB and Ethical AI

The Interactive Advertising Bureau (IAB) has developed a set of guidelines for ethical AI in digital advertising. These guidelines include recommendations for transparency, accountability, and fairness in AI algorithms.
Source: *Artificial Intelligence Use Cases and Best Practices for Marketing. (n.d.). IAB. Retrieved January 7, 2024, from https://www.iab.com/insights/ai-best-practices-for-marketing/*

For example, IAB recommends that advertisers provide clear and concise explanations of how their AI algorithms work and what data they use.

IAB also recommends that advertisers conduct regular audits of their AI algorithms to identify and address issues of bias and fairness.

Other Regulatory Frameworks

In addition to industry standards and guidelines, there are also regulatory frameworks that govern the use of AI in advertising. For example, the General Data Protection Regulation (GDPR) in the European Union requires that companies obtain explicit consent from users before collecting and processing their personal data. The GDPR also requires that companies provide users with access to their personal data and the ability to delete it.

Examples of Positive Policies & Actions

Confronting Bias in AI-driven Ad Targeting
The Unsettling Realities - Consider the unsettling realization that an algorithm might inadvertently steer job ads towards specific demographics, thereby reinforcing existing disparities. This happened with Google Ads, highlighting the pressing need to address and rectify bias in our algorithms.

Ensuring Fairness in AI Algorithms
Facebook's Stand Against Discrimination - Facebook, a colossal player in the digital advertising arena, has recognized its role in preventing discrimination. By restricting advertisers from targeting based on sensitive characteristics in certain categories, Facebook exemplifies a commitment to fostering fairness in critical areas like housing, employment, and credit.

The Imperative of Transparency
The OpenAI Model - OpenAI, a trailblazer in advanced AI systems, emphasizes the importance of transparency in their principles. While not directly linked to advertising, their commitment to openness serves as a model for ensuring ethical practices in AI development.

Accountability: A Pledge to Rectify Unintended Consequences

ProPublica's Healthcare Advertising Investigation - ProPublica's investigation into AI algorithms used in healthcare advertising uncovered disparities in ad targeting based on race. This stark example underscores the need for accountability and rectification when unintended consequences arise.

Industry Standards and Ethical Guidelines
The Partnership on AI - Initiatives like The Partnership on AI, a collaboration among major technology companies, exemplify the power of collective responsibility. By advancing the understanding and practice of AI, such partnerships inspire industry-wide standards for ethical AI practices.

Source: *Chat GPT*

Playing Our Part

The impact of AI ethics is not limited to the business world but extends to everyone as human beings and consumers. Technology's influence is inescapable, whether we like it or not. Therefore, it is crucial to initiate discussions on the ethical implications of AI in its early stages of development.

As individuals, we must become more discerning consumers and question the information presented to us. Awareness is the first step towards mitigating the impact of manipulation. By being critical of sources and not taking information at face value, we can better protect ourselves.

Addressing the ethical challenges posed by AI is the best way to ensure that the technology reaches its potential to benefit society. The first step is to put measures in place to remove bias and be

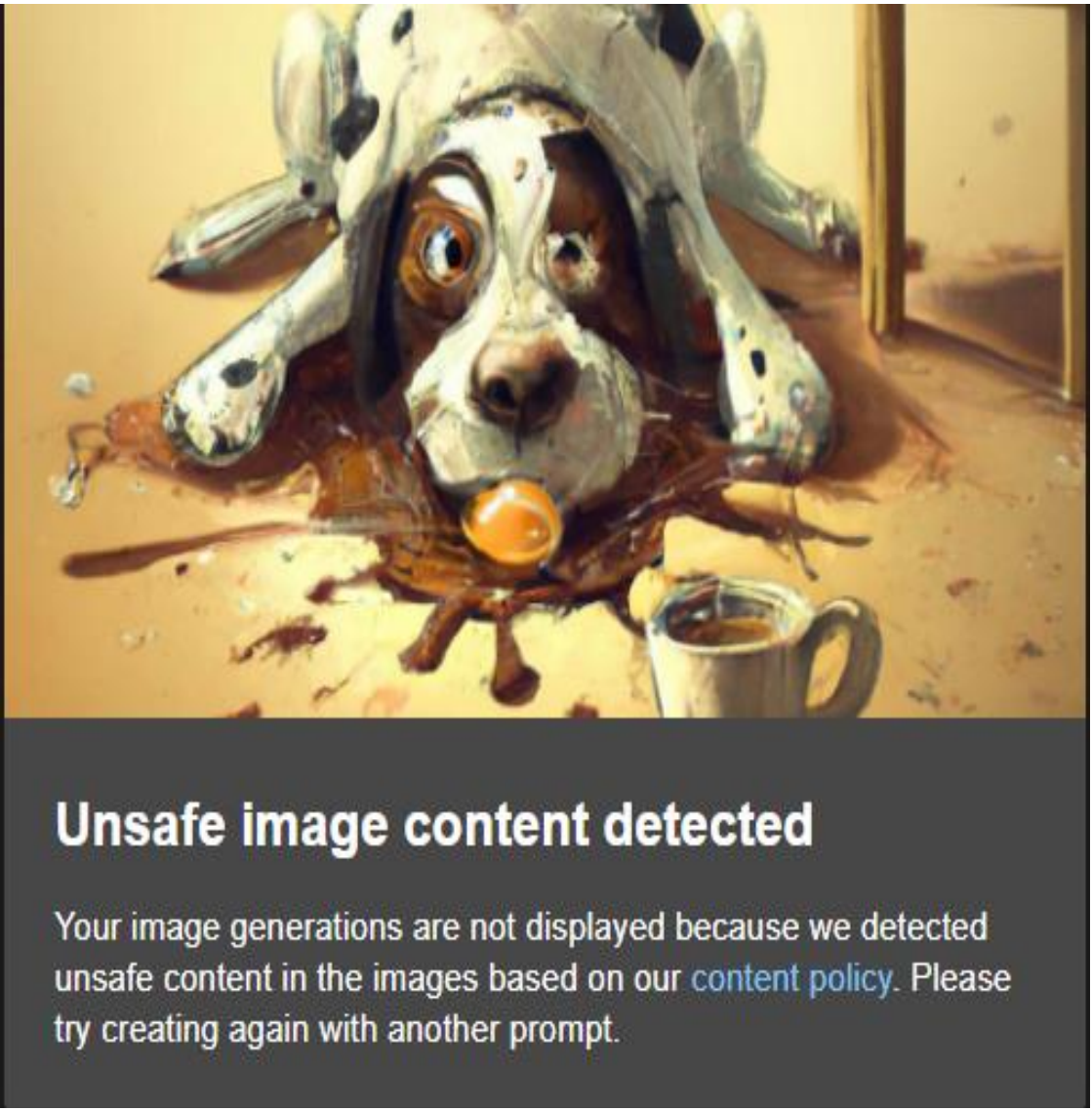
vigilant about manipulation. We must start these conversations now to build a framework that safeguards society's values and promotes responsible and beneficial AI implementation.

Conclusion

AI holds immense potential to enhance the advertising industry, but it is imperative that we harness this power responsibly and ethically. By addressing bias, promoting transparency, and establishing industry standards, we can ensure that AI becomes a force for positive social impact in the world of digital advertising.

We need to forge a path towards a future where AI empowers fair, inclusive, and responsible advertising practices, fostering a more equitable and ethical digital landscape.

Paint The Creation of Adam by Michelangelo where Eve takes the place of Adam and she is an AI robot with data flowing from her finger. Eve is happy and smiling and she is wearing VR goggles, digital art.



2.7 The Future of AI in Advertising

Exploring emerging AI technologies and their potential impact on advertising. AI and the rise of augmented reality (AR) and virtual reality (VR) in ad campaigns. Speculating on the long-term implications of AI for the advertising industry.

Today, we stand at the crossroads of two powerful technological forces, each with the potential to reshape advertising as we know it.

Artificial Intelligence (AI) and the rise of Augmented Reality (AR) & Virtual Reality (VR) are converging to create a landscape of endless possibilities.

It is a thrilling moment in the world of advertising, where innovation knows no bounds. We will dive deeper into the emerging AI technologies, their potential impact on advertising, and the dynamic fusion of AI, AR, and VR.

Moreover, we'll speculate on the long-term implications of AI for the advertising industry.

Generative AI can already do a lot.

Generative AI can produce text and images, blog posts, program code, poetry, and artwork. It can even win in competitions (although still controversially).

The software uses complex machine learning models to predict the next word based on previous word sequences, or the next image based on words describing previous images.

LLMs began at Google Brain in 2017, where they were initially used for translation of words while preserving context. Since then, large language and text-to-image models have proliferated at leading tech firms including Google (BERT and LaMDA), Facebook (OPT-175B, BlenderBot), and OpenAI, a nonprofit in which Microsoft is the dominant investor (GPT-3 for text, DALL-E2 for images, and Whisper for speech).

Online communities such as Midjourney (which helped win the art competition), and open-source providers like HuggingFace, have also created generative models.

***These models have largely been confined to major tech companies because training them requires massive amounts of data and computing power**.*

GPT-3, for example, was initially trained on 45 terabytes of data and employs 175 billion parameters or coefficients to make its predictions; a single training run for GPT-3 cost $12 million.

