Generative AI in communications, media and technology

Introduction

Science fiction writer Arthur C. Clarke famously wrote, “Any sufficiently advanced technology is indistinguishable from magic.” This wisdom seemed especially true when OpenAI unveiled its large language model-based chatbot, ChatGPT, to the public. Seemingly all at once, tasks and talents thought to be exclusive to humans were shared with machines. Generative AI (Gen AI) presents a step change in humanity’s ability to apply specialized knowledge at unprecedented speed, breadth and scale. Perhaps sooner than expected, Communications, Media & Technology (CMT) is poised to be a beneficiary of use cases that are likely to impact billions of people daily, as well as to be the staging ground from which gen AI becomes ubiquitous in every industry.

An introduction to generative AI and the importance of mitigating risks

Gen AI refers to the branch of artificial intelligence that focuses on creating or generating new content, such as text, images, or music, that is indistinguishable from content created by humans. At its best, it can rapidly accelerate knowledge and decision-making, and even emulate human insights and creativity on a vast scale.

And yet—as much as this powerful technology may seem like magic, it is not. A lot of work, by humans, must go into organizing and curating underlying data, and in training algorithms for context and decision-making cues. This comes with risks. To mitigate them, enterprises will need to consider how to build trustworthy and responsible gen AI that is unbiased, secure, transparent, explainable and which complies with privacy and copyright laws.

Harnessing the power of language models

Large language models (LLMs), like ChatGPT and Google's Bard, are examples of gen AI systems that are trained on vast amounts of text data from the Internet. Built on massively scaled neural networks, these models utilize deep learning techniques to learn the statistical patterns, semantic relationships and syntactical structures present in data. By training on such extensive datasets, these models can generate human-like responses to text prompts, engage in conversations, answer questions and even assist in content creation.

Several trends spanning industries have made generative AI increasingly relevant. The explosion of big data and the availability of powerful computing resources, advances in machine learning algorithms and techniques, as well as improved natural language processing capabilities are fueling the development of more sophisticated generative models that can significantly improve business functions across multiple industries.

In many instances, a private language model is the best fit to address a use case. These models may be fed by any number of data sources, including proprietary ones. A model may aggregate outputs of multiple subsidiary language models. Additionally, insights gained through complementary AI or machine learning (ML) models may also be used as inputs for algorithms that generate prompt responses. For example, gen AI may be trained to produce an evidence-based argument for how to best optimize a process.

Enterprises will need to face important questions about the degree to which they might sacrifice authenticity and neutrality to produce a business outcome. For example, in response to a product recommendation, an organization may be understandably reluctant to recommend a competitor;

yet how a company approaches the situation may affect trust. Decisions like this require mindful planning, monitoring, governance, measurement—and direct user feedback.

Overall, the advancements in gen AI and large language models offer enterprises powerful tools to automate customer interactions, enhance content creation, extract meaningful insights from data, and more. By leveraging these technologies, businesses can improve operational efficiency, deliver personalized experiences and gain a competitive edge in the fast-paced digital landscape.

Implications for CMT

CMT lies at the crossroads of gen AI foundational technologies and many of its highest potential use cases, making it a breeding ground and a nexus point to improve the lives of billions of people every day.

For communications service providers, gen AI promises to inform how services are sold, delivered, tailored and supported. For media companies, it promises to be a game changer for how content is produced, discovered, personalized and monetized. And for technology companies, it promises to lay the foundation from which gen AI will scale into myriad applications, while simultaneously revolutionizing search and intra-language communications.

In each of these industries, we're likely to see significant traction in the near future from foundational use cases that drive improved outcomes.

Communications

Contact centers for customer support

While AI has been used in contact centers by communication service providers (CSPs) for years, generative AI will provide improved capabilities and greater impact. Language models can power intelligent chatbots that offer round-the-clock support to customers, addressing their queries and providing relevant responses, as well as letting customers make payments and execute similar transactions. CSPs will be able to more accurately gauge customer call summaries to understand customer sentiment and identify cross-sell and up-sell opportunities. This iterative process will result in CSPs deploying increasingly informed virtual agents that can engage in more sophisticated and personalized customer interactions.

