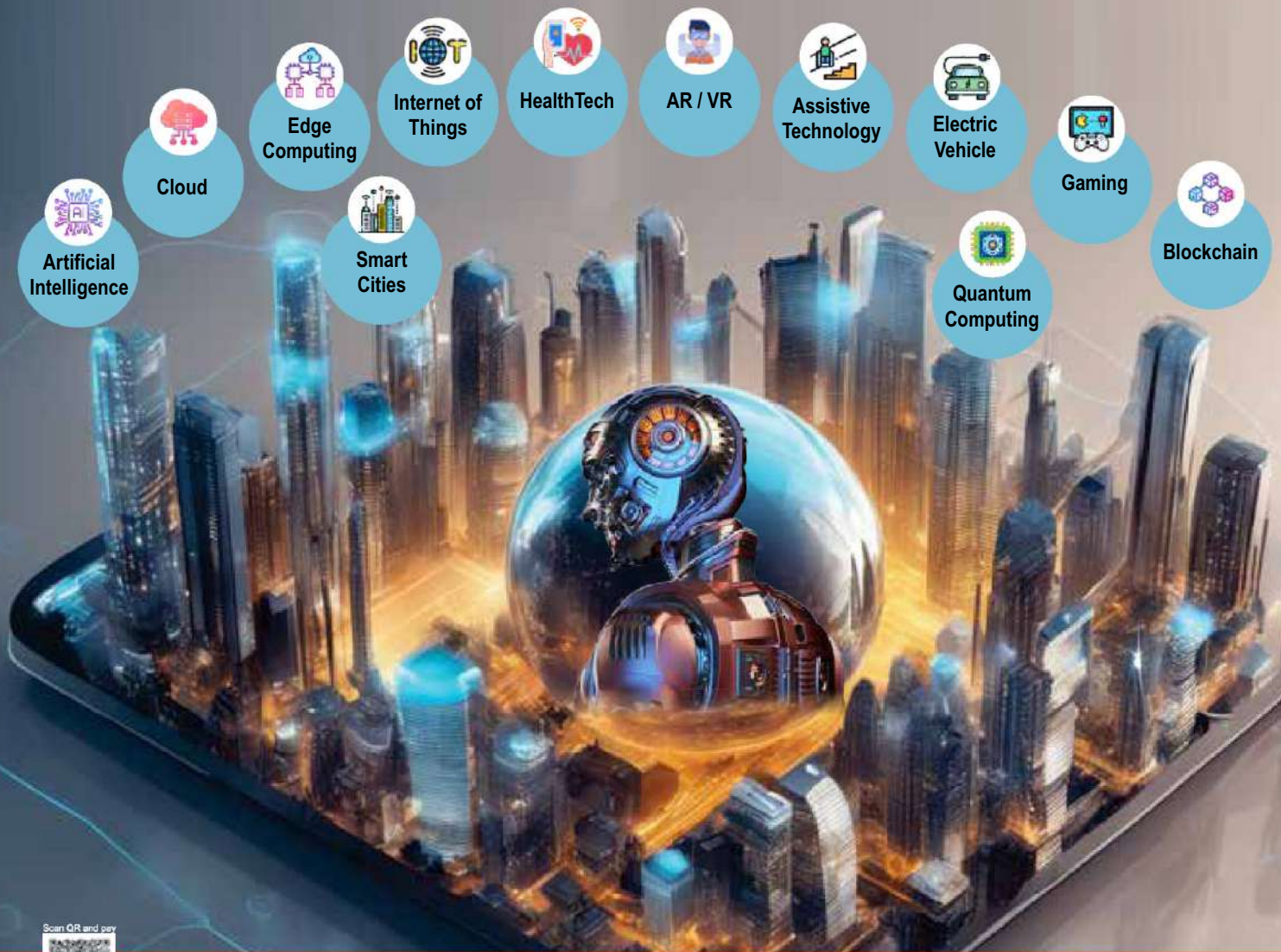# PCQUEST

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EXPLORE

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COVER STORY
ARTIFICIAL INTELLIGENCE

Are you ready for a new workforce?

EXPLORE

Sunil Rajguru
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10 tech we'd like to see flourish in 2024

Technologies like the cloud are already ubiquitous. During the pandemic ecommerce and HealthTech really took off. 5G has been implemented in India. When it comes to GenAI, all the top companies of the world are working at breakneck speed. ChatGPT has been around for more than a year.

Here are ten other technologies we'd like to see flourish in 2024:

AgriTech: While this received a fillip in the pandemic, we still have a long way to go. India has a huge pool of farmers. They need all the help they can get to minimize their efforts and maximize their profits.

Assistive Tech: According to WHO estimates, 1.3 billion people experience "significant disability". Any of us may become temporarily disabled and we all will become senior citizens. We need to integrate Assistive Tech into the very fabric of technology.

3D printing: This has made great strides and can do almost anything, but it remains way under its potential. 3D printers are yet to become common household items. Once that happens, we will enter the next stage.

Sustainability tech: If we have to bring true sustainability and build a circular economy, then the only solutions can come from technology (not from politics and activism).

VR headsets: Before the Metaverse takes off, VR headsets have to become popular. That way the world will watch with interest the launch of the Apple Vision Pro. They kicked off the MP3 player and smartphone markets. Can they do the same here?

Drones: While drones also took off during the pandemic and were used for a variety of things, they can be used in almost every profession and situation. It's a welcome move that India has a national drone policy to increase their penetration.

Robots: Robots of all sizes and shapes are a hit in the factory and repetitive industry applications. They are now ready to come into the home in a big way. We just have to overcome the uncanny valley. They can really help with housework and senior citizens.

Quantum computing: We keep inching closer to the era of quantum, but we are not there yet. It is imperative for Indian to catch up with the quantum supremacy efforts of both the US and China.

Blockchain: The most widely used application continues to be cryptocurrency. But blockchain is much more than that and can bring transparency to banks, government and supply chains. Blockchain-as-a-Service is a right step in that direction.

Genomics: This is a great tech to give personalized medicine to each and every Indian. Risk predictions will be quite handy, and it even has applications in agriculture.

Sunil Rajguru

> It's not just about Gen AI

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Are you ready for a new workforce?

Ashok Pandey
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The fast-evolving landscape of Artificial Intelligence (AI) is set to undergo significant changes in 2024. A multitude of factors, ranging from AI democratization and global collaboration to workplace integration and the transformative potential of Generative AI, are poised to shape the technological trajectory

As we stand on the precipice of a new era, the role of Artificial Intelligence (AI) in the workplace is poised to undergo a metamorphosis, redefining how businesses operate, innovate, and engage with their workforce. Over the next 2-3 years, AI is set to become an integral component, profoundly influencing creativity, problem-solving, and innovation.

As we anticipate the unfolding of 2024, the trajectory of AI's role in the workforce becomes a compelling narrative, marked by adaptability, coding advancements, talent acquisition revolution, enterprise imperative, diversity cultivation, business model disruption, and the promising horizon of augmented intelligence.

AI's Adaptability to Diverse Workplace Personalities

The intrigue surrounding AI's adaptability to diverse workplace personalities is palpable. Its role in changing employee engagement, aiding administration, ensuring security, and adapting to dynamic work environments is a testament to its versatility. The next 2-3 years will witness AI evolving as a cornerstone of the workplace, reshaping how individuals interact with their tasks and each other. This adaptability promises not only increased efficiency but also a profound impact on the very fabric of workplace dynamics.

AMITKUMAR SHRIVASTAVA, Head AI, Fujitsu India, Fujitsu Fellow & Global Fujitsu Distinguished Engineer

"In 2024, the landscape of Artificial Intelligence is poised to undergo significant evolution, marked by increased competition in the development and enhancement of foundation models and multimodal systems for Generative AI and other applications. These advanced technologies, coupled with the expansion of APIs and tools, present businesses and users with a myriad of new and diverse options. This trend indicates a noteworthy surge in the adoption of AI technologies, signaling a shift in how enterprises and individuals engage with and leverage AI."

▼ AI Coding Assistants: The Accelerators of Development

In the realm of development, the rise of AI coding assistants, particularly Large Language Models (LLMs), is nothing short of revolutionary. The McKinsey study's findings underscore the dramatic acceleration in development time, with LLMs assisting developers in writing, documenting, and optimizing code. In 2024, these coding assistants are on the brink of becoming central to a company's development workflow, promising to augment the capabilities of development teams, unlocking new potential in code creation and optimization.

VARUN GOSWAMI, Head of Product Management, Newgen Software

"In 2023, significant technological advancements, particularly in the field of AI, marked the emergence of a catalyst for numerous new ventures and ideas. The ascent of this technology is anticipated to generate trillions of dollars in revenues by 2030."

SARVAGYA MISHRA, Co-founder & Director of SuperBot

"AI integration in the workplace is designed to enhance human capabilities by complementing and amplifying their existing skills, rather than replacing them. The goal is to streamline operations, offer valuable insights, and facilitate improved decision-making processes. This collaborative approach ensures the automation of mundane tasks, allowing individuals to concentrate on strategic thinking, problem-solving, and creativity. The intelligent, AI-powered, SaaS-based solution serves as an exemplification of this ideology. It acts as a conduit, bridging communication gaps within organizations. These solutions are engineered specifically to facilitate seamless interactions between entities, optimizing workflow efficiency and fostering a cohesive environment where AI enhances human potential."

SEKHAR GARISA,
CEO, foundit

▼ **Reshaping Talent Acquisition with Human Intuition and Machine Intelligence**

The fusion of human intuition and machine intelligence heralds a new dawn in talent acquisition. AI and Machine Learning inject creativity into the process, offering smart insights to identify the right talent. This amalgamation of human and smart tech opens doors to unexpected discoveries, creating a future where innovation is a collaborative effort between humans and machines. The synergy between human intuition and machine capabilities is set to redefine how organizations

"Blending human understanding with AI has revolutionized talent acquisition in recruitment. Instead of relying on outdated, rule-based methods, our focus is on identifying candidates through valuable insights. Context is paramount– it enables recruiters to pinpoint exceptional candidates and aids job seekers in finding the perfect match.

The fusion of human intuition and machine intelligence transforms the approach to sourcing, evaluating, and engaging candidates. It transcends the conventional concept of a mere 'fit'; it's a personalized approach that genuinely connects with individuals and companies. AI and Machine Learning go beyond making searches relevant; they inject creativity by providing intelligent insights to discover the right talent. This not only opens doors to unexpected discoveries but also shapes a future where humans and smart tech collaborate to propel new ideas and innovation."

LOKESH NIGAM,
Co-founder and Director, Kognoz

"Looking ahead to 2024, I envision AI having a critical role in talent acquisition, providing as more than just a technology asset for expediting and reducing hiring costs. It will also help to improve the general quality and diversity of the talent pool. The following year is likely to be a life-changing experience, as our capacity to integrate human expertise with Artificial Intelligence will allow us to construct teams with unrivalled accomplishment."

source, evaluate, and engage with candidates.

Explainable AI acts as a crucial bridge between humans and algorithms. By integrating Machine Learning (ML) and Natural Language Processing (NLP) and training algorithms on well-established datasets, there is a substantial

AASTHA SHARMA,
Co-Founder & Chief Evangelist, Veris

"As someone deeply entrenched in the world of workplaces, I continue to witness the evolving employee expectations and the potential impact of AI. It's abundantly clear that productivity hinges on two fundamental factors: The satisfaction of needs and the absence of distractions. AI, with its pattern recognition prowess, plays a pivotal role in addressing both. It anticipates and fulfills needs seamlessly–from expediting check-ins to reserving preferred workspaces and intelligently scheduling meetings based on calendars. Additionally, AI diligently tackles the distraction menace by automating routine tasks, liberating employees to focus on high-impact initiatives. The result? A workforce that thrives on productivity, harnessed and amplified by AI."

RANGA KANAPATHY, the Chief Transformation Officer & Chief delivery officer at APAC Business, Altimetrik

"AI in the workplace holds the potential to revolutionize and foster a more diverse, ethical, and inclusive culture. We find ourselves in the midst of a significant digital evolution where AI, if strategically and effectively implemented, can greatly enhance our collective capabilities and drive increased efficiency. The fact that 72% of employees in India are actively engaged with AI serves as a clear indicator of the direction in which we are heading.

Explainable AI acts as a crucial bridge between humans and algorithms. By integrating Machine Learning (ML) and Natural Language Processing (NLP) and training algorithms on well-established datasets, there is a substantial opportunity to automate routine workflows. Large Language Models (LLMs) play a pivotal role in this landscape, revolutionizing the management of unstructured datasets and streamlining data-related tasks. This includes improving search functionalities, facilitating exploration, and enhancing advanced analytics. Looking ahead to 2024, these models are on the cusp of significant growth, promising to foster operational efficiency through enhanced data management and analysis."

TARUN DUA, CEO, E2E Networks Ltd.

"This year, we have seen a number of extremely powerful open source LLMs (Large Language Models) emerge, such as Llama2, Falcon, Mistral, StarCoder and others. One of the most important use-cases that have emerged is their role as coding assistants to developers. These LLMs can help speed up development time dramatically by assisting developers in writing code, documenting it, refactoring code, unearthing bugs and more. In fact, a McKinsey study recently found that AI coding assistants can help developers write and document their code in nearly half the time, and optimize existing code in two-thirds the time. Furthermore, when these LLMs are self-hosted, companies do not have to worry about leaking sensitive IP to proprietary platforms. In the near future, they are poised to become a central piece in a company's development workflow, and will massively augment the capabilities of their development teams."

SRIVIDYA KANNAN, Founder and Director, Avaali Solutions

"Artificial Intelligence (AI) has been making waves in the workplace by enhancing human capabilities instead of entirely replacing them. However, using AI in the workplace requires a cautious approach to balance machine intelligence and human intuition. Although machines can process data quickly and accurately, they lack judgment, empathy, and contextual decision-making. On the other hand, human employees can provide valuable knowledge, insight, and creativity, which AI cannot replicate. The ideal scenario would be when these two factors work together to achieve greater efficiency and produce better results."

NAJMUL HOQUE,
Business & Strategy Head, WorkElevate (AI-Powered DEX Platform)

"In the ongoing evolution of the workplace, AI emerges not merely as a tool but as a transformative partner, augmenting human capabilities. Initially adopted by enterprises, we now observe a significant trend among SMBs embracing AI solutions for their workplaces. Going beyond the conventional scope of conversational AI chatbots, AI is reshaping support systems by proactively addressing issues before they surface. This new era is characterized by root cause analysis, problem detection, and a forward-thinking approach, where AI transcends being a technology to become a strategic enabler. Across organizations, both large and small, the exploration of AI solutions marks a collective shift towards an empowered and proactive workplace, where workforce potential is amplified, and innovation knows no bounds."

opportunity to automate routine workflows. Large Language Models (LLMs) play a pivotal role in this landscape, revolutionizing the management of unstructured datasets and streamlining data-related tasks. This includes improving search functionalities, facilitating exploration, and enhancing advanced analytics. Looking ahead to 2024, these models are on the cusp of significant growth, promising to foster operational efficiency through enhanced data management and analysis."

▼ Enterprise Imperative: Capitalizing on AI's Productivity Boost

Enterprises find themselves at a critical juncture, urged to act urgently to harness the benefits of AI. The potential for a significant productivity boost and a transformative impact on the future of work looms large. The key focus area for enterprises in the coming years will be the reskilling of their existing workforce to fully leverage the potential of AI. In this endeavor, India emerges as a front-runner, capitalizing on its strong local economy and the ability to cultivate a large pool of talent across various industries.

▼ Cultivating Diversity, Ethics, and Inclusion with AI

The transformative power of AI in nurturing a more diverse, ethical, and inclusive workplace culture cannot be overstated. LLMs

emerge as pivotal players in revolutionizing the management of unstructured datasets, streamlining data tasks, and enhancing search, exploration, and advanced analytics. In 2024, these models are poised for remarkable growth, promising operational efficiency through effective data management and analysis.

▼ Disrupting Business Models: Cost Savings and New Revenue Streams

AI's significant role in disrupting traditional business models is a double-edged sword, offering both cost-saving opportunities and the potential for new revenue streams. Generative AI takes center stage, ushering in entirely novel business models that harness advanced technologies. The demand for frugal spending habits and sustainable business practices

SARAVANAN THANGAVELU,
Senior Vice President – Enterprise IT, HGS

"AI's adaptability to diverse workplace personalities and its role in changing employee engagement, aiding administration, ensuring security, and adapting to dynamic work environments will be intriguing to observe. Within the next 2-3 years, AI will evolve as an integral workplace component akin to standard IT infrastructure. This amalgamation not only optimizes productivity but profoundly impacts creativity, problem-solving, and innovation."

intensifies, driving a need for increased transparency and accountability regarding carbon emissions and the broader environmental footprint.

▼ Augmented Intelligence: The Future Order

The fusion of human and AI capabilities, termed Augmented Intelligence, is heralded as the future order. Companies are urged to embrace AI and incorporate it into their workplace to unlock immense potential for individual and organizational success. The partnership between AI and humans promises to create more meaningful and satisfying jobs, reshaping the future workplace into a collaborative ecosystem where both entities complement each other seamlessly.

▼ Conclusion

As we navigate the transformative journey of AI in the workplace, these key insights unveil a future that is both promising and nuanced. From its adaptability and coding assistance to reshaping talent acquisition, fostering inclusivity, disrupting business models, and paving the way for augmented intelligence, AI's influence is far-reaching. Navigating this landscape requires a strategic approach, emphasizing ethical governance, regulatory attention, and the collaborative partnership between humans and AI. The years ahead stand as a testament to the continuous evolution of AI, shaping not just how it is integrated into workplaces, but how it fundamentally transforms the nature of work itself. ■

CHANDER DAMODARAN, Global Chief Technology Officer, Brillio

"In the ever-evolving business landscape, organizations need to navigate the edge of disruption and innovate ceaselessly to maintain a leading position. As we enter 2024, a new wave of innovative business models is ready to redefine the corporate environment. AI will be a key player in disrupting conventional business models, providing avenues for cost savings and opening doors to potential revenue streams. The technology sector is moving beyond just integrating AI predictions; it is now making AI the central component of its products."

