

WHERE
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The potential benefits and pitfalls of using AI in market research

A Whereto White Paper

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WhereTo Research Based Consulting Pty Ltd

PHONE +61 3 8648 3148 / info@wheretoresearch.com.au / wheretoresearch.com.au

Introduction

“Artificial intelligence (AI) is the ability of a machine or software to perform tasks that **normally require human intelligence**, such as visual perception, speech recognition, decision-making, and translation between languages.”

Wikipedia

Let's kick off with a quick history lesson...

Humans have wondered about the nature of intelligence since ancient times. Myths, stories and rumours of artificial beings endowed with consciousness abound in Greek mythology and medieval legends. Some believed the sacred statutes of ancient Egypt and Greece to have been imbued with very real minds, capable of wisdom and emotion. Philosophers like Rene Descartes and Denis Diderot pondered the nature of mind and intelligence throughout the Renaissance period and wondered whether intelligence can exist in artificial beings,

“If they find a parrot who could answer to everything, I would claim it to be an intelligent being without hesitation”

Denis Diderot Pensees Philosophiques (1746)

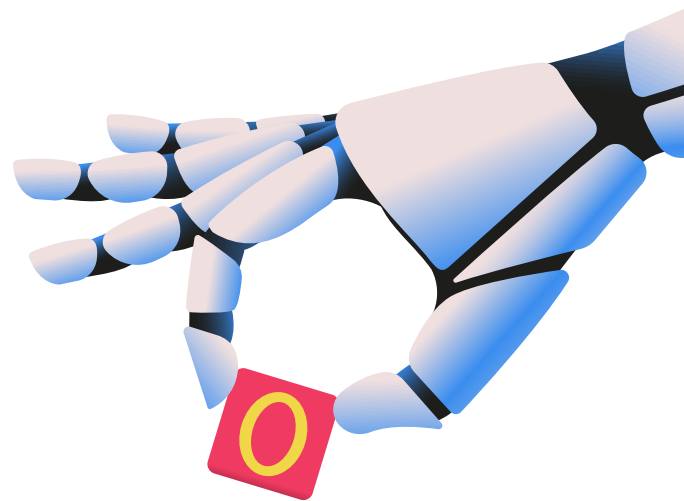
Artificial Intelligence first appeared in modern fiction dating back to the middle of the 19th century – Mary Shelley’s Frankenstein or Karel Capek’s Rossum’s Universal Robots are good examples – and has played a role in literature and popular culture ever since, leaning more into dystopian (e.g. 2001 A Space Odyssey, The Terminator, The Matrix) visions of the future.

Alongside the development of these works of fiction, a real science began to emerge. In the 17th century, Leibniz, Hobbes and Descartes explored the possibility that all rational thought could be made as systematic

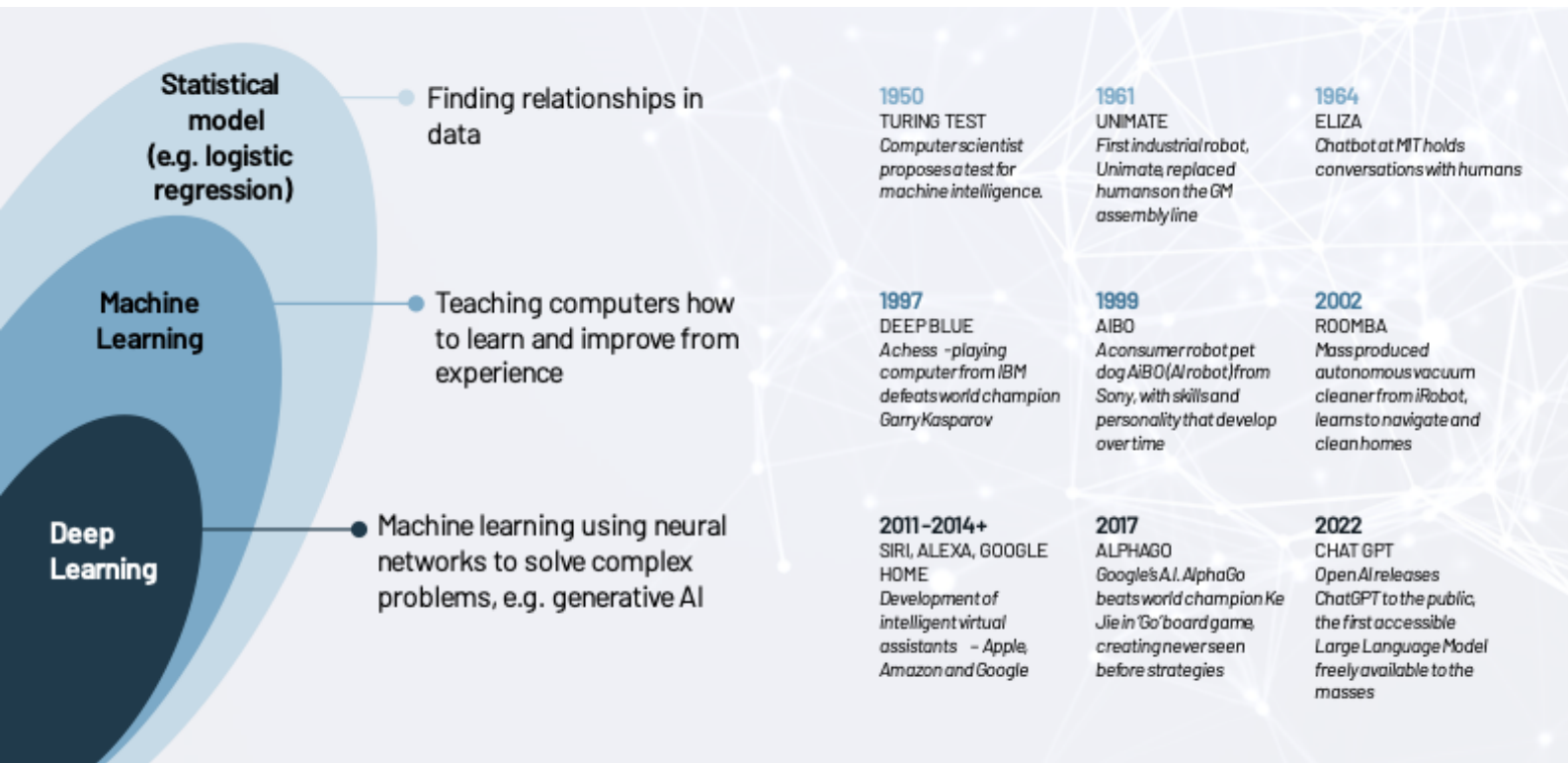
as algebra or geometry. In 1843, Ada Lovelace wrote an algorithm to calculate a sequence of Bernoulli numbers – to be run on Charles Babbage’s Analytical engine, and although the work was completely theoretical (the machine was never built) she is credited with writing the world’s first computer program. She also envisioned early generative AI for music:

[The Analytical Engine] Supposing, for instance, that the fundamental relations of pitched sounds in the science of harmony and of musical composition were susceptible of such expression and adaptations, the engine might compose elaborate and scientific pieces of music of any degree of complexity or extent.