Network optimization

Generative AI connects multiple complex AI/ML models used across network planning and operations with LLMs that are able to comprehend network behaviors and develop initiatives for network capacity planning and performance. It can analyze the network traffic, identify patterns, and provide feedback on how to optimize the network's performance based on those patterns. The models will be trained on curated internal customer data, making the predictions more factual and relevant, and quelling privacy concerns.

Network troubleshooting and diagnostics

CSPs will benefit from the cost savings stemming from optimized field service devices which will have improved diagnostic and analytical capabilities. Generative AI can facilitate installation, parts and troubleshooting, while also analyzing equipment data to identify potential problems and schedule preventative maintenance. This will reduce the number of impromptu service calls that companies will need to respond to and could ultimately prevent outages and improve reliability.

Media

Content creation, production and management

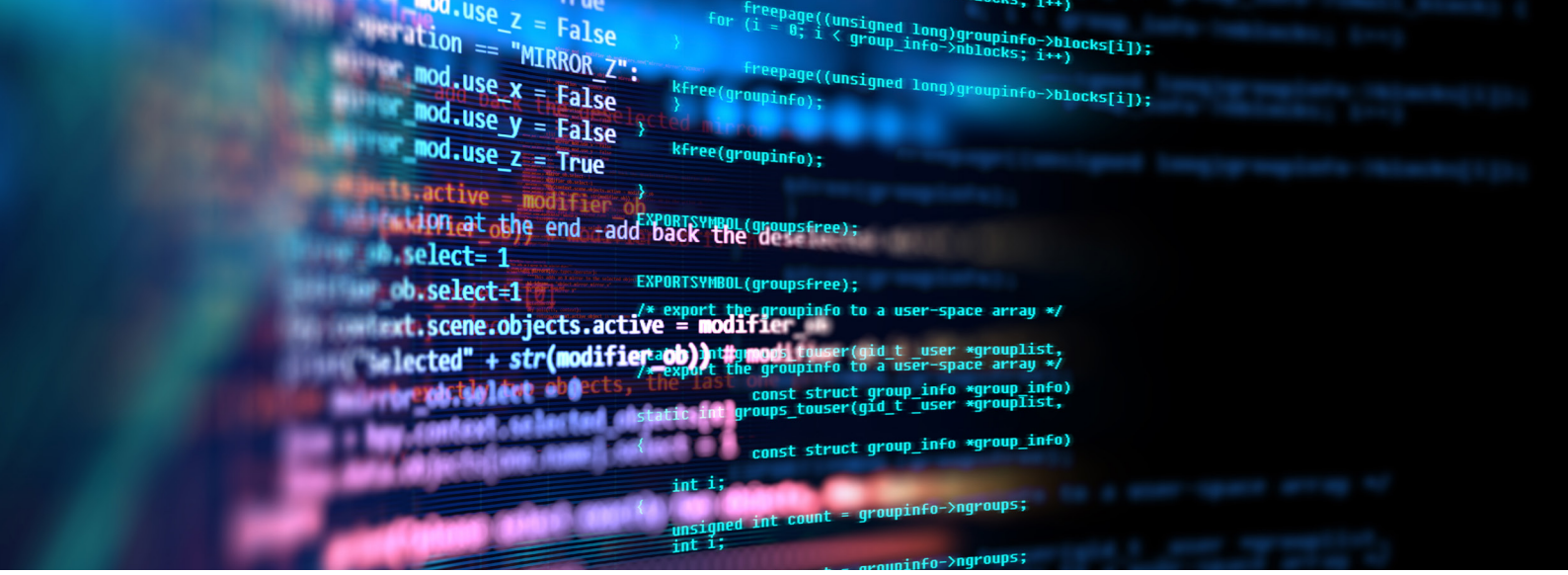
Generative AI has democratized multiple dimensions of content creation, ranging from text to audio to video. This will have significant impacts on all kinds of content creation, including synthesizing research for journalists, automating post-production editing for videographers, and consolidating music libraries for music producers. Generative AI will enable creatives to spend less time on the mundane, repetitive aspects of their work, freeing them to focus on the highly creative elements.