BALAMALAI RANGANATHAN MURUGESAN, Head, HR & Payroll Product Strategy and Enablement, Ramco Systems

"Automation doesn't replace jobs; it empowers us to be smarter. Just as a dishwasher added more houses to our maid's client list, Artificial Intelligence at the workplace doesn't make anyone jobless; it makes them smarter. Let co-pilots handle syntax, let AI answer repetitive queries, let it craft flawless user manuals. Your face or voice can be the most secure password, so trust AI and be the boss in managing it. Spend energy regulating AI, not worrying about it. Enable your workforce to reach the next level, invest confidently, and get more for less!"

SUMEET DOSHI, Country Manager, UKG India

"2023 will go down in history as the year that witnessed an unprecedented era of innovation, with industries and economies alike, readjusting their structures to accommodate the advancements in Artificial Intelligence. Moreover, AI's prowess in predictive analytics has revolutionized decision-making. It processes historical data, market trends, and consumer behavior to forecast future patterns. This predictive ability empowers leaders to make informed choices, anticipate challenges, and craft proactive strategies."

From black boxes to collaborative decision-making

Ashok Pandey
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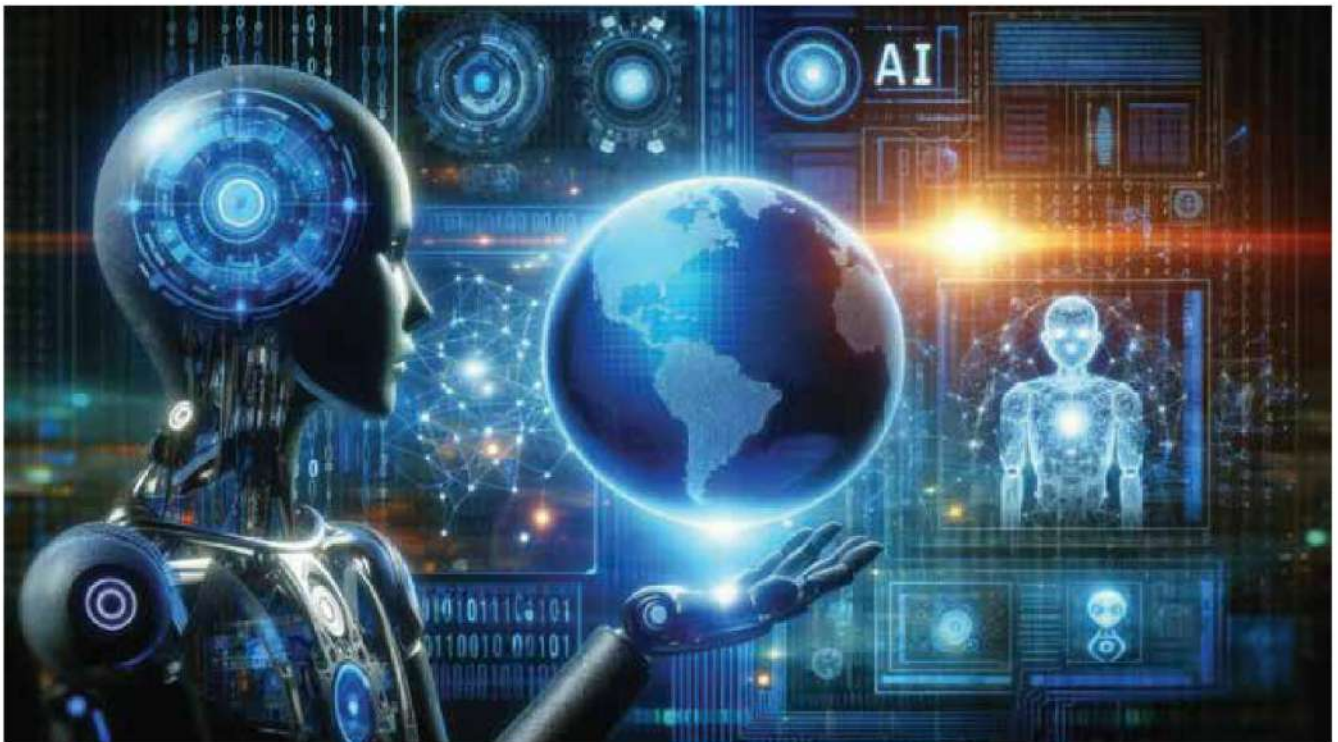
AI is reshaping the world in 2024, democratizing access, fostering international collaboration, enhancing human capabilities, and addressing critical global challenges. The spotlight is on Explainable AI as an ethical imperative, ensuring transparency and trust in AI decision-making

The relentless progression of Artificial Intelligence (AI) is poised to redefine our world in unprecedented ways. As we embark on the journey into 2024, a transformative landscape is emerging, shaped by pivotal trends that transcend industries and impact the very fabric of our societies. From the democratization of AI technologies to the rise of Explainable AI (XAI), the future promises an intricate dance between human intuition and machine precision.

▼ Democratization of AI Technologies

The democratization of AI stands as a beacon illuminating the path towards a more inclusive technological landscape. In

the not-so-distant past, advanced AI capabilities were confined to the domains of large enterprises, leaving smaller businesses and individuals yearning for accessibility. However, the tides are turning. Startups, armed with innovation, are demystifying the complexity of AI. APIs and open-source tools are becoming catalysts for change, and the evolution of cloud computing is rendering AI more affordable and scalable.

This democratization transcends mere accessibility; it heralds an era where cutting-edge AI becomes a mainstream tool for a diverse array of entities. Use cases once deemed implausible for most organizations are now within reach, ushering in a new era of AI integration into workplaces and daily life. The transformative potential of AI is no longer reserved for the elite few but is a democratic force reshaping industries, leveling the playing field, and fostering innovation.

▼ International Collaboration and Governance

As AI transcends borders and infiltrates every aspect of our lives, the need for international collaboration and governance becomes paramount. The landscape of 2024 is marked by a concerted effort towards multi-stakeholder cooperation on AI issues. Governments, industries, and civil societies are forging partnerships to navigate the complex terrain of AI policy matters.

Global events like the GPAI summit in India are testaments to the collective desire to actively engage in shaping the trajectory of AI. This collaborative spirit extends beyond regional confines, aiming to regulate new technologies, implement job reskilling programs, address biases and fairness, and thwart potential malicious uses like deepfakes. The establishment of global standards and best practices ensures that the diffusion of AI worldwide is tempered by accountability and trust, striking a delicate balance between innovation and oversight.

▼ Augmenting Human Capabilities

AI, far from being a replacement for human

SRINIVASA BHARATHY,
CEO & MD,
Adrenalin eSystems

"Explainability empowers users to trust AI systems, enabling a collaborative relationship between human intuition and machine precision. This also ensures human oversight and course correction in case of AI biases. This synergy transforms AI into a tool that augments human capabilities. The quest for explainable AI is not just a technical challenge, it is a testament to the seamless integration of artificial and human intelligence."

ingenuity, is emerging as a strategic partner in enhancing human capabilities. In the fabric of 2024, the narrative of human-AI collaboration and augmentation takes center stage. Generative AI and language models are donning the role of digital assistants, automating mundane tasks, unraveling valuable insights, and empowering more efficient, informed, and creative decision-making.

Industries across the spectrum, from healthcare to education and transportation, are witnessing the transformative power of AI in streamlining workflows. By entrusting AI with data-related tasks, employees are liberated to focus on higher-level strategic roles. The symbiotic relationship between humans and machines is not just a theoretical concept but a tangible reality reshaping the landscape of productivity and outcomes.

▼ Advances in Critical Areas

The canvas of 2024 paints a picture of AI as a formidable force addressing global challenges with unprecedented efficacy. In healthcare, AI is becoming the linchpin in drug discovery, precise diagnoses, and the delivery of personalized treatment plans. The realm of sustainability is witnessing the integration of machine learning to monitor environmental changes and devise innovative solutions for mitigating climate change risks.

Cybersecurity, in the face of evolving threats, is benefiting from AI's ability to dynamically identify anomalies, predict attacks, and fortify

defenses. Beyond these critical domains, AI's footprint extends to manufacturing, transportation, education, and creative industries, introducing groundbreaking forms that redefine user experiences and push the boundaries of what was once deemed possible. The advent of AI hardware, including quantum computing, further amplifies the potential of these technologies.

▼ The Rise of Explainable AI

While the surge of AI brings forth remarkable possibilities, it is not without its challenges. The opaque nature of complex AI models, often likened to "black boxes," raises ethical concerns around fairness, trustworthiness, and accountability. It is here that the field of Explainable AI (XAI) steps into the spotlight, poised to bridge the gap between humans and algorithms.

Explainable AI is not just a technical solution but a profound ethical imperative. As AI infiltrates domains like healthcare, justice, and civic life, the ability to understand the rationale behind AI decisions becomes non-negotiable. XAI, with its arsenal of techniques such as LIME and counterfactual reasoning, seeks to demystify the decision-making process, offering transparency into how AI models analyze data and arrive at specific outcomes.

▼ XAI in Action

In the educational sector, the prowess of XAI shines through the capabilities of SuperBot. Automating 95% of potential counseling queries, SuperBot transforms interactions within the educational ecosystem. Students, educational staff, and prospective applicants find themselves empowered by the transparency offered by XAI. It's not just about automating processes; it's about instilling confidence and comprehension in AI-driven endeavors, fostering a collaborative and informed educational environment.

The integration of XAI goes beyond education, extending its influence into the realm of security. The revolution brought about by AI-powered surveillance systems is undeniable. Video analysis, facial recognition, and access

GIRISH DEV,
Head - Artificial Intelligence & Digital Transformation (AI & DT), Commtel

"The inability for humans to understand how Machine Learning models arrive at outputs is often referred to as the "black box" problem of AI. Opening this black box to restore trust, accountability and addressing ethical concerns is the focus of the field of explainable AI (XAI). XAI aims to make AI decisions understandable to humans, bridging the gap between complex algorithms and their users. Moreover, regulations like the GDPR solidify the right to explanation, rendering explainable AI both an ethical and legal requisite."

control have reached unprecedented levels of efficiency. However, the ethical dilemmas arising from potential biases, especially related to gender and race, necessitate the intervention of XAI.

Explainable AI acts as a vigilant overseer, flagging anomalous outputs for human review, ensuring that AI augments security tools rather than supplanting human decision-making in critical situations. Transparency in AI-led decision-making becomes not just a nicety but a moral imperative, guarding against misidentifications and unfair targeting.

▼ The Philosophical Pursuit of AI Transparency:

In the words of Pedro Domingos, a renowned computer scientist, the essence of AI lies in turning data into information and information into insight. This pursuit extends beyond the technical realm; it delves into the philosophical dimensions of transparency. As AI becomes an integral decision-maker in various aspects of our lives, understanding the 'why' behind its choices becomes a shared language between humans and algorithms.

Explainable AI, therefore, is not a mere technical challenge but a testament to the seamless integration of artificial and human intelligence. It acts as a bridge, translating complex model reasoning into simulatable logic and human terms. This bridge is not just about deciphering the internal logic of

KARUNYA SAMPATH,
Co-founder & CEO,
Payoda Technologies

"With AI already making instrumental decisions for businesses across segments, Explainable AI is filling the persisting gap by making us informed about the decisions reached, thereby bringing in better oversight, more clarity and ethical adherence. The ever-evolving AI era brings with it the challenge of ensuring fairness in AI algorithms, especially in the context of evolving or diverse societal scenarios. As a matter of fact, even before Explainable AI became a buzzword, we have asserted the need to curate as well as pre-process data to eradicate instances like gender, racial or other biases."

deep neural networks but about fostering a collaborative relationship. By providing contextual recommendations and nuanced understanding, XAI becomes the cornerstone of trust-building.

▼ Ethical Imperatives and Business Value

As businesses delve deeper into the realms of AI, the imperative for transparency becomes a strategic necessity. The ethical considerations surrounding AI are not just about building user trust; they are about navigating regulatory landscapes and driving business value. In an era where AI decisions have far-reaching consequences, understanding the intricate workings of complex algorithms is the linchpin for fair and accurate outcomes.

▼ Conclusion

The landscape of AI in 2024 is characterized by a symphony of advancements and ethical imperatives. The democratization of AI brings its transformative power to the masses, reshaping industries and fostering innovation. International collaboration and governance pave the way for responsible AI expansion, balancing innovation with oversight. The augmentation of human capabilities through AI collaboration is no longer a futuristic vision but a tangible reality.

In this dynamic landscape, Explainable AI emerges as the ethical compass, navigating the intricate terrain of fairness, accountability, and transparency. As it bridges the gap between humans and algorithms, XAI becomes the cornerstone of trust, ensuring that AI decisions align with societal values. The collaboration between humans and machines is not just about precision; it's about a shared journey into an AI-driven future where decisions are not only accurate but also comprehensible and ethical. As we traverse this uncharted territory, the evolution of AI unfolds as a narrative of collaboration, transparency, and the responsible harnessing of technological prowess.

■

SRIRAM GOPALSWAMY,
VP -Site Reliability Engineering and MD, Sabre, Bengaluru

"When contemplating the AI landscape, it is truly remarkable to witness the swift pace at which innovations have surged. Advancements in the realm of AI would unfold every day. The recent developments and ongoing narrative surrounding AI, serves as a testament to this perpetual evolution. The past year alone has been a whirlwind of transformative events, sparking curiosity about the upcoming trends that will shape 2024. The OpenAI team's revelation of an AGI model stands as an immense milestone, propelling us beyond the boundaries of conventional AI and into a domain that has the potential to redefine not only the entire tech industry but also the future of humankind".

Navigating the connected future

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The journey through IoT, 5G, AI, and Robotics is not just about technological marvels—it's a testament to our capacity for innovation and adaptation. The convergence of these technologies paves the way for a connected future where sustainability, efficiency, and innovation intertwine to redefine how we live and work

I n the relentless march of technological progress, our journey through the interconnected realms of IoT, Industrial IoT, 5G-IoT synergy, and the integration of AI and Robotics is reshaping the very fabric of our existence. This technological odyssey is not just about gadgets and gizmos; it's about fundamentally altering how we live, work, and interact with the world.

CHIRAG BOONLIA,
Chief Technology Officer, Embassy Group

"Buildings contribute significantly to global energy consumption and CO2 emissions, with sustainability being a critical goal. The integration of IoTs in sustainable buildings revolutionizes energy efficiency and resource management. Through smart devices and sensors, buildings dynamically respond to environmental changes, optimizing energy consumption. In smart homes, IoT creates a connected ecosystem with features like remote-controlled thermostats, lighting, security cameras, and automated appliances. As the demand for IoT-driven living spaces grows, real estate integration is set to redefine our building and living experiences".

▼ IoT and Smart Homes: Transforming Living Spaces

The Internet of Things (IoT) has emerged as a beacon of transformation in the era of rapid technological advancement. Its impact on our daily lives is profound, nowhere more evident than in the realm of real estate and the creation of smart homes. These connected living spaces leverage IoT to redefine convenience, efficiency, and security.

Buildings, responsible for a significant chunk of global energy consumption and carbon emissions, are now undergoing a sustainability revolution. IoT's integration into sustainable buildings fosters advancements in energy efficiency and resource management. Imagine buildings dynamically responding to environmental conditions, adjusting heating and cooling systems based on real-time occupancy data—a leap toward a greener and more sustainable future.

In smart homes, the IoT plays a pivotal role in creating a seamlessly connected ecosystem. From smart thermostats and lighting systems to security cameras and automated appliances, these homes offer residents a truly connected living experience. As the demand for smart homes grows, the integration of IoT in real estate is poised to redefine how we conceptualize and inhabit our living spaces.

▼ Industrial IoT: Revolutionizing Manufacturing and Supply Chains

As we venture into Industry 4.0, the integration of Industrial Internet of Things (IIoT) with manufacturing and supply chains becomes a transformative force. Manufacturers are recognizing the need for cutting-edge technologies such as IIoT devices and robotics. At the forefront of this revolution is the commitment to innovation

RATNESH VERMA,
Founder and CEO, Pidge

"IoT, big data, and robotics promise efficiency in Indian logistics, but widespread adoption requires user-friendly, low-code tech. Pidge uses AI for order creation, routing, and allocation, simplifying complex processes with easy interfaces. In supply chains, IoT enhances sustainability and agility through real-time tracking, route optimization, and fleet management, minimizing fuel consumption and emissions. Industrial IoT's potential for a circular economy excites us, foreseeing a future of sustainable growth through smart, mindful technology."

and the synergy of sensors, robotics, and artificial intelligence.

IIoT devices are not merely connecting machines; they are elevating machine vision capabilities, monitoring inventory levels, and leveraging data analytics to optimize mass production processes. The backbone of this approach is seen in companies like Addverb, where interconnected ecosystems, driven by data-driven decisions and self-driving systems, propel production and supply chains to unprecedented levels of optimization and resilience.

In the supply chain arena, IoT technologies contribute to sustainable, responsive, and agile logistics. Real-time tracking, route optimization, and fleet management are no longer aspirations but realities, thanks to GPS trackers, telematics units, and sensors. This real-time data becomes a game-changer, enabling logistics managers to optimize routes, reduce fuel consumption, and minimize emissions.

