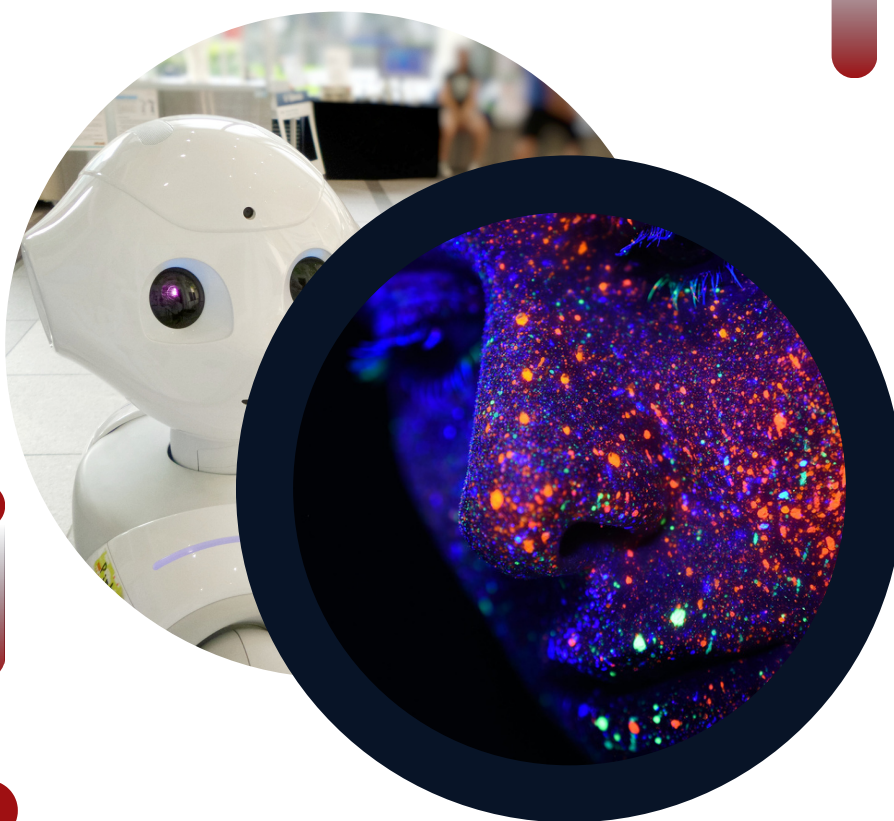
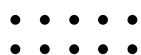




Warwick Entrepreneurs  
Create, innovate, disrupt

# ARTIFICIAL INTELLIGENCE

TERMLY REPORT OCTOBER ISSUE

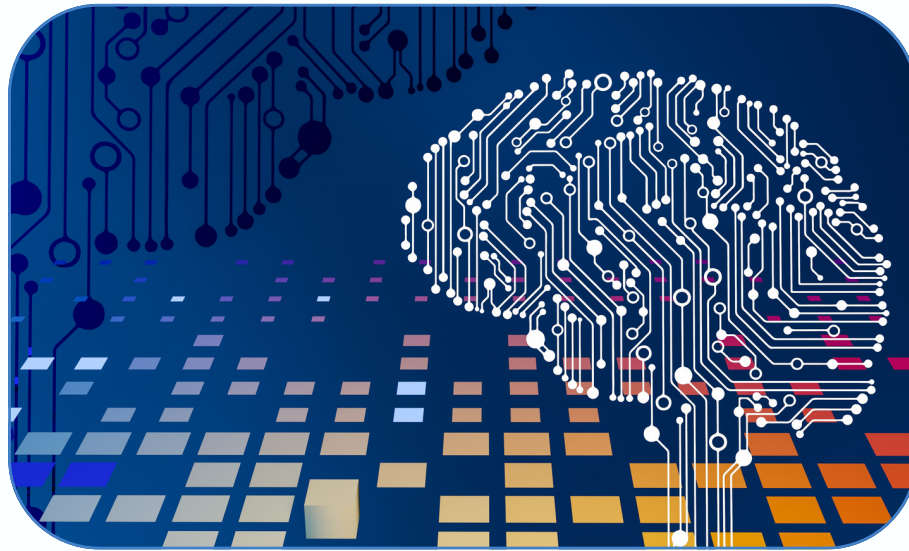


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Joba Thomas, and Theo van Peski

