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AVOIDING ALGORITHM AVERSION

ARTIFICIAL INTELLIGENCE

IN STRATEGIC PLANNING

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ABOUT ASSOCIATION TRANSFORMATION

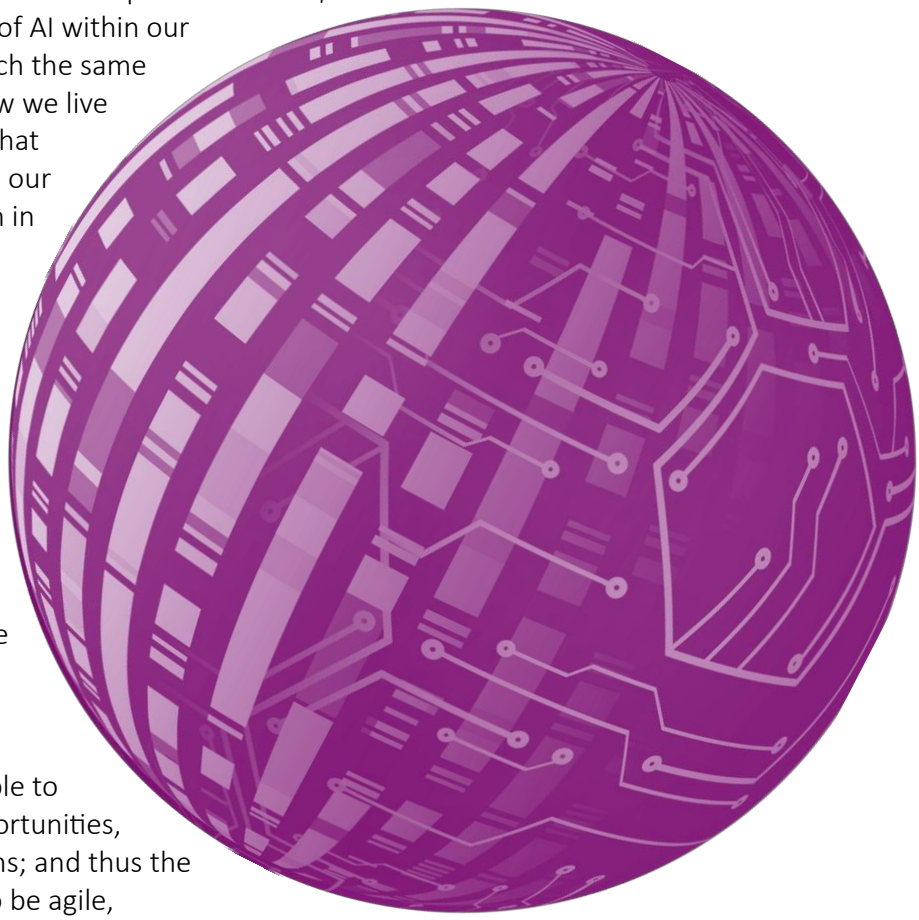
Launched in July 2020, the Association Transformation podcast was conceived as a direct response to the membership sector's need for information, dialogue, guidance, and support during an unprecedented period of disruption and uncertainty. Recognizing the inherently global nature of the membership sector, the podcast is a transatlantic conversation between co-hosts Elisa Pratt and Andrew Chamberlain and is intended to advance the impact and evolution of non-profit organizations. We always seek diversity of thought and new examples of innovation in action; and across five seasons we have hosted 60+ association specialists from eight countries across nearly 100 recordings, taking a deep dive into the current issues, emerging trends, leadership challenges, and business opportunities facing the international association community. Irrespective of subject matter, we always aim to share practical ideas, knowledge, and support for the long-term benefit of association chief executives, c-suite nonprofit professionals, and volunteer leaders. Our conversations cover a diverse compilation of subjects relevant to association leaders across the globe, ranging from mental health and wellbeing, the climate crisis, and DEI to membership recruitment and retention, financial strategy, and governance practice.

"…fear and discomfort are an essential part of strategy making. In fact, if you are entirely comfortable with your strategy, there's a strong chance it isn't very good… You need to be uncomfortable and apprehensive: True strategy is about placing bets and making hard choices. The objective is not to eliminate risk but to increase the odds of success. In this worldview, managers accept that good strategy is not the product of hours of careful research and modeling that lead to an inevitable and almost perfect conclusion. Instead, it's the result of a simple and quite rough-and-ready process of thinking through what it would take to achieve what you want and then assessing whether it's realistic to try. If executives adopt this definition, then maybe, just maybe, they can keep strategy where it should be, outside the comfort zone."

Roger L. Martin, Harvard Business Review, 2014

INTRODUCTION

Artificial intelligence (AI) has rapidly become part of our daily lives- just think about Apple's Siri, Amazon's Alexa, Google's Assistant, or any other virtual assistant; and in a business context, AI is starting to transform the way we work, collaborate, and create. Our use of AI however is still relatively limited to task automation, data analysis, and prose composition but on a seemingly weekly basis we are introduced to new ways in which AI can add value to our associations and nonprofits, from marketing and communications to income generation and market research. The expectations from AI are high worldwide, and the market for AI is anticipated to reach $15 trillion by 2030[1] and ultimately the use of AI within our organizations cannot be avoided. In much the same way that the internet revolutionized how we live and work in the 1990s and 2000s, and that mobile and cloud technologies changed our ways of accessing and using information in the 2010s, AI represents a seismic disruption to the Fourth Industrial Revolution (4IR)[2], and indeed for many observers (including Google CEO Sundar Pichai, Microsoft CEO Satya Nadella, and Nvidia CEO Jensen Huang) its societal impact could be even bigger than that of the internet.



The VUCA[3] World continues to intensify, and operating in unpredictable and rapidly changing environments has become our new normal. Under VUCA conditions, organizations (including associations and nonprofits) must be able to respond to pressures, identify new opportunities, and make highly contextualized decisions; and thus the processes for strategic planning need to be agile,

[1] Dilmegani, 2024.
[2] Visit www.pwc.com/us/en/library/4ir-ready.html for more information on the 4IR.
[3] Volatile, Uncertain, Complex, and Ambiguous.

responsive, and arguably less reliant on traditional tools and linear models.[4] Within the context of the 4IR, the use of AI in strategic planning appears inevitable, and whilst associations and nonprofits should be encouraged to use all available tools and embrace and utilize technology, it is imperative that leadership teams understand the potential and the limitations of AI; and we must ensure our senior executives and volunteer leaders remain in control of decision-making and are recognized as the owners of strategy rather than simply as interested observers of the development process.

A 2023 study by the McKinsey Center for Strategy Innovation found that only 7% of respondents to their survey about the use of AI said they use it in strategy development or financial planning, whereas in areas like marketing, supply chain, and service operations, its use is nearer 25-30%. One reason adoption is lagging is that strategy is one of the most integrative conceptual practices.[5]

> "When executives think about strategy automation, many are looking too far ahead – at AI capabilities that would decide, in place of the business leader, what the right strategy is. They are missing opportunities to use AI in the building blocks of strategy that could significantly improve outcomes."
>
> Yuval Atsmon, McKinsey Center for Strategy Innovation, 2023.