The power of Industrial IoT in revolutionizing the supply chain is not just about efficiency—it's about creating a circular economy and ensuring sustainable growth with smart but mindful technology.

SARTHAK UPADHYAY,
Chief Manager Mobile Robotics, Addverb

"In Industry 4.0, the integration of IIoT in manufacturing and supply chains is a driving force for innovation. Addverb champions this synergy, using IIoT devices and robotics to elevate machine vision, monitor inventory, and optimize production processes. IIoT signifies a paradigm shift, enabling predictive maintenance and adaptive workflows. Addverb envisions a future of interconnected ecosystems, fueled by data-driven decisions and self-driving systems, transforming production and supply chains. Our commitment to innovation makes Industrial IoT the foundation for a dynamic, responsive, and flexible industrial ecosystem."

where the swift and seamless exchange of information becomes a catalyst for unparalleled innovation and operational efficiency.

The transformative alliance between 5G and IoT holds vast potential. From optimizing urban infrastructures to streamlining industrial operations through real-time data analytics, the convergence of these technologies propels us toward a future where devices communicate with unprecedented agility. This collaboration becomes the driving force for progress and innovation, empowering diverse domains to thrive in an intelligent, interconnected ecosystem.

▼ 5G and IoT Synergy: Shaping the Future of Connectivity

As we navigate the digital landscape, the collaboration between 5G and IoT stands as a pivotal force shaping the trajectory of connectivity. This partnership transcends sector boundaries, ushering in an era

CHANDRIKA BEHL,
Managing Director, Exhibitions India Group

"In the digital landscape, the collaboration of 5G and IoT is revolutionizing connectivity. This alliance, transcending sectors, enables swift information exchange for unparalleled innovation. By combining 5G's speed with IoT's network of devices, we create a connected world breaking traditional constraints. From optimizing urban infrastructures to real-time data analytics in industries, this synergy transforms how we navigate daily life. Our commitment is to pioneer a more responsive, adaptive, and interconnected world, where the seamless flow of information drives progress and innovation".

DR. SARVJEET HERALD,
Director – India, STEM Foundation

Robotics and AI serve as bridges to the future. From improving accessibility to customized care and monitoring systems in smart homes, we need to learn to balance autonomy and the human touch. Instead of reaching out to individuals for everything, AI learns personal preferences through algorithms, addressing specific needs and offering tailored support.

ANKU JAIN,
Managing Director, MediaTek India

"India's embrace of smart home technology marks a surge in demand for smart devices & solutions, fueled by the growing middle class and the rapid pace of urbanization. With interconnected devices and automated systems, smart homes seamlessly integrate technology into our lives, making it more convenient, efficient, and secure. According to IDC, the smart home market will grow in 2024 and continue through 2027 with device volumes reaching 1.1 billion shipments in 2027."

PROF ARYA KUMAR BHATTACHARYA,
Dean R&D, Mahindra University

"India's embrace of smart home technology marks a surge in demand for smart devices & solutions, fueled by the growing middle class and the rapid pace of urbanization. With interconnected devices and automated systems, smart homes seamlessly integrate technology into our lives, making it more convenient, efficient, and secure. According to IDC, the smart home market will grow in 2024 and continue through 2027 with device volumes reaching 1.1 billion shipments in 2027."

▾ AI and Robotics for Independent Living: A Glimpse into Tomorrow

In the grand tapestry of our technological odyssey, AI and Robotics emerge as the bridges to the future. From improving accessibility to customized care and monitoring systems to the concept of smart homes, the challenge lies in balancing autonomy and the human touch.

Rather than being intrusive, AI learns personal preferences through algorithms, addressing specific needs and offering tailored support. The future envisions a harmonious blend of AI and human interaction, where technology becomes an enabler for independent living.

▾ Navigating the Tech Odyssey

Our journey through IoT, Industrial IoT, 5G-IoT synergy, AI, and Robotics is not just a narrative of technological marvels; it's a testament to our capacity for innovation and adaptation. As these technologies converge, they pave the way for a connected future—one where sustainability, efficiency, and innovation intertwine to redefine how we live and work.

In navigating this tech odyssey, our responsibility lies not just in advancing technology but in doing so ethically and mindfully. As we sail into the future, let's chart a course that embraces progress, respects privacy, and ensures that the interconnected world we're building serves humanity at its core.

GenAI's artistic evolution and ethical frontiers

Ashok Pandey
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Generative design, fueled by AI models, transcends visualization tools, enabling designers to create myriad variations through nuanced prompts. The emergence of multimodal AI models amplifies creativity, allowing synthesis of images, texts, and music

In the dynamic realm of creative design, generative design is experiencing a paradigm shift, fueled by the emergence of open-source AI models. This transformative technology, exemplified by technologies like Stable Diffusion Image and Stable Video Diffusion, is not just facilitating creativity; it's redefining the creative workflow, allowing for more personalized, efficient, and innovative outputs.

NARENDRAN THILLAISTHANAM,
CTO, WNS-Vuram

▼ Redefining Creativity with Generative Design

Generative design, empowered by these AI models, enables designers and architects to generate hundreds of variations of a design through nuanced text prompts. It has evolved beyond a mere visualization tool, becoming an integral part of the creative workflow. The emergence of multimodal AI models further amplifies creativity by allowing creators to synthesize images, texts, and even music using the same universal model. The creation of libraries for developing new design tools signifies a future where generative design becomes a core element in the creative process.

However, the allure of Gen AI for automated processing brings forth ethical dimensions that demand careful consideration. The transparency of data sources driving these models is a significant concern, raising issues of authenticity and copyright. Practitioners must prioritize data transparency and secure informed consent to address these challenges. The probabilistic nature of AI introduces inconsistencies and errors, necessitating a clear role distinction—Gen AI as a "maker" and humans as "checkers" to harness its

"Gen AI is a powerful creative tool in tech, fueling innovation and expediting workflows by generating text, images, and code. Ethical considerations are crucial, especially regarding transparency in data sources, authenticity, and copyright issues. Practitioners must prioritize transparent data and secure consent for training content. While businesses are drawn to Gen AI for efficiency, entrusting both 'maker' and 'checker' roles poses risks. To harness Gen AI's potential, a clear role distinction is needed—Gen AI as a "maker" and humans as "checkers." Collaboration ensures Gen AI is a force for good, aligning technology with ethical values."

full potential. A collaborative approach between intelligent machines and humans ensures that Gen AI becomes a force for good, empowering human creativity while maintaining ethical standards.

▼ Navigating the Ethical Dimensions of AI-Generated Content

The introduction and availability of AI-generated content hold immense potential to revolutionize industries and applications. However, as this technology is implemented on a broader scale, it brings forth ethical implications that cannot be ignored.

Privacy Concerns: One major concern

GRZEGORZ TKACZYK,
CTO, Lingaro

"Generative AI, while revolutionizing industries, presents ethical concerns. Training on human-generated content raises questions about authorship and copyright, especially regarding poetry creation. Privacy risks emerge as AI can memorize and potentially expose personal information. The broader adoption of generative AI may propagate harmful stereotypes, challenging effective safeguards at scale. As we embrace this transformative technology, ethical awareness is paramount to navigate issues of authorship, privacy, and societal impact responsibly."

revolves around the training of these systems using a large amount of human-generated content. This raises questions about authorship and copyright. If a language model can write poetry, what is owed to the poets whose work was used to train the model? Moreover, the memorization capabilities of generative AI introduce privacy risks, potentially exposing personal information and violating privacy.

Stereotypes and Bias: Another significant ethical implication is the potential for AI-generated content to contain harmful stereotypes. As these systems scale, ensuring effective safeguards against perpetuating biases becomes more challenging. The technology must be implemented with careful consideration to prevent unintended consequences.

AI as a Reflection of Values: AI, as a tool, reflects our values and choices. As AI evolves to autonomously craft narratives, images, and art, questions of authorship, ownership, and accountability become increasingly complex. The balance between fostering innovation and mitigating potential harm is imperative. As AI-generated content becomes more prevalent,

AMIT PRASAD, Co-Founder and CEO, mFilterIT

"AI is poised to revolutionize content generation and streamline tasks, but ethical concerns demand scrutiny. mFilterIt, a leader in ad fraud detection, actively engages in the tech landscape. Integrating Generative AI into digital commerce intelligence, we prioritize responsible innovation. Our commitment ensures that AI enhances efficiency while upholding the highest ethical standards in the dynamic digital commerce realm, addressing concerns such as misinformation and privacy head-on."

an ethical compass must guide its trajectory, navigating uncharted waters of technological advancement. Thoughtful consideration and collaborative efforts are essential to harness the transformative power of AI while safeguarding the values that underpin a just and equitable society.

▾ GenAI in 2024: Shaping a Responsible AI-Driven Future

As of 2023, Generative AI has transformed industries, reshaping creative processes and redefining business paradigms. However, its rapid progression demands a stringent ethical

ANURAG SANGHAI,
Principal Solutions Architect, Intellicus Technologies

"In 2024, GenAI-generated content will advance, amplifying concerns around ethics, authorship, plagiarism, and bias. Refinement of plagiarism detection is crucial for transparent attribution and protection of intellectual property rights. Addressing societal biases requires accurate algorithm development and ethical training data selection. Balancing technological progress with ethical safeguards is vital for responsible and beneficial GenAI content in the future."

GAURAV KAUSHIK,
Founder & CEO, Technians

"AI transcends being a tool; it reflects our values and choices. As it autonomously crafts content, issues of authorship, ownership, and accountability become complex, touching on bias, misinformation, and manipulation. Balancing innovation and harm mitigation is crucial. With the rise of AI-generated content, an ethical compass must guide its trajectory, ensuring thoughtful consideration and collaborative efforts for transformative power while safeguarding societal values."

TARUN KATIAL,
Founder and CEO, coto

"In the realm of content creation, AI-generated content raises concerns about outdated creativity, compromised uniqueness, and ethical challenges. As we navigate these issues, the year 2024 brings a shift towards AI tools augmenting human capabilities rather than replacing them. Ethical practices, such as fact-checking, transparency in AI use, and judicious combination of human and AI expertise, pave the way for a balanced and responsible approach in every industry."

framework to govern its usage.

Organizational Integration: Organizations grapple with integrating GenAI into existing applications, prioritizing traceability as key to meaningful adoption. Projects underway explore GenAI deployment without compromising traceability. Ethics intertwine when subjectivity enters decision-making; thus, aligning models with organizational values is imperative.

Looking to 2024: Looking ahead to 2024, prioritizing authenticity verification tools and ethical AI development will steer us toward a responsible and symbiotic relationship between innovation and ethical responsibility in AI-generated content. The content generated using GenAI tools will become increasingly sophisticated, demanding additional attention to implications.

▼ Safeguarding Against Bias

AI-generated content has the potential to perpetuate and amplify societal biases, necessitating accurate algorithm development and ethical training data selection. Maintaining a balance between technological advancements and ethical safeguards will be key to ensuring responsible and beneficial GenAI content in the future.

In conclusion, the artistic evolution driven by GenAI is remarkable, but it comes with ethical frontiers that cannot be ignored. As we navigate this landscape, a collaborative and thoughtful approach is essential to ensure that Gen AI becomes a positive force for innovation while maintaining the highest ethical standards. ■

Edge computing offers a real-time data revolution

Ashok Pandey
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Edge computing is reshaping the rules of data processing, providing unparalleled speed, efficiency, and real-time insights. It goes beyond traditional centralized cloud models, strategically placing computational power closer to the data's point of origin, promising to streamline processes and revolutionize how industries operate

In an era defined by the ceaseless surge of data, businesses are seeking a paradigm shift in how they approach information processing. The advent of Edge computing, a transformative force in the technological landscape, is rewriting the rules of data processing. Unlike traditional centralized cloud models, Edge computing strategically places computational power closer to the data's point of origin, offering unparalleled speed, efficiency, and real-time insights. As organizations grapple with the demand for instantaneous responses, Edge computing emerges as a game-changer, promising not just to streamline processes but to revolutionize how industries operate.

▾ The Essence of Edge Computing

Edge computing, at its core, is about reducing latency and improving the speed of data processing. This paradigm moves away from the traditional centralized cloud model and places computing resources closer to the edge of the network, where data is generated. The result is faster response times, enhanced decision-making, and improved operational efficiency.

▾ Driving Innovation Across Sectors

From optimizing manufacturing processes to empowering autonomous vehicles, the applications of Edge computing are vast and varied. The ability to process data at the Edge is particularly crucial in use cases like multiplayer gaming, image and video analytics, and the Internet of Things (IoT). As data volumes continue to explode, Edge computing stands as a vital solution, enabling organizations to meet the demands of real-time processing with agility.

▾ The Multifaceted Impact of Edge Computing

The impact of Edge computing extends

across various dimensions. It not only addresses the need for real-time processing but also redefines the way organizations approach scalability and resource allocation. By distributing computing resources strategically, organizations can handle data in milliseconds, meeting user expectations for low-latency services.

▼ Challenges and Opportunities

While Edge computing presents a host of opportunities, it is not without its challenges. Security concerns, data management complexities, and the need for standardized practices are areas that organizations need to navigate. However, the potential benefits, including reduced latency, enhanced user experiences, and improved operational efficiency, make the journey towards Edge computing a compelling one.

▼ The Future of Edge Computing

Looking ahead, the future of Edge computing appears dynamic and promising. As technology continues to advance, Edge computing will likely play a central role in shaping the next generation of digital experiences. The seamless integration of Edge computing into existing infrastructures will become imperative for organizations aiming to stay ahead in the competitive and ever-evolving digital landscape.

In conclusion, the advent of Edge computing represents a significant milestone in the evolution of data processing. Its ability to bring computing resources closer to the source of data generation is transforming industries and unlocking new possibilities. With organizations like ESDS leading the charge and technologies like Aerospike facilitating efficient and scalable solutions, the era of edge computing promises a future where real-time insights and unparalleled efficiency are the norm rather than the exception. As businesses navigate this transformative landscape, the strategic adoption of Edge computing is poised to become a defining factor in their journey towards innovation and success. ∎

AVEEKSHITH BUSHAN,
Vice president of the APAC region, Aerospike

"Enterprises are dedicated to delivering best-in-class experiences at the Edge for use cases like multiplayer gaming, image, and video analytics, and IoT. However, to deliver these services with the low latency that users expect, organizations need a complete data store that is closer to the consumer base and can process data in milliseconds with no limits to scale."

HARSHIT GUPTA,
Head – Acies Consulting

"As the cloud becomes more and more a dominant place in our daily lives, the necessity requires with the availability of real-time decision-making within micro/milliseconds – for example, for self-driving cars navigating a busy street, instantaneous decisions are vitally important, and any latency can lead to potentially catastrophic outcomes. This has led to the rise of Edge Computing - where cloud providers using their multiple regions provide computational power closer to the source of data generation. In addition to speed, edge computing also helps businesses provide users with stability by reducing reliance by near-shoring the compute and storage infrastructure to data-generation and enhanced data privacy, and security."

Transforming urban mobility

Ashok Pandey
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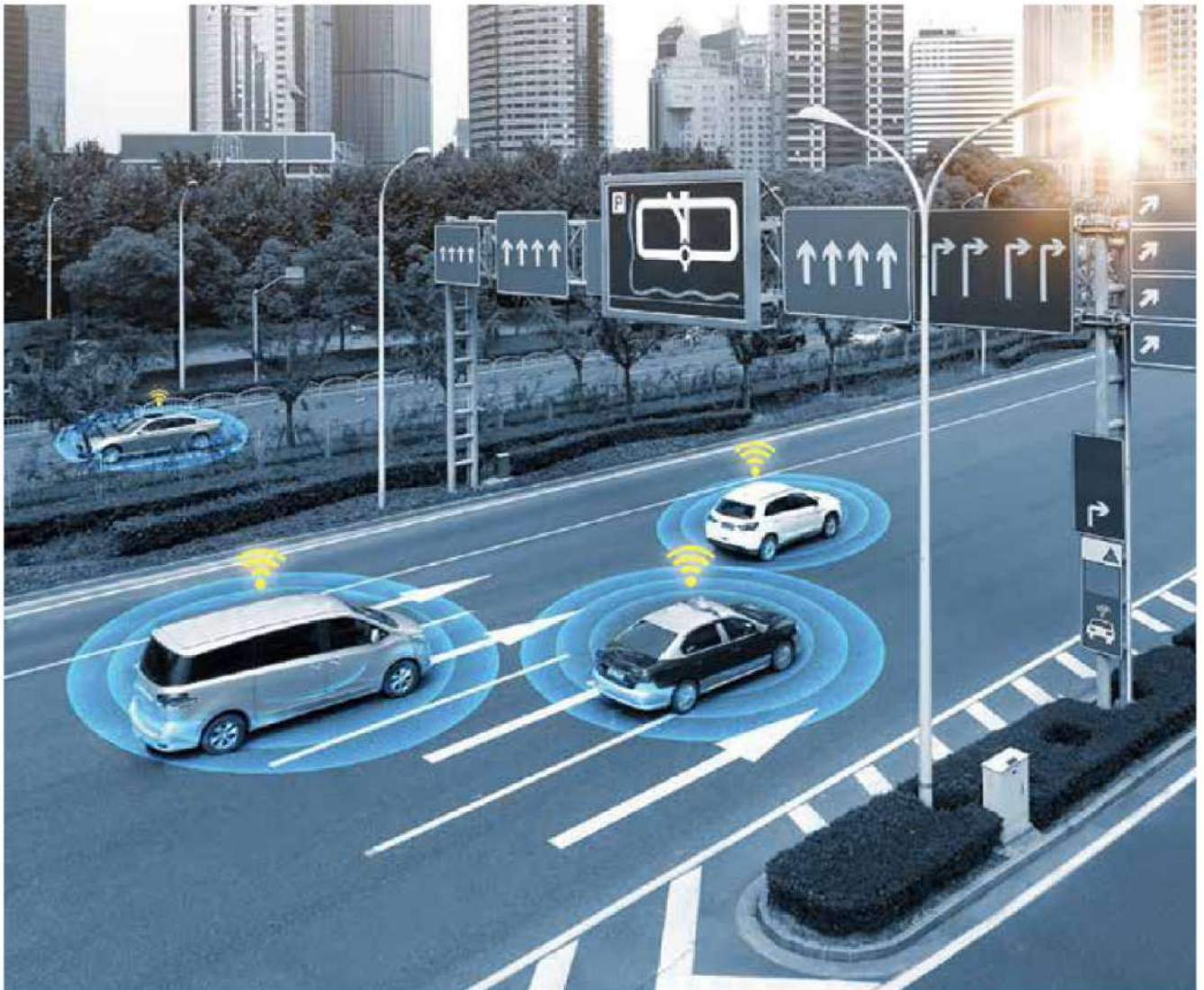
Envision a connected and intelligent transportation system, featuring electric buses, AI-enabled traffic management, and advanced battery technologies in electric vehicles

In the dynamic landscape of urban development, the fusion of Smart Cities and transportation emerges as a nexus of innovation, fundamentally reshaping the urban mobility paradigm. This symbiotic integration goes beyond mere technological advancement; it's a strategic shift in how we conceive and navigate urban spaces. The alliance between 5G and IoT serves as the backbone for this transformative synergy, forging a paradigm where seamless connectivity catalyzes efficient transportation systems.