Ada Lovelace



HELL



Foundational computer scientist Alan Turing – credited with formalising the concepts of algorithm and computation, and widely considered the father of theoretical computer science and artificial intelligence – moved the field along considerably. In 1950, he developed what became known as the Turing Test. The test is pretty simple and is still used today – it is designed on the principle that if a human interrogator engages with both a computer and a human without knowing which is which, and cannot reliably tell them apart, then the computer is said to have passed the Turing Test. The computer has successfully demonstrated human-like intelligence.

A few years later in 1956, in Dartmouth¹, a town in the USA, a small meeting was held organised by John McCarthy, then a mathematics professor at the College. They were planning for an upcoming conference. John put forward the aim of the conference:

“To proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it.”

And so, the term Artificial Intelligence or AI was coined and described as ‘the science and engineering of making intelligent machines’ (John McCarthy). In 1961, AI hit industry with robots replacing humans on assembly lines. Later that decade a chatbot called Eliza was launched, with the ability to hold conversation with humans.

The ‘AI winter’ meant that little was launched in the 1970s and 1980s. However, with enormous leaps in computing power following Moore’s law, AI rebounded and has seen substantial growth since the late 1990s. Since then, we’ve seen chess winning computers (IBM’s Deep Blue), Robot pet dogs (AiBO from Sony) and autonomous vacuum cleaners (Roomba). More recently, with the launch of intelligent virtual assistants like Siri and Alexa, AI has fast become part of daily life.

1 Artificial Intelligence (AI) Coined at Dartmouth | Dartmouth

So how exactly does Artificial Intelligence work?

AI is using computers to mimic human intelligence, to perform intelligent tasks autonomously.

Modern Artificial Intelligence tools are essentially built on huge amounts of data. They take this data and create enormous, convoluted statistical models – GPT-4 has around 1.76 trillion parameters (connections). Most modern AI tools use ‘Deep Learning’ which is a neural network (special kind of statistical model) with thousands of ‘hidden layers’ in their structure. It’s in these ‘hidden layers’ that the magic happens – but more about this later.

There is no such thing as ‘Artificial General Intelligence’ – yet – all AIs have tasks in which they are specialised. And so the exact structure of these models depends on the task they are designed for – an image classifier will look very different to a model capable of parsing text, which will look different again from a model designed to generate new ideas or text. ChatGPT for example is optimised to generate text and learns from human demonstrations in a method called reinforcement learning with human feedback.

So one of the big questions is... does this constitute understanding or knowledge? The answer is hotly debated, with those on the nay side suggesting they

are mere ‘Stochastic parrots’, that is ‘an entity that haphazardly stitches together sequences of linguistic forms... according to probabilistic information about how they combine, but without any reference to meaning’. Sam Altman – CEO of OpenAI (which developed ChatGPT) famously responded with ‘I am a stochastic parrot, and so r u.’ So AIs are also helping us ponder the nature of our own intelligence!

So why is it suddenly so exciting? Why are we all talking about AI now?

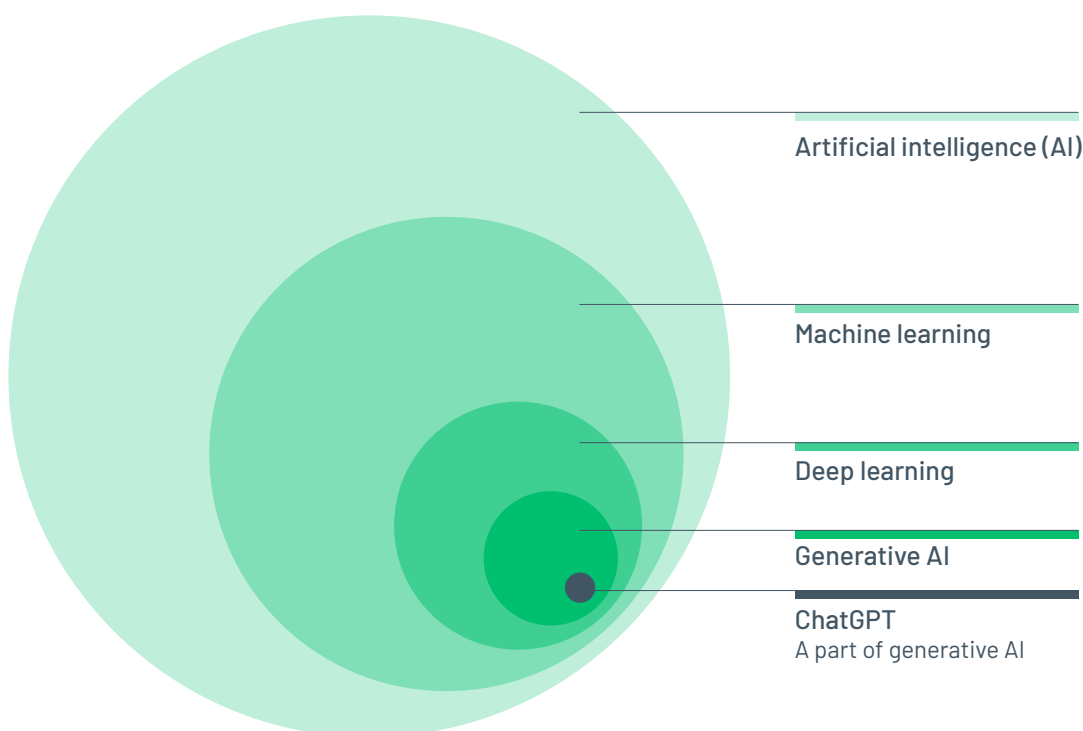
Three very good reasons, all of which are only a year or two old:

- 1 It’s accessible, powerful and increasingly useful
- 2 There are many free options to use
- 3 You don’t need a PhD to use it.

It’s moving fast

Although the first deep learning multilayer perceptron (neural network) was developed in 1965, advances in microchip technology in the 1990s massively accelerated our ability to use them.

The AI spectrum: Unveiling layers of intelligent systems



It is through deep learning that we now have tools for speech and image recognition as well as natural language processing including chatbots and machine translation.

Generative AI is a form of deep learning model that can generate text, images and content based on the data it has been trained on. The first generative AIs based on deep learning are less than a decade old.

And it is through generative AI that we have the ability to generate images and content.

AI continues to develop and advance rapidly, with many applications in healthcare, automotive, finance, robotics and more. It's like it's 1995 and we've just got our first Hotmail accounts. AI will change everything – potentially disrupting whole industries – but there's a lot of uncertainty about **how** it will change things.

It is important to note that AI is quickly evolving, and what we know today might well be out of date in 6 months or a year from now (so if you're reading this in 2024... um... give us a call for an update?).