There is a significant opportunity for associations and nonprofits to utilize AI and enhance their strategic planning processes – to save time and money, improve performance and impact, and enhance innovation and agility – and to do so effectively and ethically. This White Paper serves as an articulation of those opportunities and seeks to support associations and nonprofits in their understanding of the role of artificial intelligence in strategic planning.

THE PURPOSE OF STRATEGIC PLANNING

> "It is not easy to predict the future but that is what Boards are asked to do and then from that prediction to bring clarity to the complexity in a way that is meaningful, measurable, and achievable."
>
> Bill Moran, Chair, Sport New Zealand, 2018-23[6]

UNESCO describes futures literacy as "...a universally accessible skill that builds on the innate human capacity to imagine the future, [which] offers a clear, field tested solution to poverty-of-the-imagination." It is a capability that allows leaders to better understand the role of the future in what they see and do, and in how their organizations develop. Being futures literate, and accepting that uncertainty is inevitable, empowers the imagination, freeing us from the limitations of conformity, and enhancing our ability to prepare, recover and invent as changes occur. Within the context of increasingly competitive and complex environments, as the custodians of their organization a board of directors has a distinct responsibility, and an exceptional opportunity to apply the pivotal skill of futures literacy by envisioning a future for their organization and shaping and controlling its direction through the seminal function of strategic planning.

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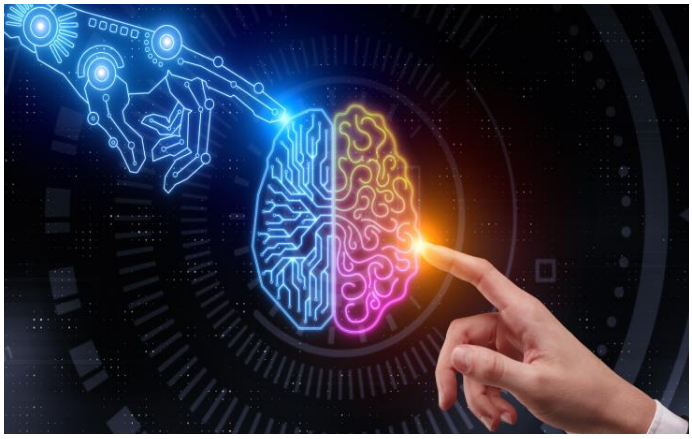
[4] Taurins, 2023.
[5] Atsmon, 2023.
[6] https://sportnz.org.nz/media/o5hpy5lr/the-board-s-role-in-strategic-planning.pdf

Strategic planning is the ongoing process of using available knowledge to document an organization's intended direction. The process is used to prioritize efforts, effectively allocate resources, align stakeholders on the organization's goals, and ensure those goals are underpinned by data and sound reasoning. The benefits to an association (and by extension, its membership) are manifold[7]:

1. Create a shared vision for the organization and generate collective responsibility for success

   Articulating the organization's objectives, explaining how and why they were chosen, and communicating how everyone (staff, volunteers, members, and stakeholders) can contribute to their delivery, generates a distinct sense of collective responsibility for the strategy's success. It also underpins trust in and of the organization in so much as a cohesive SMART[8] strategic plan reflects an association's commitment to ensuring its success and ergo its members' success, albeit words must ultimately align with action.



2. Challenge cognitive biases and flaws in reasoning

   To a greater or lesser extent, the decisions we all make are inherently biased, influenced by our personal experiences and opinions, experiences. Participating in the strategic planning process forces us to examine and justify our decision-making; to engage in robust debate and constructive conflict; and to utilize data, projections, and case studies that combine to reinforce a culture of evidence-led decision-making.

3. Monitor progress and adapt accordingly

   By defining a strategy's performance indicators and long-term measures of success, an association can monitor progress effectively and confidently report on its performance and impacts; and, whilst a strategic plan should be far-reaching and structured, it is nonetheless a live document, that must evolve with the challenges and opportunities an organization encounters. A process of continual measurement and review therefore also ensures a strategy remains agile and responsive to circumstances.

Pain points

All association and nonprofit leaders know that a strategic plan is important, but many leadership teams also find it a daunting prospect. Strategic planning and decision-making forces them to confront a future they can only guess; and even worse for some, agreeing to a strategy requires decisions that explicitly cut off possibilities and options, which can leave them feeling caught between a rock and a hard place and/or unwilling to ultimately be held accountable for those decisions (a situation which is exacerbated if internal decision-making processes are lacking or unknown); and association leaders may well fear that getting those decisions wrong will damage their association, as well as their own reputations and prospects.

[7] Cote, 2020.
[8] Specific, Measurable, Achievable, Relevant, and Timely

> "The natural reaction is to make the challenge less daunting by turning it into a problem that can be solved with tried and tested tools. That nearly always means spending weeks or even months preparing a comprehensive plan for how the [organization] will invest in existing and new assets and capabilities in order to achieve a target … The plan is typically supported with detailed spreadsheets that project costs and revenue quite far into the future. By the end of the process, everyone feels a lot less scared."
>
> Roger L. Martin, Harvard Business Review, 2014

In reality, over the last 20 years, association and nonprofit leadership teams have become far more adapt at strategic planning and are increasingly confident in their abilities to horizon scan, interpret their association's circumstances, and challenge the status quo. They do however continue to rely heavily on the traditional suite of macro-environment analysis models like PESTLE[9], which can require long lead times for data analysis and depend on historical data as well as 'gut instinct' or conjecture, which in turn exacerbates the risk of bias in strategic decision-making (see Bias below).

Developing a strategic plan can be a complex and time-consuming process. It requires a lot of data collection, analysis, and synthesis, as well as creativity, collaboration, and communication. It also requires a lot of flexibility and adaptability because of the need to routinely update and revise a plan to reflect an organization's changing realities and opportunities.[10] This is where AI can help.

AI undeniably exceeds human capabilities in translating big data into manageable and accessible information and knowledge, including unstructured inputs like audio, video, and images; and reduction of the long lead time for data analysis will realize efficiencies in the strategic planning process by automating and enhancing aspects of the strategic planning process, and by providing valuable insights and recommendations.

Data-driven, evidence-led decision-making

Evidence-led decision-making has particular resonance in diverse and devolved businesses like associations and nonprofits. This is particularly the case in fast moving environments where it is critical to understand changing views, challenges, and opportunities from a broad community of internal and external stakeholders. There is a particular strength and value in finding an anonymized way to benchmark those changing views so that at key moments stakeholders have a clear and accepted view that is acknowledged as an accurate reflection of a shared position. This is fundamental to trust in the process which can, in turn, provide a mandate which informs business planning and the evolution of strategy.[11] Within that context, data-driven, evidence-led decision-making should be at the very heart of the strategic planning process.

The speed of processing high volumes of data into manageable information and viable alternatives adds another dimension to strategic planning and decision-making. In a VUCA world we understandably want to be as informed as possible but the data in associations and nonprofits is often overwhelming, manually curated, and/or simply missing. If the data is missing, lagging, and/or disorganized then an organization's limitations, disadvantages, and/or deficiencies may be overlooked or result in erroneous projections. Similarly, insufficient or substandard data can also mask an association's potential and undermine the leadership team's confidence in the organization's capacity and capabilities. Incorrect projections can be costly and misinformed strategy will always fail. Maximizing the use of all available tools is therefore imperative for a successful planning process, and this includes utilizing AI for collating,

[9] Political, Economic, Social, Technological, Legal, and Environmental analysis
[10] Stanke, 2023.
[11] Boyd, 2022.

deciphering, and presenting and projecting an association's strategic context. This does however require leadership teams to understand and utilize the correct AI.