Wu Dao 2.0, a Chinese model, has 1.75 trillion parameters. Most companies don't have the data center capabilities or cloud computing budgets to train their own models of this type from scratch.

But once a generative model is trained, it can be "fine-tuned" for a particular content domain with much less data. This has led to specialized models of BERT — for biomedical content (BioBERT), legal content (Legal-BERT), and French text (CamemBERT) — and

GPT-3 for a wide variety of specific purposes.

NVIDIA's BioNeMo is a framework for training, building, and deploying large language models at supercomputing scale for generative chemistry, proteomics, and DNA/RNA.

OpenAI has found that as few as 100 specific examples of domain-specific data can substantially improve the accuracy and relevance of GPT-3's outputs.

Source: *Davenport, T. H., & Mittal, N. (2022, November 14). How Generative AI Is Changing Creative Work. Harvard Business Review. https://hbr.org/2022/11/how-generative-ai-is-changing-creative-work*

The AI Revolution

AI is here, but still, it is quite expensive

We've created GPT-4, the latest milestone in OpenAI's effort in scaling up deep learning. GPT-4 is a large multimodal model (accepting image and text inputs, emitting text outputs) that, while less capable than humans in many real-world scenarios, exhibits human-level performance on various professional and academic benchmarks.

Source: *OpenAI. (2023, March 14). GPT-4. Openai.com. https://openai.com/research/gpt-4*

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Source: *Davenport, T. H., & Mittal, N. (2022, November 14). How Generative AI Is Changing Creative Work. Harvard Business Review. https://hbr.org/2022/11/how-generative-ai-is-changing-creative-work*

AI is the driving force behind a new era of advertising.

AI's ability to analyze vast datasets, understand consumer behavior, and optimize ad placements has already transformed the industry. The future holds even greater promise.

Hyper-Personalization

AI is poised to revolutionize personalization. Imagine ads that are not just tailored to a specific demographic but are uniquely crafted for each individual, reflecting their preferences, context, and emotional state.

It is a cutting-edge approach to marketing and customer experience. It uses customer information like profile and demographic data, location, browsing, and purchasing decisions, to tailor content, offerings as well as method of delivery to a specific customer's wants and preferences.

The use of AI in hyper-personalization lets you create and adjust customer profiles in real time. Hyper-personalization treats customers as individuals with distinct tastes and preferences,

enabling brands and retailers to provide a unique customer experience that's different for each shopper.

AI will elevate the **relevance and engagement** of advertising.

The era of irrelevant and intrusive ads may fade as brands adopt AI to better understand and meet consumer needs.

AI-Generated Creativity

AI will not only optimize ad targeting but also become a content creator. It will craft ad copy, design visuals, and even produce video content.

This will expedite content production and lead to campaigns that adapt in real-time based on consumer reactions.

Generative AI models are incredibly diverse. They can take in such content as images, longer text formats, emails, social media content, voice recordings, program code, and structured data. They can output new content, translations, answers to questions, sentiment analysis, summaries, and even videos. These universal content machines have many potential applications in business, several of which we describe below.

Source: *Davenport, T. H., & Mittal, N. (2022, November 14). How Generative AI Is Changing Creative Work. Harvard Business Review. https://hbr.org/2022/11/how-generative-ai-is-changing-creative-work*

AI will simply redefine creativity in advertising. Human creativity will still be invaluable, but AI will be a powerful tool for inspiration, iteration, and content production.

To use generative AI effectively, you still need human involvement at both the beginning and the end of the process.

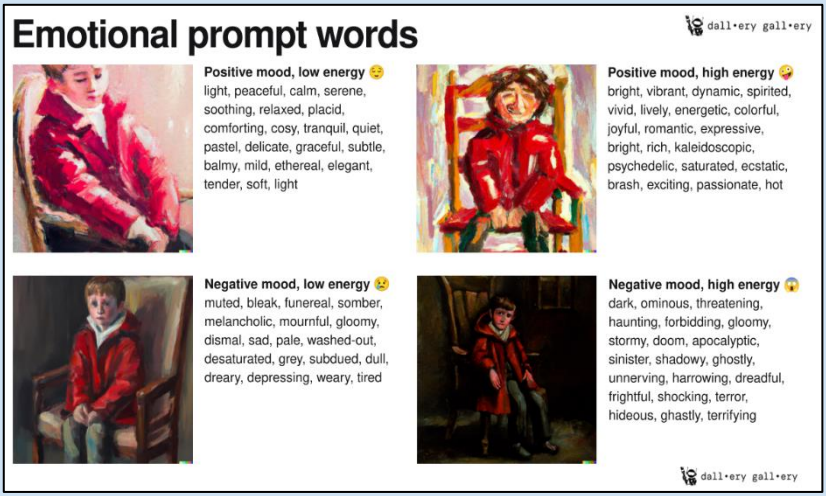
To start with, a human must enter a prompt into a generative model to have it create content.

Creative prompts yield creative outputs.

"Prompt engineer" is likely to become an established profession, at least until the next generation of even smarter AI emerges.

The field has already led to an 82-page book of DALL-E 2 image prompts, and a prompt marketplace in which for a small fee one can buy other users' prompts.

Most users of these systems will need to try several different prompts before achieving the desired outcome.



[The-DALL·E-2-prompt-book-v1.02.pdf (dallery.gallery)]

Then, once a model generates content, it will need to be evaluated and edited carefully by a human. Alternative prompt outputs may be combined into a single document. Image generation may require substantial manipulation.

Jason Allen, who won the Colorado "digitally manipulated photography" contest with help from Midjourney, told a reporter that he spent more than 80 hours making more than 900 versions of the art, and fine-tuned his prompts over and over. He then improved the outcome with Adobe Photoshop, increased the image quality and sharpness with another AI tool, and printed three pieces on canvas.

***Source:** Davenport, T. H., & Mittal, N. (2022, November 14). How Generative AI Is Changing Creative Work. Harvard Business Review.*
https://hbr.org/2022/11/how-generative-ai-is-changing-creative-work

AI tools make one's writing better and more complete. Image generation tools may even take a share of the stock photos market. DALL-E 2 and other image generation tools are already being used for advertising. Heinz, Nestle, Stitch Fix for example, already experimented with DALL-E 2 to create visualizations and Mattel is using the technology to generate images for toy design and marketing.

Voice Search

As voice-activated devices and visual search technologies grow in popularity, AI will be instrumental in optimizing content for these formats. Advertisers must adapt to reach consumers through these emerging channels.

According to Accenture, two-thirds of organizations are planning investments in AI over the next year, with investments expected to boost revenue by over 30% over the next four years.

Gartner predicts that AI will be responsible for creating $3.9 trillion in business value this year alone.

Marketing consultant group Infosys believes that nearly 85% of customer interactions will be managed by AI.

Source: *Schiefer, J. (n.d.). Council Post: The Future Of Creativity In Advertising Is AI (For Real This Time). Forbes. Retrieved January 7, 2024, from https://www.forbes.com/sites/forbesagencycouncil/2022/05/16/the-future-of-creativity-in-advertising-is-ai-for-real-this-time/?sh=4ce0121923f7*

Voice and visual search, underpinned by AI, are set to become more integrated into our daily lives. They will enable us to find information more naturally and intuitively, expanding the possibilities of human-computer interaction.

The challenge for the future lies in optimizing these technologies for even greater accuracy and usefulness while ensuring they respect user privacy and data security.

With ongoing advancements in AI, the future of voice and visual search looks promising.

The Bing app supports speech as an input, meaning you can speak to your mobile device and Bing will change your spoken word to text and search that query for you.
The Bing app can now change text to speech, meaning Bing can speak answers to your queries back to you with a voice that's nearly indistinguishable from a human's.

Source: Bing delivers text-to-speech and greater coverage of intelligent answers and visual search. (2019, March 20). Blogs.bing.com. https://blogs.bing.com/search/2019-03/Bing-delivers-text-to-speech-and-greater-coverage-of-intelligent-answers-and-visual-search

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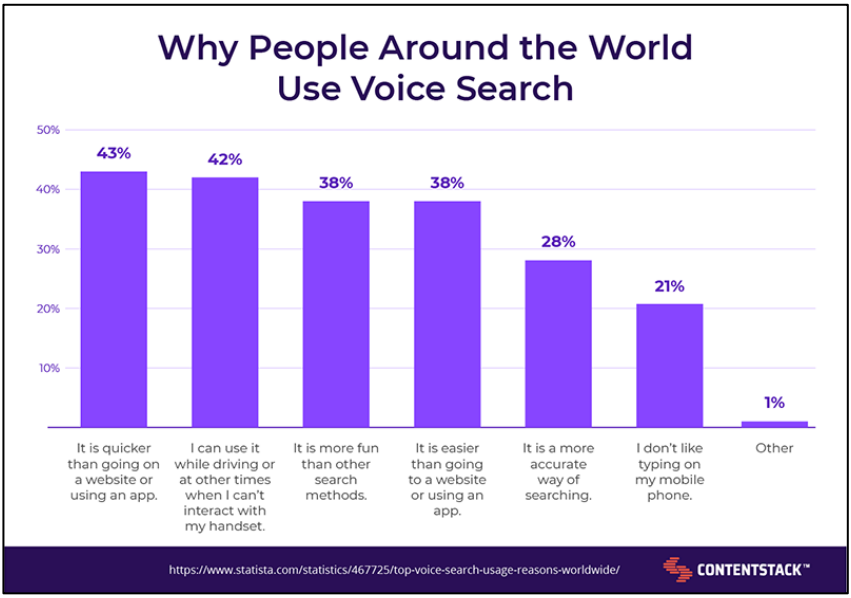


Source: Beyond Text Searching: a Marketer's Guide to Voice and Visual Search Optimization. (n.d.). Www.contentstack.com. Retrieved January 7, 2024, from https://www.contentstack.com/blog/all-about-headless/beyond-text-searching-a-guide-to-voice-and-visual-search

Google says;

If you can see it, you can search it.