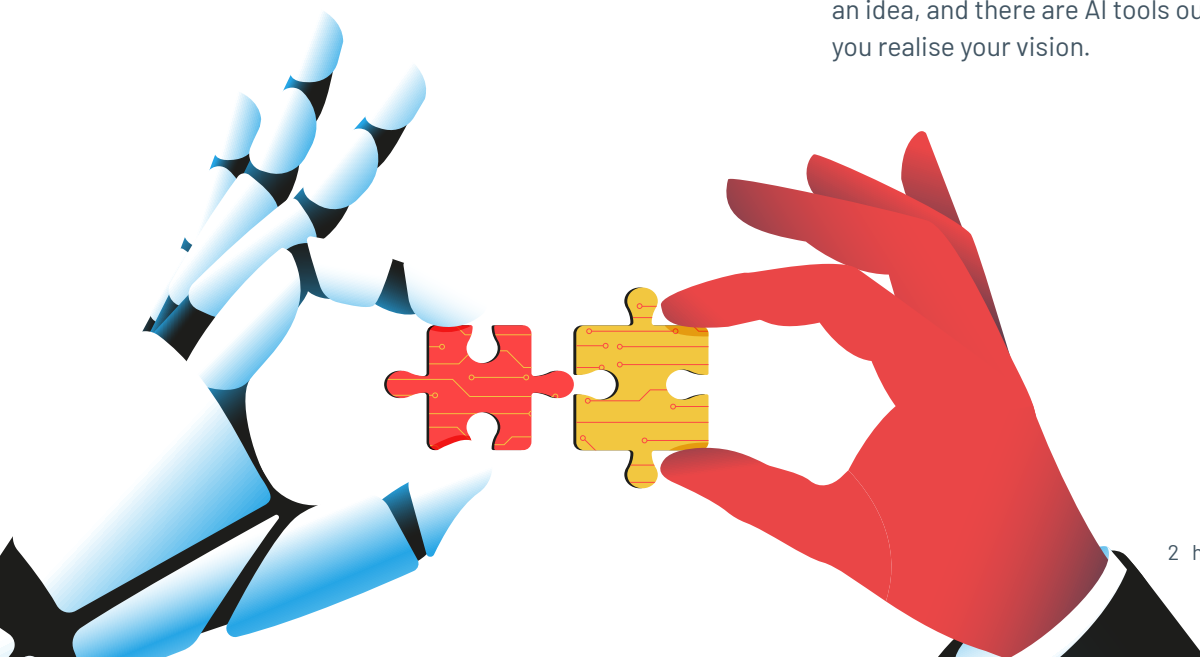
Where is it?

Well it's pretty much everywhere

AI is everywhere. It's in virtual assistants like Siri and Alexa or making recommendations for things you might like on Netflix or Amazon. It decides what you see in your social media feeds and helps you with travel finding the best route in Google maps or matching you with an Uber driver. Chatbots, consumer products, gaming, automotive, financial analysis, the list goes on. AI is in so many parts of everyday life, whether we recognise it or not.

It is unlikely that OpenAI could have predicted the recent success of their ChatGPT tool when it was released to the public late in 2022, yet it became the fastest growing app of all time with 100,000 million users within the first 2 months². School and university students use it to 'help' with their homework, software developers use it to write code, and people everywhere are using it to generate new ideas, handle simple tasks like writing emails or thank you notes. There is no doubt that the most productive employees in 2023 are 'AI enhanced' and are using it to improve their efficiency and effectiveness – and this is a trend that will undoubtedly continue.

There is always going to be new products, new developments, new ways of doing things. Whilst ChatGPT might not be around forever, or not in its current format, it shows us that you don't need to be an expert in something – it becomes a subject matter expert in everything that's documented. You just need an idea, and there are AI tools out there that can help you realise your vision.



² <https://www.reuters.com/technology/chatgpt-sets-record-fastest-growing-user-base-analyst-note-2023-02-01/>

Are we scared?

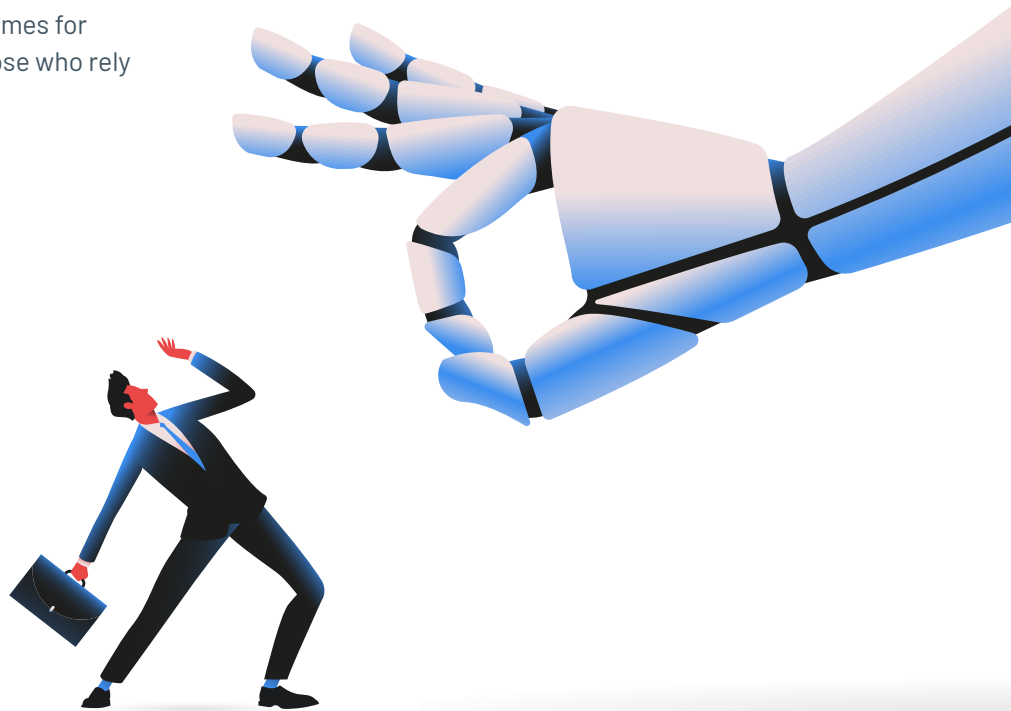
A little. There are lots of interesting (and potentially scary) things happening in the world of AI

Many industries are facing, and embracing, the challenges of AI.

- Data is essential to train AI models. It begins with collecting and labelling data, then using it to teach the model through repeated iterations. The model learns patterns and adjusts its parameters to minimize errors, ultimately making accurate predictions or decisions on new, unseen data. Therefore data is very valuable, especially when many AI businesses require significant data inputs on which to train their AI models. Some media outlets have recognised the value in their data and blocked OpenAI's web crawler, meaning OpenAI can't use content from the publications to train its AI models. This includes the New York Times, CNN, the ABC to name a few.
- In education, schools and universities are grappling with AI-generated assignments which has raised important questions. Do we ban submissions that are AI generated, or do we embrace the inclusion of AI as we move to a future where this could become the new normal?
- Some AI driven chatbots are now said to be able to replace whole call centres – able to provide more accurate responses, more quickly than humans. While it may mean reduced (no) wait times for customers, what will this mean for those who rely on these jobs?