TYPES OF AI AND WHY IT MATTERS

The outputs and benefits of AI will depend on the type of AI selected, and there are many definitions and classifications of AI, which are continually evolving in real-time. Their classification matters because each type performs a different function, especially in terms of performance analysis (see Types of AI analytics below).

Types of AI (by capability)[12]

1. Artificial narrow intelligence ("narrow AI" or "weak AI")
   This is the type of AI that today's technology is primarily based on. It encompasses AI that can complete a specific set of predetermined tasks. For example, Siri on your iPhone can respond to voice commands and questions, based on a focused set of functions. If you ask Siri to direct you to the airport, an AI algorithm combines roadmap data and current traffic conditions to calculate the best route. Straying too far from conventional topics however leads to a dead end – if you have ever asked Siri an offbeat or complicated question, then you are probably familiar with the phrase "I'm not sure I understand."

   Narrow AI needs a large pool of reference data to develop its intelligence, and it cannot learn, expand upon, or interpret this information and apply it to new tasks. Today's AI-powered tools are more sophisticated than we could have dreamed of even five years ago. For example, they have fundamentally changed how to make a website or how manufacturing facilities operate, but they're all still based on narrow AI.

   Despite its impressive capabilities, ChatGPT is an example of Narrow AI:[13]

   - It is task-specific, designed primarily for natural language understanding and generation. It can perform tasks like answering questions, generating text, and simulating conversation but it cannot function outside of this scope, such as image recognition or complex problem-solving in unrelated domains.
   - It can parse and generate text based on the data it has been trained on, but it does not understand in the way that humans do.
   - It cannot transfer knowledge or skills from one domain to another. For instance, if trained to assist with customer service, it cannot then apply its experience to help with medical diagnosis.
   - It does not have the ability to learn new tasks autonomously or adapt new types of challenges beyond its training data. It cannot develop common sense reasoning or emotional intelligence.

2. Artificial general intelligence ("general AI" or "strong AI")
   Artificial general intelligence (AGI) describes AI that is capable of mimicking human decision-making and incorporating logic, emotion, and learning. Although researchers initially thought AGI would be

[12] WIX, 2023.
[13] Courtaud, 2023.

widespread before the beginning of the 21st century, human intelligence has turned out to be hard to recreate. Developers have devised several tests to determine whether their creations meet the standard for AGI. The most famous of them is the Turing test[14], which compares responses to questions given by a computer and a human to see if the tester can tell the difference. Some types of generative AI can, according to some, now meet the Turing threshold. For example, when a small group of ad executives tried comparing machine- versus human-generated digital ads, they could only guess which were written by AI with 57% accuracy; but AI is still unable to pass other AGI tests (which involve mundane but complex tasks, like making a cup of coffee in an unfamiliar kitchen) and some claim the Turing test to be outdated. AGI is still largely considered a goal rather than reality.

3. Artificial super intelligence ("super AI")
   Currently only found in science fiction, super AI surpasses human intelligence and consciousness, giving machines the upper hand. While robots taking over the world sounds far-fetched, some researchers believe that once technology meets the AGI threshold, AI tools will quickly be able to learn, adapt and perfect their functions, ultimately surpassing human skills.

Types of AI (by functionality)[15]

4. Reactive AI
   Reactive, or reactional, AI functions within narrow parameters, without referencing past interactions, responses, or results. The data used to train reactive AI is all-important, since it is the sole source of the algorithm's knowledge. Despite its limited focus, reactive AI can beat humans at specific tasks, thanks to its high-powered processing speed. The most famous examples of reactive AI are IBM's Deep Blue[16], which beat a chess champion, and Watson[17], which won the TV game show "Jeopardy!". Many everyday tasks now rely on reactive AI for simple decision-making based on pattern recognition, such as automated spam filters for email, credit scoring mechanisms in finance, and simple eCommerce product recommendations.

5. Limited memory AI
   Limited memory AI uses stored data to inform current behavior, making its performance more sophisticated than reactive AI. Limited memory AI can process sequences of input and react accordingly. Additionally, it can use the results of its interactions as new training data, "learning" and refining its actions over time. Limited memory AI improves digital experiences by using past interaction data to predict what current website visitors or app users want to do or see next. It picks the right dynamic content for the situation in real time, recommending products you did not know you needed or generating the correct chatbot responses to customer service questions. ChatGPT is an example of limited memory AI, but self-driving cars are really testing the cutting edge of limited memory AI. They are trained to process data from sensors and recognize objects like traffic lights and buses. When a pedestrian steps into a crosswalk, the car uses limited memory AI to perceive, react and apply the brakes.

   There are constraints, though: Vast amounts of data and energy are still required to train limited memory AI to perform straightforward tasks. Its knowledge expands when results are fed back to

[14] Visit https://plato.stanford.edu/entries/turing-test/ for more information on the Turing Test.
[15] Wix, 2023
[16] Visit www.ibm.com/history/deep-blue for more information on IBM's Deep Blue.
[17] Visit www.ibm.com/watson for more information on IBM's Watson.

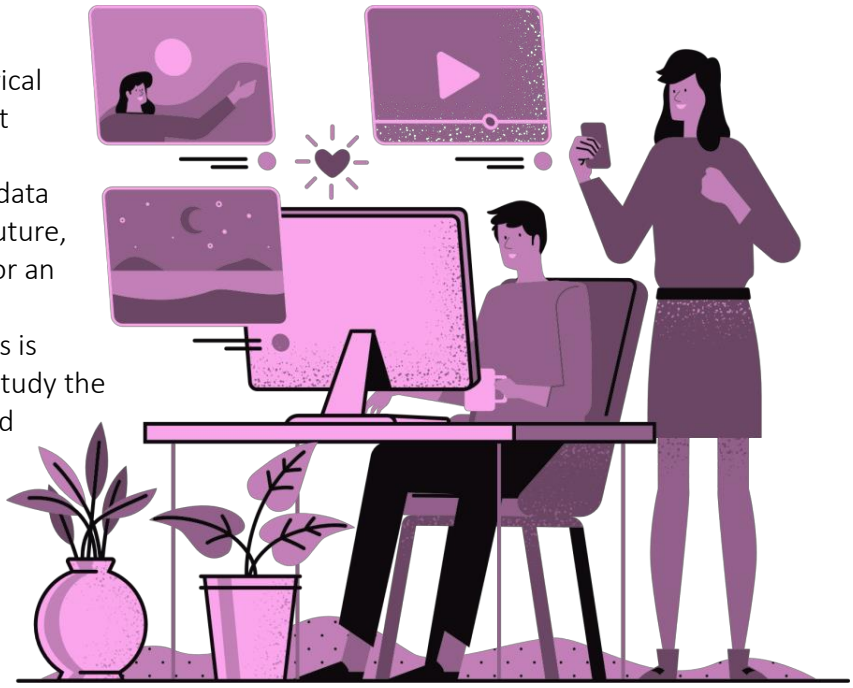
itself. The dataset grows, but the processing mechanism stays the same—unless humans reprogram it. That is why self-driving cars have been flummoxed by seemingly minor but unanticipated obstacles, such as San Francisco's fog.[18]

6. Theory of mind AI
   In psychology, the term "theory of mind" refers to the understanding that other beings have thoughts and emotions that affect their actions. To approach human intelligence, AI needs to develop this awareness of others, and be able to interact in ways that take into account others' knowledge and experiences. AI with a theory of mind does not yet exist.