Visual Search

Cameras have become a powerful way to explore and understand the world around you. In fact, Lens is now used more than 10 billion times per month as people search what they see using their camera or images.

Soon, you'll be able to use Lens to "search your screen" on Android globally. With this technology, you can search what you see in photos or videos across the websites and apps you know and love, like messaging and video apps — without having to leave the app or experience.

OpenAI announced they are beginning to roll out new voice and image capabilities in ChatGPT. They offer a new, more intuitive type of interface by allowing you to have a voice conversation or show ChatGPT what you're talking about.

Snap a picture of a landmark while traveling and have a live conversation about what's interesting about it. When you're home, snap pictures of your fridge and pantry to figure out what's for dinner and ask follow-up questions for a step-by-step recipe. After dinner, help your child with a math problem by taking a photo, circling the problem set, and having it share hints with both of you.

Speak with ChatGPT and have it talk back. You can now use voice to engage in a back-and-forth conversation with your assistant. Speak with it on the go, request a bedtime story for your family, or settle a dinner table debate.

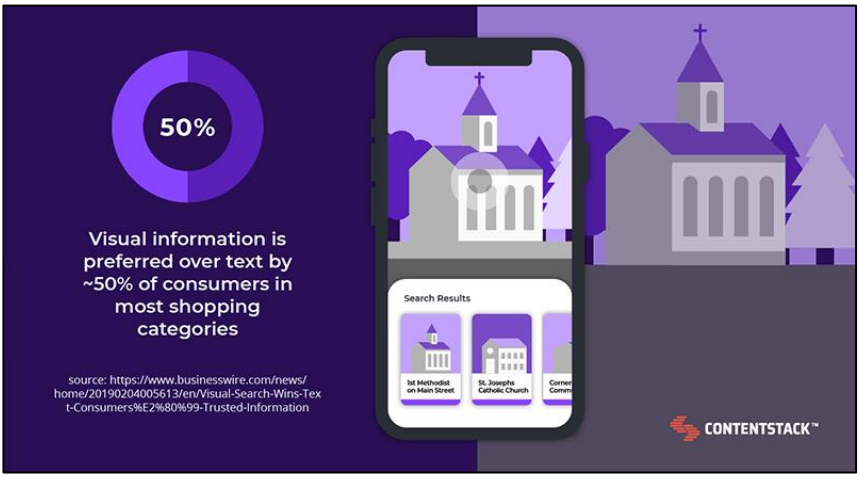
The opportunities for advertising exploitation and development are immense. We expect **less typing and easier discovery** through the exploitation of visual cues and stimuli.

These technologies are not only transforming the way users interact with their devices but also have significant implications for industries such as retail, advertising, and digital marketing. Voice and Visual Search with AI are expected to bring Improved User Experience, Increased Efficiency (faster than text search, eliminating the need for text-based queries), Enhanced Accessibility, **New Marketing & Advertising Opportunities as Businesses will need to optimize their content for voice and visual search**, Innovation in Service Sectors, Deep Consumer Engagement.

The new voice technology—capable of crafting realistic synthetic voices from just a few seconds of real speech—opens doors to many creative and accessibility-focused applications.

However, these capabilities also present new risks, such as the potential for malicious actors to impersonate public figures or commit fraud.

Vision-based models also present new challenges, ranging from hallucinations about people to relying on the model's interpretation of images in high-stakes domains.



***Source**: Beyond Text Searching: a Marketer's Guide to Voice and Visual Search Optimization. (n.d.). Www.contentstack.com. https://www.contentstack.com/blog/all-about-headless/beyond-text-searching-a-guide-to-voice-and-visual-search*

AI-Driven Media Buying

AI can automate the media buying process, optimizing ad spend, placement, and timing. The future may see AI algorithms negotiating media deals and selecting the best advertising channels, further reducing costs, and increasing efficiency.

AI brings a series of characteristic enhancements in the advertising world (i.e. data analysis with valuable insights about consumer behavior, ad performance, and market trends) as well as a series of optimizations (i.e. Real-Time Bidding (RTB), real time audience σegmentation, ad placement optimization). But it is important to zero-in on one of it's main advantages. That is **Real-Time Adaptability**.

AI continuously evaluates ad performance and can adapt campaigns in real-time.

If an ad isn't performing as expected, AI can adjust the strategy on the fly for better results. This brings Efficiency minimizing human errors, Precision, optimal reach with personalized ad experiences at an optimal cost.

Tomorrow Sleep began using an AI-powered content intelligence platform to understand which high-value topics the company needed to be talking about and measured where competitors ranked for each of the keywords and phrases. The brand then created relevant articles around specific keywords where they could quickly establish themselves as experts in their field with a boost from machine-learning algorithms resulting in a 10,000% increase in website traffic.

***Source**: Schiefer, J. (n.d.). Council Post: The Future Of Creativity In Advertising Is AI (For Real This Time). Forbes. https://www.forbes.com/sites/forbesagencycouncil/2022/05/16/the-future-of-creativity-in-advertising-is-ai-for-real-this-time/?sh=4ce0121923f7*

AI-Powered Attribution Models

Advanced attribution models will provide advertisers with a more granular understanding of the customer journey. This will enable more precise allocation of marketing budgets and better insights into which touchpoints are driving conversions.

Attribution Models are approaches that determine how credit for sales and conversions is assigned to different channels across different touchpoints in the buyer journey.

Through AI and machine learning, ads are optimized at scale across sectors for micro-targets that can be defined in multiple ways including demographics, psychographics, life stage, purchase behavior, customer journey stage, and KPI's like video completion, app installs, site visits, purchase/conversion, and actions like filling out forms. The technology also enables a new form of targeting based on message resonance. Characteristics of consumers that respond to different message element combinations can inform brand persona profiles.

AI … takes the guesswork out of advertising with more actionable, diagnostic information, within the context of brand campaign big ideas.

***Source**: Greenwald, M. (n.d.). Why AI Powered Creative Is The Most Important Change In Advertising Development History. Forbes. Retrieved January 7, 2024, from https://www.forbes.com/sites/michellegreenwald/2021/06/03/why-ai-powered-creative-is-the-most-important-change-in-advertising-development-history/?sh=376efd1f3986*

The purpose of attribution modeling is to increase the chances of converting more prospects by identifying areas of the buyer's journey that can be improved, determining the ROI for each channel or touchpoint, surfacing the most effective ways to spend your marketing budget, and tailoring marketing campaigns and content to unique personas.

The Role of AI in Market Research

AI will revolutionize market research by analyzing massive datasets to understand market trends and consumer sentiment. This data will inform advertising strategies, ensuring ads are not just personalized but also timely and relevant.

The Rise of AR and VR

While AI is pushing the boundaries of personalization and creativity, AR and VR are transforming the way consumers interact with advertising.

AR and VR offer the potential for **immersive advertising experiences**. Think of consumers trying on clothes in a virtual store, experiencing products in their own environment, or participating in branded gamified experiences.

AR and VR **redefine storytelling**. These technologies enable brands to create narratives that are not just compelling but also interactive and experiential.

The line between the physical and digital worlds is blurring. Consumers are no longer passive observers; they're active participants in brand stories.

Long-term Implications

The future of AI in advertising is a future of unprecedented engagement, creativity, and personalization. As AI-driven hyper-personalization becomes the norm, consumers will see fewer irrelevant ads and more content that truly resonates.

Ad Blockers

Are there AI-powered adblockers?

Yes, there are AI-powered ad blockers available in the market. These adblockers use artificial intelligence and machine learning algorithms to identify and block online ads, making browsing the internet faster and less cluttered.

AI-powered adblockers are becoming increasingly popular as internet users seek to enhance their browsing experience by removing unwanted ads and pop-ups.

Will ad blockers be able to block the ads that are based on AI?

AI-based advertising techniques continue to evolve, ad blockers may struggle to keep up with the latest tactics used by advertisers to deliver targeted ads. For example, some advertisers may use AI algorithms to generate unique ad content that is difficult for ad blockers to recognize and block. Nonetheless, AI-powered adblockers will also continue to evolve and improve their ability to detect and block ads based on AI. And as artificial intelligence and advertisement are likely to become close friends, there will be a reverse friendship.

Source: *AdLock. (2023, April 7). AI in Advertising: How AI Transform the Industry. AdLock - Download the Most Functional Ad Blocker to Remove Ads & Pop-Ups. https://adlock.com/blog/ai-in-advertising/*

In the AR and VR realm, advertising will become an integral part of immersive experiences. Brands that leverage these technologies effectively will transport consumers into their narratives, leaving lasting impressions.

