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MCKINSEY TECHNOLOGY TRENDS OUTLOOK 2022



With 63% of the world's population online, the internet is a mirror of society: it speaks all languages, contains every opinion and hosts a wide range of (sometimes unsavoury) individuals.

As the internet has evolved, so has the dark world of online harms. Trust and safety teams (the teams typically found within online platforms responsible for removing abusive content and enforcing platform policies) are challenged by an ever-growing list of abuses, such as child abuse, extremism, disinformation, hate speech and fraud; and increasingly advanced actors misusing platforms in unique ways.

The solution, however, is not as simple as hiring another roomful of content moderators or building yet another block list. Without a profound familiarity with different types of abuse, an understanding of hate group verbiage, fluency in terrorist languages and nuanced comprehension of disinformation campaigns, trust and safety teams can only scratch the surface.

A more sophisticated approach is required. By uniquely combining the power of innovative technology, off-platform intelligence collection and the prowess of subject-matter experts who understand how threat actors operate, scaled detection of online abuse can reach near-perfect precision.

Online abuses are becoming more complex

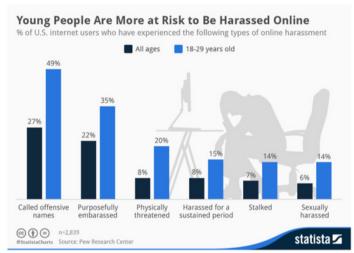
Since the introduction of the internet, wars have been fought, recessions have come and gone and new viruses have wreaked havoc. While the internet played a vital role in how these events were perceived, other changes – like the radicalization of extreme opinions, the spread of misinformation and the wide reach of child sexual abuse material (CSAM) – have been enabled by it.

Online platforms' attempts to stop these abuses have led to a Roadrunner meets Wile E. Coyote-like situation, where threat actors use increasingly sophisticated tactics to avoid evolving detection mechanisms. This has resulted in the development of new slang, like child predators referring to "cheese pizza" and other terms involving the letters c and p instead of pornography". "child New methodologies are employed, such as using link shorteners to hide a reference to a disinformation website: and online abuse tactics, such as the off-platform coordination of attacks on minorities.

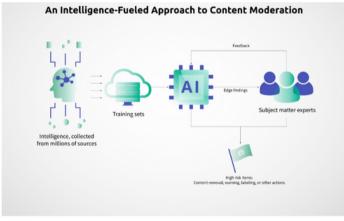
Traditional methods aren't enough

The basis of most harmful content detection methods is artificial intelligence (AI). This powerful technology relies on massive training sets to quickly identify violative behaviours at scale. Built on data sets of known online abuses in familiar languages means AI can detect known abuses in familiar languages, but it is less effective at detecting nuanced violations in languages it wasn't trained on - a gaping hole of which threat actors can take advantage.

While providing speed and scale, Al also lacks context: a critical component of trust and safety work. For example, robust Al models exist to detect nudity but few can discern whether that nudity is part of a renaissance painting or a pornographic image. Similarly, most models can't decipher whether the knife featured in a video is being used to promote a butcher's equipment or a violent attack. This lack of context may lead to over-moderating, limiting free speech on online platforms; or undermoderating, which is a risk to user safety.



Threat actors use increasingly sophisticated tactics to avoid evolving detection mechanisms for online abuses, Image: Statista



By bringing human-curated, multi-language, off-platform intelligence into learning sets, Al will then be able to detect nuanced, novel online abuses a

In contrast to AI, human moderators and subject-matter experts can detect nuanced online abuse and understand many languages and cultures. This precision, however, is limited by the analyst's specific area of expertise: a human moderator who is an expert in European white supremacy won't necessarily be able to recognize harmful content in India or misinformation narratives in Kenya. This limited focus means that for human moderators to be effective, they must be part of large, robust teams – a demanding effort for most technology companies. The human element should also not be ignored. The thousands of moderators tasked with keeping abhorrent content offline must witness it themselves, placing them at high risk of mental illness and traumatic disorders. Beyond care for moderators, this situation may limit the operation's effectiveness, as high churn and staffing instabilities lead to low organizational stability and inevitable moderation mistakes.