7. Self-aware AI
   Another as-yet hypothetical version of AI, self-aware AI can (in theory) recognize its own mental states, emotions, and memories. In addition, self-aware AI would be able to apply its own emotional intelligence to interpret and guess at others' unstated motivations and internal states.

Types of AI analytics[19]

Descriptive analytics involves examining past data to understand what has happened. It summarizes historical data and provides insights into patterns, trends, and key metrics. It is the building block for all other types of analytics, used by almost 90% of organizations. It focuses on answering "What has happened?" by analyzing real-time and historical data. It helps organizations understand past successes and failures and provides insights for future decision-making. Examples include using social media and engagement data ("likes"), collating survey results, and summarizing past events, such as marketing campaigns.



Predictive analytics involves using historical data and statistical techniques to predict future events or outcomes. It utilizes patterns and relationships found in the data to estimate what might happen in the future, facilitating generation of SMART goals for an organization, strategic planning, and measures of success. Predictive analytics is used by associations and nonprofits to study the data and stare into the crystal ball to find answers to the question, "What could be the future outcome based on previous trends and patterns?" Predictive analytics helps predict the likelihood of a future outcome using various statistical and machine learning algorithms, although the accuracy of the predictions is not 100%, as it is based on probabilities. Algorithms take the input data and fill the missing data with the best possible guesses to make predictions. This data is pooled with historical information from the CRM, EMS, LMS, POS, and HR systems to look for data patterns and identify relationships among various variables in the dataset. Predictive analytics can be further divided into:

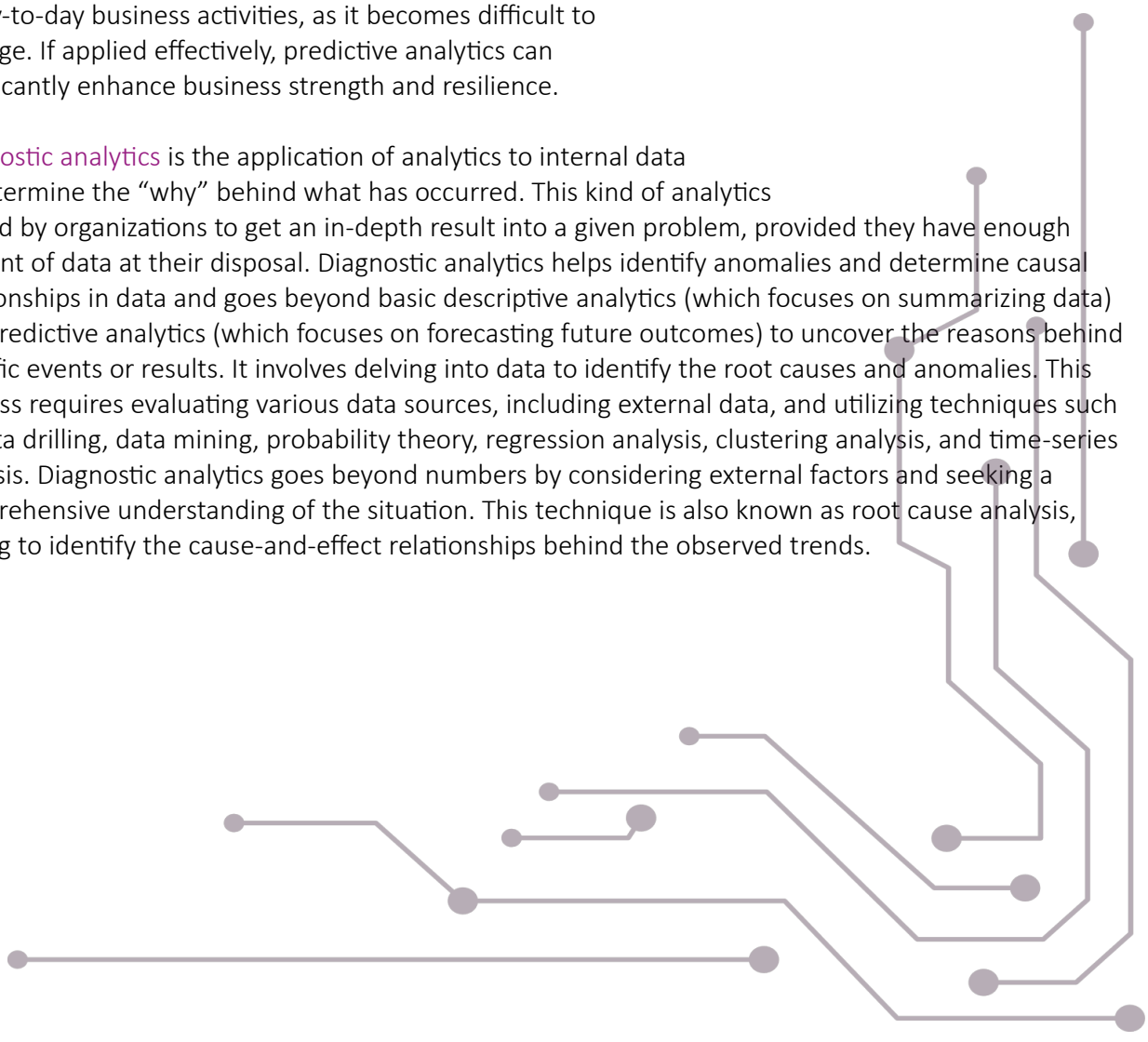
[18] See https://shorturl.at/abrvI.
[19] ProjectPro, 2024.

1. Predictive Modeling – What will happen next?
2. Root Cause Analysis – Why do this happen?
3. Data Mining – Identifying correlated data.
4. Forecasting – What if the existing trends continue?
5. Monte-Carlo Simulation – What could happen?
6. Pattern Identification and Alerts – When should action be taken to correct a process?

Prescriptive analytics takes data analysis further by recommending specific actions to optimize outcomes based on predictive models and business objectives. It uses advanced algorithms, optimization techniques, and simulation to generate actionable insights. Big data can highlight an organization's problems and helps leadership to understand why they occurred. Organizations use the data-backed and data-found factors to prescribe solutions for their business problems and prescriptive analytics is the next step from predictive analytics and adds an extra dimension by manipulating the future and advising on possible outcomes. It uses simulation and optimization to ask "what should the organization do?" and is based on the principles that optimization helps achieve the best outcomes and that random optimization helps to determine the best outcome by identifying and utilizing data uncertainties to make better decisions.