However, we must also navigate the challenges. Ethical considerations, including data privacy and transparency in AI and immersive advertising, are paramount. Striking the right balance between innovation and responsible usage is crucial for the long-term success of the industry.

Deepfakes and Other Legal/Ethical Concerns

Generative AI systems lead rapidly to several legal and ethical issues.

"Deepfakes," *or images and videos that are created by AI and purport to be realistic but are not. Heretofore, however, the creation of deepfakes required a considerable amount of computing skill. Now, however, almost anyone will be able to create them. OpenAI has attempted to control fake images by "watermarking" each DALL-E 2 image with a distinctive symbol. More controls are likely to be required in the future, however — particularly as generative video creation becomes mainstream.*

Generative AI also raises numerous questions about what constitutes original and proprietary content.

Since the created text and images are not exactly like any previous content, the providers of these systems argue that they belong to their prompt creators. But they are clearly derivative of the previous text and images used to train the models. These technologies will provide substantial work for intellectual property attorneys in the coming years.

From these few examples of business applications, it should be clear that we are now only scratching the surface of what generative AI can do for organizations and the people within them.

It may soon be standard practice, for example, for such systems to craft most or all of our written or image-based content — to provide first drafts of emails, letters, articles, computer programs, reports, blog posts, presentations, videos, and so forth.

No doubt that the development of such capabilities would have dramatic and unforeseen implications for content ownership and intellectual property protection, but they are also likely to revolutionize knowledge and creative work.

If these AI models continue to progress as they have in the short time they have existed, we can hardly imagine all of the opportunities and implications that they may engender.

Source: *Davenport, T. H., & Mittal, N. (2022, November 14). How Generative AI Is Changing Creative Work. Harvard Business Review. https://hbr.org/2022/11/how-generative-ai-is-changing-creative-work*

AI will create new job roles within the industry. Roles related to AI strategy, ethical AI management, and data analysis will become increasingly important.

In Conclusion

The future of AI in advertising is one where real and virtual realities converge. It's a landscape where creativity knows no bounds, personalization is hyper, and consumers become co-creators of brand narratives. The fusion of AI, AR, and VR in advertising is

not just a technological evolution; it's a revolution that will redefine the way we engage with consumers and tell stories.

In the years ahead, advertisers will not just be advertisers; they will be experience architects, crafting narratives that blend the physical and the digital.

In the years ahead, customers will not just be customers; they will be co-creators of their personalized brand fit, harnessing the power and opportunities provided by personalization.

In the years ahead, publishers will not just be publishers; they will be creators of meaning and makers of personalized life-style trends, able to perfectly balance brands, trends, and personalized preferences.

As AI reshapes advertising, advertising agencies and practices will face disruption. Adapting and leveraging AI capabilities will be essential for long-term success.

As we embark on this journey, let us keep ethical considerations at the forefront, ensuring that innovation serves not just our interests but also those of the consumers who make it all possible.

Please be creative and provide a picture depicting AI and Human Collaboration in an Advertising agency.

2.8 AI and Human Collaboration in Advertising

Discussing the role of human creativity and decision-making in an AI-dominated advertising landscape. Finding the right balance between AI automation and human ingenuity. Strategies for upskilling the advertising workforce to leverage AI effectively.

The first computer was invented in 1822 by Charles Baggage.

In 1997 the world chess champion Garry Kasparov lost a match to a smart machine for the first time.

In 2015 many experts in the world of technology including Elon Musk, Stephen Hawking signed a document which blocks the ability to create an entity which can't be controlled by people.

Source: *Artificial Intelligence vs. Human Brain. Who Wins the Battle? | Tinkogroup. (2018, October 30). Tinkogroup.com. https://tinkogroup.com/blog/artificial-intelligence-vs-human-brain#:~:text=AI%20is%20used%20in%20video%20games%2C*

Is the confrontation between artificial and human intelligence brewing? Is it a fight?

AI's role in business is now an everyday, unavoidable thing. Just look at all the productivity features rolling out in Google Workspace as one example. Additionally, the growth reports published are simply amazing.

Generative AI's impact on productivity could add trillions of dollars in value to the global economy.

…generative AI could add the equivalent of $2.6 trillion to $4.4 trillion annually across the 63 use cases we analyzed—by comparison, the United Kingdom's entire GDP in 2021 was $3.1 trillion.

Source: *Economic potential of generative AI | McKinsey. (2023, June 14). Www.mckinsey.com. https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier#key-insights*

Human Intelligence compared to Artificial Intelligence

AI is one of the most debated subjects of today and there seems little common understanding concerning the differences and similarities of human intelligence and artificial intelligence.

Discussions on many relevant topics, such as trustworthiness, explainability, and ethics are characterized by implicit anthropocentric and anthropomorphistic conceptions and, for instance, the pursuit of human-like intelligence as the golden standard for Artificial Intelligence.

For the time being, AI systems will have fundamentally different cognitive qualities and abilities than biological systems.

These fundamentally different cognitive qualities and abilities create several matters that need to be addressed:

- How we can use and “collaborate” with these (AI) systems as effectively as possible?
- For what tasks and under what conditions, decisions are safe to be left to AI and when is human judgment required?
- How can we capitalize on the specific strengths of human- and artificial intelligence?
- How to deploy AI systems effectively to complement and compensate for the inherent constraints of human cognition (and vice versa)?
- Should we pursue the development of AI “partners” with human (-level) intelligence, or should we focus more at supplementing human limitations?

A Different definition of intelligence may be required.
Frontiers | Human- versus Artificial Intelligence (frontiersin.org)

The fact that humans possess general intelligence does not imply that new inorganic forms of general intelligence should comply with the criteria of human intelligence.

Because of the many differences between the biological and artificial intelligence the current anthropocentric way of reasoning is probably unwarranted. The rapid progress in the field of artificial

intelligence is accompanied by a recurring redefinition of what should be considered “real” (general) intelligence.

Digital machines are equipped with a completely different operating system (digital vs biological) and with correspondingly different cognitive qualities and abilities than biological creatures, like humans and other animals. In general, one could argue that digital reasoning- and problem-solving agents only compare very superficially to their biological counterparts.

For these reasons a non-anthropocentric definition of “intelligence” as: “the capacity to realize complex goals” (Tegmark, 2017) could be used. AGI can be defined as: “Non-biological capacities to autonomously and efficiently achieve complex goals in a wide range of environments”.

With regard to cognitive tasks, we humans are probably less smart than we think. So why should we vigorously focus on human-like AGI?

Many different forms of intelligence are possible and general intelligence is therefore not necessarily the same as humanoid general intelligence (or “AGI on human level”). Artificial General Intelligence is often not necessary; many complex problems can also be tackled effectively using multiple narrow AI’s.

it should not be a surprise that the capacities of our brain for performing these recent cognitive functions are rather limited.

These limitations are manifested in many ways, for instance:

- The amount of cognitive information that we can consciously process (our working memory, span or attention) is very limited, approximately 10–50 bits per second.
- Most cognitive tasks, like reading text or calculation, require our full attention and we usually need a lot of time to execute them. Mobile calculators can perform millions of times more complex calculations than we can.
- Although we can process lots of information in parallel, we cannot simultaneously execute cognitive tasks that require deliberation and attention, i.e., “multi-tasking”.
- Acquired cognitive knowledge and skills of people (memory) tend to decay over time, much more than perceptual-motor skills. Because of this limited “retention” of information we easily forget substantial portions of what we have learned.

Our limited processing capacity for cognitive tasks is not the only factor determining our cognitive intelligence.

Except for an overall limited processing capacity, human cognitive information processing shows systematic distortions. These are manifested in many cognitive biases (at least 200 biases identified. Cognitive biases are systematic, universally occurring tendencies, inclinations, or dispositions that skew or distort information processes in ways that make their outcome inaccurate, suboptimal, or simply wrong.

Generative AI has the potential to change the anatomy of work, augmenting the capabilities of individual workers by automating some of their individual activities.

Current generative AI and other technologies have the potential to automate work activities that absorb 60 to 70 percent of employees' time today… The acceleration in the potential for technical automation is largely due to generative AI's increased ability to understand natural language, which is required for work activities that account for 25 percent of total work time.

Source: *Economic potential of generative AI | McKinsey. (2023, June 14). Www.mckinsey.com. https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier#key-insights*

What Is “Real Intelligence”

Eight (8) types of Human Intelligence

According to Howard Gardner, a psychologist and professor at Harvard University, there are eight types of human intelligence.

Each type represents different ways of how a person best processes information:

1. ***Spatial Intelligence**: The ability to think abstractly and in multiple dimensions. This is required for fields such as architecture, graphic design, photography, interior design, and aviation.*

2. ***Bodily-Kinesthetic Intelligence**: The ability to use your body in a way that demonstrates physical and athletic prowess.*

.