Source: https://www.weforum.org/agenda/2022/08/online-abuse-artificial-intelligence-human-input/













HEALDLINE NEWS IN A FLASH

GOOGLE RESEARCH AI IMAGE NOISE REDUCTION IS OUT OF THIS WORLD

If you have great lighting, a good photographer can take decent photos even with the crappiest camera imaginable. In low light, though, all bets are off. But then Google Research came along, releasing an open source project it calls MultiNerf, and I get the sense that we're at the precipice of everything changing. The algorithms run on raw image data and adds AI magic to figure out what footage "should have" looked like without the distinct video noise generated by imaging sensors. At the moment this is research rather than a commercially available product, but as a photography and AI nerd, I'm wildly excited by these developments; the lines are blurring between photography and computer graphics, and I'm here for it. Computational photography is already present in all modern smartphones to some degree, and it's a question of time before algos like this are fully integrated as well.

Source: TechCrunch

HOW ARTIFICIAL INTELLIGENCE HELPS FIGHT CLIMATE CHANGE

A new report by an international body into Ecological Footprint Initiative, Planet Alliance in collaboration with Boston Consulting Group (BCG) and BCG GAMMA, on artificial intelligence, Al, has revealed that it can help address issues of climate change. The report is titled: 'How Al Can Be a Powerful Tool in the Fight against Climate Change.' The report says that 87 per ce of public and private sector leaders who oversee climate and Al topics believe that Al is a valuable asset in the fight against climate change. Managing director and partner at BCG and BCG GAMMA, Mr. Hamid Maher, said based on survey results from over 1,000 executives with decision-making authority on Al or climate-change initiatives, it finds that roughly 40 percent of organizations can envision using Al for their own climate efforts. However, even among these experts, there is widespread agreement that significant barriers to broad adoption remain in place.

Source: Vanguardngr

THE EU'S AI ACT COULD HAVE A CHILLING EFFECT ON OPEN SOURCE EFFORTS, EXPERTS WARN

Proposed EU rules could limit the type of research that produces cutting-edge AI tools like GPT-3, experts warn in a new study. The nonpartisan think tank Brookings this week published a piece decrying the bloc's regulation of open source AI, arguing it would create legal liability for general-purpose AI systems while simultaneously undermining their development. Under the EU's draft AI Act, open source developers would have to adhere to guidelines for risk management, data governance, technical documentation and transparency, as well as standards of accuracy and cybersecurity. If a company were to deploy an open source AI system that led to some disastrous outcome, the author asserts, it's not inconceivable the company could attempt to deflect responsibility by suing the open source developers on which they built their product.

Source: TechCrunch

MOBILE PHOTO EDITING APP CREATOR LIGHTRICKS LAUNCHES TEXT-TO-IMAGE GENERATOR

Mobile photo editing app creator Lightricks is hopping on the Algenerated art bandwagon with its new "Text to Image" generator within its apps, including Photoleap, which is known for its photo editing capabilities, and Motionleap, an app that can animate a still photo to make it look like it's in motion. As of today, users can now create Algenerated images via text prompts to share with their friends and social media followers. The new feature is the latest AI development for Lightricks, whose flagship Facetune app is used by many Instagram models to retouch their selfies and alter waistlines. The Israel-based startup is known for leveraging artificial intelligence technology to power a range of creative expression tools. Its other products include apps like Videoleap, Filtertune, Beatleap, Artleap, Lightleap and Boosted.