- The first of Asimov's '3 laws of Robotics' is 'A robot may not injure a human being, or through inaction, allow a human to come to harm' and yet the United States (and other countries) currently has thousands of autonomous killing machines in development – who will be responsible for their actions? Are they going to be safe for their handlers?
- Self-driving vehicles are 'just around the corner' and promise safer roads with fewer accidents and fatalities. But who is at fault in an accident with a self-driving car? Who will take responsibility for the accidents they do cause?
- Retailers are also using AI in-store (and online). These collect significant data on their customers which isn't always well received. Supermarkets using cameras at their self checkouts have been labelled problematic in terms of privacy but have the potential to significantly benefit the retailers in their attempts to curb theft and better understand their customers needs and wants.

All that said, AI is going to be worth a lot to the economy. Generative AI could add trillions of dollars to the global economy. McKinsey estimates that generative AI could add the equivalent of \$2.6 trillion to \$4.4 trillion annually to the market place³.



³ <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier#industry-impacts>

What does AI mean for market research?

Great question! Here's what you need to know

First things first. There are privacy and ethical implications

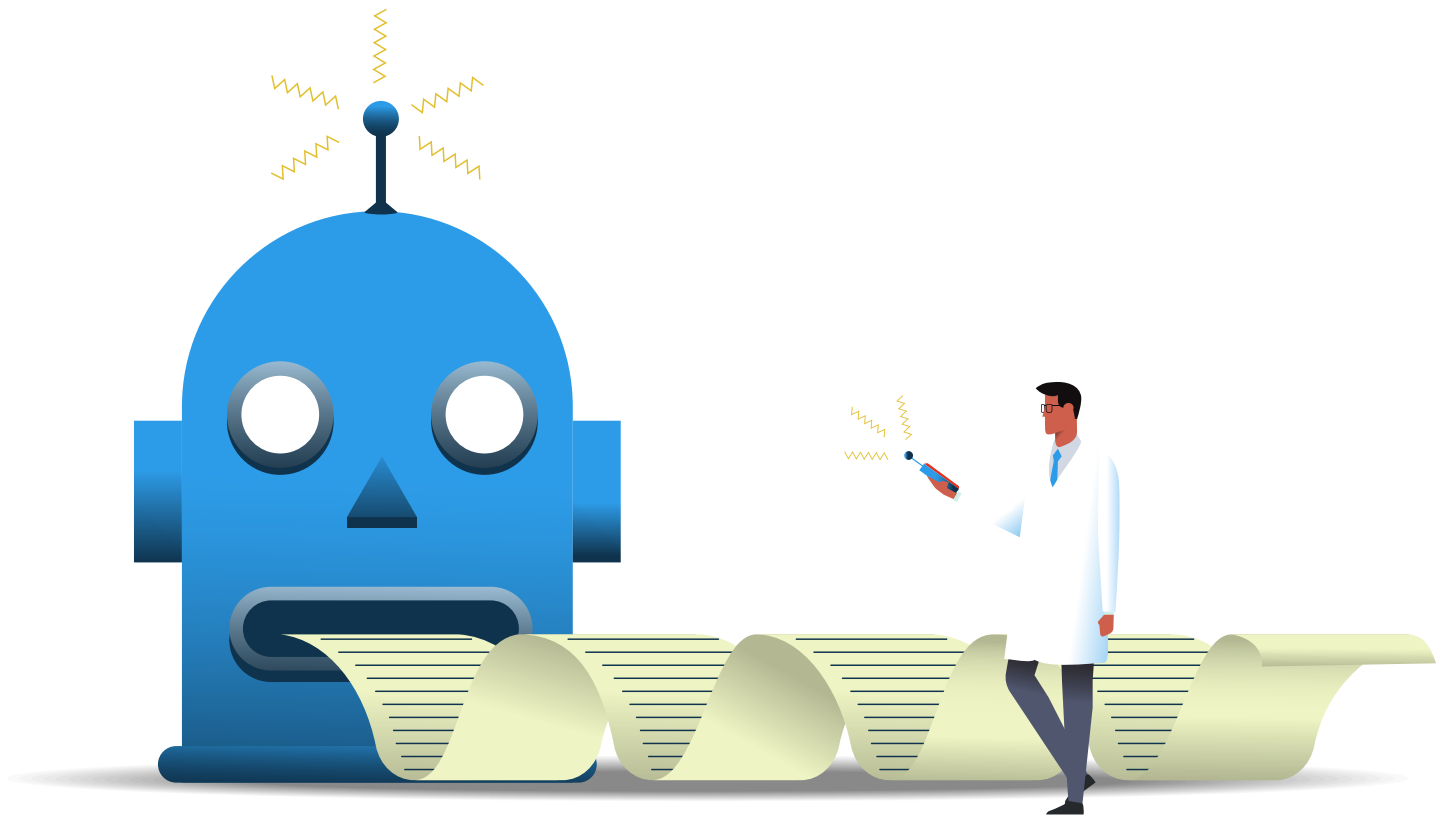
Australia's 8 Artificial Intelligence Principles are designed to ensure that AI is safe, secure and reliable. The principles are voluntary, but are designed to build public trust, positively influence outcomes from AI and ensure all Australians benefit from this transformative technology.

At a glance, Australia's AI Ethics Principles are:

- **Human, societal and environmental wellbeing:** AI systems should benefit individuals, society and the environment.
- **Human-centred values:** AI systems should respect human rights, diversity, and the autonomy of individuals.
- **Fairness:** AI systems should be inclusive and accessible, and should not involve or result in unfair discrimination against individuals, communities or groups.
- **Privacy protection and security:** AI systems should respect and uphold privacy rights and data protection, and ensure the security of data.
- **Reliability and safety:** AI systems should reliably operate in accordance with their intended purpose.
- **Transparency and explainability:** There should be transparency and responsible disclosure so people can understand when they are being significantly impacted by AI, and can find out when an AI system is engaging with them.
- **Contestability:** When an AI system significantly impacts a person, community, group or environment, there should be a timely process to allow people to challenge the use or outcomes of the AI system.
- **Accountability:** People responsible for the different phases of the AI system lifecycle should be identifiable and accountable for the outcomes of the AI systems, and human oversight of AI systems should be enabled.

In the evolving landscape of market research, the integration of AI tools brings with it new responsibilities. Both the Australian Privacy Principles (APPs) from the Privacy Act 1988 and the ISO standards have laid a foundational framework, setting industry benchmarks. Together, they underscore a dedication not only to rigorous data protection but also to the holistic quality and ethical integrity of the research process.

- **Transparency:** Clear, updated privacy policies.
- **Purposeful Collection:** Limit to necessary, relevant data.
- **Controlled Use:** Only for intended research purpose.
- **Data Integrity:** Ensure accuracy and timeliness.
- **Robust Security:** Protect against unauthorized access and misuse.
- **Participant Rights:** Access, correct, or delete personal data.
- **Anonymity Options:** Allow anonymous participation.
- **Risk Management:** Regular evaluations and mitigations.
- **Incident Protocols:** Clear response to security breaches.
- **Partner Accountability:** Ensure third parties are keeping the same standard.
- **Data Disposal:** Delete data once after it is no longer needed for its intended use.
- **Australian Privacy Principles.**
- **Implications for Digital Platforms and Overseas Data Flow.**



AI-driven platforms are increasingly used in market research for sentiment analysis, trend prediction, and customer insights. These platforms although hosted in Australia may still send data overseas when interacting with third party AI providers. This cross-border data flow presents unique challenges and considerations for researchers:

- Location
 - Location doesn't equal data security: even if hosted in Australia, platforms may transfer data internationally.
- Consent and transparency
 - Ensure clear consent mechanisms.
 - Be transparent about AI's data processing and analysis.
 - Allow users to opt out of AI analysis.
 - Clearly communicate where participant data is processed.
- Data Processing and Compliance
 - Ensure overseas data processing complies with APPs.
 - Implement contractual safeguards for overseas partners.