# 2023



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# INTRODUCTION

This marks the **inaugural report** from the **Entrepreneurial Research Division at Warwick Entrepreneurs**. A pioneering initiative aimed at exploring the dynamic landscape of emerging technologies and their profound impact on the startup scene, businesses and industries.

In this first report, we delve into the topic of **Artificial Intelligence (AI)** and **AI chatbots**, focussing on the transformative role they play in the automation and enhancement of various business applications and customer interactions.

## OUR MISSION

**Our mission** is to **keep you informed and engaged**, which is why we strive to release two reports like this per term in addition to weekly short-form content shared on the **@warwick\_entrepreneurs** Instagram page.

You can access this report and all our future publications via the new **Warwick Entrepreneurs website**, your gateway to all things relating to the division and Warwick Entrepreneurs.

# MARKET



# SUMMARY

The release of OpenAI's ChatGPT in 2022, sparked an arms race among top technology firms to develop the most powerful AI applications. Among the S&P 500 companies, there have been 1,072 mentions of AI on Q1 earnings calls, indicating that more companies are looking to leverage AI to improve productivity.



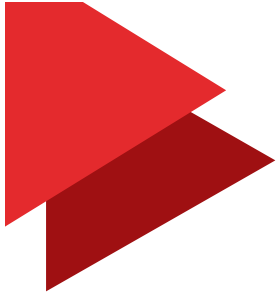
Much of the recent hype around AI has focused on generative AI, a form of machine learning which generates new content. The market for generative AI could be worth \$1.3 trillion by 2032, according to a Bloomberg Intelligence report.

## VENTURE CAPITAL

4.5 BILLION

Appetite for AI firms is high among venture capitalists. In 2022, venture capitalists poured \$4.5 billion into generative AI startups.

This is indicative of a trend among private investors to place their bets on AI. Only time will tell if these bets pay off.



# MARKET Leaders



## OpenAI



Founded by Sam Altman and Elon Musk, OpenAI began as a non-profit AI research laboratory before switching to a capped-profit entity in 2019. The company rose to fame in 2022 after launching ChatGPT, an AI chatbot. OpenAI's long-term mission is to ensure that artificial general intelligence (AI which surpasses human intelligence) "benefits all of humanity"

## Microsoft



Microsoft boasts a large portfolio of AI services with its Azure AI platform. This includes machine learning and chatbot building solutions for companies.

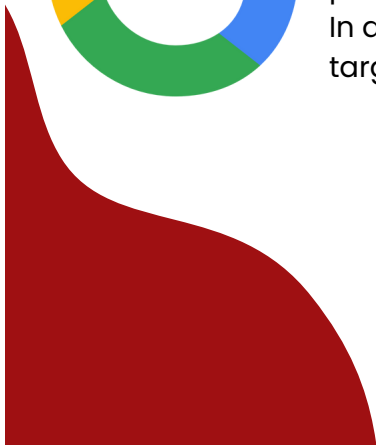
In January, Microsoft announced an investment of \$10 billion into OpenAI, to consolidate its position as a market leader in AI technology. Microsoft subsequently released a new chatbot feature on its Bing search engine. The chatbot uses the same GPT-4 technology used to power ChatGPT.

## Google



In response to the launch of ChatGPT, Google launched its chatbot, Google Bard. Bard's EU launch was initially delayed due to data privacy concerns.