Source: TechCrunch

THIS AI-POWERED SPEECH TRANSCRIPTION TOOL MAKES RETAINING INFO EASIER

They say knowledge is power, and you only derive knowledge from information. Sounds obvious, right? But think of the ways you gather information: by reading and listening. It's one thing to have information presented to you, but it's another entirely to ensure you're retaining that information. Sometimes, you need to be able to reference it again to really get it to stick. That's why an audio-to-text transcriber can be such a useful tool for any entrepreneur. Voicetapp is an Al-enhanced transcriber that delivers up to 99 percent accuracy in just three easy steps. This intuitive tool uses automatic speech recognition (ASR) powered by Amazon Web Services and Google Cloud Platform, allowing it to cover more than 170 international languages and accents from recorded audio and 12 languages for live transcription.

Source: Entrepreneur

LILY AI LANDS NEW CAPITAL TO HELP RETAILERS MATCH CUSTOMERS WITH PRODUCTS

During the pandemic, retailers were forced to embrace e-commerce. But some found that they struggled to maintain customer loyalty as consumer expectations changed and purchasing patterns shifted. As a result of formidable competition like Amazon, they discovered, customers have low patience for sites that don't present them with what they want. According to research from the Baymard Institute, for every 100 potential customers, 70 will leave without purchasing. That's why Purva Gupta launched Lily AI, an AI-powered platform that connects a retailer's or brand's shoppers with products they might be looking to buy. Co-founded by Sowmiya Narayanan, Lily provides algorithms designed to power web store components like search engines and product discovery carousels. Lily today announced that it raised \$25 million in a Series B funding round led by Canaan, bringing its total raised to \$41 million.

Source: TechCrunch

Image Credit: McKinsey Technology Trends Outlook 2022

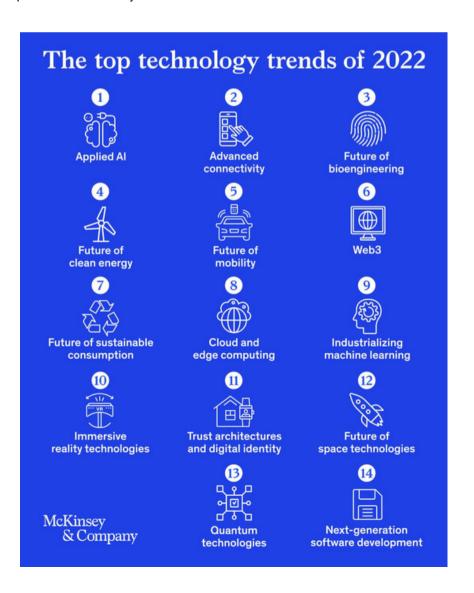
Which technology trends matter most for companies in 2022? New analysis by the McKinsey Technology Council highlights the development, possible uses, and industry effects of advanced technologies.

Technology continues to be a primary catalyst for change in the world. Technology advances give businesses, governments, social-sector institutions more possibilities to lift their productivity, invent and reinvent offerings, and contribute to humanity's well-being. And while it remains difficult to predict how technology trends will play out, executives can plan ahead better by tracking the development of new technologies, anticipating how companies might use them, and understanding the factors that affect innovation and adoption.

To that end, we have worked with the external and internal experts on the McKinsey Technology Council to identify and interpret 14 of the most significant technology trends unfolding today. This study builds on the trend research we shared last year, adding fresh data and deeper analysis to provide a more granular assessment of trends in two thematic groups: Silicon Age, which encompasses digital and IT technologies, and Engineering Tomorrow,

which encompasses physical technologies in domains such as energy and mobility. Our analysis examines such tangible factors as investment, research activity, and news coverage to gauge the momentum of each trend. We also conducted dozens of interviews and performed hundreds of hours of research to learn which industries are apt to benefit most as they absorb these technologies. And, recognizing that trends can shift, we examined the uncertainties and questions that surround each of them.

You can <u>download detailed profiles</u> of all these trends or download a customized PDF containing profiles of the trends you choose.