Prescriptive analytics is comparatively complex, and most associations and nonprofits are not yet using them in day-to-day business activities, as it becomes difficult to manage. If applied effectively, predictive analytics can significantly enhance business strength and resilience.

Diagnostic analytics is the application of analytics to internal data to determine the "why" behind what has occurred. This kind of analytics is used by organizations to get an in-depth result into a given problem, provided they have enough amount of data at their disposal. Diagnostic analytics helps identify anomalies and determine causal relationships in data and goes beyond basic descriptive analytics (which focuses on summarizing data) and predictive analytics (which focuses on forecasting future outcomes) to uncover the reasons behind specific events or results. It involves delving into data to identify the root causes and anomalies. This process requires evaluating various data sources, including external data, and utilizing techniques such as data drilling, data mining, probability theory, regression analysis, clustering analysis, and time-series analysis. Diagnostic analytics goes beyond numbers by considering external factors and seeking a comprehensive understanding of the situation. This technique is also known as root cause analysis, aiming to identify the cause-and-effect relationships behind the observed trends.



OPPORTUNITIES AND BENEFITS[20]

Collecting and analyzing data

- Descriptive AI can help collect and analyze data from various sources, such as internal and external databases, reports, surveys, social media, and web analytics, to provide a comprehensive and accurate picture of the current situation and performance of an association or nonprofit.
- AI can systematically and effectively identify patterns and signals that may be missed by humans.
- It facilitates insights that inform strategy formulation or deliver early warning signs of threats.
- It can also help to identify and quantify the strengths, weaknesses, opportunities, and threats (SWOT) of an organization, as well as its competitive advantages and disadvantages.
- AI can also help forecast and model the future scenarios and trends that may affect an organization, and its potential risks and opportunities.
- Generative AI can assist with data analysis that might guide evaluations, and leadership teams may be able to make better judgements because of using more data and educated reasoning.[21] However, ChatGPT or other AI is currently incapable of reasoning or decision-making.

Formulating and evaluating ideas

- Diagnostic AI can organize a strategy portfolio into segments, while Predictive AI can provide a systemic view for decision makers, generating and evaluating ideas for the vision, mission, goals, and strategies of an association or nonprofit.
- ChatGPT can affect decision making at a strategic level if leadership teams use it to obtain information, filter and organize options, and obtain recommendations in specific situations.
- AI can use natural language processing (NLP) and natural language generation (NLG) to create and communicate clear and compelling statements that reflect the purpose and values of a business.
- AI can also use machine learning (ML) and deep learning (DL) to suggest and rank the best ideas that are aligned with the data and the objectives of an organization.
- AI can also help test and validate the ideas using simulations and experiments and provide feedback and suggestions for improvement.

Creating and executing plans

- AI can help to create and execute plans for the implementation and monitoring of the strategic plan.
- AI can use project management and workflow automation tools to assign and coordinate tasks, resources, and timelines, and to track and measure the progress and performance of the strategic plan.
- AI can use decision support and optimization tools to help make the best decisions and actions that can achieve the desired outcomes and impact of the strategic plan.
- AI can also help communicate and report the results and achievements of the strategic plan to key stakeholders.

With a development of Strong AI, Machine Learning would enable the ability to think and operate as ‘human-inspired’ or ‘humanized AI’, although this is still a long way from Strong AI capability.[22]

Saving time and money

[20] Stanke, 2023.
[21] Korzynski et al, 2023.
[22] Hesel et al, 2022

AI can help you save time and money by automating and streamlining the strategic planning process. AI tools can collect and analyze data in minutes, and generate and evaluate ideas in seconds, and provide relevant insights and recommendations required to make informed decisions. AI tools can also help to avoid wasting time and money on irrelevant, outdated, or inaccurate data and ideas, and optimize the resources and budget for the most effective and efficient strategies and actions.

Improving performance and impact

AI tools can help you improve performance and impact by helping to develop a strategic plan that is data-driven, evidence-based, and goal-oriented. AI tools can help to create a strategic plan that is aligned with an association's purpose and values, and that can achieve the desired outcomes and impact. AI tools can also help to monitor and evaluate the performance and impact of a strategic plan and provide actionable insights and recommendations for improving and optimizing results and achievements.

Enhancing innovation and agility

AI tools can help to enhance an organization's innovation and agility by helping develop a strategic plan that is creative, collaborative, and adaptive. AI tools can help leadership teams to generate and evaluate new and novel ideas that can differentiate and elevate the organization. AI tools can also help with internal collaboration and external communication and can be used to solicit and incorporate feedback and input. AI tools can also help an association to adapt and respond to the VUCA world, and to update and revise a strategic plan accordingly.

ALGORITHM AVERSION

Research shows that algorithms and machines consistently outperform humans in almost every professional domain. However, when people must decide between algorithm judgment or human judgment, they tend to not want to follow evidence-based rules when making decisions, even though a lot of research demonstrates that is exactly the way they should be making judgments and forecasts. A lot of people prefer instead to rely on their gut instinct or to simply improvise in their decision-making rather than rely on consistent, evidence-based rules. Once they see an algorithm or computer make a mistake, their trust is undermined and they no longer to use it, even though the algorithm or computer is going to make a much smaller mistake or more infrequent mistakes than people are going to make.[23] This phenomenon is known as algorithm aversion.

Even though current AI is only as good as the quality of data on which it is trained, fundamentally people want algorithms to be perfect and expect them to be perfect, and thus AI decision-making models and algorithms are held to a much higher standard than humans. People believe that humans can improve over time whereas a model is relatively fixed, neither of which is necessarily true, but the psychology of algorithm aversion is nonetheless highly compelling and must be countered if AI is to be used effectively, especially in a strategic planning environment, where decision-making has long-term implications for an association's success (or otherwise).

Researchers have found however that people will engage positively with AI decision-making models and algorithms if there is a semblance of their control in the process. This is akin to self-driving cars, where trust in autonomous vehicles is much higher when people have access to safety controls and therefore perceive control over the vehicle, even though they may never use those controls; and evidence suggests that the level of require control is not that high:

[23] Massey & Simmons, 2017.

Massey: "We got early evidence that it wasn't going to be very much; then we started testing the limits of it and found that we could give them just a little bit of control. You know, move something around 5% or so and they would be much more interested in using the algorithm. If you give them more, it doesn't increase the lift at all. Give them a little bit, and it's about the same as giving them moderate influence."

Simmons: "What's nice about that is when they adjust the algorithms, they make them worse. But if they can only adjust it [a little bit], they can only make it that much worse. And since they are more likely to use it in that case, their final judgments will wind up being correlated with the algorithm close to perfectly. We can't get people to use algorithms 100%, but we can get them to use algorithms 99%, and that massively improves their judgments."