3. ***Musical Intelligence**: Sensitivity to rhythm, pitch, meter, tone, melody, and timbre. This may entail the ability to sing and/or play musical instruments.*

4. ***Logical-Mathematical Intelligence**: The ability to analyze problems logically, carry out mathematical operations, and investigate issues scientifically.*

5. ***Linguistic-Verbal Intelligence**: The ability to think in words and to use language to express and appreciate complex meanings.*

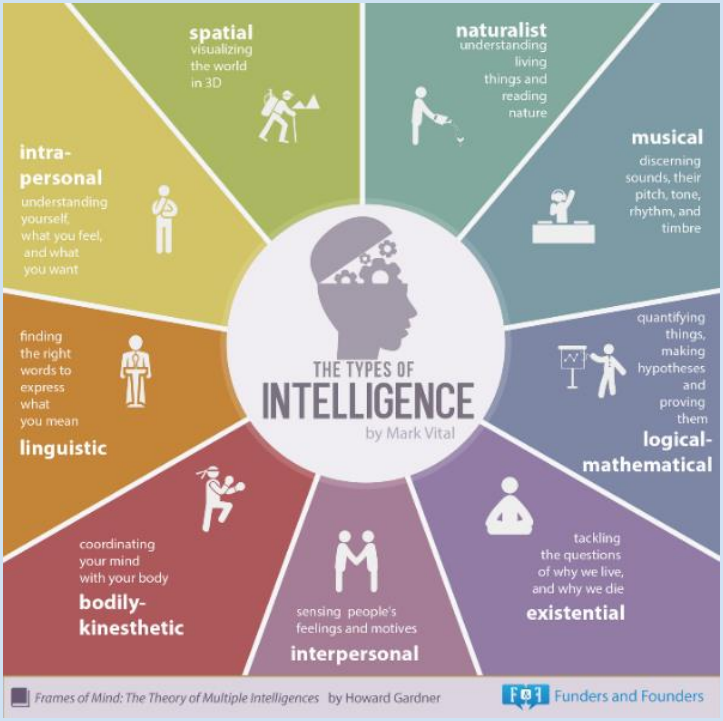
6. ***Interpersonal Intelligence**: The ability to understand and interact effectively with others.*

7. ***Intrapersonal Intelligence**: The ability to understand oneself, to appreciate one's feelings, fears, and motivations.*

8. ***Naturalistic Intelligence**: The ability to observe patterns in nature, identify and classify objects, and understand natural and human-made systems.*

Each type of intelligence is independent of the others (a high score in one does not necessarily influence how you score in another). These intelligences can be developed and strengthened over time.

Source: *Conversation with Bing, 12/3/2023*
(1) Harvard psychologist: There are 8 types of intelligence. Where ... - CNBC.
https://www.cnbc.com/2021/03/10/harvard-psychologist-types-of-intelligence-where-do-you-score-highest-in.html.
(2) 9 Types of Intelligence (And How to Know Your Type) - LifeHack.
https://www.lifehack.org/886292/types-of-intelligence.
(3) The 12 types of intelligence, which one do you have? - Psychology Spot.
https://psychology-spot.com/types-of-intelligence/.



Infographic List - Infographics + Interesting Articles

Four (4) classifications of Artificial Intelligence

Artificial Intelligence (AI) can be classified based on its likeness to the human mind and its functionality. Here are the four types of AI according to this classification:

1. ***Reactive Machines**: These are the most basic type of AI. They do not have the ability to form memories or use past experiences to inform current decisions.*

2. ***Limited Memory**: This type of AI can look into the past. Self-driving cars are an example of this, as they observe other cars' speed and direction. That can't be done in just one moment, but rather requires identifying specific objects and monitoring them over time.*

3. ***Theory of Mind**: This is a psychology term. It refers to the understanding that others have their own beliefs, desires, and intentions that impact the decisions they make. This kind of AI does not yet (December 2023) exist.*

4. ***Self-awareness**: In this category, AI systems have a sense of self, have consciousness. Machines with self-awareness understand their current state and can use the information to infer what others are feeling. This type of AI does not yet exist[1].*

Each type represents a different stage in the evolution of AI capabilities, from the simplest reactive machines to the hypothetical self-aware machines.

***Source:** Conversation with Bing, 12/3/2023*
(1) 7 Types Of Artificial Intelligence - Forbes.
https://www.forbes.com/sites/cognitiveworld/2019/06/19/7-types-of-artificial-intelligence/.
(2) Artificial intelligence (AI) | Definition, Examples, Types ....
https://www.britannica.com/technology/artificial-intelligence.
(3) What Is Artificial Intelligence? Definition, Uses, and Types.
https://www.coursera.org/articles/what-is-artificial-intelligence

The relation between human intelligence and artificial intelligence

The relationship between human intelligence and artificial intelligence is complex and multifaceted. Here are some key points to consider:

1. ***Nature of Intelligence**: Human intelligence is innate and develops over time through learning and experience. It is adaptable and can respond to changes in the environment. On the other hand, artificial intelligence (AI) is created by humans and can be programmed to perform complex tasks. AI must adapt to new changes much more quickly.*

2. ***Learning and Improvement**: Both human intelligence and AI can learn and improve over time. However, humans need years of training to develop their intelligence, while machines can be "programmed" to perform complex tasks.*

3. ***Task Performance**: Human intelligence supports a wide range of roles, whereas AI is currently limited in terms of performing fewer tasks at the same time. However, AI can process vast amounts of data much faster than humans and can work around the clock without needing breaks or rest.*

4. ***Creativity and Intuition**: Human intelligence has creativity, intuition, and emotional intelligence that AI currently lacks. AI is limited by its programming and may not be able to adapt to new or unexpected situations.*

5. ***Ethical and Moral Considerations**: Human intelligence can provide ethical and moral considerations in decision-making, a capability that AI currently does not possess.*

In terms of the relationship between the types of human intelligence and the types of AI, it's important to note that AI strives to mimic certain aspects of human intelligence.
For example, AI applications in natural language processing aim to replicate linguistic-verbal intelligence, while AI in music composition

tries to emulate musical intelligence.

However, AI is still far from achieving the full spectrum of human intelligence, especially when it comes to interpersonal and intrapersonal intelligence, which involve understanding and interpreting human emotions and motivations.

Source: *Conversation with Bing, 12/3/2023*
(1) Difference Between Artificial Intelligence and Human Intelligence. https://www.geeksforgeeks.org/difference-between-artificial-intelligence-and-human-intelligence/.
(2) What Is The Relationship Between Human Intelligence And Artificial .... https://www.surfactants.net/what-is-the-relationship-between-human-intelligence-and-artificial-intelligence-2/.
(3) Artificial Intelligence Vs Human Intelligence: Key Differences. https://skillsstreet.com/artificial-vs-human-intelligence/.
(4) A Focus on the Relationship between AI and Humans. https://www.europeanbusinessreview.com/a-focus-on-the-relationship-between-ai-and-humans/.
(5) Difference Between Artificial Intelligence and Human Intelligence. https://www.tutorialspoint.com/difference-between-artificial-intelligence-and-human-intelligence.

The Role of Human Expertise and Judgment

Despite the immense potential of AI, human expertise and judgment remain essential in guiding AI development, interpreting results, and making strategic decisions.

Human oversight is crucial to ensure that AI models are developed and deployed in an ethical and responsible manner, preventing biases, maintaining transparency, and upholding user privacy.

Humans play a critical role in interpreting AI-generated insights and contextualizing them within broader business and marketing strategies. Human judgment is essential in making strategic

decisions based on AI insights, balancing AI's efficiency with human creativity and expertise to craft effective marketing campaigns.

Few fundamental differences between human and artificial intelligence (Bostrom, 2014):

Basic structure
Biological (carbon) intelligence is based on neural "wetware" which is fundamentally different from artificial (silicon-based) intelligence. As opposed to biological wetware, in silicon, or digital, systems "hardware" and "software" are independent of each other (Kosslyn and Koenig, 1992). When a biological system has learned a new skill, this will be bound to the system itself. In contrast, if an AI system has learned a certain skill, then the constituting algorithms can be directly copied to all other similar digital systems.

Speed
Signals from AI systems propagate with almost the speed of light. In humans, the conduction velocity of nerves proceeds with a speed of at most 120 m/s, which is extremely slow in the time scale of computers (Siegel and Sapru, 2005).

Connectivity and communication
People cannot directly communicate with each other. They communicate via language and gestures with limited bandwidth. This is slower and more difficult than the communication of AI systems that can be connected directly to each other. Thanks to this direct connection, they can also collaborate based on integrated algorithms.

Updatability and scalability
AI systems have almost no constraints with regard to keeping them up to date or to scale and/or re-configuring them, so that they have the right algorithms and the data processing and storage capacities necessary for the tasks they have to carry out. This capacity for rapid, structural expansion and immediate improvement hardly applies to people.

In contrast, biology does a lot with a little
Organic brains are millions of times more efficient in energy consumption than computers. The human brain consumes less energy than a lightbulb, whereas a supercomputer with comparable computational performance uses enough electricity to power quite a village (Fischetti, 2011).

The Supposition of Human-like AGI
So, if there would exist AI systems with general intelligence that can be used for a wide range of complex problems and objectives, those AGI machines would probably have a completely different intelligence profile, including other cognitive qualities, than humans have (Goertzel, 2007).

Source: *Frontiers | Human- versus Artificial Intelligence (frontiersin.org)*

Strong points of the human brain

Artificial Intelligence vs. Human Brain. Who Wins the Battle? | Tinkogroup. (2018, October 30). Tinkogroup.com. https://tinkogroup.com/blog/artificial-intelligence-vs-human-brain#:~:text=AI%20is%20used%20in%20video%20games%2C

Your brain can't be hacked as it is a self-controlled essence. Unlike computers it functions without much help and uses limited energy.