In addition, Google offers a machine learning service, Vertex AI, targeted towards data scientists seeking to train AI models.

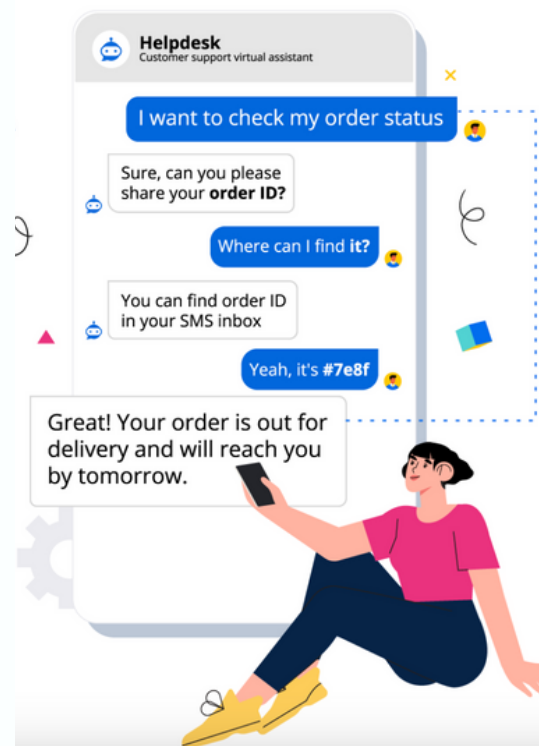


# OPPORTUNITIES FOR STARTUPS

**'I think this is going to create millions of startups...entrepreneurship is going to be a boom'** Brian Chesky, CEO of Airbnb stated concerning the emergence of artificial intelligence. AI has already demonstrated its capabilities and revolutionised startups across different industries from healthcare to e-commerce. Consequently, this presents several opportunities for startup founders, for example, with the optimisation of AI chatbots, which are computer programs that utilise AI and natural language processing to engage with customers directly based on gaining insights into their inquiries, according to IBM.

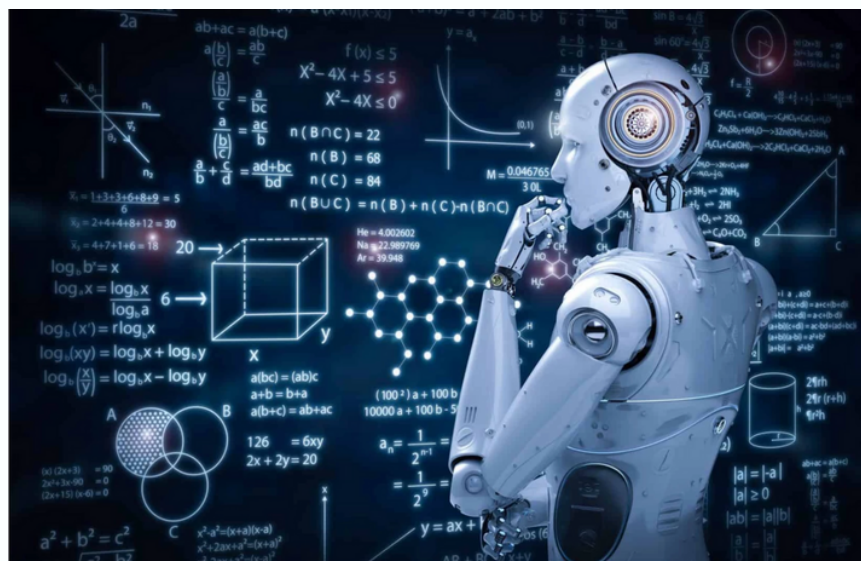


Firstly, AI has proven to have several advantages for companies, which have changed the landscape of operations. One of them is that they have been able to **streamline operations**. For example, companies such as Bizbike have been utilising AI chatbots to serve as an equivalent to customer service. Consequently, automating routine tasks boosts short-term efficiency, reducing costs, and allowing employees to focus on more complex responsibilities, signifying fewer responsibilities towards repetitive or administrative tasks. This also reduces the risk of errors, signifying higher degrees of reliability and validity. Moreover, these systems are operational 24/7, thereby catering directly and immediately to customers globally, despite employees' work status. Although it could be **refuted that some of these technologies have not been fully developed** or adapted to customers' wants, thereby signifying some flaws that could hinder interactions with customers.