Cade Massey & Joseph Simmons, Knowledge at Wharton, 2017

The overarching lesson is not to impose a standard decision-making model and avoid an all-or-nothing framing, i.e., forcing people to stick with the algorithm 100% of the time will only result in their pushback. If people recognize that they have some control in the modelling and decision-making, then they will be much more amenable to using it. The Nuremburg Institute for Market Decisions conducted a 2022 study of 500 high-level B2C managers from 2,000 of the biggest public companies in the world and reinforced this principle, finding that human decision-makers accept algorithm more frequently when they can modify its decisions or forecasts.[24] The preferred model was augmented decision-making, with humans in control, using AI in the role of "collaborator". When strategic planning, leadership teams can tell a machine what they want it to do, such as creating decision rules or giving it datasets. Alternatively, they can define the output or the goal and let the machine find a solution. In other words, they 'feed' the task to AI. To do so effectively, the planning team will need to source technology talent who can build AI tools and be able to translate the organization's queries into AI questions; and for this to happen, the planning team need to understand and agree what the association will aim to achieve via its strategic plan.[25]

BIAS

Framing of the task can influence strategic decision-making profoundly. AI mechanisms programmed by humans incorporate human bias in machine learning and evidence suggests that such bias can have serious implications. AI bias is an anomaly in the output of machine learning algorithms, due to the prejudiced assumptions made during the algorithm development process or prejudices in the training data.

AI systems contain biases because of two reasons:[26]

1. Cognitive biases: These are unconscious errors in thinking that affects individuals' judgements and decisions. These biases arise from the brain's attempt to simplify processing information about the world. More than 180 human biases have been defined and classified by psychologists. Cognitive biases could seep into machine learning algorithms via either designers unknowingly introducing them to the model or uploading a training data set which includes those biases.

[24] Hesel et al., 2022
[25] Atsmon, 2023.
[26] Dilmegani, 2024.

2. Lack of complete data: If data is not complete, it may not be representative and therefore it may include bias. For example, most psychology research studies include results from undergraduate students which are a specific group and do not represent the whole population.

It is impossible to have a completely unbiased human mind and therefore a completely unbiased AI system. After all, humans are creating the biased data while humans and human-made algorithms are checking the data to identify and remove biases. Therefore, until AI develops further, we are obliged to minimize AI bias by testing data and algorithms and developing AI systems with responsible AI principles in mind (see Ethics below):[27]

1. Assess the algorithm and data to assess where the risk of unfairness is high;
2. Establish a debiasing strategy within your overall AI strategy that contains a portfolio of technical, operational, and organizational actions;
3. Improve human-driven processes as you identify biases in AI training data;
4. Decide on which cases should use automated decision-making and which should be human led;
5. Diversify your organization and follow a multidisciplinary approach, gathering input to training data from a wide range of subject experts;

ETHICS

It is predicted that 90% of commercial apps will use AI by 2025, and that the AI industry could be worth more than $15 trillion by 2030. It has the potential to impact the daily lives of people around the world. Developing and scaling AI with responsibility, trustworthiness, and ethical practices in mind is therefore essential to optimize AI's beneficial impact, while reducing risk and adverse outcomes. While rules and protocols develop to guide the use of AI, the academic community has leveraged the Belmont Report[28] to guide ethics within experimental research and algorithmic development. The three main principles that emerged from the Belmont Report are respect for persons, beneficence, and justice which translate today as the following primary concerns of AI:

1. Bias and discrimination
   Instances of bias and discrimination across several intelligent systems have raised many ethical questions regarding the use of artificial intelligence. How can we safeguard against bias and discrimination when the training datasets can lend itself to bias? See *Bias* above.

2. Privacy
   Privacy tends to be discussed in the context of data privacy, data protection and data security, and these concerns have allowed policymakers to make more strides here in recent years. For example, in 2016, GDPR legislation was created to protect the personal data of people in the European Union and European Economic Area, giving individuals more control of their data. In the United States, individual states are developing policies, such as the California Consumer Privacy Act (CCPA), which require businesses to inform consumers about the collection of their data. This recent legislation has forced organizations to rethink how they store and use personally identifiable data, and as a result, investments within security have become an increasing priority for organizations as they seek to eliminate any vulnerabilities and

[27] See https://research.aimultiple.com/ai-bias/ for information on how to fix biases in AI and machine learning algorithms.
[28] Available at https://www.hhs.gov/ohrp/sites/default/files/the-belmont-report-508c_FINAL.pdf.

opportunities for surveillance, hacking, and cyberattacks. Best practices to ensure privacy include:

- Assessing and classifying data according to its sensitivity and monitor sensitive data;
- Developing a data access and usage policy within the organization; and
- Implementing the principle of least privilege.

3. Accountability

There is no universal, overarching legislation that regulates AI practices, but many countries and states are working to develop and implement them locally. Some pieces of AI regulation are in place today, with many more forthcoming. To fill the gap, ethical frameworks have emerged as part of a collaboration between ethicists and researchers to govern the construction and distribution of AI models within society. However, at the moment, these only serve to guide, and research shows that the combination of distributed responsibility and lack of foresight into potential consequences is not necessarily conducive to preventing harm to society. Best practice to ensure accountability within an organization is to create a robust AI governance framework, ensuring AI systems are operating as an organization's principles and values intend, as stakeholders expect, and as required by relevant regulation. A successful governance program will:

- Define the roles and responsibilities of people working with AI;
- Educate all people involved in the AI lifecycle about building AI in a responsible way;
- Establish processes for building, managing, monitoring, and communicating about AI and AI risks; and
- Leverage tools to improve AI's performance and trustworthiness throughout the AI lifecycle.

4. Security

The security of an AI system is critical in preventing attackers from interfering with the system and changing its intended behavior. The increasing use of AI in particularly critical areas of society can introduce vulnerabilities that can have a significant impact on public safety. These adversarial attacks can involve data poisoning by injecting misleading data into training datasets and/or model poisoning by accessing and manipulating the model, causing AI to act in unintended ways. As AI technology evolves, attackers will find new methods and new ways to defend AI systems will be developed. Best practices to achieve security include:

- Assessing whether an adversary would have an incentive to attack the system and the potential consequences of such an attack;
- Creating a red team within your organization that will act as an adversary to test the system for identification and mitigation of vulnerabilities; and
- Following new developments in AI attacks and AI security. It is an ongoing area of research, so it is important to keep up with developments.

5. Transparency

Transparency, interpretability, or "explainability" of AI systems is a must in some industries such as healthcare and insurance in which businesses must comply with industry standards or government regulations. However, being able to interpret why AI models come up with specific outputs is important for all businesses and users to be able to understand and trust AI systems. A transparent AI system can help businesses explain and defend business-critical decisions,

conduct scenario modelling, ensure the models work as intended, and ensure accountability in case of unintended results. Best practices to ensure transparency include:

- Using a small set of inputs that are necessary for the desired performance of the model. This can make it easier to accurately pinpoint where the correlation or the causation between variables comes from;
- Giving explainable AI methods priority over models that are hard to interpret (i.e., black box models); and
- Discussing the required level of interpretability with domain experts and stakeholders.

Artificial intelligence performs according to how it is designed, developed, trained, tuned, and used, and AI ethics is all about establishing an ecosystem of ethical standards and guardrails around and throughout all phases of an AI system's lifecycle.[29]

COGNITIVE CHALLENGE

As well as being a data-driven process, strategy development is also an intellectually demanding process underpinned by cognitive insights. It involves reasoning, requires problem-solving, and necessities a corporate learning culture. To inform their decisions, leadership teams must identify underlying patterns, gain meaningful insights, and use probability techniques to support their judgement. In brief, most associations and nonprofits have the need for speed, greater anticipatory and predictive capability, and a synergy of analytical and judgement skills.[30] But artificial Intelligence is no substitute for emotional intelligence and whilst new and emerging AI tools have a high potential to improve 'decision intelligence' for better outcomes, the role of humans in strategic planning is unlikely to become redundant with the advancement of AI and machine learning.