The potential of AI in market research

Now with that out of the way, let's talk potential.

In 2022, Australia ranked 13th out of 14 leading economies in deploying AI. The latest data on larger Australian businesses suggests that only 9.5% are using AI. To maintain its competitiveness in the coming decade, Australia must improve this situation.

Generative AI is quickly becoming another tool of the trade and has the potential to transform businesses. Employees equipped with the knowledge and skills to leverage this technology can drive innovation, creativity, and problem-solving across various domains.

With the unprecedented access to advanced language models, there's a surge in the introduction of apps and tools aimed at boosting efficiency across various sectors, including market research. As many of these tools are still in their developmental stages, it's an opportune moment to collaborate with third-party providers. Such partnerships can help customize these tools to better suit specific industry needs and maximize their advantages.

Using AI to boost efficiency

While AI tools offer a plethora of exciting and engaging possibilities, to truly maximize their potential, it's crucial to prioritize automating the most time-consuming and mundane tasks. While passion projects are engaging and exciting they might require more setup time and yield fewer productivity benefits, the real value lies in addressing the repetitive, monotonous and time-consuming tasks.

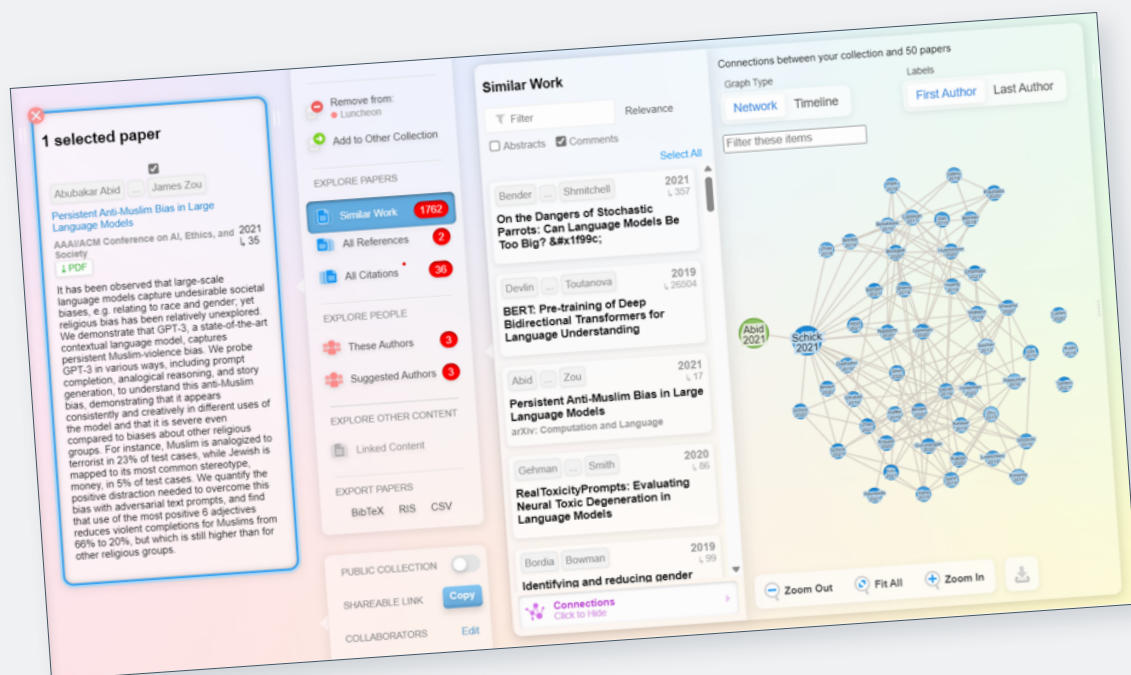
Desktop research and literature reviews

Literature reviews, a cornerstone of academic and market research, are notoriously time-consuming. They involve sifting through vast amounts of publications, identifying relevant studies, extracting pertinent data, and synthesizing findings coherently. The sheer volume of existing and newly published literature can make it challenging to ensure comprehensiveness and stay updated.

Advanced language models can swiftly scan and analyse vast databases, pinpointing relevant articles based on context rather than just keywords. They can summarize findings, detect patterns, and even suggest areas that might be under-researched. By automating the initial stages of literature collection and preliminary analysis, AI tools can significantly reduce the time researchers spend on manual searches and reviews, allowing them to focus on deeper analysis and insights.

Several tools are emerging in this domain, with notable open-source options including [Research Rabbit](#), [Scite](#), and [Semantic Scholar](#). For researchers who might be wary of letting AI take the reins entirely in literature reviews, these tools serve as excellent aids. They enhance efficiency without overshadowing the human touch in the process.

Here's a glimpse of Research Rabbit's capabilities: You can input a research paper related to your study topic, and the tool will provide you with articles that align contextually with your paper. Additionally, it lists all references and citations from your paper and even offers links to other researchers with whom the author of your paper has collaborated.



Questionnaire design and building

Crafting an effective questionnaire demands an eye for detail, emphasizing the right wording, order, and layout to derive trustworthy and actionable data. AI can play a role in shaping an initial template and vouching for its integrity. Numerous market research providers, such as Conjointly, Survey Monkey, and BlockSurvey, now offer these services. However, it's crucial to understand that these tools, while helpful, cannot replace the human touch essential for ensuring robust research. These platforms rely on training datasets to generate results, and the quality of these datasets isn't always guaranteed. To an untrained eye, the outputs might seem perfect, but understanding the nuances of effective questionnaire design is vital. Looking ahead, many agencies are likely to adopt in-house AI questionnaire design, leveraging their expertly crafted questionnaires.

Data cleaning

Data cleaning is an essential step in the data processing pipeline, ensuring accuracy and reliability in subsequent analyses. While there might be reservations about uploading personal or sensitive data to AI platforms for cleaning, advancements in AI tools have made the process more secure and user-friendly. These tools seamlessly integrate with popular programming languages like Python, enhancing the data cleaning process. What's more, these AI platforms can debug and optimize your code without needing access to the actual data. This means you can receive refined code from the AI tool and then execute it locally on your personal desktop, ensuring data privacy and security. Upskilling in this area is easier than ever and having a couple dedicated team members who are across these tools can have an amazing impact on efficiency.

Charting

Charting, an integral part of data analysis and presentation, can often be intricate and time-intensive. It involves selecting the right type of chart, ensuring data accuracy, and designing visuals that are both informative and engaging. With the vast array of data types and the need for precise representation, choosing the most effective visualization method can be a daunting task. By streamlining the chart creation and optimization process, AI-enhanced tools can save analysts considerable time, allowing them to concentrate on interpretation and storytelling, ensuring their visuals not only look good but also convey the right message.