Through creativity, people create amazing things. This pushes humans to progress in all scientific and sociological and psychological fields. On the contrary, Artificial intelligence does not generate ideas itself (yet?). Real intelligence moves easily in the flow of new information and circumstances. Innovative technologies act strictly in the frame of the way they were programmed or trained for.

Source: *Artificial Intelligence vs. Human Brain. Who Wins the Battle? | Tinkogroup. (2018, October 30). Tinkogroup.com. https://tinkogroup.com/blog/artificial-intelligence-vs-human-brain#:~:text=AI%20is%20used%20in%20video%20games%2C*

In business and life making decisions is crucial. Human intuition, passive knowledge, judgment and inner reasoning often play a decisive role in this aspect. Making decisions often requires more than information, it requires insight.

Finally, up to this day in December 2023, robots can't build a relationship, empathize, give real emotions, be social. They don't have a personality.

Will computer systems grab our jobs?

As promised by 2055 automation will dislodge 49% of human work activity. It can be depressing for unskilled labor but, on the other hand, people create new unique content, designs, drawings, can analyze deeper, make mistakes and develop through them.

The brain is a muscle, train it!

As awe-inspiring as the AI tools are, they require the people behind the screen powering them. While worker productivity often accelerates with generative AI tools, their true potential lies in the hands and experience of the person inputting the prompts. We strongly believe that the businesses able to invest in and capitalize on their teams' diversity, creativity, and skill will be the ones leveraging LLMs to their fullest.

To build an effective AI-first workforce, cloud leaders are investing heavily in upskilling their employees to drive efficiency with current and future technologies.

It's one of the reasons that leaders in cloud technology saw a 5% gain in market share and market cap versus their peers during the pandemic.

Once they've understood how they can work with LLMs, workers become competitive differentiators as their prompting skills improve, processes are automated, and creative ingenuity accelerates through cultural changes.

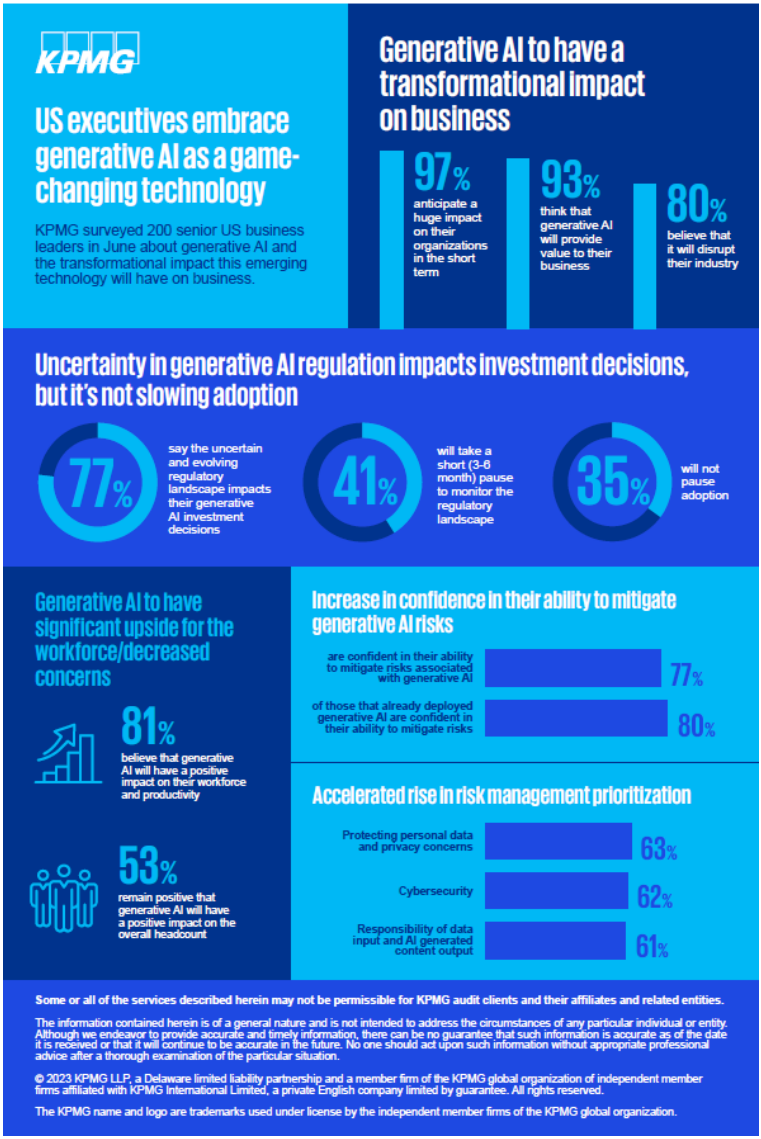
Source: *Your people, not prompts, matter most in the AI era. (n.d.). Google Cloud Blog. Retrieved January 7, 2024, from https://cloud.google.com/blog/transform/people-not-prompts-matter-most-in-the-ai-era*

Conclusion

We live in a time of major technological changes. The fear of artificial intelligence is perfectly legitimate. The acceptance of said technology by different demographic groups is also very thought-provoking.

For a substantial part of society, the AI revolution could mean changing jobs or their lifestyles. The expected disruptions to the job market, education, or transportation should be our major concerns.