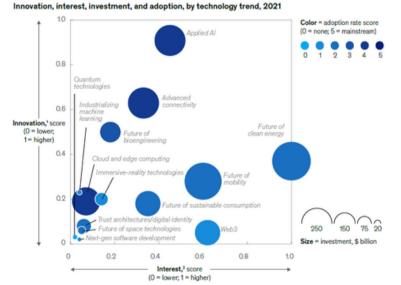


New dynamics

First, several trends that are based on proven and mature technologies—namely applied AI, advanced connectivity, future of bioengineering, and cloud and edge computing-score more highly on quantitative measures of innovation, interest, and investment than trends based on technologies that are still in the early stages of development. These trends also tend to have viable applications in more industries, which places them closer to a state of mainstream adoption than other trends (Exhibit 1). The next noteworthy group consists of trends that are closely aligned with sustainability priorities. These trends—which we call future of clean energy, future of sustainable consumption, and future of mobility-display increasing levels of innovation, interest, and investment. Indeed, of all the 14 trends we studied, the clean-energy and mobility trends attracted the most investment. They have also emerged as significant across multiple industries. Outside the first two major categories, newer and less-proven digital tools power a set of emerging trends: industrializing machine learning, immersive-reality technologies, trust architectures and digital identity, next-generation software development, and quantum technologies. These trends could have major benefits for businesses. For example, industrializing machine learning (ML) can shorten the production time frame for ML applications by 90 percent. But much work must be done to develop, refine, and commercialize the

Exhibit 1

Applied AI recorded the highest innovation score of all 14 trends, while clean energy drew the most interest and investment.



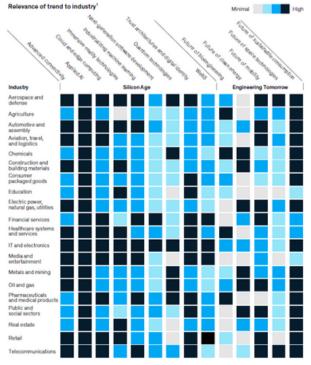
Note: Innovation and interest scores for the 14 trends are relative to one another. All 14 trends exhibit high levels of innovation and interest compared with other topics and are also attracting significant investment (\$0 billion minimum in 2001).

The innovation score combines the OF is score to presents and research, which are relative to the trends studied. The patents score is based on a measure of patent fillings, and the releast his score is based on a measure of patent fillings, and the releast his score is based on a measure of releast his patents. The trends studied. The news score is based on a measure of news publications, and the searches score is based on a measure of news translation and the searches score is based on a measure of news.

technologies that underpin these trends. As a result, it's unclear how long it will take for these trends to be adopted in multiple sectors, let alone to realize the potential seen by proponents. Despite the uncertainty of these newer trends, it's apparent that industries are broadly exposed to changes resulting from technological innovation and the diffusion of new technology-enabled business practices. When we looked at how frequently news reports mentioned companies in 20 sectors alongside different trends, we found that most of these sectors display a meaningful association with five or more trends. The mature and sustainability focused trends described above exhibit a close connection with multiple industries. Several nascent trends also show a moderately close connection with many industries. Overall, we see that coverage connects the press automotive. manufacturing, telecommunications, and technology sectors closely to at least one trend and moderately to several others (Exhibit 2). We plan to explore the effects that technology trends are having, and could have, on sectors in more depth over the coming months. (For more about how we performed this work, please see the sidebar "Research methodology.")

Exhibit 2

Most industry sectors display a meaningful association with five or more technology trends.