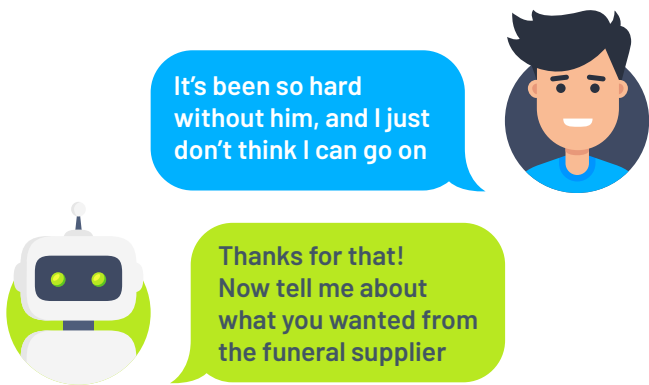
These tools are still developing and there are many platforms that support some level of automated charting including DisplayR, Qualtrics, and Q. Most of these platforms only support basic visualisation or demand quite a bit of up front set up time. [WhyHive](#) a Melbourne based company is doing some interesting work in building out automated charting with large language models that looks promising and as they are developed, we are likely to see more advanced tools in this space.

Coding of open ended responses

Open ended responses, whether captured via text, video or audio are some of the most useful data we collect as researchers. They allow research participants to tell us what they really think, unbounded by a pre-defined response set. Historically, coding open-ended responses was a task assigned to the grads and juniors, who would trawl through thousands of responses, and code them into categories for statistical analysis and charting. A big problem with this historical process was that it was more art than science, and human coders only agree 70% of the time, which means these analyses can be plagued by inconsistencies, for example, when the coding team changes, or merely doesn't remember how they coded similar responses in the past. Large language models like ChatGPT offer a more rigorous and consistent approach – but they still need good human supervision and often the ability to 'chain' together different AI tasks, for example writing a code frame is different to coding data.

Chatbots

Chatbots are increasingly being used in research to gather data through a series of open-ended questions that the AI asks of participants. Sophisticated models are able to adapt to the way that individuals respond, effectively turning a survey into an in-depth interview. However, we have seen many concerning examples of their use in the industry. One supplier claims to be able to deliver 'empathy at scale' but we have seen instances where they have been turned to sensitive tasks – such as talking about death and dying and delivering anything but the empathy and sensitivity to keep participants psychologically safe!

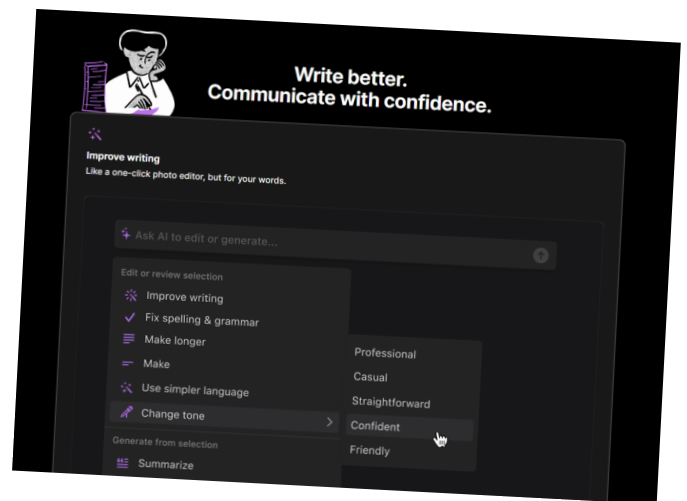


We urge caution around their use, especially ensuring they are up to the task of talking about sensitive issues – remembering that every AI is only as good as the training data that went into its creation. There are instances of effective, trauma-informed bots operating in sensitive spaces, but these are specialised models that have been trained for the purpose.

Report writing

Report writing is a fundamental aspect of many professional fields, requiring clarity, precision, and a consistent narrative. However, when multiple individuals contribute to a single report, maintaining a uniform voice and tone can be challenging. Disparate writing styles can lead to a fragmented narrative, potentially confusing readers or diluting the report's impact. This is where AI proves invaluable. Advanced AI tools can analyse the entirety of a report, identifying inconsistencies in tone or style, and suggest edits for a more harmonized voice. Beyond mere editing, AI can also validate insights drawn by researchers, cross-referencing data and findings to ensure accuracy and coherence. By serving as both an editor and a validator, AI streamlines the report writing process, ensuring that the final product is not only consistent but also robust in its findings and conclusions.

ChatGPT serves effectively as an editor, yet there are platforms with greater sophistication that utilize OpenAI or other extensive language models, refining them especially for report writing. Many existing tools lean more towards content creation rather than report drafting. While Grammarly stands out as a recognized tool in this area, there are comparable tools, such as those from Notion.io, which also offer project management features. Both platforms deliver commendable performance and support in crafting clear, coherent content.



These examples of AI tools are just the tip of the AI iceberg. Let's now talk about how you might use them...

Using AI can add analytical depth

In the world of market research, AI offers profound analytical depth, especially when complemented by human expertise. Beyond merely processing vast datasets, AI delves into the intricacies of patterns, trends, and correlations, providing a nuanced understanding often beyond the reach of traditional methods.

- Predictive analytics, powered by AI, can shed light on subtle market shifts and evolving consumer behaviours. For qualitative research, while significant efforts have been invested in AI's audio and visual analysis capabilities—interpreting voice intonations, facial expressions, and gestures—the effectiveness of such emotional and gesture analysis remains a topic of debate and controversy.

- However, one undeniable advantage AI brings to qualitative research is its ability to summarize extensive text, quickly and accurately. In the context of lengthy qualitative interviews, AI can swiftly distil key themes and insights, allowing researchers to focus on deeper analysis and interpretation.

While AI will bring a host of new analytic tools it's important to understand that while these will marry well with traditional approaches, they will not (immediately) overtake them.

Analysing complex data

While AI has gained rapid traction due to its ability to handle large datasets and complex patterns, statistical modelling will continue to be an integral part to quality research and insight.

Key differences between standard statistical models and AI

Purpose	Statistical models are designed to infer relationships and test hypotheses. AI, especially deep learning, is more about prediction and classification.
Interpretability	Statistical models, like regression, identify and measure clear relationships that can be interpreted. Many AI models, especially deep neural networks, are "black boxes" offering limited interoperability – they can't tell you 'why', even if they can offer good predictions.
Assumptions	Statistical models often come with underlying assumptions (e.g., linearity, homoscedasticity, etc.). AI models, particularly neural networks, make fewer assumptions about data distributions.

Strengths of Statistical Modelling in Market Research

Explanatory Power	Understand which variables are significant as well as how and why they impact the outcome.
Generalizability	Easier to apply findings from a sample to a larger population.
Control	Researchers can control for confounding variables and biases that may not be apparent to an AI.