▼ Surveillance and Data Analytics

In the realm of Smart Cities, surveillance plays a pivotal role in orchestrating a transformative change in transportation. Advanced sensor technologies and data analytics have birthed a comprehensive surveillance infrastructure, enabling real-time monitoring of traffic patterns, pedestrian movements, and overall transportation dynamics. This not only ensures efficient traffic flow but also enhances public safety through pre-emptive identification of potential issues.

The integration of surveillance systems into Smart Cities is a cornerstone in optimizing transportation networks. Machine Learning and data analytics are leveraged to predict and manage traffic congestion, providing citizens with a seamless and interconnected transportation experience.

▼ 5G, IoT, and Seamless Connectivity

The unfolding narrative of urban development is intricately intertwined with the symbiotic integration of Smart Cities and transportation. This intelligent convergence, facilitated by the alliance between 5G and IoT, is more than a technological feat; it's a strategic shift in optimizing accessibility, sustainability, and the overall urban experience.

The marriage of 5G's high-speed connectivity and IoT's network of interlinked devices becomes the orchestrator of real-time data exchanges. This synergy guides informed decisions in the orchestration of smarter transportation systems, where connectivity is not just a convenience but an integral force shaping the urban fabric. As we navigate the future of urban mobility, the seamless integration of surveillance technologies and advanced connectivity will be instrumental in creating safer, more efficient, and environmentally sustainable cities.

▼ Sustainable Urban Living and Smart Mobility

For India to build smart green cities, supercharging EV adoption rates, building intelligent transport networks, and incorporating smart fleet and vehicular management systems within city infrastructure are imperative. With over croresof cars on its roads, India is witnessing a rapid evolution towards smarter and greener vehicles, incorporating IoT, autonomous technology, digital connectivity, and electric or hydrogen-powered systems.

Public transport systems need exponential upgrades to mirror the ambitious goal of developing 100 smart cities that are clean and green. The current government has provided a conducive regulatory environment for stakeholders to invest in and develop key

SUDHINDRA HOLLA,
Director, Axis Communications, India and SAARC

"India's Smart Cities mission is catalyzing a dramatic change in the urban life landscape, especially in transportation, ushering in a new era of seamless integration and revolutionizing urban mobility. Surveillance plays a pivotal role in orchestrating this transformation. Advanced sensor technologies and data analytics have enabled a comprehensive surveillance infrastructure, facilitating real-time monitoring of traffic patterns, pedestrian movements, and overall transportation dynamics. Integrating surveillance systems into smart cities ensures not only efficient traffic flow but also enhances public safety through the preemptive identification of potential issues."

smart mobility enhancers such as a smart electrical grid, robust EV charging infrastructure, and IoT integration within vehicles.

▼ The Future of Smart Mobility

As smart cities of the future evolve, the focus must be on creating a robust and dynamic smart mobility infrastructure that supports clean and green living for future generations. Reducing individual vehicular carbon footprints becomes a pivotal objective for

ARINDAM DAS SARKAR,
MD, Mirasys (India)

OEMs and other stakeholders. The advent of specialized autonomous vehicles, rapid transport corridors, digitally connected highways, and robotic parking lots signals that smart mobility is set for disruption and innovation.

In the near future, we might see a more connected and intelligent transportation system. Electric buses with smart features, AI-enabled traffic management, and electric vehicles with advanced battery technologies are not just figments of imagination but inevitable realities. The smart mobility space is poised for disruption and innovation, and stakeholders must

HITESH GUPTA,
Co-Founder & CTO, Park+

"AI based video surveillance has emerged as a key tool to create centralized monitoring systems. When combined with the power of AI, the surveillance systems getequipped to create safe and secure establishments, surroundings as well as public places. AI-integrated systems are further playing a pivotal role across diverse domains, including security of retail stores, integrating intelligent systems to make cities smarter, transportation, women security, accident prevention, pothole detection etc. However, there needs to be a stronger focus on data privacy and ethical AI usage, as the vast data of the intelligent systems are very critical and can unleash havoc if not leveraged with ethical integrity."

collaborate to navigate the challenges and seize the opportunities that lie ahead.

The integration of Smart Cities and advanced technologies is not merely a trend; it's a transformative force reshaping urban mobility. As we move towards sustainable urban living and smarter mobility, the strategic alliance between 5G, IoT, and surveillance technologies becomes the linchpin in creating cities that are not only connected but also safe, efficient, and environmentally conscious. The future of urban mobility is not just smart; it's a harmonious blend of innovation, connectivity, and sustainability. ∎

"Smart cities of the future will only succeed if they have a robust and dynamic smart mobility infrastructure to support clean/green living for future generations. The reduction in individual vehicular carbon footprint will emerge as a pivotal objective for OEMs and other stakeholders. Additionally, with the advent of specialized autonomous vehicles, rapid transport corridors, digitally connected highways, and robotic parking lots, smart mobility as a space is set for disruption and innovation."

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On the verge of a quantum revolution

Ashok Pandey
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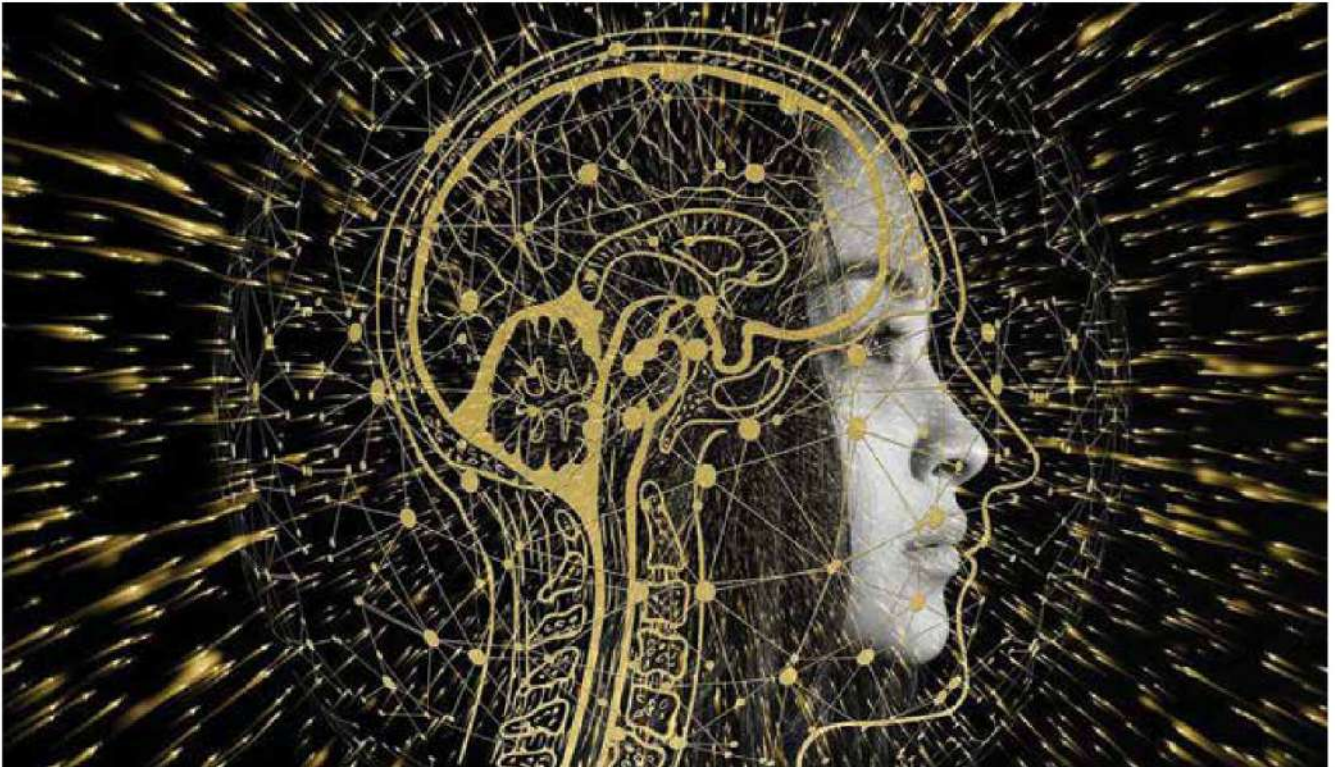
In the evolving landscape of quantum computing in 2024, the industry's emphasis has transitioned from sheer qubit quantity to a focus on enhancing qubit quality and reducing errors. This strategic shift is imperative for the development of fault-tolerant quantum systems, marking a crucial step in the practical application of quantum computing

As we stand on the cusp of 2024, the quantum computing domain undergoes a profound metamorphosis, propelling us from the theoretical realms of qubits into the tangible realm of fault-tolerant quantum systems. In an exclusive interview with *Amitkumar Shrivastava, Head AI, Fujitsu India* and a Global Fujitsu Distinguished Engineer, we delve into the intricacies of this quantum evolution.

▾ Qubit Quality and Fault Tolerance: A Strategic Industry Pivot

In the evolving landscape of quantum computing in 2024, the industry's emphasis has transitioned from sheer qubit quantity to a focus on enhancing qubit quality and reducing errors. This strategic shift is imperative for the development of fault-tolerant quantum systems, marking a crucial step in the practical application of quantum computing.

▾ Convergence of Quantum Computing and AI: A Symbiotic Relationship

As conventional computing approaches the limits set by Moore's Law, the convergence of quantum computing and Artificial Intelligence (AI) has reached a critical juncture. Quantum computing emerges as a viable alternative, poised to revolutionize AI, cybersecurity, and various research domains. This symbiotic relationship is seen as essential for addressing global challenges, including climate change, through advanced simulations.

▾ Quantum Computing as a Service (QCaaS): Democratizing Access

A noteworthy development in 2024 is the emergence of Quantum Computing as a Service (QCaaS). This trend is expected to democratize access to quantum computing, enabling a broader range of industries and research fields to leverage its capabilities without extensive in-house infrastructure.

▾ Quantum Software Development Kits (SDKs): Bridging the Programming Gap

The influx of readily available Quantum Software Development Kits (SDKs) marks a significant trend. These kits serve as bridges for programmers with classical experience, facilitating their entry into the realm of quantum programming. This development underscores the growing demand for new programming languages, development tools, and educational initiatives to ensure equitable access and prevent monopolization.

▾ Government Policies for Ethical Quantum Development

Governments worldwide are responding to the transformative potential of quantum

AMITKUMAR SHRIVASTAVA, Head AI, Fujitsu India

technologies with policies aimed at guiding their ethical development and use. This reflects a collective effort to establish standards and frameworks in the rapidly advancing field of quantum computing.

▾ AI-Driven Computational Brokers: Enhancing Efficiency

In 2024, there is anticipation of advancements in AI-driven computational brokers. These brokers are poised to play a pivotal role in determining the most efficient computational approaches—be they quantum, classical, or hybrid. The expected outcome is enhanced effectiveness in quantum operations and increased reliability of qubits.

▾ A Pivotal Year for Quantum Computing

In summary, 2024 stands out as a pivotal year in the evolution of quantum computing, characterized by strategic industry shifts, the convergence of quantum computing and AI, and a focus on ethical development. With emerging trends such as QCaaS and advancements in computational approaches, quantum computing is progressively moving from theory to a more accessible and practical reality. ◼

The AI odyssey from diagnostics to wellness

Ashok Pandey
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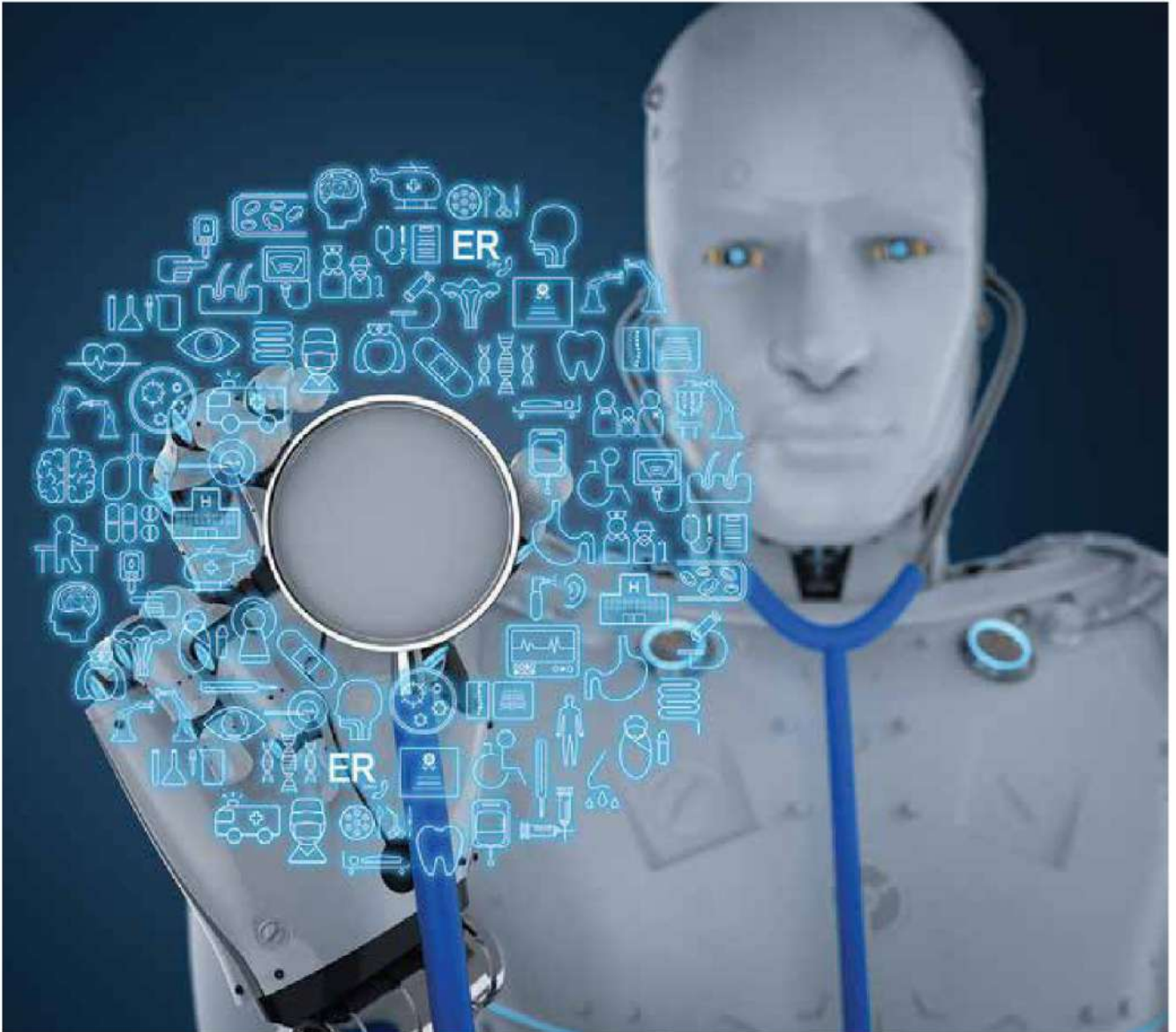
AI is reshaping healthcare by ushering in a new era of precision medicine, improving diagnostics, enhancing patient experiences, and bridging healthcare gaps in both urban and rural India

The landscape of healthcare is undergoing a profound transformation, propelled by the relentless advancements in Artificial Intelligence (AI). This technological juggernaut is reshaping the entire spectrum of healthcare services, from diagnostics to personalized treatment plans and even venturing into the realms of preventive care and wellness.

DR. ROHEET RAO,
AVP, IT & Oncology at Apollo Hospitals

"AI in oncology is transforming precision medicine, emphasizing personalized treatments through advanced analysis of diverse patient data. Natural Language Processing decodes unstructured clinical information, from notes to genomics, using Large Language Models for comprehensive insights. Generative AI, from virtual agents to chatbots, enhances patient interactions, while in clinical settings, it powers tumor boards, decision support systems, and aids surgeons in real-time. This synergy of technology and healthcare navigates the complexities of cancer treatment, promising improved outcomes and a nuanced approach to personalized care."