Strong strategic thinking skills combined with sophisticated analytical AI tools will become core leadership competencies for association and nonprofit executives and volunteers; and it is anticipated that the demand and significance of higher-order thinking skills, such as analysis, reasoning, problem solving, and decision making will continue to grow at the global level.[31] In the future, professional education will transform from knowledge creation to developing AI-human collaboration capability, enabling executives to think critically and use judgement.

Strategy formulation is a highly conceptual process, underpinned by strategic thinking and decision making. It requires an understanding of context and exercising judgment in an increasingly complex VUCA world. AI is already capable of automating operational decisions, identifying patterns, and providing insights with limited prediction but is currently incapable of solving undefined problems and generating options for corporate strategies that need to be clearly formulated.

AI still needs to be closer to a human ability to solve problems that are not well defined. Currently, AI can only perform when it knows what to look for, such as patterns in a large volume of data to identify insights that can help leadership teams inform their strategic decision-making, albeit a strategic 'problem' or goal needs to be articulated first. Even with the advancement of strong AI development,

[29] Visit www.ibm.com/topics/ai-ethics#Organizations+that+promote+AI+ethics for details about organizations that promote AI ethics.
[30] Taurins, 2023.
[31] Joynes et al., 2019.

"humanized AI" will not become a substitute to effective strategic leadership any time soon;[32] and to that end, today AI is more of a tactical rather than strategic tool, albeit with great potential to support strategic planning and decision-making as a core part of the building blocks of strategy.

CALL TO ACTION

Much like the advent of the internet, generative AI tools like Jasper, Gemini, and Microsoft Copilot are profoundly reshaping how people work and what they focus on in their roles. Respondents to Avanade's 2023 survey[33] of 3,000+ business leaders expect the change to happen fast, anticipating that generative AI tools will impact up to 20 hours (or half) of their working week by the end of 2024. This indicates that a seismic shift in working styles is pending, giving people more time to create, innovate and imagine – all of which will enable organizations to lead their sectors and act on new ideas in ways never imagined before. [34] And strategic planning and decision-making can (and should) be at the very epicenter of the AI revolution.

However, leaders should first take a step back and assess how their organizations will sustainably drive value and growth with AI, and not just focus on short-term efficiencies. Next, it is critical to establish proper governance to scale behaviors and processes by engaging diverse user groups to experiment and learn. Then, embrace the opportunities which AI presents.

Strategic planning is not about guessing. Aspiring, yes. But those aspirations have to be built upon an informed foundation. Ignorant speculation and lazy assumptions, often where both conscious and unconscious bias subsists, can be reduced by adopting evidence-based decision-making, i.e., data. Data means financials, market research, membership reports and trends, satisfaction surveys, need assessments, competitive analyses, and focus group feedback. Is data the answer to everything? No. Do we know for absolute certain what challenges members of the future will face? No. However, we can use data as a predictor to identify trends and measure both change and pain points.[35] AI can help an association or nonprofit leadership team in developing a strategic plan by automating and enhancing the strategic planning process, and by providing valuable insights and recommendations. AI can collect and analyze data, generate and evaluate ideas, and create and execute plans that can improve an organization's performance and impact, and enhance innovation and agility. However, AI tools should be used effectively and ethically; and until AI advances further and strategic foresight becomes automated, it should be used as a tactical tool, that complements the human skills of critical thinking, strategic analysis, reasoning, judgement, and problem solving.

[32] Taurins, 2023.
[33] Avanade, 2023.
[34] Ibid.
[35] Pratt, 2022.

GLOSSARY OF TERMS

Included in the white paper but also used more widely when using Artificial Intelligence

AI Copilot	A conversational interface that uses large language models to support users in various tasks and decision-making processes across multiple domains within an enterprise environment.
Algorithm	A sequence of rules given to an AI machine to perform a task or solve a problem. Common algorithms include classification, regression, and clustering.
Adapter	An advanced method for making pre-trained AI models adaptable to new tasks without complete retraining. These modules save time, money, and resources by efficiently repurposing existing models for different tasks in areas like natural language processing, computer vision, and robotics.
Annotation	The process of labeling data with additional information to help machine learning algorithms understand and learn.
Application Programming Interface	A set of protocols that determine how two software applications will interact with each other. APIs tend to be written in programming languages such as C++ or JavaScript.
Artificial Intelligence	The simulation of human intelligence in machines that are programmed to think and learn like humans. Example: A self-driving car that can navigate and make decisions on its own using AI technology.
Artificial General Intelligence (strong AI)	An AI system that possesses a wide range of cognitive abilities, much like humans, enabling them to learn, reason, adapt to new situations, and devise creative solutions across various tasks and domains, rather than being limited to specific tasks as narrow AI systems are.
Artificial Narrow Intelligence (weak AI)	This is the type of AI that today's technology is primarily based on. It encompasses AI that can complete a specific set of predetermined tasks.
Associative Memory	A system's ability to store, retrieve, and process related information based on connections between elements, enabling it to efficiently identify and use relevant data for decision-making.
Big Data	The large data sets that can be studied to reveal patterns and trends to support business decisions. It is called "big" data because organizations can now gather massive amounts of complex data using data collection tools and systems. Big data can be collected very quickly and stored in a variety of formats.
ChatGPT	A chat interface built on top of GPT-3.5. GPT-3.5 is a large language model developed by OpenAI that is trained on a massive amount of internet text data and fine-tuned to perform a wide range of natural language tasks. Example: GPT-3.5 has been fine-tuned for tasks such as language translation, text summarization, and question answering.
Controllability	The ability to understand, regulate, and manage an AI system's decision-making process, ensuring its accuracy, safety, and ethical behavior, and minimizing the potential for undesired consequences.
Conversational AI	A subfield of AI that focuses on developing systems that can understand and generate human-like language and conduct a back-and-forth conversation. Example: A chatbot that can understand and respond to customer inquiries in a natural and human-like manner.