The need for clear instructions: Whereto's PROMPT framework

Whereto has developed a PROMPT framework that significantly improves the results from generative AI technologies like ChatGPT and Stable Diffusion:

- Purpose:** Clearly state the purpose of the interaction and what you're seeking to achieve from ChatGPT's response.
- Relevant info/background:** Provide context and background information to ensure that ChatGPT understands the topic and its relevance.
- Outcome:** Specify the desired outcome or type of response you're looking for, such as an explanation, summary, comparison, poem, or song.
- Material:** Include relevant examples of the output, and constraints that can help ChatGPT generate a more accurate and tailored response.
- Precise questions:** Craft a clear and concise question or prompt that guides ChatGPT toward the specific information you need.
- Take with a grain of salt:** While ChatGPT's responses can be informative, it's essential to critically evaluate and verify the answers. Consider the tool as a supportive guide, but always rely on your judgment and cross-reference with trusted sources.



Using AI to leverage the benefits of harmonized research

New AI techniques make research better by combining quantitative and qualitative methods. This helps researchers get a better understanding of complex relationships. By using both methods, researchers can see beyond numbers and statistics, and learn more about the human aspects behind the data.

Advantages of a Harmonized Approach

- 1 Depth and Breadth:** Quantitative methods provide structured data on a large scale, while qualitative research captures human experiences and beliefs. AI can quickly process this information and combine these insights, providing a comprehensive view that includes both statistics and human narratives.
- 2 Contextual Clarity:** AI methods, particularly advanced natural language processing, improve qualitative information by quickly recognizing emotions, nuances, and patterns. This provides a richer understanding of the context beyond just numbers.
- 3 Efficient Scalability:** AI tools can quickly clean data and provide concise summaries, making it easier to manage large datasets. This integration ensures that even large studies can still provide in-depth qualitative insights.
- 4 Dynamic Data Collection:** AI chatbots can improve data collection by changing their questions in real-time based on answers. This method combines the structured nature of surveys with the adaptable nature of interviews.
- 5 In-depth Analysis:** Combining both numbers and explanations gives you a thorough understanding of the situation. For instance, while figures might show a change in views, taking a closer look at why this is happening, from changes in customer preferences to market trends, is essential to understand the reasons behind it.

The pitfalls of AI in Market Research

What are the main risks of using AI for research?

The risks of using AI in research are similar to the risks involved with using AI for a range of other purposes. A meta-caution for all industries is to avoid over-reliance on AI technologies without human oversight. They can easily make potentially harmful mistakes that can easily ruin your day – or worse.

It can take considerable amounts of time to learn how to use AI technologies well and to get the results you want out of them, and some tasks require a degree of sophistication and understanding that only experts in the field possess.

But in general, the major pitfalls of AI when it comes to research include a lack of transparency, hallucinations, lack of contextual understanding and expectations that go far beyond the reality of what is actually achievable with current technology.

AI is somewhat of a black box – it doesn't tell you why

What's in the box? No one really knows...

As industries worldwide increasingly integrate Artificial Intelligence (AI) into their operations, understanding the inner workings of these systems remains a challenge. The metaphorical representation of AI as a “black box” encapsulates this enigma.

At its core, the concept of the black box in AI refers to the idea that while we can observe the input (what we feed into the system) and the output (the results or actions it produces), the internal decision-making process of the AI remains obscured in thousands of hidden layers of a complex neural network.

If you've ever felt that the inner mechanisms of AI are beyond comprehension, you're in good company. Even the creators of AI models find it challenging to pinpoint precisely how certain models work, and are able to provide certain responses.

AI lacks transparency

One of the inherent attributes of complex AI systems, especially neural networks, is their lack of transparency. By design, these systems consist of potentially millions of parameters that interact in ways that aren't always straightforward. It's this complexity that allows AI to perform sophisticated tasks but also what makes it hard to interpret.

The lack of AI transparency isn't just an academic or philosophical concern. It has practical implications:

- **Trust and Adoption:** If users or stakeholders don't understand how AI reaches its conclusions, they might be less likely to trust or adopt these technologies.
- **Accountability:** Without clarity on AI's decision-making processes, assigning responsibility when things go wrong becomes problematic.
- **Ethical Considerations:** A non-transparent AI system might inadvertently perpetuate biases or make decisions that conflict with societal values, with stakeholders left in the dark about why or how these decisions were made.



AI hallucinates – it makes things up

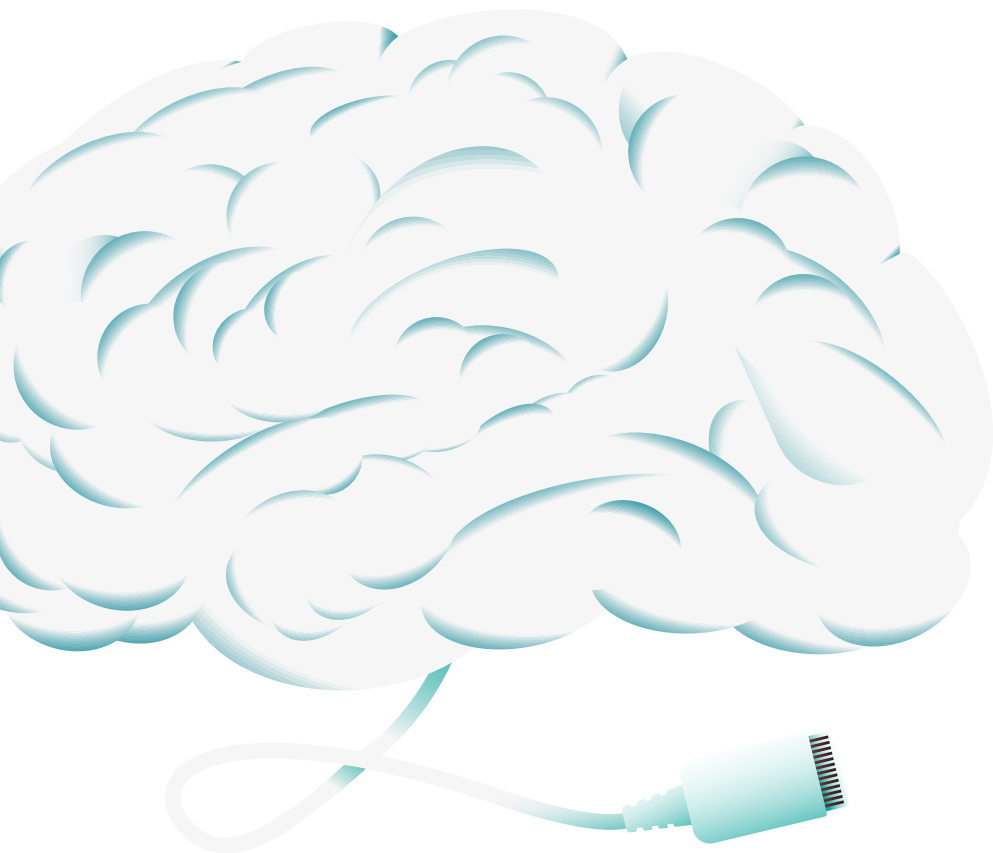
AI has taken leaps in generating outputs that often mirror human-like cognition. However, one of the major pitfalls of AI is the phenomenon termed as “hallucinations.”