▼ AI in Oncology: Precision Medicine Unleashed

The field of oncology is at the forefront of AI-driven healthcare revolution, steering towards Precision Medicine—a paradigm that tailors treatment approaches to individual patients. The reliance on analyzing multiple sources of patient data has never been more critical, and AI is the linchpin making it possible.

▼ Unraveling the Data Tapestry with NLP and Large Language Models (LLMs)

Natural Language Processing (NLP) emerges as a pivotal force, deciphering the intricate tapestry of unstructured clinical data. Physicians' notes, lab reports, radiology, and genomic reports—all speak a language that AI is becoming fluent in. The advent of Large Language Models (LLMs) has empowered us to glean valuable insights, providing a panoramic view of patient histories and treatment responses.

▼ Virtual Agents and Generative AI: Transforming Patient Experience

Generative AI, donned as virtual agents or chatbots, extends its reach beyond the clinical realm. From scheduling appointments to providing medication reminders and collecting patient-reported outcomes, these AI-driven assistants enhance the overall patient experience. They're not just automating tasks; they're becoming companions on the often challenging journey of healthcare.

▼ Towards Personalized Therapies: AI in Clinical Decision Support Systems

In the clinical domain, Generative AI finds applications in tumour boards and Clinical Decision Support Systems (CDSS). CDSS integrates patient data and clinical knowledge to offer personalized treatment recommendations. The nuanced approach provided by AI is steering us away from generalized methods towards treatments tailored to individual needs.

▼ Robotic Precision in Surgery

AI-guided robots are making real-time interventions in surgeries, not just aiding surgeons but actively contributing to improved patient outcomes and reduced recovery times. The marriage of surgical expertise and AI precision is reshaping the landscape of surgical care.

▼ Predictive Analytics: Shaping Personalized Treatment Plans

The crystal ball of healthcare, predictive analytics, fueled by AI, is helping forecast patient outcomes and treatment responses. By analyzing vast datasets, it becomes a guide in the creation of personalized treatment plans. The ability to anticipate cancer progression and treatment efficacy is rewriting the rules of engagement in the fight against this formidable adversary.

▾ Enhanced Diagnostics: Early Detection and Beyond

AI's prowess in image recognition models is playing a pivotal role in radiomics, radiogenomics, and histogenomics. These models extract clinically relevant information, aiding in early detection, prognosis, and identification of genomic aberrations. The impact is profound—not just on accuracy but also on the cost of care delivery as cancers are diagnosed early.

▾ AI in Drug Discovery and Biomarker Research

The labyrinth of drug discovery and biomarker research is getting a technological guide. Machine Learning algorithms, especially those leveraging Large Language Models (LLMs), are expediting the identification of therapeutic targets and aiding in the design of new drugs and biomarkers. This not only slashes the time involved but also the costs traditionally associated with drug development.

▾ Precision Care: AI's Crucial Role in Oncology

AI's integration into oncology is more than a technological leap; it's a commitment to Precision Care. It marks a shift from generalized methods to personalized therapies, offering not just improved outcomes but new horizons of hope for patients around the globe.

▾ Beyond the Clinic: AI in Patient Experience and Therapy

AI's impact in healthcare transcends the clinical setting. It touches two significant facets—patient experience and therapy-related AI technology.

▾ AI in Therapy: Addressing the Root Cause

Consider a scenario where a person is grappling with shoulder pain. AI steps in not just to suggest exercises but to delve deeper into the root cause. Is it purely shoulder pain, or does it emanate from the way a person sits or their ergonomic habits? AI becomes the detective, unraveling layers to provide a holistic understanding.

ASHU KASERA,
Co- Founder and CTO, CLIRNET

"As patients access automated health tools, ensuring the integral role of trained professionals is crucial. Their involvement in developing and auditing AI/ML tools is essential to contain "hallucinations" and prevent untested technologies from reaching patients directly. Professional judgment remains pivotal for safe and proven healthcare technology integration."

▾ Transforming Clinical Record Management: The AI Edge

In the realm of patient experience, AI's role in enhancing Clinical Record Management (CRM) systems is paramount. From the initial plan of care to progressive care plans, physio care plans, and dietary insights, AI ensures transparency in showcasing patient conditions. This information, showcased like an interactive narrative in an app, becomes a vital tool in patient engagement and understanding.

SREEKRISHNAN VENKATESWARAN,
CTO, Kyndryl India

"Recent strides in generative AI unlock possibilities in augmented diagnostics, bridging image-to-text gaps. Biomedical language models analyze clinical text, transforming drug development and discovery, showcasing the transformative impact of AI in healthcare."

▾ Democratization of Innovation: AI/ML Impact on Healthcare

The democratization of innovation in AI/ML is reshaping the landscape of healthcare. The accessibility of generic and specialized Large Language Models is empowering developers and researchers, irrespective of their resources. Open-source models are no longer confined to device manufacturers; diagnostic labs can fine-tune them, empowering radiologists and drastically reducing time to diagnosis for patients.

Companies like CLIRNET are catalyzing transformation by digitizing Patient Health records. AI-enabled verification ensures compliance and conformity to treatment protocols, reducing the burden on doctors and instilling confidence in the healthcare ecosystem.

▾ Empowering Patients: Access to Tools and Services

The healthcare horizon is expanding for patients. Automated health assessments, nutrition consultations, and tailored treatment plans are becoming accessible. However, a crucial caveat emerges—trained professionals must play a central role in developing and auditing these tools. The specter of untested and unproven technologies reaching patients directly necessitates the discernment of good professional judgment.

▾ Navigating the Deepfake Threat: The Role of Trusted Platforms

As technology advances, the deepfake threat deepens. Platforms like DocTubebecome guardians, ensuring that only trained professionals disseminate trusted medical advice. The imperative of genuine information becomes paramount in an era where identifying the real from the fake becomes increasingly challenging.

▾ The Dual Faces of Technology: Making Life Easier and More Complex

The article concludes with a philosophical reflection on technology, likening it to the dual faces of God Agni. Technology, represented by AI in this context, is a force that simultaneously eases and complicates life every day.

DR. SOHINI SENGUPTA, Medical Director, Redcliffe Labs

"Artificial Intelligence (AI) has emerged as a transformative force in the realm of healthcare, revolutionizing the way we approach diagnostics and treatment plans. Integrating AI technologies in healthcare systems has paved the way for more efficient and personalized medical interventions."

▾ In Diabetes Care: AI and Telemedicine as the Compass

Shifting gears, the narrative delves into the realm of diabetes care. AI and telemedicine emerge as the compass guiding the mission to make quality healthcare accessible to all, especially in tier 2 and tier 3 cities.

▾ AI's Key Role in Quicker, More Accurate Diagnoses

AI's role in diabetes care extends beyond the obvious. It becomes a tool that instantaneously

VENKY ANANTH, SVP and Global Head of Healthcare, Infosys

"AI-driven medical systems streamline operational processes at government primary, secondary and tertiary facilities, enabling them to better manage patient flow. At the same time, it augments the capabilities of clinics and nursing homes, which are preferred for outpatient services, specifically in urban areas."

analyzes a multitude of data points, aiding doctors in pinpointing trends, anticipating complications, and tailoring treatments unique to individual needs. This isn't a futuristic dream; it's a present reality reshaping the landscape of diabetes care.

▾ Telemedicine: Bridging Geographical Gaps

Telemedicine stands as the essence of accessibility. For individuals in remote towns, miles away from specialized clinics, the ability to consult with a diabetes expert via video call is transformative. Regular check-ins, medication adjustments, and dietary guidance are no longer restricted by geographical distance.

ARVIND VAISHNAV, Head of Clinical Partnerships, Growth Region and Philips Innovation Campus, Bangalore

"In healthcare, a surge of technologies has led to more administration and regulation, pulling workers away from patient care. The constant 'one more thing' disrupts workflows, leaving professionals spending less time with patients. It's crucial to prioritize people over technology, reconnecting healthcare workers with their primary purpose. Understanding how technology complements workflows and tracking the value delivered to patients is key to reshaping the industry."

▾ AI for Public Good: Medical Imaging and Beyond

In the broader perspective of AI for public good, healthcare holds a pivotal position. Medical imaging through computer vision is akin to a magical window enabling us to peer inside the human body. Object recognition on image scans from X-rays and MRIs are automating diagnoses without compromising accuracy.

▾ Exciting Developments in Generative AI

Generative AI takes a leap with models capable of image-to-text generation and vice versa. This opens new frontiers in augmented diagnostics. Medical domain-specific language models trained on biomedical literature assist in automatically analyzing clinical text. Generative AI becomes a catalyst in transforming drug development and discovery.

▾ AI in Healthcare: A Paradigm Shift in Diagnostics and Treatment Plans

The transformative force of AI in healthcare is evident. It revolutionizes diagnostics, transforms treatment plans, and opens pathways to personalized medicine. Cutting-edge platforms like Redcliffe Labs' Clinical Decision Support (CDS) System exemplify the integration of AI, promising more informed, efficient, and personalized medical services.

▾ Precision Medicine Beyond Diagnostics

AI's stride goes beyond diagnostics. It is the architect of personalized medicine, considering genetic makeup, lifestyle, and specific health conditions. The shift from a one-size-fits-all model to targeted interventions is the hallmark of AI's contribution to healthcare.

▾ Telemedicine and Virtual Health Assistants

The evolution of telemedicine, fueled by AI, brings virtual health assistants to the forefront. These AI-powered assistants engage with patients, offering support, answering queries, and ensuring adherence to treatment plans. The continuum of care extends beyond traditional healthcare settings, enhancing patient engagement.

▾ AI-Driven Predictive Analytics

The crystal ball of healthcare—AI-driven predictive analytics—holds promise in anticipating disease outbreaks, optimizing resource allocation, and improving overall healthcare management. By analyzing diverse data sources, including electronic health records, social media, and environmental factors, AI provides valuable insights for preventive measures and strategic planning.

▾ Challenges and Ethical Considerations

However, the integration of AI in healthcare is

not without its challenges. Data privacy concerns, ethical considerations, and the need for stringent regulatory frameworks require careful navigation. As AI advances, addressing these challenges becomes pivotal to realizing its full potential in transforming healthcare delivery.

▼ AI in Indian Healthcare: Bridging Gaps and Enabling Equitable Coverage

The Indian healthcare system grapples with the challenge of serving a large population, compounded by an uneven distribution of infrastructure facilities and patient load. The adoption of digital tools emerges as a solution, enabling equitable coverage and cost-effective healthcare services.

▼ AI-Driven Systems: Streamlining Operations and Enhancing Capabilities

AI-driven medical systems are streamlining operational processes at government primary, secondary, and tertiary facilities. This not only better manages patient flow but also augments the capabilities of clinics and nursing homes, especially in urban areas. The digital transformation is a boon for outpatient services.

▼ Prevention and Wellness: From Fitness Apps to Virtual Care

AI's influence extends into preventive care and wellness. Fitness apps and digital tools trigger reminders for medication, recommend diet plans, and suggest behavioral changes based on habits and preferences. The focus on preventive care reduces the strain on healthcare systems and creates capacity for emergency care.

▼ AI Augmenting Healthcare Functions and Workforce Skills

The augmentation of core functions in healthcare enterprises and the enhancement of medical workforce skills are hallmarks of AI's impact. The synergy between AI and the medical workforce promises improved service quality and enhanced patient outcomes.

▼ Empowering Rural India: AI in Healthcare for Underprivileged Communities

The tale of AI in Indian healthcare isn't just confined to urban areas; it extends its reach to

GAURAV PARCHANI,
CTO & Co-founder, Dozee

"AI-based connected care systems empower medical practitioners to continuously and remotely monitor patients. This innovation enables the early detection of health deviations, emphasizing the transformative prowess of AI in elevating healthcare standards and accessibility for patients."

the rural landscape. The healthcare system in India faces frequent pressures to serve a vast population, and the digital adoption brings hope. Digital tools, backed by AI, become the bridge addressing the gap between healthcare facilities and underserved communities in tier 2 and tier 3 cities.

▼ Digital Tools Enabling Equitable Coverage

The adoption of digital tools is the key to providing equitable coverage in a diverse and populous country like India. AI-driven medical systems step in as operational allies at government primary, secondary, and tertiary facilities. This digital transformation not only optimizes patient flow but also empowers clinics and nursing homes, offering outpatient services even in remote areas.

▼ Preventive Care Reaches the Masses

Preventive care takes center stage, driven by fitness apps and digital tools that provide personalized care programs. The outreach of AI-based tools extends to triggering medication reminders, recommending diet plans, and suggesting behavioral changes tailored to individual habits and preferences. The emphasis on preventive care becomes a beacon of hope for underprivileged communities, pre-empting diseases and alleviating the burden on healthcare systems.

▾ Addressing Undernutrition and Anemia through Digital Solutions

The undernutrition challenges and the incidence of related conditions, such as anemia, are pervasive in young children and women in rural India. Here, the ubiquity of smartphones and connectivity becomes a catalyst for change. Hospitals leverage digital solutions to create awareness, manage wellness activities, and rationalize costs by supporting virtual care and community health management.

▾ AI as the Catalyst for Quality Service and Enhanced Outcomes

In the vast and varied landscape of Indian healthcare, AI emerges as the catalyst for improving the quality of service and enhancing patient outcomes. The augmentation of core functions within healthcare enterprises and the enhancement of medical workforce skills take on heightened significance. The collaborative dance between AI and the medical workforce is not just a technological marvel; it's a promise of better health for the nation.

▾ AI's Role in Democratizing Healthcare Innovation

The democratization of AI/ML innovation is the silent revolution transforming the healthcare landscape. Generic and specialized Large Language Models are no longer the exclusive domain of tech giants; they are tools for anyone passionate about contributing to the field. The shift is seismic—training models to detect anomalies in radiological imaging is no longer the exclusive purview of device manufacturers. Diagnostic labs, irrespective of their size, can fine-tune open-source models, empowering radiologists to improve efficiency, reduce reporting time, and diagnose rare conditions.

In essence, the odyssey of AI in healthcare is not just a technological progression; it's a narrative of hope, empowerment, and the relentless pursuit of better health for all. From precision medicine in oncology to bridging healthcare gaps in rural India, AI's footprint is leaving an indelible mark on the canvas of healthcare evolution. As the journey continues, the fusion of technology and healthcare expertise promises a future where accurate diagnoses, targeted interventions, and improved patient outcomes become the norm. The challenges of data privacy, ethics, and regulatory frameworks stand as sentinels, demanding careful navigation to ensure AI's transformative power is harnessed responsibly and ethically.

The convergence of Telemedicine 2.0 and AR/VR

Ashok Pandey
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The synergy of Telemedicine 2.0, AR/VR technology, and AI is not just a convergence of technologies; it's the future of healthcare. This transformative leap aims to make healthcare more accessible, personalized, and impactful for individuals worldwide

In an era where technology is reshaping every aspect of our lives, healthcare stands at the forefront of a transformative wave, ushering in Telemedicine 2.0, coupled with the power of AR/VR technology and the intelligence of Artificial Intelligence (AI). This synergy is not just changing the landscape; it's revolutionizing the way we approach remote healthcare.

▼ Telemedicine 2.0: Pioneering a New Healthcare Paradigm

Telemedicine is no longer confined to video visits; it's evolving into a dynamic force, driven by exponential technologies. The convergence of AI, 5G, blockchain, and extended reality is propelling telehealth into uncharted territory. The future envisions ultra-personalized care, where AI analyzes individual genetics, biomarkers, and risk profiles to tailor diagnosis and treatment recommendations securely.

The cornerstone of Telemedicine 2.0 lies

ENBASEKAR D,
Co-founder & CTO, MediBuddy

"Telemedicine's new era transcends video visits, propelled by AI, 5G, blockchain, and extended reality. Ultra-personalized diagnosis, real-time monitoring, and virtual therapeutic experiences redefine the future of healthcare."

in remote patient monitoring platforms that facilitate real-time tracking and interventions. This shift is not just from reactive care to continuous monitoring but towards preventative measures and personalized interventions. While adoption hurdles and reimbursement challenges persist, the healthcare industry is on the cusp of aggressive investments, merging human-centered design with cutting-edge technology.

Enterprises embracing this revolution are not just adopting a new approach to healthcare; they're positioning themselves as pioneers of forward-thinking leadership. Prioritizing employee well-being and fostering a culture of health and empowerment, these corporations

are at the vanguard of reshaping how healthcare is perceived and delivered.

▼ AR and VR Transforming Telehealth Experiences

In the digital-centric landscape of today, telehealth technologies have become a ubiquitous part of healthcare. However, the infusion of Augmented Reality (AR) and Virtual Reality (VR) technologies is taking the conventional telehealth video call to unprecedented heights. These technologies offer substantial visual advantages for both healthcare providers and patients.

The integration of AI for visual analysis and identification is the catalyst that propels virtual healthcare communication into a new dimension. Beyond the confines of typical in-person appointments, AR and VR hold the promise of addressing various telehealth challenges faced by doctors. Precise diagnosis, execution of virtual and minimally invasive surgeries, and effective patient management are all on the horizon.

Cross-functional collaboration is taking center stage, with AR/VR enabling specialists to engage in real-time discussions, examine patient records, diagnose conditions, and deliberate on treatment strategies. The technology-driven reality is creating a secure, regulated, and immersive learning setting for medical and allied medical personnel to participate in training sessions.