Personalized audience experiences

Low switching costs have put pressure on media companies to provide fluid and engaging audience experiences that will reduce subscriber churn. Generative AI can help in this effort through its optimized search and recommendation capabilities, matching viewers with personalized content with increasing accuracy. Models are currently being trained to use sentiment analysis to provide content recommendations for viewers based on their mood and similar behavioral data. Personalized content will become increasingly sophisticated as generative AI plays a larger role in content curation, assembly and creation.

Advertising and subscription monetization

Maintaining and improving monetization has been a challenge for media companies as they navigate the ever-expanding digital offering landscape hosted on various platforms and devices. Conventional advertising and subscription models are not



providing the necessary returns that they once did; however, generative AI can mitigate some of these losses. Enhanced personalization can help to reduce churn while also providing more targeted and contextualized advertisements.

Technology

Search engine accuracy

Search engines that utilize LLM are built with a deep learning algorithm that better understands language, resulting in increased accuracy of results . As consumers gravitate toward more personalized questions, LLM allows search engines to provide increasingly more nuanced and synthesized answers. This process improvement can allow for more creative uses of the traditional search bar such as conversational replies, personalized recommendations and predictive inquiry response.

Data extraction

In a market where data propels competitive advantages, the ability to extract information from unstructured data sets can set a company apart. With LLM, sources such as social media, customer reviews and other unstructured online content are available for inclusion in data sets. This expansion of data access directly improves a company's ability to classify customer preferences and provide more personalized service.

Language translation

Global businesses rely heavily on language translation to meet their business objectives. Language models enable faster and more precise language translation for both internal and external parties. LLMs are also able to navigate language nuances and cultural differences, improving communication efficiency and accuracy across the business.

Enterprise-wide applications

In addition to vertical use cases, gen AI is likely to also have a major impact on CMT from a horizontal standpoint. Language models have many enterprise-wide applications, especially as they relate to IT operations, including:

DevSecOps

Language models improve IT worker productivity by helping generate more accurate code. In addition to code generation, language models can also analyze code bases, identify security vulnerabilities and assist in building secure software development practices. By integrating language models into DevSecOps workflows, organizations can enhance their code review processes and mitigate cybersecurity risks.

Data governance and compliance

How organizations handle customer data has become an increasing concern in recent years. Customers are demanding heightened data security measures, necessitating robust data governance and compliance practices. Language models can aid in data management and governance tasks, ensuring compliance with privacy regulations, facilitating data anonymization and improving data quality.

Knowledge management

Language models can automatically extract key concepts, relationships, and insights from textual data such as internal policy documents, market research, customer data and financial statements. When a user enters a search query, the language model processes the query and maps it to relevant documents based on semantic similarity, context and topic modeling. This enables more accurate and contextually relevant knowledge retrieval, while ensuring necessary security measures are followed.

Data privacy, security and AI safety

As language models are increasingly deployed in companies, organizations must take proactive steps to ensure data security, privacy and AI safety. Additionally, there are three levels of safeguards that an enterprise needs to put together to use language models safely.

At the first level, data deidentification and tokenization are essential strategies to ensure that an organization's interaction with the language model remains secure and that the data remains private.

The second measure takes place at the operating model level where the operating model, by design, prevents any detokenized data leakage. Similarly, the operating model also needs to ensure that any incorrect outputs from the language model are prevented from contaminating the current business processes. Both human- and AI-based feedback loops must be utilized.

The third measure occurs at the business level; it ensures that consumers of generative AI content understand that the content has been created by AI. The organization will also need to provide delineation of responsibilities based on the language models being used and their contract with the language model provider.

The hyperscalers and model vendors do play a key role in determining the security of the operating model, but with the right set of safeguards in place, generative AI can be extremely secure and reliable, meeting an organization's data privacy and security needs.