Chatbot	A user-friendly interface that allows the user to ask questions and receive answers. Depending on the backend system that fuels the chatbot, it can be as basic as pre-written responses to a fully conversational AI that automates issue resolution.
Discriminative Models	Models that classify a data example and predict a label. For example, a model that identifies whether a picture is a dog or a cat.
Data Augmentation	A technique used to artificially increase the size and diversity of a training set by creating modified copies of the existing data. It involves making minor changes such as flipping, resizing, or adjusting the brightness of images, to enhance the dataset and prevent models from overfitting.
Data Mining	The process of sorting through large data sets to identify patterns that can improve models or solve problems.
Deep Learning	A function of AI that imitates the human brain by learning from how it structures and processes information to make decisions. Instead of relying on an algorithm that can only perform one specific task, this subset of machine learning can learn from unstructured data without supervision.
Descriptive analytics	Involves examining past data to understand what has happened
Deterministic Model	Follows a specific set of rules and conditions to reach a definite outcome, operating on a cause-and-effect basis.
Diagnostic analytics	The application of analytics to internal data to determine the “why” behind what has occurred.
Emergent Behavior	Also called emergence, emergent behavior is when an AI system shows unpredictable or unintended capabilities.
Fine Tuning	The process of adapting a pre-trained model to a specific task by training it on a smaller dataset. For example, an image classification model trained on all intersection pictures can be fine turned to detect when a car runs a red light.
Foundation Model	A broad category of AI models which include large language models and other types of models such as computer vision and reinforcement learning models. They are called "foundation" models because they serve as the base upon which applications can be built, catering to a wide range of domains and use cases.
Generative AI	A type of technology that uses AI to create content, including text, video, code, and images. A generative AI system is trained using large amounts of data, so that it can find patterns for generating new content.
Generative Pre-trained Transformer	A type of deep learning model trained on a large dataset to generate human-like text, the underlying architecture of ChatGPT.
Grounding	The process of anchoring AI systems in real-world experiences, knowledge, or data. The objective is to improve the AI's understanding of the world, so it can effectively interpret and respond to user inputs, queries, and tasks. Grounding helps AI systems become more context-aware, allowing them to provide better, more relatable, and relevant responses or actions.
Guardrails	Restrictions and rules placed on AI systems to make sure that they handle data appropriately and don't generate unethical content.
Hallucination	When a model, especially one dealing with natural language processing, generates outputs that may be irrelevant, nonsensical, or incorrect based on the input provided. This often occurs when the AI system is unsure of the context, relies too much on its training data, or lacks a proper understanding of the subject matter.

Hyperparameter	A parameter, or value, that affects the way an AI model learns. It is usually set manually outside of the model.
Instruction-tuning	An approach where a pre-trained model is adapted to perform specific tasks by providing a set of guidelines or directives that outline the desired operation.
Large Language Model (LLM)	An AI model that has been trained on large amounts of text so that it can understand language and generate human-like text.
Machine Learning	A subfield of AI that involves the development of algorithms and statistical models that enable machines to improve their performance with experience.
Multi-hop Reasoning	Multi-hop is a term often used in natural language processing and, more specifically, machine reading comprehension tasks. It refers to the process by which an AI model retrieves answers to questions by connecting multiple pieces of information present in a given text or across various sources and systems, rather than directly extracting the information from a single passage.
N-Shot Learning	Zero/Single/Few shot learning are variations of the same concept – providing a model with little or no training data to classify new data and guide predictions. A “shot” represents a single training example.
Natural Language Ambiguity	Natural language ambiguity refers to situations where a word, phrase, or sentence can have multiple meanings, making it challenging for both humans and AI systems to interpret correctly.
Natural Language Generation (NLG)	A subfield of AI that produces natural written or spoken language.
Natural Language Processing (NLP)	A subfield of AI that involves programming computers to process massive volumes of language data. Focuses on transforming free-form text into a standardized structure.
Natural Language Understanding (NLU)	A subtopic of NLP that analyzes text to glean semantic meaning from written language. That means understanding context, sentiment, intent, etc.
Neural Network	A machine learning model inspired by the human brain's structure and function that's composed of layers of interconnected nodes or "neurons." Example: A neural network that can recognize handwritten digits with high accuracy.
OpenAI	The organization that developed ChatGPT. More broadly speaking, OpenAI is a research company that aims to develop and promote friendly AI responsibly. Example: OpenAI's GPT-3 model is one of the largest and most powerful language models available for natural language processing tasks.
Optimization	The process of adjusting the parameters of a model to minimize a loss function that measures the difference between the model's predictions and the true values. Example: Optimizing a neural network's parameters using a gradient descent algorithm to minimize the error between the model's predictions and the true values.
Overfitting	A problem that occurs when a model is too complex, performing well on the training data but poorly on unseen data. Example: A model that has memorized the training data instead of learning general patterns and thus performs poorly on new data.
Pattern Recognition	the method of using computer algorithms to analyze, detect, and label regularities in data. This informs how the data gets classified into different categories.

Pre-training	Training a model on a large dataset before fine-tuning it to a specific task. Example: Pre-training a language model like ChatGPT on a large corpus of text data before fine-tuning it for a specific natural language task such as language translation.
Predictive analytics	Involves using historical data and statistical techniques to predict future events or outcomes.
Prescriptive analytics	Takes data analysis further by recommending specific actions to optimize outcomes based on predictive models and business objectives.
Prompt	An input that a user feeds to an AI system in order to get a desired result or output.
Probabilistic Model	A probabilistic AI model makes decisions based on probabilities or likelihoods.
Reasoning	The process by which artificial intelligence systems solve problems, think critically, and create new knowledge by analyzing and processing available information, allowing them to make well-informed decisions across various tasks and domains.
Recursive Prompting	A strategy for guiding AI models to produce higher-quality output. It involves providing the model with a series of prompts or questions that build upon previous responses, refining both the context and the AI's understanding to achieve the desired result.
Reinforcement Learning	A type of machine learning in which a model learns to make decisions by interacting with its environment and receiving feedback through rewards or penalties. GPT uses reinforcement learning from human feedback.
Responsible AI	The approach of creating, implementing, and utilizing AI systems with a focus on positively impacting employees, businesses, customers, and society as a whole, ensuring ethical intentions and fostering trust, which in turn enables companies to confidently scale their AI solutions.
Sentiment Analysis	Also known as opinion mining, sentiment analysis is the process of using AI to analyze the tone and opinion of a given text.
Sequence Modeling	A subfield of NLP that focuses on modeling sequential data such as text, speech, or time series data. Example: A sequence model that can predict the next word in a sentence or generate coherent text.
Speech-to-Text	The process of converting spoken words into written text.
Stacking	A technique in AI that combines multiple algorithms to enhance overall performance. By blending the strengths of various AI models, stacking compensates for each model's weaknesses and achieves a more accurate and robust output in diverse applications, such as image recognition and natural language processing.
Steerability	The ability to guide or control an AI system's behavior and output according to human intentions or specific objectives. This involves designing AI models with mechanisms that understand and adhere to the preferences provided by users, while avoiding unintended or undesirable outcomes. Improving steerability requires ongoing research and refinement, including techniques like fine-tuning, rule-based systems, and implementing additional human feedback loops during AI development.
Supervised Learning	A type of machine learning in which a model is trained on labeled data to make predictions about new, unseen data. Example: A supervised learning algorithm that can classify images of handwritten digits based on labeled training data.

Transformer	A type of neural network architecture designed to process sequential data, such as text. Example: The transformer architecture is used in models like ChatGPT for natural language processing tasks.
Text-to-Speech	A technology that converts written text into spoken voice output. It allows users to hear written content being read aloud, typically using synthesized speech.
Token	A token is a basic unit of text that an LLM uses to understand and generate language. A token may be an entire word or parts of a word.
Training Data	The information or examples given to an AI system to enable it to learn, find patterns, and create new content.
Unsupervised Learning	A type of machine learning in which a model is trained on unlabeled data to find patterns or features in the data. Example: An unsupervised learning algorithm that can cluster similar images of handwritten digits based on their visual features.

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