Secondly, companies have been utilising AI **as a means to enhance decision-making**, especially in the airline industry. For example, Air Canada has followed suit with an aim to improve operations and customer experience. This is because they have leveraged AI to process and analyse data sets (small or large) quickly and accurately, which are summarised and presented in a concise manner for employees who undertake the final decision. Consequently, allowing employees to have a more comprehensive understanding of the given scenario enables them to make more informed and data-driven decisions. Such decisions are key for any given business, particularly for start-ups, which place high levels of significance on customers and budgeting given the limited amount of capital available. Therefore such insights can assist and maximise potential. To add on, these insights enable companies to offer more personalised products and recommendations to their customers, especially in, e-commerce, whereby they show relevant content to what a customer is interested in, thereby enhancing the shopping experience and stimulating purchasing.



Overall, companies can exploit AI significantly, enabling them to gain a competitive edge over their competitors due to improved levels of efficiency, decision-making, and analytical insights. Recently, many companies have devoted investment and resources to further developing AI and implementing it into their operations. Over time, many more opportunities will arise, and it will be interesting to see how organisations will become more AI-oriented.



# APPLICATIONS FOR AI CHATBOTS



AI chatbots use artificial intelligence (**AI**) and natural language processing (**NLP**) to simulate human conversations with customers. Such chatbots can reduce average customer service costs and the workload of customer service staff; improving overall efficiency.

AI and NLP have a wide range of applications, below are two examples of how this technology can be used to interact with customers under different contexts:

## CUSTOMER SERVICE



**Customer:** Hello, I'm having some trouble with my new laptop.

**AI Chatbot:** Hi there! Can you please provide me with your order number and the laptop model?

**Customer:** Certainly, my order number is #123456789, and the laptop is a Model XYZ123.

**AI Chatbot:** Thank you for sharing that. To help you resolve the issue:

1. Let's start by updating your laptop's software.
2. Try a battery calibration to improve its performance.
3. If the problem persists, explore available warranty options.

**Customer:** Great! I'll follow these steps and see how it goes. Thanks for your assistance!

**AI Chatbot:** You're welcome! If you have any more questions or need further help, please don't hesitate to reach out. Thank you for contacting us, and we hope we were able to resolve your issue. Have a wonderful day!

## LEAD GENERATION



**User:** I'd like to know about your product's pricing.

**AI Chatbot:** Sure, our pricing starts at \$X per month. Can you provide your email so I can send you a detailed quote?

**User:** It's [user@example.com](mailto:user@example.com).

**AI Chatbot:** Thanks! I'll send the pricing details to [user@example.com](mailto:user@example.com). Feel free to reach out if you have more questions.

**User:** How long is the free trial period?

**AI Chatbot:** Our free trial lasts for 14 days. During that time, you can explore all our features. If you need an extension or have specific requirements, just let us know.

Beyond customer service AI and NLP technologies can be used in many other areas such as: Healthcare, Education, Finance and Banking, and much more.