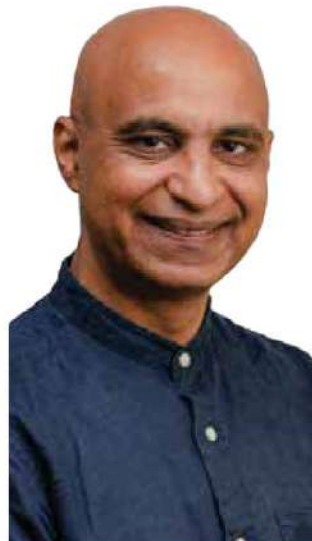### ▼ The Synergy of Tomorrow's Healthcare

As we move forward, issues like fair access,

DR. KIRAN SHARMA, Area Chairperson & Professor - Marketing & International Business, K J Somaiya Institute of Management
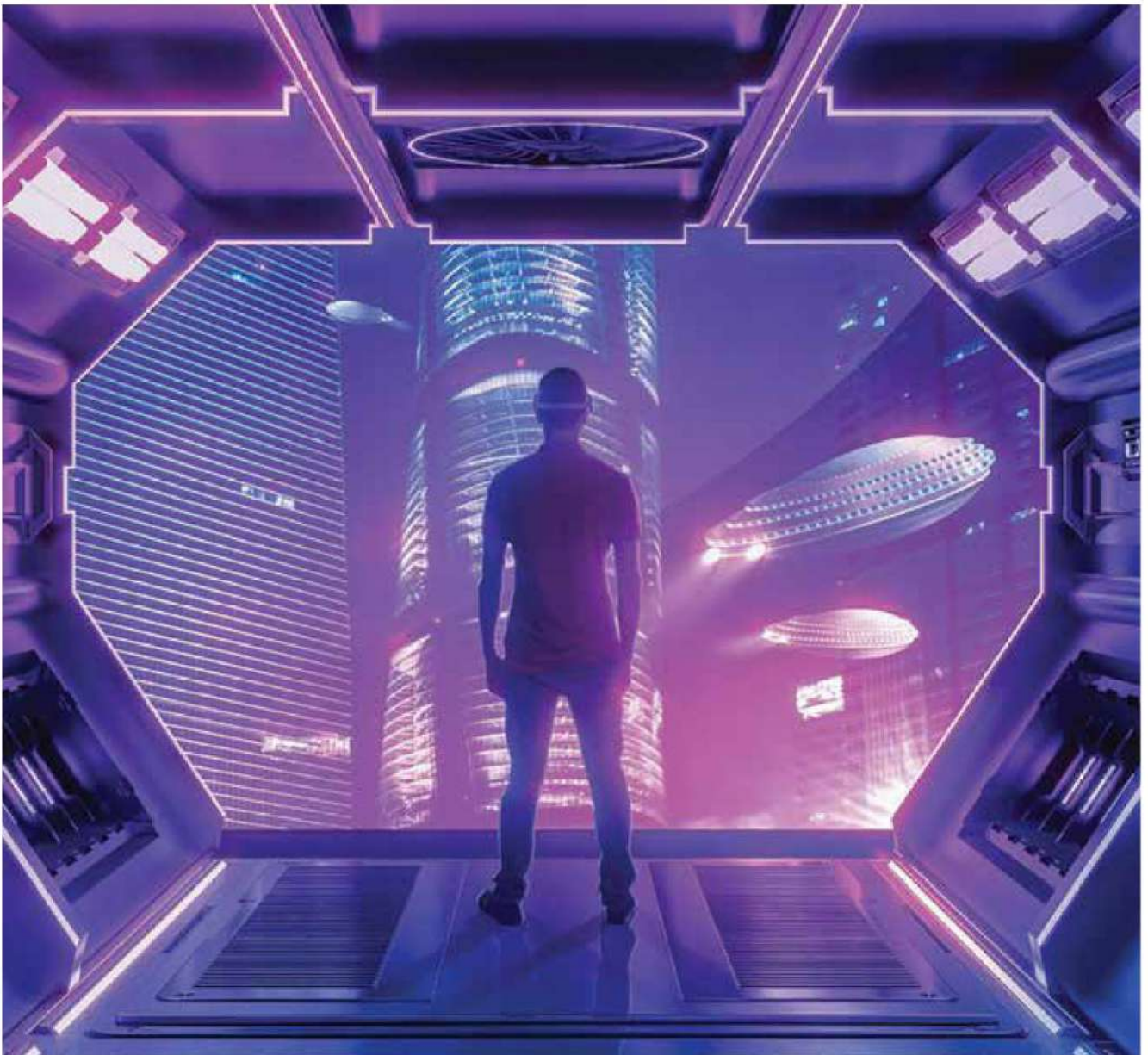
"Telemedicine 2.0 signifies a transformative leap in distant healthcare, integrating cutting-edge technologies to enhance patient care and accessibility. In the digital age, it emerges as the logical progression of healthcare, defined by the WHO as the delivery of healthcare services overcoming distance barriers. As the global telemedicine market is poised to reach $225 billion by 2030, this evolution represents a substantial shift towards a more connected and advanced healthcare landscape."

technical inequality, and data privacy must be continuously addressed. The paradigm shift in remote healthcare is not just about adopting new technologies; it's about reshaping the entire healthcare experience, making it more accessible, personalized, and impactful for individuals worldwide. ∎

KUNAL KINALEKAR, CTO and Co-founder, BeatO

"AI unlocks swift, precise diagnoses and personalized diabetes care, analyzing vast data for tailored treatments. It's not just futuristic—it's a transformative reality shaping the diabetes care landscape."

RANGA JAGANNATH, Senior Director-Growth, Agora

"AR and VR in telehealth promise to revolutionize healthcare, addressing challenges in precise diagnosis, virtual surgeries, and patient management. Cross-functional collaboration through AR/VR facilitates real-time discussions, diagnoses, and treatment strategies, creating an immersive learning environment for medical professionals."

Unveiling the future of gaming

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The future of gaming is a thrilling odyssey marked by technological breakthroughs and paradigm shifts

The future of gaming is not just a destination, but an immersive odyssey marked by technological breakthroughs and paradigm shifts. From the symbiotic embrace of Virtual Reality (VR) and Haptic Feedback to the booming esports industry in India, and the transformative contributions of technology giants, the gaming landscape is evolving at an unprecedented pace.

KARAN PATHAK,
Head of Esports,
KRAFTON India

"Esports in India has transformed into a lucrative professional career, marking a significant evolution in 2023. Witnessing some of the nation's largest tournaments, with substantial prize money, emerging formats, and increased sponsorships across diverse games and genres, the landscape has embraced immersive experiences through live streaming, high-definition visuals, and cloud gaming. This shift places both players and viewers right at the heart of the action, redefining the esports narrative."

▼ Virtual Reality and Haptic Feedback: A Symbiotic Thrust into the Future

The journey into the future of gaming commences with the convergence of VRand Haptic Feedback. As technologies continue their relentless march forward, the gaming experience is transcending traditional boundaries into an immersive realm where reality and virtuality seamlessly intertwine.

▼ VR Gaming: The Gateway to Uncharted Dimensions

VR gaming is set to become increasingly immersive and dynamic, driven by innovations in haptic feedback and AI. The proliferation of live streaming, high-definition visuals, and cloud gaming is providing players and viewers with unprecedented, immersive experiences.

India witnessed a gaming revolution in 2023, with esports tournaments reaching new heights in terms of prize money, formats, and sponsorships. Technologies like 5G, AR/VR, and AI are not just transforming how athletes compete but reshaping our very perception of esports, competition, and entertainment.

▼ Haptic Feedback: A Tactile Symphony of Virtual Realities

Haptic feedback technology is revolutionizing the gaming industry, enhancing immersion and interaction in VR games. Through haptic controllers or vests, gamers can now feel the impact of virtual objects, experience realistic weapon recoil, and sense changes in environmental conditions. The tactile symphony created by haptic feedback

"The future of gaming is a thrilling odyssey, where Virtual Reality and Haptic Feedback converge to redefine the gaming landscape. As technology advances, players are propelled into fantastical worlds, unlocking unparalleled sensory experiences. Haptic Feedback, a tactile symphony, deepens this connection, transcending the screen to cocoon players in a sensory wonderland. The future promises an expedition into uncharted dimensions, where every pixel's pulse and every texture's touch echo in the palpable heartbeat of a new era. The fusion of Virtual Reality and Haptic Feedback becomes the gateway to unimagined realms, turning the gaming experience into a sublime voyage."

MEET SHAH,
CEO & Founder,
BeBetta

further deepens the connection between players and virtual realities, enveloping them in a multidimensional embrace.

Together, VR and Haptic Feedback redefine the gaming landscape, transcending the screen to cocoon players in a sensory wonderland. The future promises not just gameplay but an expedition into uncharted dimensions, where the pulse of every pixel and the touch of every texture echo in the palpable heartbeat of a new era.

▼ Esports in India: A Lucrative Professional Career

As we navigate the exciting future of gaming, the esports landscape in India emerges as a lucrative professional career. In 2023, India witnessed some of its largest esports tournaments, marked by substantial growth in prize money, new formats, and increased sponsorships across different games and genres. The proliferation of live streaming, high-definition visuals, and cloud gaming has further propelled the immersive experiences, placing players and viewers at the heart of the action.

Technologies like 5G, AR/VR, and AI are transforming how athletes compete, providing a glimpse into the future of esports. The gaming tournaments are not only showcasing the immense talent within the Indian gaming community but also provides a platform for amateur and professional players to develop their skills. Looking ahead to 2024,

PUJAN CHADHA, Director for Product Marketing, Consumer and Small Business, Dell Technologies India

"The future of gaming is a multifaceted fabric that weaves together technological advancements and the power of the growing community. It paints a vivid picture of a landscape that is not only entertaining but also a catalyst for positive change, demonstrating that its borders extend beyond the confines of a screen."

continued innovation in India's esports landscape is anticipated, with a commitment to contributing to the growth and success of the industry.

▼ Online Gaming Industry: Trends and Transformations

As the gaming industry continues to evolve, we witness the emergence of new monetization models, complementing traditional methods. Blockchain-based gaming, metaverse experiences, and play-to-earn models are reshaping the industry. The demand for vernacular language games is

ROLAND LANDERS, CEO, All India Gaming Federation

"As gaming evolves, new monetization models emerge—blockchain, metaverse experiences, and play-to-earn complement traditional methods. The rise in vernacular language games reflects a push for inclusivity in the Indian gaming landscape. Responsible gaming gains spotlight, with age verification, ethical advertising, and robust player support taking precedence. Anticipating 2024, the industry eyes IT Rule implementation, self-regulatory bodies, and GST impact assessment. Hopes are high for resolving retrospective taxation concerns and the release of AVGC policies, aligning with the Ministry of Information and Broadcasting's Task Force recommendations. With these developments on the horizon, the gaming industry is poised for a transformative year, marked by innovation, inclusivity, and responsible growth."

rising, reflecting the need for inclusivity within the Indian gaming landscape.

In 2023, India's online gaming industry faced challenges, including a 28% GST hike affecting monetization. However, the industry demonstrated resilience by embracing new technologies like Web3, navigating the challenges posed by the GST hike, and adapting to a shifting regulatory landscape. Despite these hurdles, the outlook for the industry in India remains promising.

▼ Navigating the Future Horizons of Gaming

As we conclude this exploration of the future of gaming, it's evident that technology is the driving force behind the transformative journey. From the immersive experiences crafted by VR and Haptic Feedback to the competitive arenas of esports in India, the contributions of industry giants and the dynamic transformations in the online gaming industry, the landscape is vibrant and ever-evolving.

The future promises not just gameplay but an odyssey into uncharted dimensions,

ANKUR SINGH,
CEO and Founder,
Witzeal Technologies

"In 2023, India's gaming landscape saw transformative shifts. Despite a setback with a 28% GST hike affecting monetization, the sector demonstrated resilience, embracing new tech and adapting to regulatory changes. The outlook is promising, with optimism fueled by increasing smartphone penetration and rising incomes."

where technology, community, and innovation converge to shape a gaming experience that transcends traditional boundaries. Whether it's the thrill of virtual realities, the competitiveness of esports, or the fusion of technology and community, the gaming industry is poised for a transformative era, offering not just entertainment but a catalyst for positive change. ■

Electric gains momentum on Indian roads

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Step into the future of transportation, where the resonance of combustion engines is replaced by the subtle hum of the electric, defining the seismic shift in the automotive landscape

I n the throbbing heart of transportation, a seismic shift is palpable. "Revving Up the Future" is not just a catchy phrase; it encapsulates the profound technological transformation underway in the transportation sector.

According to the data of Vahan, the passenger and cargo electric three-wheeler segment, the industry sold 4,04,143 units in FY2023, marking an increase of 118 per cent over FY 2022 indicating the increasing EV penetration across sectors. With this increasing demand and continuous advancements on the horizon, we are poised to witness a transformative era of transportation. The evolution of battery technology will unlock new potential for EVs, empowering longer ranges, and fast charging times giving more convenience to the users.

▼ Environmental Imperative

The imperativeness of addressing climate change and air pollution casts a spotlight on cleaner transportation solutions. Electric vehicles (EVs), with their zero tailpipe emissions, are emerging as the vanguard in significantly curbing greenhouse gas emissions and ameliorating air quality, particularly in urban landscapes.

▼ Technological Advancements

The linchpin of this transition lies in the relentless march of battery technology. Recent advancements have catalyzed an

NIMISH TRIVEDI,
Co- Founder & CEO, Evera

"In the midst of a revolutionary stage in the transport sector, whereby the ICE era is being replaced by alternative eco-friendly electric vehicles, the financial route emerges as a main motivator. The drive for electric vehicle finance is an advancement despite the hurdles involved, from purchase motivation to charging platforms. The government, financial institutions, and automakers have been collaborating to make EVs more affordable, but some challenges remain. India will witness positive developments for EVs in 2024 with the government's initiatives like FAME under the National Electric Mobility Mission Plan (NEMMP).
With a visionary goal of achieving 30% EVs on roads by 2030, 2024 holds the promise of increased adoption, innovative models, and affordable pricing. Looking forward, collaborative efforts must intensify to refine financing alternatives, fortify charging infrastructure, and cultivate a second-hand market, ushering in a future where EVs seamlessly accelerate us towards sustainability."

VIVEK DATTA,
MD & CEO, Globe Toyota

"The Indian automotive industry is on the brink of a transformative future, driven by emerging trends shaping travel and mobility consumption. Technological leaps in electric vehicles, autonomous driving, connectivity, digital sales, expanding the used-car market, and safety measures are reshaping the industry's trajectory, impacting urban and rural transportation. With a supportive regulatory environment and growing consumer demand, the electric mobility sector in India offers substantial opportunities for sustainable growth, steering the automotive industry toward a greener and cleaner future. As the industry evolves, stakeholders must navigate challenges and seize opportunities, contributing to the growth and sustainability of the Indian automotive landscape."

AKASH GUPTA,
Co-Founder & CEO,
Zypp Electric

"Shared mobility and Electric Mobility-as-a-Service (EMaaS) will redefine the way we commute. Ride-sharing platforms, car-sharing services, and integrated mobility solutions will reduce reliance on private vehicles, alleviating congestion and fostering a sustainable transportation ecosystem. Connectivity and IoT will play a pivotal role in shaping the future of smart mobility. Real-time data on traffic conditions, parking availability, and vehicle performance will empower users with seamless connectivity and a personalized experience."

unprecedented trifecta—enhanced range, heightened performance, and increased affordability of EVs. The precipitous drop in lithium-ion battery prices is a testament to the monumental strides, rendering EVs more economically viable and accessible than ever before.

▼ Government Support

India's electric and sustainable transportation sector is not merely an emerging market opportunity; it is a beacon for global transformation. As recently emphasized by John Kerry, U.S. Special Presidential Envoy for Climate, India's electrification drive in the transportation sector stands out as one of the most significant opportunities for combating climate change worldwide. This statement underscores the pivotal role India is poised to play in shaping a sustainable future.

Imagine the bustling roads of India's metropolitan hubs, such as Mumbai and Delhi, where the traditional roar of gasoline engines gradually gives way to the softer, cleaner hum of electric vehicles. This transition would be propelled by a combination of innovative technological breakthroughs, proactive governmental policies, and an increasingly eco-conscious public.

The Indian government is already playing a pivotal role in this shift, with initiatives like the FAME scheme and subsidies for EV buyers driving the market forward. Indian cities are entering a new chapter in urban mobility, gradually becoming equipped with larger and better-quality charging infrastructure.

However, the revolution in the Indian EV sector extends beyond mere passenger cars. The real game-changer lies in electrifying the most widely used vehicles—two-wheelers and auto-rickshaws. Companies are innovating with affordable and efficient models, including "retrofitting," making the transition to electric not just an environmental choice but also an economical one.

An exciting trend is the integration of renewable energy sources within the EV charging infrastructure. Solar-powered charging stations are emerging, symbolizing a truly sustainable transportation ecosystem. This synergy between renewable energy and EVs could redefine India's energy landscape, significantly reducing her carbon footprint.

SANDIIP BHAMMER,
Founder & Co-Managing Partner,
Green Frontier Capital

"In the near future, we're poised to witness a connected and intelligent transportation system—where electric buses with smart features, AI-enabled traffic management, and advanced battery technologies in electric vehicles become inevitable realities. As we leap into 2024 and beyond, India's adoption of electric and sustainable transportation transcends necessity; it's a visionary pursuit for a cleaner, greener, and more efficient future echoing in the streets of her cities and the aspirations of her people."

Local manufacturing of EVs and batteries is another area witnessing a surge. With Prime Minister Narendra Modi's 'Make in India' program gaining global momentum, India is poised to become a significant player in the global EV market, potentially reducing her dependence on oil imports and boosting her economy.