The EU has proposed the AI Act, a sweeping set of consumer protections from potentially dangerous applications of AI in general. In the US, legal frameworks around AI-generated content are still being discussed, though it is expected that this area will quickly evolve in the near future. The companies that are able to stay one step ahead of these policy decisions will find that they have a unique competitive advantage in the years ahead.

Lastly, it's important to remember that language models have been trained on sets of data that may contain inherent biases. These biases are manifestations of years of decision-making by human agents. To ensure organizational equity, companies must track the AI-driven decision-making processes over an extended time horizon in order to detect potential biases and correct them as needed.

Prioritizing areas of investment on generative AI

The utilization of language models holds immense promise for the communications, media and technology industries, enabling organizations to unlock new capabilities and improve customer care. However, selecting the right use case for language model deployment requires careful consideration of the risks and rewards involved. By balancing the potential risks, rewards and costs of integrating the language model output within their workflow, organizations can select the optimal generative AI investment areas.

Stakeholder benefits

A successful language model deployment should bring tangible benefits to multiple stakeholders within the organization's ecosystem. Organizations can determine the value of a particular area of investment based on the differentiated capability generative AI brings in or the size of the problem it can potentially solve.

Risk assessment

For every generative AI use case, organizations need to consider the risks associated with each specific implementation, which vary considerably based on the use case. For example, a recommendation for network coverage and scheduled maintenance based on AI-analyzed traffic patterns carries far higher risk for a communications provider than producing a digital marketing campaign based on AI-generated content.

System integrations

Language models may generate valuable insights on their own, but integrating them into an organization's existing operating systems and workflows is essential to realize their full potential. These integrations will enable the models to develop the domain-specific knowledge they need to perform optimally for that organization. Adequate resources, technical expertise and collaboration with IT teams is necessary to ensure seamless integration and implementation.

To strike the right balance between risk and reward in language model deployment, organizations can follow these guiding principles:

Iterative deployment

Adopt an iterative approach, continuously evaluating the performance, impact and risks associated with language models. Implement feedback loops and mechanisms to address issues, refine processes and improve outcomes over time.

Collaborative approach

Generative AI needs a truly diverse set of skills to implement it in a safe and responsible manner. Organizations should collaborate with stakeholders such as managers, data scientists, legal experts and customer representatives—in addition to the traditional IT organization—throughout the decision-making process. An environment that fosters communication and collaboration is essential to ensure the most comprehensive assessment of risks and rewards.

Start with low stakes use cases

Begin with use cases that have relatively low impact and risk to understand the capabilities and limitations of the language model within a particular business context. Gradually expand to more complex scenarios as confidence and experience grow. While many of the above-mentioned use cases would serve as great starting points for a company's generative AI journey, we recommend starting with use cases that deal with improving internal processes, since it is relatively inexpensive to create a framework to supervise the output of the model in such scenarios.

Select the right partner

It is critical that an organization selects the right partner as it begins their generative AI journey. Keeping in mind how critical generative AI will be to the CMT industries, Cognizant has invested heavily in offerings that bring together the IT services, automation and generative AI capabilities required by the modern enterprise. Cognizant also has forged best-in-class partnerships with the major hyperscalers such as Google, Microsoft and Amazon Web Services, and each partner brings its own unique perspective on developing optimal generative AI solutions. Cognizant has deep knowledge of open-source language models that can be deployed for specific use cases. We are currently working with several CMT clients to plan their generative AI journeys in collaboration with our hyperscaler partners and we hope to partner with you as we look ahead.

Conclusion:

Move forward while balancing risk and reward

Generative AI and large language models have the potential to revolutionize the communications, media and technology industries. By leveraging gen AI capabilities, organizations can streamline operations, enhance decision-making and improve customer experiences.

However, this transformation must be approached with a strong commitment to strategy, data security, privacy, and AI safety. To learn more about generative AI and its potential for your organization contact us.

To learn more about how Cognizant can help you with your digital transformation initiatives, visit Cognizant.com/consulting or contact the authors:

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