As AI and NLP technologies continue to advance the potential applications for AI and AI chatbots will likely expand even further





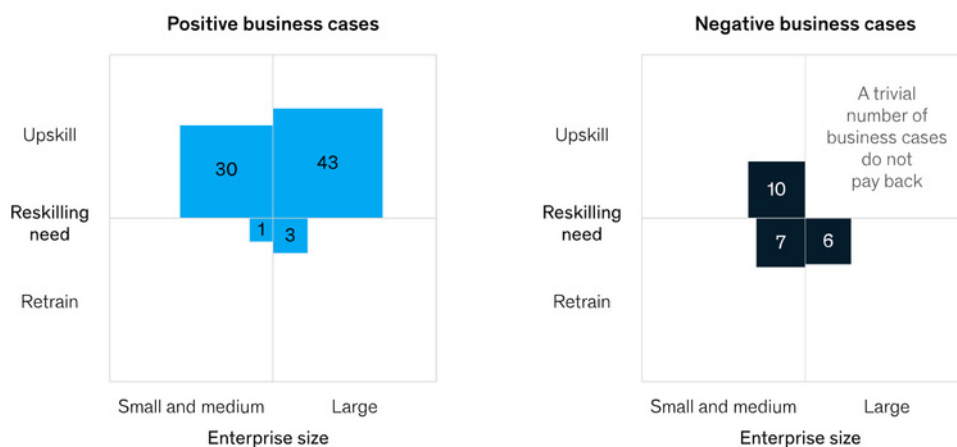
# CHALLENGES, LIMITATIONS AND THREATS

AI adoption presents several potential threats for startups, and the first among them is job displacement. As AI-driven automation becomes more prevalent, certain employees within startups who are engaged in routine and repetitive tasks may find their roles becoming redundant. According to a report by the World Economic Forum, by 2025, approximately 85 million jobs might be displaced by AI-driven automation, while 97 million new roles might emerge, resulting in a net loss of 12 million jobs (Russo, 2020).

To address this concern, startups must prioritize retraining and upskilling initiatives. A study by McKinsey reveals that reskilling and upskilling programs can mitigate job displacement concerns and even unlock potential for new opportunities, potentially offering a 6-12% productivity boost that could benefit over 75% of UK enterprises (Allas, et al., 2020).

**In about 75 percent of cases, reskilling is beneficial for UK enterprises.**

Upskilling and retraining paybacks for UK enterprises, % of total reskilling cases

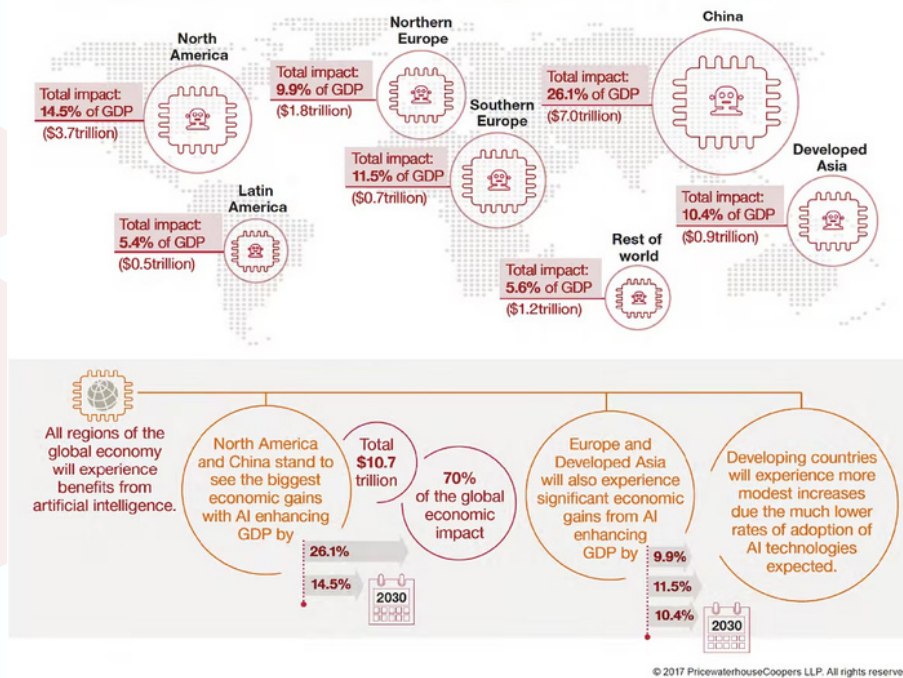


McKinsey  
& Company

Strategically, reskilling surpasses traditional hiring, containing costs, promoting diversity, and boosting engagement. A tripartite approach to optimization includes aligning skills with goals, adaptable training, and cultivating a culture of ongoing learning.