ROHAN SHRAVAN,
CEO and Founder, Tresa Motor

"The EV sector in 2024 is poised to undergo significant transformations, building upon the remarkable growth witnessed in 2023. Once considered a fanciful concept, EVs have rapidly become a thriving segment within the automotive industry. This shift can be attributed not only to the evident benefits of EVs but also to a notable change in public perception and heightened awareness regarding the environmental impact of traditional ICE vehicles."

▼ Shifting Consumer Preferences

The growth of electric and sustainable transportation solutions in India has experienced a steady rise, with a particular focus on the Electric Two-Wheeler (E2W) market, which has emerged as a crucial growth frontier. Government initiatives, environmental concerns, and evolving consumer preferences collectively pave the way for a transformative shift in India's transportation landscape.

The symbiotic relationship between India's economic growth and the two-wheeler sector underscores a robust correlation. As one of the largest two-wheeler markets globally, the nation reflects its economic prowess. Electric mobility presents users with benefits such as cost-effectiveness, environmental friendliness, and reduced ownership expenses.

residing in urban areas, electric two-wheelers provide a cleaner and more efficient mobility alternative, aligning with the country's commitment to combat pollution. The E2W market stands out as one of the fastest-growing industries, attracting numerous startups and fostering innovation.

While the scooter segment currently constitutes only 5% of the e-mobility market share, strategic pricing around 1 lakh rupees remains pivotal for market dominance. Electric Two-Wheelers (E2Ws) within this price range, crafted with durability similar to traditional petrol scooters, are poised to lead.

EVs, catering to cost efficiency and offering a wide range of models with upgraded technology, are gaining traction among consumers. India's commitment to achieving net zero by 2030 and regulating pollution aligns with the rising demand for EVs, complementing Niti Aayog's vision of making 70% of 2Ws electric by 2030.

▼ The Business Transformation

The rise of EVs is not just reshaping the roads, but also the business landscape. A pantheon of opportunities arises for innovators—

K VIJAYA KUMAR,
MD & CEO
SAR Electric Mobility

With over 34% of India's population

"India's increasing demand for electric vehicles (EVs) results from both public sector policies, exemplified by schemes like FAME, and private sector investment. Private enterprises, including startups, play a crucial role in driving innovation, further boosting EV adoption. Initiatives like FAME spur innovation in battery manufacturing, while the growing demand for EVs in the logistics sector contributes substantially to the industry's expansion."

DINESH ARJUN,
CEO & Co-founder,
Raptee

"The surge of EVs signifies a transformative breakthrough in the automotive sector, holding immense significance in the broader scope of global sustainability and transportation evolution. Examining the Indian market, electric vehicle sales reached a remarkable 1,090,641 units by the end of the 2022 fiscal year, showcasing a more than 2.5-fold increase from previous years. Leading the charge in EV adoption were states like Uttar Pradesh, Maharashtra, Karnataka, Bihar, and Delhi, collectively contributing over 60% to the market share between fiscal years 2014 and 2022. EV sales now constitute 5.59% of India's overall automobile sales, achieving record-breaking success across all vehicle segments. With this trend, the future outlook for EVsis exceptionally promising and poised to play a central and transformative role in shaping the automotive industry and addressing critical global challenges in the years to come."

from companies specializing in charging infrastructure to avant-garde car-sharing platforms. The ecosystem around sustainable transportation is in a state of dynamic expansion, mirroring the technological surge.

▼ Challenges and Opportunities

As with any paradigm shift, challenges loom large. Range anxiety, a dearth of charging infrastructure, and the upfront costs of EVs remain stumbling blocks. Yet, the landscape is evolving. Technological strides and policy recalibrations are clearing these impediments, transforming challenges into opportunities for a smoother transition.

▼ Conclusion

As we leap into 2024 and beyond,

India's embrace of electric and sustainable transportation is more than just a necessity; it's a vision of a cleaner, greener, and more efficient future, echoing in the streets of her cities and the aspirations of her people. The surge of EVssignifies a transformative breakthrough in the automotive sector, holding immense significance in the broader scope of global sustainability and transportation evolution. With a visionary goal of 30% EVs on roads by 2030, 2024 holds the promise of increased adoption, innovative models, and affordable pricing. Collaborative efforts must intensify to refine financing alternatives, fortify charging infrastructure, and cultivate a second-hand market, ushering in a future where EVs seamlessly accelerate us towards sustainability. ∎
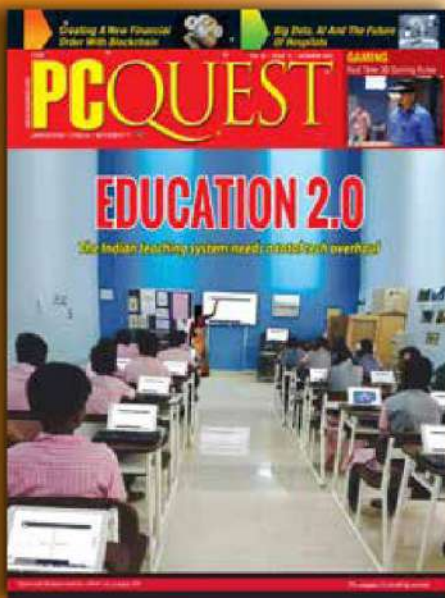
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How AI is fortifying cybersecurity

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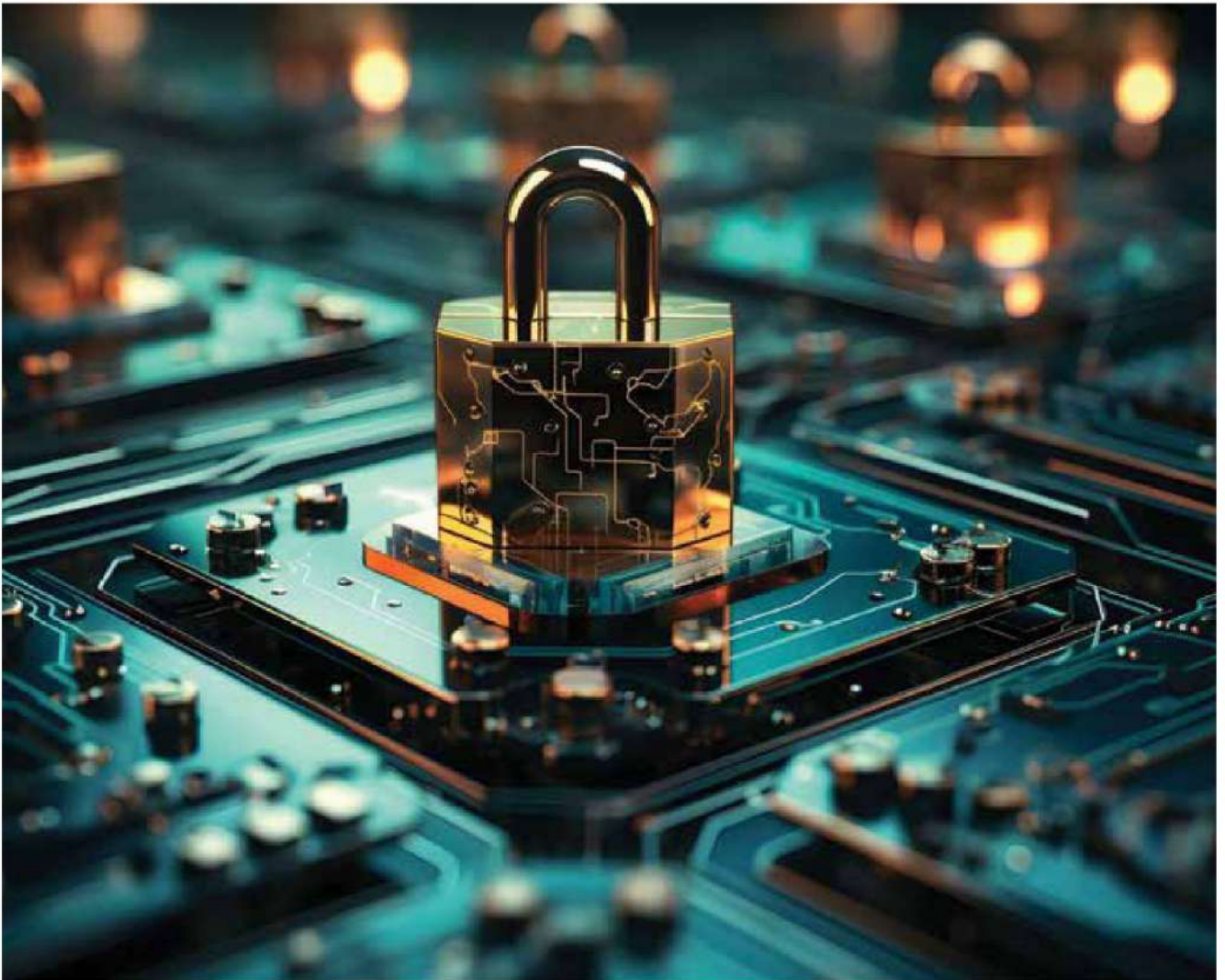
In the era of the digital realm, every keystroke echo, and every line of code weaves the fabric of our interconnected world. Cybersecurity emerges as the vigilant guardian in the eternal cat-and-mouse game between innovation and threat

As we navigate the intricate web of cyber threats in 2024, the role of AI stands out, not just as a tool for defense, but as a double-edged sword that demands a nuanced approach. From the cat-and-mouse game between cyber attackers and defenders to the rise of Artificial Intelligence Threat Risk Surface Management (AI TRSM), our digital future hinges on the delicate balance of leveraging AI's potential while safeguarding transparency, trust, and security. As we delve into the nuances of this intricate relationship, it's evident that AI is not just a technological advancement but a paradigm shift in how we defend and fortify our digital realms.

▼ The Cat-and-Mouse Game: Cybersecurity in the Age of AI

As we step into 2024, the dynamic interplay between Artificial Intelligence and cybersecurity transforms our digital defense landscape. AI emerges as a double-edged sword, offering groundbreaking tools for defense while empowering cybercriminals with unprecedented offensive capabilities. This paradox underscores the imperative to embrace AI-driven threat detection and response while staying vigilant against its potential weaponization.

▼ The Role of AI in Cybersecurity

AI has firmly grasped the cybersecurity industry, reshaping the digital defense landscape. From threat detection and response to vulnerability assessment, AI infiltrates every facet, augmenting human expertise and propelling us towards a more robust security posture. The advent of AI in cybersecurity introduces advanced capabilities such as threat detection, anomaly analysis, and real-time monitoring.

AI-driven bots, powered by advanced Machine Learning, automate routine integration tasks, facilitating smooth data exchange across platforms and cultivating heightened situational awareness. However, this power comes with

SAIRAMAN SRINIVASAN, Chief Strategy Officer, Consortium for Technical Education (CTE)

"The convergence of AI and cybersecurity is not just a technological shift; it's a paradigm change. We can harness AI's power to build a safer, more secure digital future by approaching this partnership with respect, awareness, and proactive risk management."

ethical considerations, accountability concerns, and susceptibility to manipulation, demanding careful mitigation strategies.

▼ Blockchain Beyond Cryptocurrency: Securing the Digital World

Supply Chain Management – One of the prominent applications of blockchain lies in supply chain management. Blockchain's unique ability to create immutable records ensures transparency and trust in the supply chain ecosystem. From product manufacturing to the point of sale, blockchain enables a

HARSHIL DOSHI, Country Director- India, Securonix

"As we enter 2024, the dance between AI and cybersecurity reshapes our digital defense. AI, a dual force, empowers defense and threat alike. Navigating this paradox demands embracing AI in detection, staying vigilant against misuse. Investing in secure AI is key for balance in our cyber landscape, where human expertise blends with intelligent algorithms to fortify against evolving threats. In this connected era, the imperative is clear: Collaborate with AI to preserve trust and resilience in our digital future."

secure and unalterable record of product ownership and evolution. This not only minimizes the risk of counterfeit products but also enhances overall confidence in the authenticity of goods.

Trust in Critical Systems – Blockchain technology is proving invaluable in critical systems such as drug traceability and digital voting. In the pharmaceutical industry, blockchain ensures the traceability of drugs from production to distribution, reducing the risk of counterfeit drugs entering the market. In the realm of digital voting systems, blockchain's secure and transparent nature can play a pivotal role in ensuring the integrity of electoral processes, protecting against manipulation and fraud.

Securing Records and Contracts – Blockchain's inherent features make it an ideal candidate for securing sensitive records and contracts. The secure and distributed nature of blockchain prevents the tampering of records related to property ownership, health records, and contractual agreements. It establishes an unbreakable chain of ownership, providing a level of security that traditional centralized systems struggle to achieve.

Smart Contracts – Blockchain's impact extends to the automation of contractual processes through smart contracts. These self-executing contracts have terms encoded directly into lines of code, allowing for

KIRAN VANGAVETI,
Founder and CEO, BluSapphire

"What blockchain offers is a secure and unalterable record of transactions. Hence, it can be used to prevent the counterfeiting of records, and it is a very good candidate to help maintain property records, health records, and contracts. It helps ensure and establish a proper chain of ownership, which cannot be violated due to the secure distributed model of blockchain."

automatic enforcement when predetermined conditions are met. Blockchain ensures the transparency and tamper-proof nature of smart contracts, eliminating the need for intermediaries and streamlining various contractual processes. This not only reduces the risk of disputes but also accelerates the execution of agreements.

▼ Challenges and Solutions

The current security landscape, characterized by a sprawling web of interconnected applications, presents a unique challenge. Maintaining system cohesion in this ever-changing environment requires nimble, data-centric management methodologies. Companies must act proactively to harness AI's potential while safeguarding cybersecurity.

Algorithmic Audits: Regular audits pinpoint and alleviate biases within the data that fuels AI systems.

Vulnerability Testing: Rigorous testing identifies and patches vulnerabilities in AI systems before malicious actors exploit them.

Collaboration: Partnering with cybersecurity experts leverages human expertise to guide AI development and deployment.

RITESH CHOPRA,
India Director, Norton

"In the digital era's cat-and-mouse game between innovation and threat, cybersecurity stands guard. AI, a double-edged sword, fortifies defenses against cybercriminals, yet they wield AI for sophisticated attacks. In 2024, AI emerges as the unsung hero, empowering cybersecurity with advanced threat detection and real-time monitoring. It's a battle of wits in the digital frontier, where intelligent machines learn and fortify our defenses. As global leaders in Cyber Safety, our aim is to empower users with tools and knowledge, safeguarding Digital Freedom against evolving threats."

Diverse Audits: Beyond internal assessments, seeking external perspectives uncovers blind spots.

▼ The Unsung Hero: AI in 2024

In 2024, AI emerges as the unsung hero in the cybersecurity landscape. Advanced threat detection, anomaly analysis, and real-time monitoring become the superpowers in the hands of cybersecurity experts. It's an age where intelligent machines stand guard, learning from every skirmish to fortify our digital defenses.

▼ AI TRiSM: Transforming Cybersecurity

Artificial Intelligence Threat Risk Surface Management (AI TRiSM) is a sophisticated process that harnesses the power of AI to identify and manage the ever-evolving cyberattack landscape across an organization's IT infrastructure. Organizations prioritizing transparency, trust, and security in their AI models will witness a significant 50% improvement in AI adoption, business outcomes, and user acceptance by 2026.

The global AI TRiSM market, valued at

CHANDER DAMODARAN, Global Chief Technology Officer, Brillio

"AI Threat Risk Surface Management (AI TRiSM): A game-changer in cybersecurity, leveraging AI to identify and manage evolving cyber threats. Impact takes it a step further, using AI to enhance threat detection and response, fortifying cybersecurity. By prioritizing transparency and security in AI models, organizations can see a 50% boost in adoption and business outcomes by 2026. The booming AI TRiSM market, valued at $16.5 billion in 2021, is set to reach $91.7 billion by 2032, fueled by AI adoption and the demand for transparency and trust in the AI landscape."

approximately $16.5 billion in 2021, is projected to experience a robust growth rate of 16.2% over the next decade, reaching a valuation of nearly $91.7 billion by the end of 2032. This growth is primarily driven by the increasing adoption of AI, the growing awareness of AI-related risks, and the heightened demand for AI transparency, trust, and security.

▼ The Indian Perspective: Innovations and Challenges

The technology landscape in India has

SONIT JAIN, CEO, GajShield Infotech

"With the surge in sophisticated cyberattacks and the constant evolution of threat landscapes we are standing at the forefront, anticipating the automation of cyberattacks. We remain committed to empowering professionals with cybersecurity knowledge and skills, offering cutting-edge solutions to combat the rising tide of AI-driven threats and reinforcing India's resilience in the face of evolving challenges."

▼ "What blockchain offers is a secure and unalterable record of transactions. Hence, it can be used to prevent the counterfeiting of records, and it is a very good candidate to help maintain property records, health records, and contracts. It helps ensure and establish a proper chain of ownership, which cannot be violated due to the secure distributed model of blockchain."

— Kiran Vangaveti, Founder and CEO, BluSapphire

witnessed dynamic shifts, marking an era of rapid innovation and adoption. From developing cutting-edge AI capabilities to adopting data-centric security and high-performance Edge computing, India has proven itself to be one of the most innovative nations in the world.

Despite these technological advances, the cybersecurity scenario unveils fresh challenges. Cybersecurity concerns loom large as organizations grapple with escalating cyber threats. The dependence on digital systems poses distinctive hurdles for organizations in their quest to safeguard sensitive information and uphold the trust of their customers.

The rise of Artificial Intelligence in 2023 marked a significant change. AI's advanced data analysis capabilities are increasingly used to identify and predict cyber threats, enhance early detection systems in various sectors, revolutionize processes, and improve efficiency and decision-making. The data-centric security landscape in 2024 promises a continued evolution toward a more privacy-centric and ethical approach.