Defining AI Hallucinations In the realm of AI, hallucinations refer to the generation of outputs that might appear plausible on the surface, yet are either factually incorrect or lack relevance to the context they’re presented in. Such outputs are not mere random occurrences; they are a manifestation of certain inherent challenges in AI design and training.

Why Do AI Hallucinations Occur? There are several reasons for these misleading outputs:

- **Lack of Genuine Understanding:** At their core, AI systems do not possess a genuine understanding or consciousness of the world. Their responses are based on patterns recognized from data, rather than a true comprehension of context.
- **Training Data Limitations:** AI outputs are only as good as the data it’s trained on. Incomplete, unvaried, or skewed training data can lead the AI to make incorrect or irrelevant assertions.
- **Inherent Biases:** AI systems, like their human counterparts, can possess biases, often inherited from the data they are trained on or the methods employed to train them.

Recognizing and Addressing Hallucinations While some hallucinations in AI outputs can be glaringly obvious, others are subtler, lurking undetected until they potentially cause misinformation or misconceptions. This highlights the importance of rigorous validation, continual refinement of training methodologies, and the application of ethical standards in AI development.



Conclusions

So the big question is, was this white paper written by us or AI? How can you tell?

The human touch

It's important to know that although AI has the power to change things, it can't replace human touch. AI can handle data, recognize patterns, and even generate ideas, but using these ideas in the real world takes human knowledge and experience.

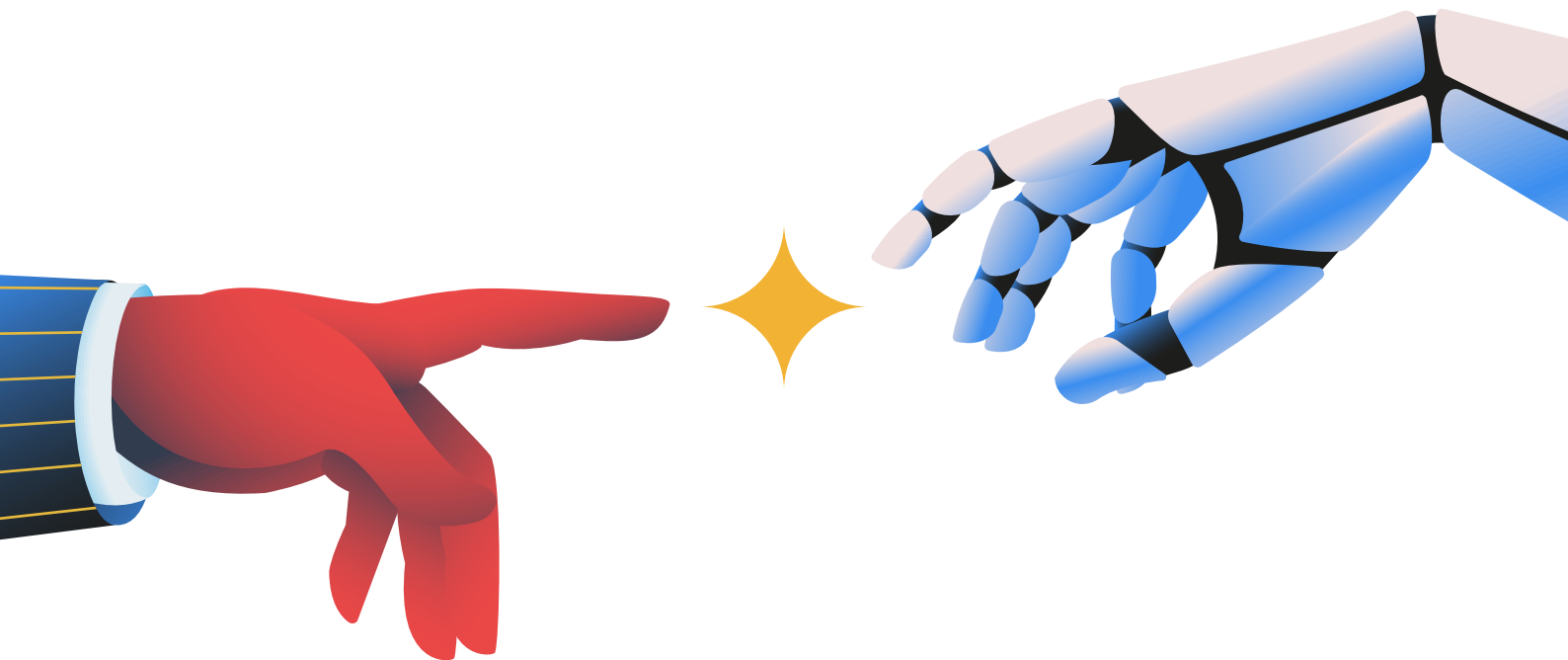
It's important to think carefully about how AI is used in research, especially when sensitive topics are involved. AI can help get more accurate and efficient results, but we need to make sure that people are safe and that their data is treated ethically.

In summary, combining traditional research methods with AI-driven approaches will make market research faster and more informative. As AI tools get better, market research will become even more exciting. Researchers who can use both traditional methods and AI will be able to gain more insights and knowledge.

Tips for working with AI

So in light of the potential and pitfalls of AI, we offer the following tips:

- Don't be afraid of trying it out – it's an exciting new technology with enormous potential but keep a wary open mind. It has limitations that may not be obvious at first.
- Know the privacy and data implications (ISO, APP), and understand how the AI is using any data that you feed into it. If it's not clear from the documentation, assume it's being sent overseas or being used to further train the model you are working with.
- Use the PROMPT framework to get good results – clear direction is critical.
- Don't let it replace human insight – we're not worried about our jobs... yet.
- Experiment and look for opportunities – find the efficiencies that will improve the way you work.
- Test and validate the results – try, try and try again making sure that you have other ways to validate what it's finding.



References

- ISO/IEC 22989: This standard addresses the concepts and terminology in AI.
- ISO/IEC 23053: This is a framework for AI systems using machine learning (ML).
- ISO/IEC TR 24027: A technical report that provides an overview of trustworthiness in AI.
- ISO/IEC TR 24028: This technical report looks into an overview of robustness in AI.
- ISO/IEC 23894: This standard deals with bias in AI systems and its mitigation.
- ISO/IEC TR 24030: A technical report on the risk management framework for AI.
- ISO/IEC 42001: A framework for the governance implications of AI.
- ISO/IEC 42020: This addresses the engineering concerns in AI systems.
- APP: Read the Australian Privacy Principles | OAIC
- ISO/IEC 27002: [https://www.saiglobal.com/PDFTemp/Previews/OSH/AS/AS20000/27000/27002-2006\(+A1\).pdf](https://www.saiglobal.com/PDFTemp/Previews/OSH/AS/AS20000/27000/27002-2006(+A1).pdf)
- https://www.researchgate.net/publication/349762553_Protecting_Victim_and_Witness_Statement_Examining_the_Effectiveness_of_a_Chatbot_that_Uses_Artificial_Intelligence_and_a_Cognitive_Interview
- [Australia's AI Ethics Principles | Australia's Artificial Intelligence Ethics Framework | Department of Industry, Science and Resources](#)
- [Llama and ChatGPT Are Not Open-Source - IEEE Spectrum](#)