Nelevance estimated qualitatively by industry experts based on trend's potential to affect an industry, degree of relevance is scaled at both trend and industry level

Looking ahead

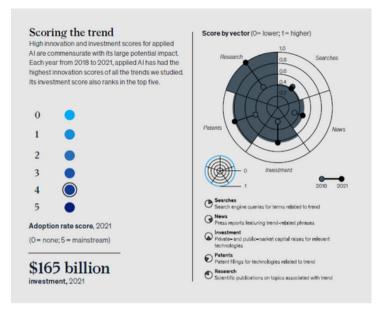
We expect changes like these will accelerate and intensify in the years to come, much as they have during the roughly three decades since the start of the internet revolution. The changes will not only alter the competitive landscape but also exert evermore powerful effects on society: reshaping markets, boosting productivity, spurring economic growth, and enhancing lives and livelihoods. When we look at these trends, what impresses us more than anything else is the massive effect that technology will have on every sector. The next few decades promise to be a time in which technologies progress ever-more quickly from science to engineering to impact-at scale, and around the world. We also expect to see the multiplying effect of "combinatorial innovation," as different technologies come together in creative ways. For example, this is happening now as organizations combine different technologies to create the metaverse and the many layers that make it up. Informed by our colleagues and the members of the McKinsey Technology Council, we intend to publish more about the effects of technology trends on particular industries, about the efforts of companies to tap into technology trends, and about the ways that business leaders can manage the implications of technology trends for their strategies, operations, and talent. We invite you to join us in understanding how technology trends evolve and influence the world, and we invite you to share your feedback with us at: techforexecs@mckinsey.com.

Trend summaries: Silicon Age

Applied Al

The trend—and why it matters - With AI capabilities, such as machine learning (ML), computer vision, and natural-language processing, companies in all industries can use data and derive insights to automate activities, add or augment capabilities, and make better decisions. In a 2021 McKinsey Global Survey on the state of AI, 56 percent of respondents said their organizations had adopted AI, up from 50 percent in the 2020 survey. The 2021 survey also indicated that adopting AI can have financial benefits: 27 percent of respondents attributed 5 percent or more of their companies' EBIT to AI. Companies are developing and adopting more applications for AI, but organizational, technical, ethical, and regulatory issues must be resolved before businesses can realize the technology's full potential.

Industry relevance - Al applications continue to emerge across industries and business functions. The technology industry leads in Al adoption. Among business functions, product development and service operations have generally seen the most benefits from applied Al.



Key uncertainties and big questions

The development and use of new AI applications could be affected by the availability of resources, such as talent and funding, despite technical advances in solutions for industrializing ML and in IT infrastructure. Cybersecurity concerns, notably those related to data risks and vulnerabilities, could slow the uptake of Al-55 percent of respondents to the 2021 McKinsey Global Survey on the state of AI cite cybersecurity as a leading risk. Companies may also face questions from stakeholders about the responsible, trustworthy use of Al, touching on such issues as data governance, equity, fairness, and "explainability." Those questions may prompt policy makers to establish regulations and compliance requirements that affect AI research and applications. For companies, addressing such issues could mean building more features into their Al applications and risk putting management mechanisms in place.please see the sidebar "Research methodology.")

Source: McKinsey Technology Trends Outlook 2022

06

SEPTEMBER 2022 | ISSUE 84





#1: DIGITAL TRANSFORMATION #1: ARTIFICIAL INTELLIGENCE #1: PREDICTIVE ANALYTICS









SINGAPORE | MALAYSIA | AHMEDABAD | USA

LIVE WEBINAR

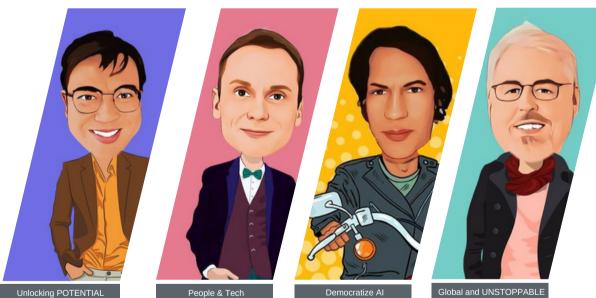
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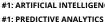
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#1: DIGITAL TRANSFORMATION #1: ARTIFICIAL INTELLIGENCE













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