2.9 APPENDIX


KPMG
US executives embrace generative AI as a game-changing technology
KPMG surveyed 200 senior US business leaders in June about generative AI and the transformational impact this emerging technology will have on business.
Generative AI to have a transformational impact on business
97% anticipate a huge impact on their organizations in the short term
93% think that generative AI will provide value to their business
80% believe that it will disrupt their industry
Uncertainty in generative AI regulation impacts investment decisions, but it's not slowing adoption
77% say the uncertain and evolving regulatory landscape impacts their generative AI investment decisions
41% will take a short (3-6 month) pause to monitor the regulatory landscape
35% will not pause adoption
Generative AI to have significant upside for the workforce/decreased concerns
81% believe that generative AI will have a positive impact on their workforce and productivity
53% remain positive that generative AI will have a positive impact on the overall headcount
Increase in confidence in their ability to mitigate generative AI risks
are confident in their ability to mitigate risks associated with generative AI 77%
of those that already deployed generative AI are confident in their ability to mitigate risks 80%
Accelerated rise in risk management prioritization
Protecting personal data and privacy concerns 63%
Cybersecurity 62%
Responsibility of data input and AI generated content output 61%
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The information contained herein is of a general nature and is not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act upon such information without appropriate professional advice after a thorough examination of the particular situation.
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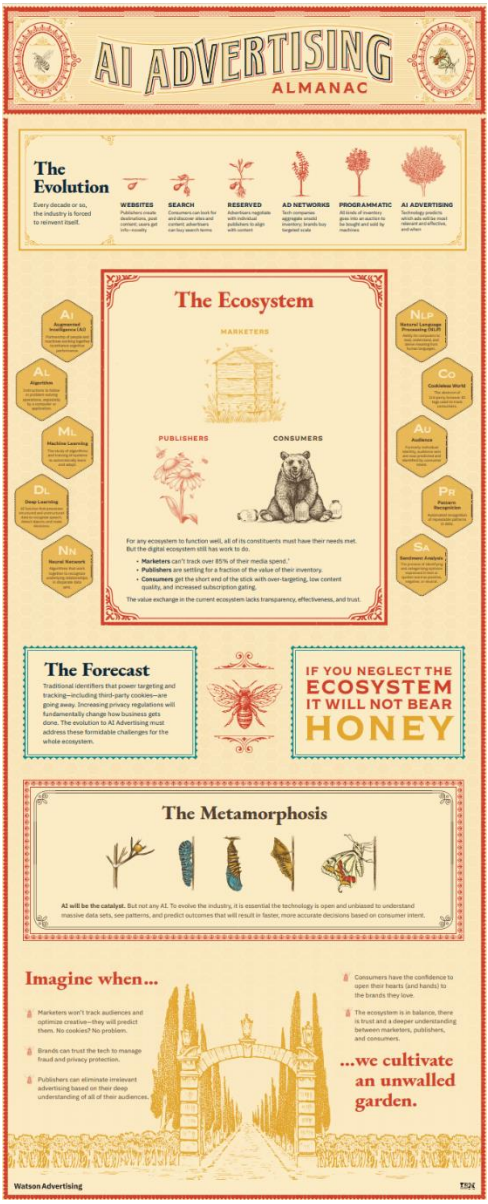
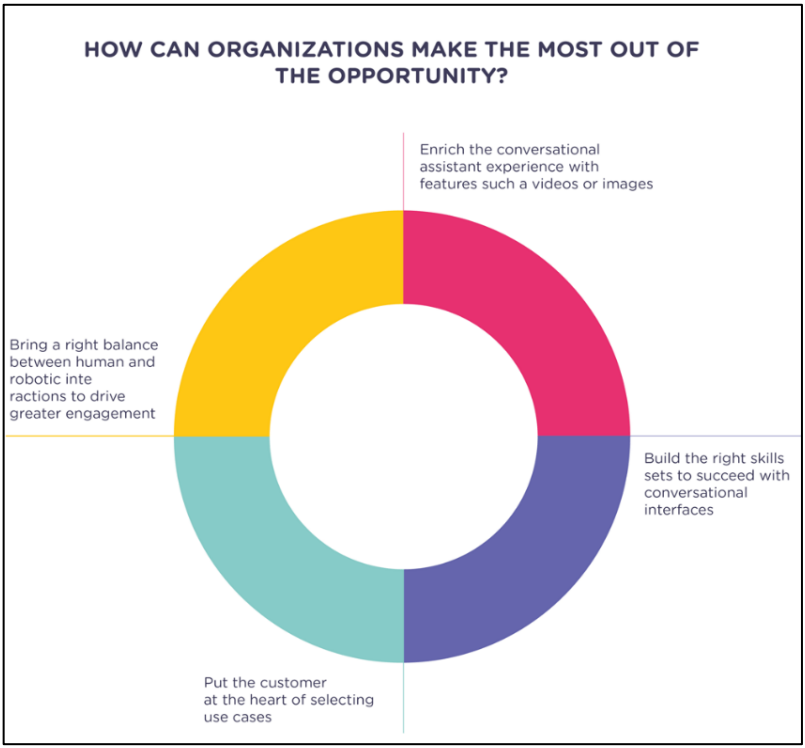
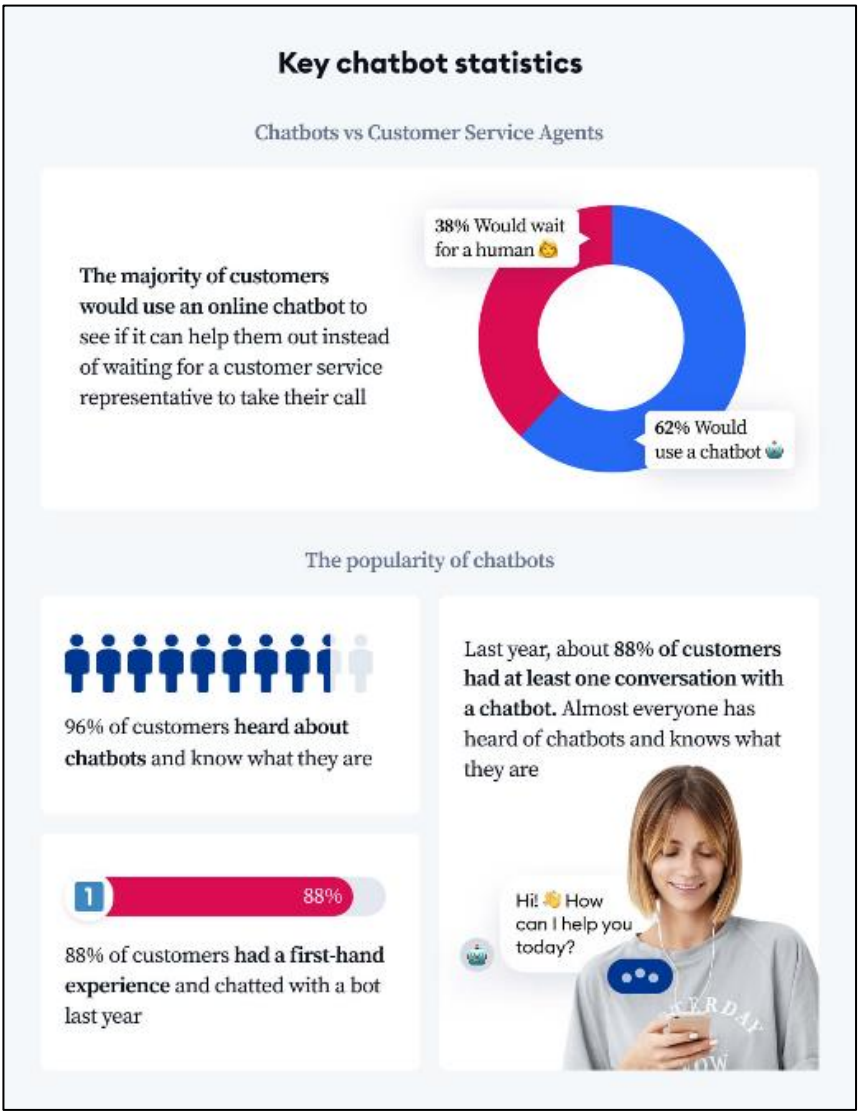

AI ADVERTISING
ALMANAC
The Evolution
Every decade or so, the industry is forced to reinvent itself.
WEBSITES
SEARCH
RESERVED
AD NETWORKS
PROGRAMMATIC
AI ADVERTISING
The Ecosystem
MARKETERS
PUBLISHERS
CONSUMERS
For any ecosystem to function well, all of its constituents must have their needs met. But the digital ecosystem still has work to do.
• Marketers can't track over 85% of their media spend.*
• Publishers are settling for a fraction of the value of their inventory.
• Consumers get the short end of the stick with over-targeting, low content quality, and increased subscription gating.
The value exchange in the current ecosystem lacks transparency, effectiveness, and trust.
The Forecast
Traditional identifiers that power targeting and tracking—including third-party cookies—are going away. Increasing privacy regulations will fundamentally change how business gets done. The evolution to AI Advertising must address these formidable challenges for the whole ecosystem.
IF YOU NEGLECT THE ECOSYSTEM IT WILL NOT BEAR HONEY
The Metamorphosis
AI will be the catalyst. But not any AI. To evolve the industry, it is essential the technology is open and unbiased to understand massive data sets, see patterns, and predict outcomes that will result in faster, more accurate decisions based on consumer intent.
Imagine when...
Marketers won't track audiences and optimize creative—they will predict them. No cookies? No problem.
Brands can trust the tech to manage fraud and privacy protection.
Publishers can eliminate irrelevant advertising based on their deep understanding of all of their audiences.
Consumers have the confidence to open their hearts (and hands) to the brands they love.
The ecosystem is in balance, there is trust and a deeper understanding between marketers, publishers, and consumers.
...we cultivate an unwalled garden.
Watson Advertising

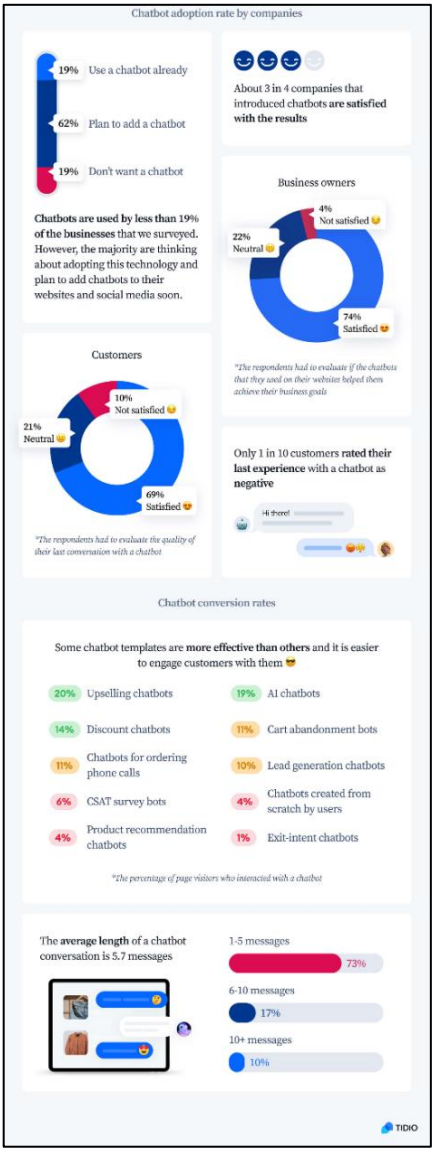

EVERYTHING YOU NEED TO KNOW
ABOUT REAL TIME BIDDING
WHAT IS REAL TIME BIDDING?
01
02
03
RTB SIMPLIFIED:
WHO DOES RTB BENEFIT?
HOW DOES RTB BENEFIT?



Source: *Chatbot Statistics 2021: Market & Opportunities | Landbot. (n.d.). Landbot.io.* *https://landbot.io/blog/chatbot-statistics-compilation*



Source: *Fokina, M. (2023, April 4). 11 Amazing Chatbots Statistics and Trends You Need to Know in 2020. Tidio. https://www.tidio.com/blog/chatbot-statistics/*