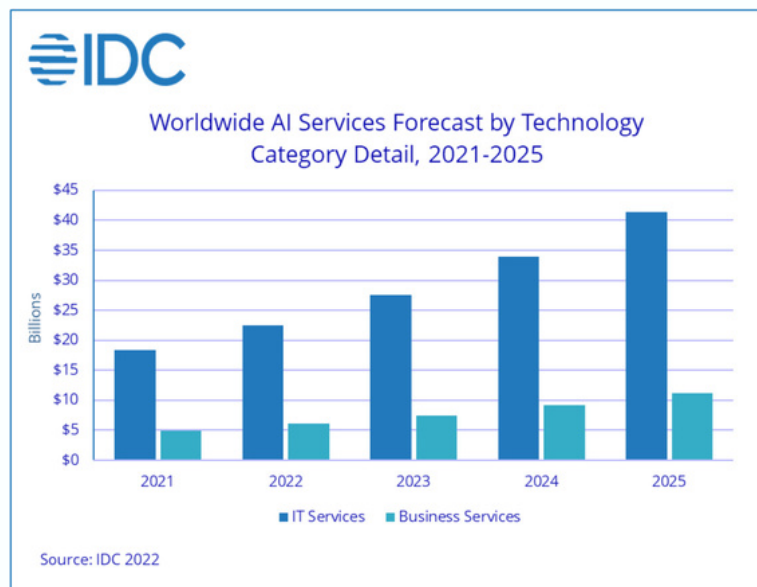
While the potential benefits of AI adoption are vast, startups face numerous challenges when implementing this transformative technology. One such challenge is the significant cost of implementation. AI technology has become more accessible, but it still entails substantial initial investment and ongoing maintenance costs. According to a study by PwC, AI's potential contribution to the global economy could reach \$15.7 trillion by 2030 (S.Rao & Verweij, n.d.).

## Sizing the prize – Which regions gain the most from AI?



However, startups, often grappling with limited financial resources, may struggle to fund the implementation of AI-driven initiatives fully. This financial constraint can lead to slower AI adoption rates and put startups at a disadvantage compared to larger, more established corporations.

Another pressing challenge for startups is the scarcity of skilled AI talent. The AI talent market is highly competitive, with larger companies offering attractive compensation packages and established reputations, making it challenging for startups to attract and retain top AI talent. According to LinkedIn's 2021 Emerging Jobs report, AI specialist roles have experienced a 74% annual growth rate in recent years, indicative of the surging demand for AI expertise (Fenzel, 2023). Startups must adopt creative strategies to address this scarcity, such as partnering with educational institutions, offering competitive compensation packages, and providing attractive perks and opportunities for career growth.

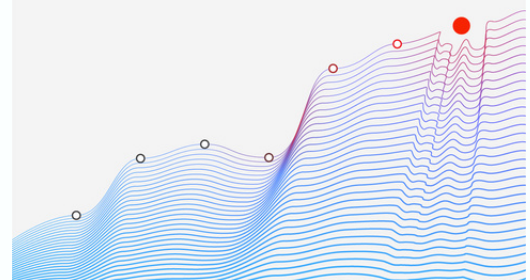


In the context of AI adoption, startups need to confront and mitigate several limitations. An important constraint pertains to data availability for training AI models. Effective AI model performance hinges on extensive and diverse training datasets. However, early-stage startups may encounter difficulties in procuring sufficient data, resulting in less accurate and suboptimal AI outcomes.

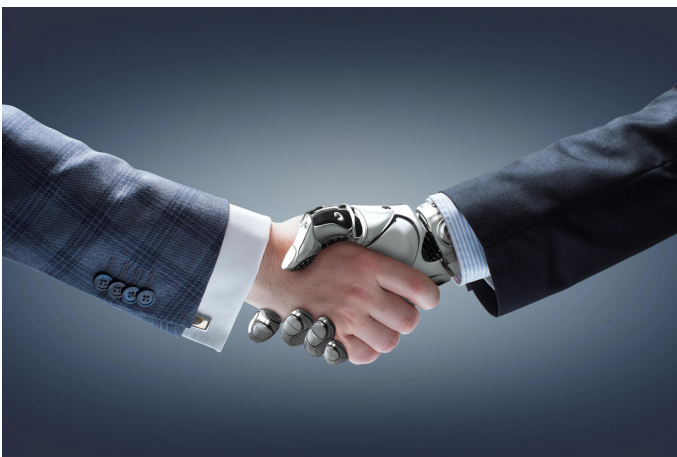
To address this limitation, startups must explore alternatives, such as leveraging third-party data sources. Yet, integrating AI introduces concerns regarding data security and privacy. AI systems process sensitive information, and vulnerabilities could lead to breaches and cyberattacks. As per IBM Security's Cost of Data Breach Report 2023, the average cost of a data breach is estimated to be \$4.45 million (IBM, 2023). Startups, often with limited financial resources, may struggle to recover from such a setback. Therefore, robust security measures and privacy protocols are imperative. Aligning with these frameworks and investing in security can foster customer trust and safeguard reputation.

**\$4.45M**

Average cost of  
a data breach



Ethical dilemmas surrounding AI adoption for startups encompass privacy, transparency, and decision-making. Startups relying on AI algorithms for customer data processing must ensure transparency and informed consent to maintain trust. Moreover, the use of AI in decision-making raises issues of bias and fairness. As emphasized in the European Commission's Ethics Guidelines for Trustworthy AI, startups must prioritise human agenda and oversight over AI development that aligns with their values and principles (High-Level Expert Group on AI, European Commission, 2019). Failing to address ethical considerations can lead to reputational damage and even legal repercussions for startups.



Nonetheless, in certain instances, the need for human review and validation can counteract the time and cost savings initially envisioned from AI integration. While AI streamlines content creation, the imperative for human intervention to ensure accuracy and contextual appropriateness demonstrates the critical role of human oversight, thereby mitigating the complete substitution of human involvement in content generation workflows.



## References

- Anon., 2023. Generative AI to Become a \$1.3 Trillion Market by 2032, Research Finds.
- Bloomberg , 2023. AI Is the Hot Topic on Earnings Calls This Quarter.
- Future Travel Experience. (2019). Air Canada introduces artificial intelligence labs to drive operations and CX.
- OpenAI , 2023. Planning for AGI and beyond.
- Robbins, J., 2023. The most active investors in generative AI.
- Allas, T., Fairbairn, W. & Foote, E., 2020. The economic case for reskilling in the UK: How employers can thrive by boosting workers' skills, London: McKinsey & Company.
- Fenzel, J., 2023. Navigating the Impact of Artificial Intelligence on the Global Job Market.
- High-Level Expert Group on AI, European Commission, 2019. Ethics Guidelines for Trustworthy AI.
- IBM, 2023. Cost of a Data Breach Report 2023.
- Russo, A., 2020. World Economic Forum.
- Sauer, M., 2023. A.I. will make having a lucrative side hustle or startup much easier, says Airbnb CEO.
- Sinch. (n.d.). Optimizing customer service and costs with an AI chatbot.
- S.Rao, D. A. & Verweij, G., n.d. Sizing the prize: PwC's Global Artificial Intelligence Study: Exploiting the AI Revolution, s.l.: PwC.