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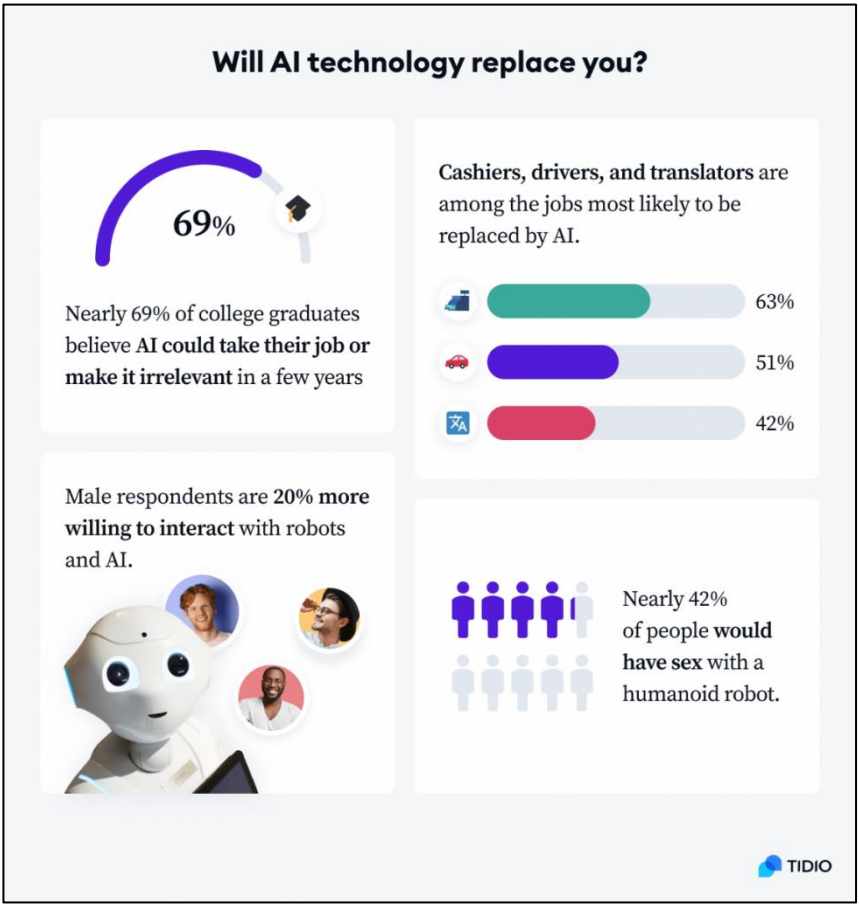

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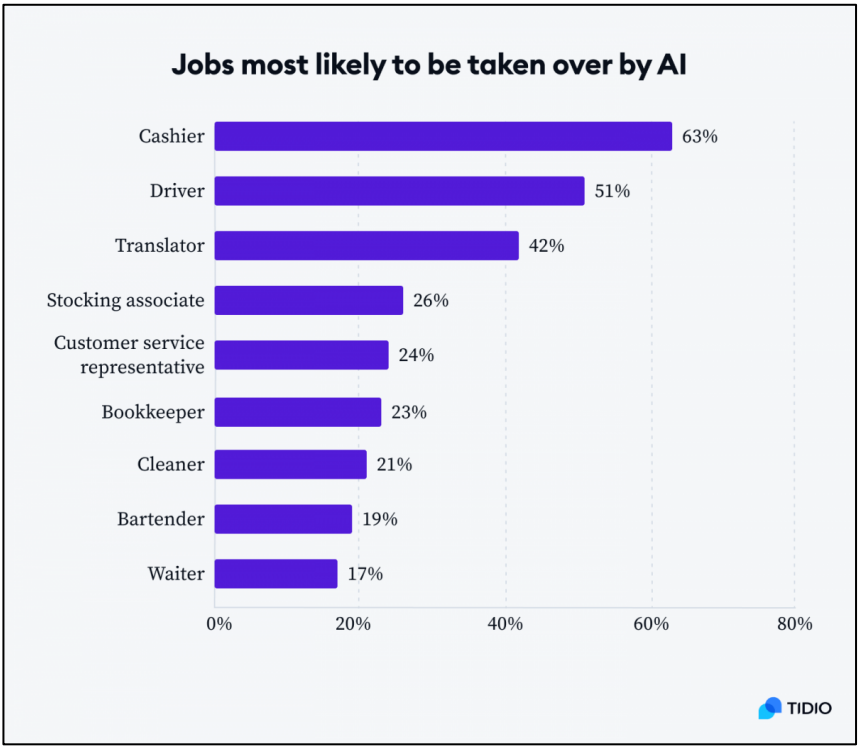

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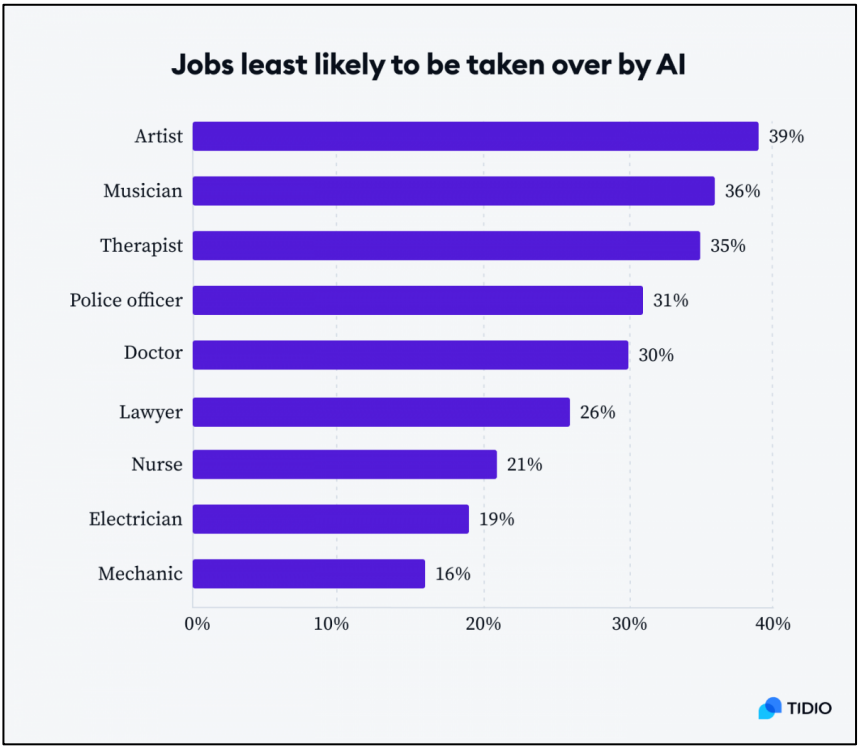

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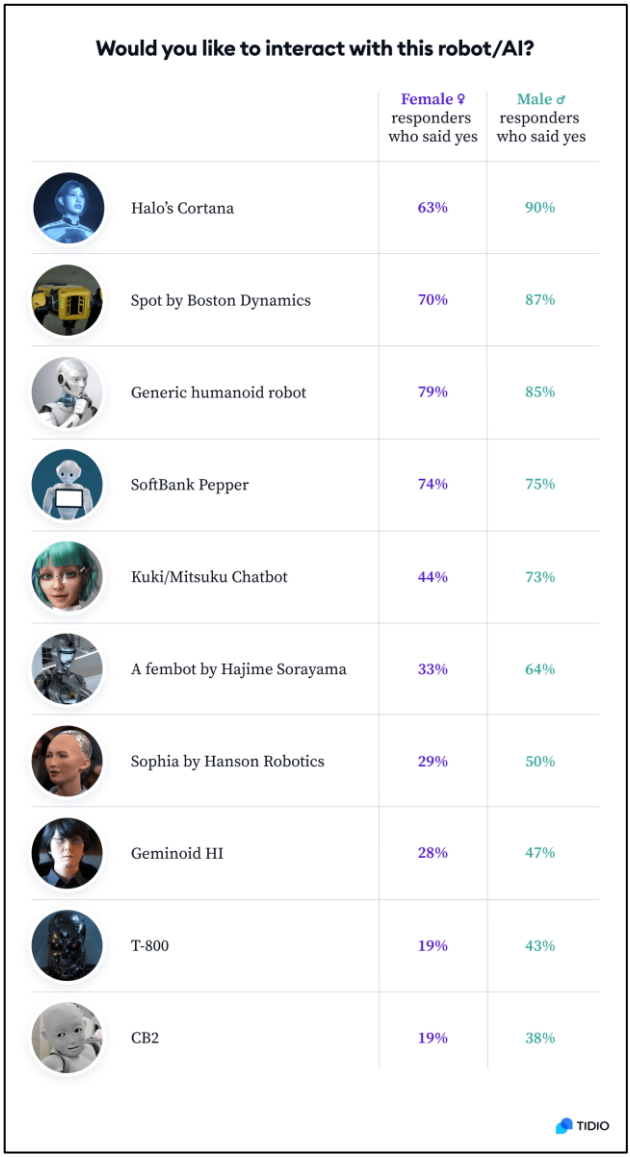

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In what situations we welcome AI technology

The percentage of people who feel positive about	Total	Male ♂	Female ♀
AI robot cleaning my house	78%	80%	75%
AI preparing my food	70%	74%	64%
AI planning my budget and doing my taxes	68%	71%	64%
AI analyzing sounds on the streets 24/7 to detect crime (e.g. gunshots)	63%	62%	64%
AI scheduling my day at work	62%	62%	63%
Using a self-driving AI taxi during heavy traffic	60%	62%	57%
AI taking care of airline traffic control	57%	61%	51%
AI making strategic decisions with regard to the economy of my country	54%	56%	51%
AI robot teaching my child at school	52%	57%	45%
AI robot performing a surgery on me	52%	58%	43%
AI robot police officer patrolling the streets of my neighborhood	51%	54%	47%
HR recording my job interview and using AI to see if I'm the best candidate	50%	51%	50%
Having a sexual intercourse with a humanoid robot	42%	48%	33%
Being in a romantic relationship with AI	39%	43%	33%

TIDIO

Source: *Rajnerowicz, K. (2022, March 23). Will AI Take Your Job? Fear of AI and AI Trends for 2021. Tidio. https://www.tidio.com/blog/ai-trends/*