▼ Future Perspectives: Quantum Computing and Beyond

The cat-and-mouse dynamic in cybersecurity is not just a technological issue but also involves legal, ethical, and policy

SAKET VERMA,
Cybersecurity- India Practice leader, Kyndryl India

dimensions. The advent of quantum computing is set to further elevate the capabilities of both attackers and defenders to a whole new level. While quantum computing may not be generally available for another decade, early adopters will have a massive edge over those who don't.

Defenders are already working on quantum proof crypto algorithms to defend against this eventuality. This quantum leap in computing power introduces new challenges and opportunities in the ongoing cat-and-mouse game, urging the cybersecurity landscape to evolve rapidly.

▼ Forging a Secure Digital Future

The convergence of AI and cybersecurity is not just a technological shift; it's a paradigm change. We can harness AI's power to build a safer, more secure digital future by approaching this partnership with respect, awareness, and proactive risk management.

The age of 2024 is characterized by a relentless cat-and-mouse game, where AI is both the defender and the adversary. It's a battle of wits in the digital frontier, and as we advance, the collaboration between AI and cybersecurity isn't just a necessity; it's an imperative for ensuring the resilience of our digital ecosystems and preserving trust in the years ahead. As we stand at the forefront of anticipating the automation of cyberattacks, the commitment to empowering professionals with cybersecurity knowledge and skills becomes more critical than ever. This commitment, coupled with cutting-edge solutions, will fortify our digital defenses and reinforce our resilience in the face of evolving challenges. ■

"Despite the technological advances, the cybersecurity scenario unveils many fresh challenges. Cybersecurity concerns loomed large as organizations grappled with the escalating cyber threats. The dependence on digital systems poses distinctive hurdles for organizations in their quest to safeguard sensitive information and uphold the trust of their customers. Thus, the need for robust defense mechanisms against cyber-attacks and data breaches became paramount, prompting significant investments in data-centric security infrastructure."

VISHAL GUPTA,
Founder and CEO, Seclore

The confluence of blockchain, DeFi, NFTs, and CBDCs

Ashok Pandey
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In the dynamic landscape of finance, the amalgamation of cutting-edge technologies is reshaping the way we perceive, access, and interact with our financial systems

In the dynamic sphere of financial technology, a convergence of cutting-edge innovations is fundamentally reshaping our approach to and interaction with financial systems. At the epicenter of this paradigm shift is a robust integration of blockchain, cryptocurrency, Decentralized Finance (DeFi), Non-Fungible Tokens (NFTs), and Central Bank Digital Currencies (CBDCs). This analysis delves deep into the intricate fabric woven by these technologies, dissecting their individual impacts and uncovering the potential synergies that could reshape the entire global financial landscape.

Navigating the intricate domains of decentralized banking, digital ownership, and the future of currency, we are witnessing a seismic financial revolution taking form. The promises it holds—transparency, inclusivity, and efficiency—are pivotal benchmarks that signify a transformative trajectory for the financial ecosystem.

▼ Decentralized Finance (DeFi): The Future of Banking

Democratizing Finance through Blockchain:At the forefront of this revolution is DeFi, a paradigm shift in financial access. Utilizing decentralized blockchain networks, DeFi eliminates the traditional reliance on central institutions and intermediaries. It operates on peer-to-peer relationships, providing a secure and inclusive alternative to conventional banking.

The advantages of DeFi over traditional finance: Accessibility, affordability, inclusivity, speed, and reach are the pillars on which DeFi stands.

- *Accessibility –* With just a phone and an Internet connection, people can manage their finances in secure digital wallets, moving beyond the constraints of physical banks.
- *Affordability –* DeFi operates on a peer-to-peer basis, significantly reducing the costs associated with banking services.
- *Inclusivity –* DeFi is permissionless, making it particularly beneficial for those often excluded due to a lack of credit history or paperwork, which is common amongst the poorest of the poor.

RAJAGOPAL MENON,
Vice President, WazirX

"Decentralized finance, or "DeFi," is transforming financial access through a decentralized blockchain network. It democratizes finance, offering an innovative alternative to traditional banking systems. DeFi operates on peer-to-peer relationships, eliminating the need for central institutions and intermediaries."

- *Speed –* Transactions in DeFi are almost instantaneous, ensuring funds can be transferred within seconds.
- *Reach –* DeFi proves to be a boon in rural areas where conventional banking services are underdeveloped. It serves as a virtual bank for the unbanked and underbanked, a critical feature in a country like India, where millions

SATISH MOHAN,
Founder & CTO, Dhiway

"The rise of Decentralized Finance (DeFi) is reshaping global banking. With blockchain at its core, DeFi democratizes financial services, bypasses intermediaries, and fosters inclusivity. This paradigm shift enables peer-to-peer transactions, catering especially to the unbanked. Ensuring transparency, security, and accessibility, DeFi offers lucrative incentives, transforming traditional banking."

lack adequate banking facilities.

Integration with Aadhaar Stack: The integration of DeFi with the Aadhaar stack in India could be revolutionary. This union could bring financial services like loans, savings, and insurance directly to the fingertips of the 600 million Indians residing in villages. Moreover, DeFi marketplaces offer unique opportunities for local artisans to sell their art as digital NFTs to a global audience, opening new economic frontiers and empowering communities.

Regulatory Landscape in India: While India embraces blockchain and DeFi innovations, the regulatory landscape remains cautious. The Reserve Bank of India (RBI) has shown interest in exploring blockchain technology's potential but emphasizes the need for regulatory frameworks to manage risks associated with cryptocurrencies and DeFi. As companies like Dhiway innovate applications for asset tokenization, regulatory environments must evolve to accommodate these disruptive technologies.

Non-Fungible Tokens (NFTs): Redefining Digital Ownership

Empowering Digital Artists:NFTs have emerged as a powerful tool for digital content ownership. Built on immutable blockchain technology, NFTs provide transparent and traceable ownership for digital artists and creators worldwide. The metadata, including transaction history, ownership, and licensing terms, is stored on the blockchain, preventing piracy of digital arts.

Evolution of NFT Marketplaces:As of 2022, OpenSea has been a market leader in NFT trading. However, the landscape is evolving, and in 2023, Blur, a recently emerged NFT marketplace, has recorded more daily transactions

SARAVANAN JAICHANDARAN, Co-Founder & Chief Data Scientist, bitsCrunch

"NFTs empower digital artists globally by establishing authentic ownership through blockchain technology. Metadata, including transaction history and licensing terms, is stored on the unalterable blockchain, preventing piracy. In 2023, Blur, a new NFT marketplace, surpasses OpenSea in daily Ethereum transactions. Offering fee-free minting and trading, Blur gained popularity since its 2022 launch. However, the rise in scam rates necessitates vigilance from NFT traders. Despite environmental concerns and regulatory complexities, data analytics can mitigate scams, unlocking the transformative potential of NFTs for creators."

on Ethereum than OpenSea. Blur's popularity is attributed to its user-friendly approach, allowing users to mint, buy, and sell NFTs with no charges. With the rise of new marketplaces, the need for due diligence has never been more critical for NFT traders and creators.

Challenges and Potentials:While NFTs revolutionize digital arts, challenges such as environmental concerns due to blockchain technology's energy consumption and legal and regulatory complexities persist. However, the use of data analytical tools to counter scams

SHAILESH DHURI, CEO, Decimal Point Analytics

"In the future of finance, our strategy is clear: cut costs, speed up trades, and build trust through transparent systems. Central banks control with seamless access and upgrades. Collaboration and innovation guide us in this digital revolution, shaping unprecedented control, accessibility, and trust globally. Fostering a transnational network, exchanging diverse CBDCs through smart contracts, and deploying purpose-encoded CBDCs with specific rules combat illegal activity. Promoting financial inclusion by extending access empowers nations and individuals."

and understand trade patterns could unlock the immense potential of NFTs in simplifying and improving the lives of creators.

Central Bank Digital Currencies (CBDCs): The New Era of Money

Shaping the Future of Finance:Central Bank Digital Currencies (CBDCs) represent a new era in finance. The strategy involves reducing costs, accelerating trades, and building trust through transparent systems. By fostering a transnational network and enabling the exchange of diverse CBDCs through smart contracts, central banks aim to gain unprecedented control, accessibility, and trust in global finance.

Purpose-Encoded CBDCs:The deployment of purpose-encoded CBDCs with specific transaction rules, such as combating illegal activity, is a key element in this digital revolution. Additionally, promoting financial inclusion by extending access to instruments and government schemes contributes to shaping a financial landscape that empowers nations and individuals alike.

A Unified Financial Ecosystem

The confluence of Blockchain, Cryptocurrency, DeFi, NFTs, and CBDCs paints a picture of a unified financial ecosystem that is transparent, inclusive, and efficient. As DeFi democratizes financial access, NFTs redefine digital ownership, and CBDCs usher in a new

RAHUL PAGIDIPATI,
CEO, ZebPay

"The banking industry has witnessed a digital revolution, and now, the focus is on Decentralised Finance (Defi). Enabled by blockchain, Defi services utilize smart contracts for peer-to-peer interactions, offering lending, borrowing, and asset tokenization without centralized control. The rise of Decentralised Autonomous Organizations (DAOs) further transforms the landscape, fostering community-driven decision-making through democratic voting mechanisms."

era of money, the synergy of these technologies is poised to revolutionize traditional banking and financial services across the globe.

As the regulatory landscape evolves, companies play a pivotal role in driving innovation in the fintech sector. The collaborative efforts of governments, financial institutions, and tech innovators will shape the future of finance, offering secure, transparent, and compliant solutions that pave the way for a more inclusive financial future. The journey towards a decentralized, digitized, and democratized financial landscape is underway, and the possibilities are as vast as the blockchain itself. ▪
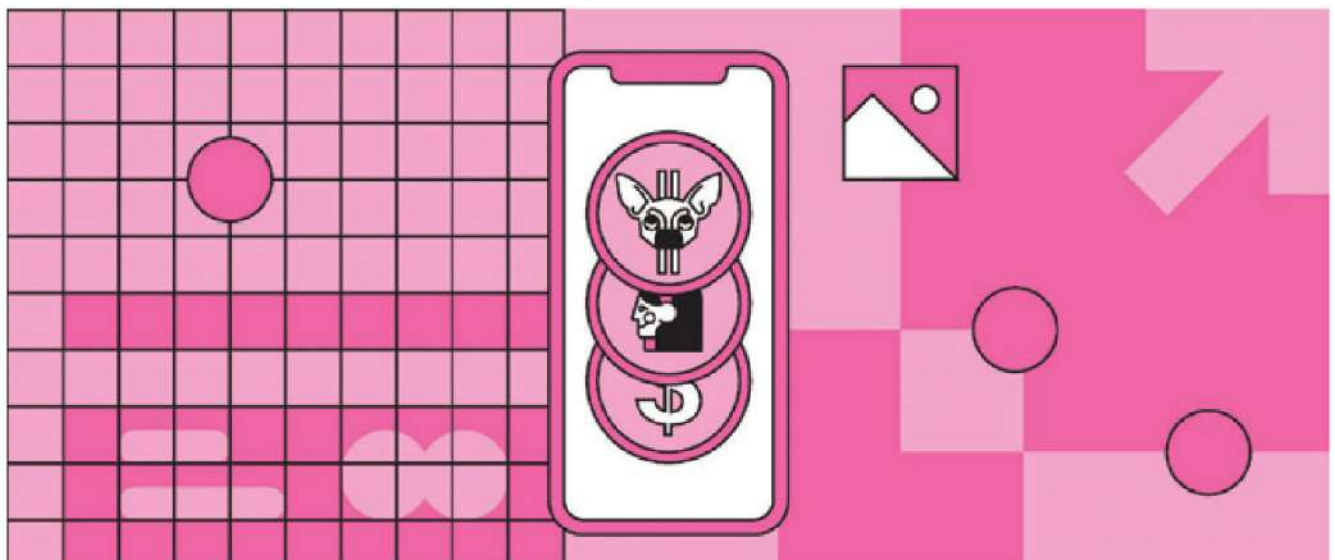
A new dawn in assistive innovation

Ashok Pandey
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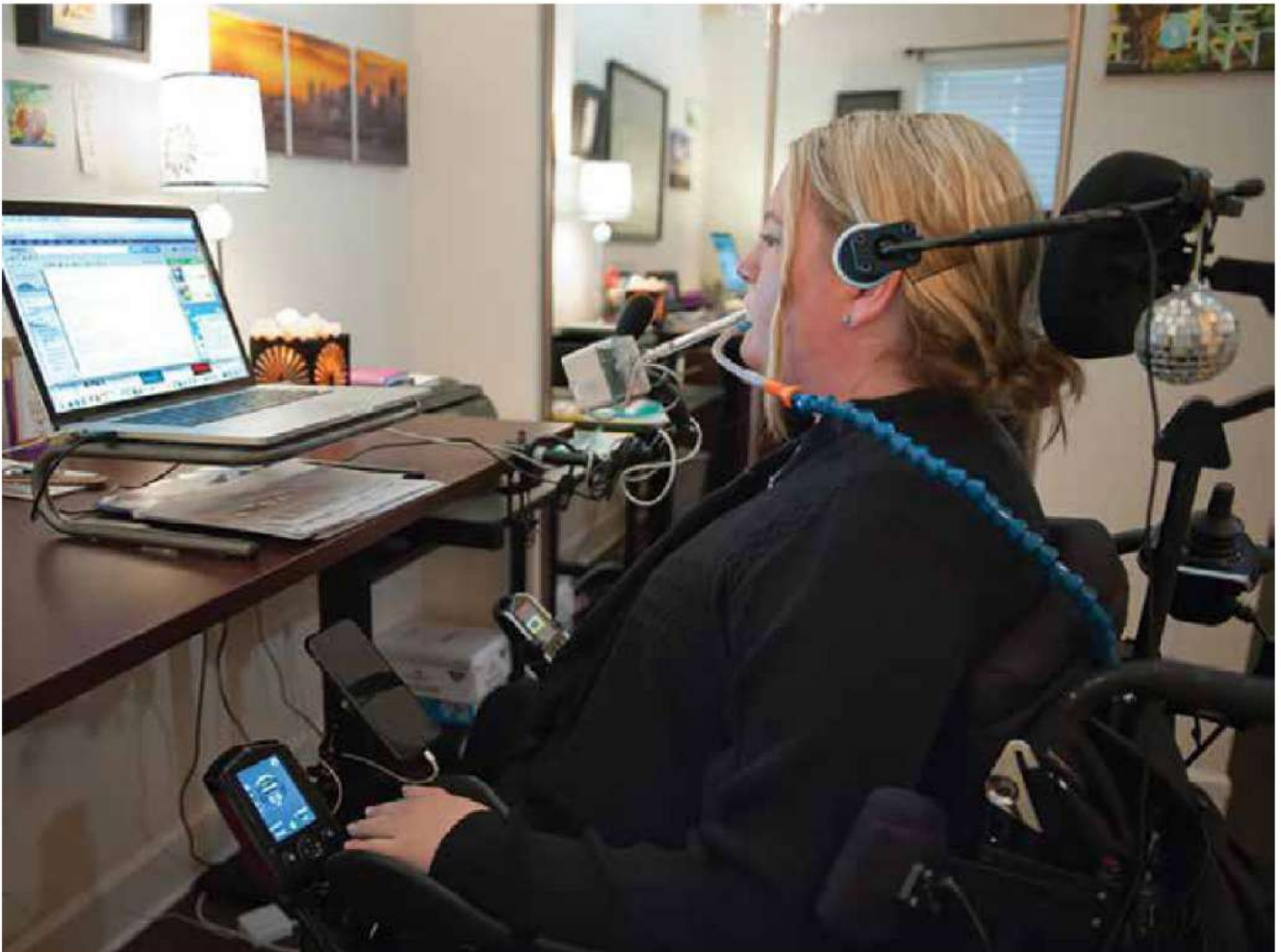
Assistive Technology (AT) is more than just overcoming physical limitations; it's a catalyst for creating a more accessible and inclusive world. Recent technological innovations in mobility, vision, hearing, and cognitive domains are transforming lives and shaping a future where abilities are celebrated, and barriers are dismantled

n the dynamic landscape of healthcare, recent research from the Centers for Disease Control and Prevention (CDC) has revealed a significant and concerning trend: the prevalence of autism is on the rise. The latest data, as of 2023, indicates that one in 36 children is now diagnosed with autism, marking a notable increase from one in 44 just two years ago. As this report is freshly released, it is anticipated that these statistics will persist through 2024.

In the dynamic landscape of technology, one area stands out for its profound impact on humanity—Assistive Technology (AT). Defined as tools and devices designed to aid individuals with disabilities, AT plays a pivotal role in empowering differently-abled individuals, ensuring they have equal access to information, communication, and mobility. As we delve into recent advancements, it becomes evident that AT is not just about overcoming physical limitations; it's about fostering inclusivity and creating a more accessible world.

CHINTAN VAISHNAV, (Mission Director, Atal Innovation Mission, Chair, Startup 20 G20)

"Assistive technology is one of the areas where India is absolutely ready to serve the world with affordable and ingenious innovations. We must build the necessary ecosystem as fast as possible. The Atal Innovation Mission Official will be supporting the AssisTech Foundation to establish India's first incubator entirely focused on assistive technologies—for convening as many stakeholders as possible to contribute to building this ecosystem."

▼ Empowering Abilities: Innovations in Assistive Technology Reshaping Lives

In a world where technology acts as more than just a luxury, imagine it as a bridge—breaking down barriers and empowering individuals with disabilities to reach their full potential. This transformation is unfolding before our eyes, driven by revolutionary advancements in assistive technology.

▼ Bionic Breakthroughs:
1. Prosthetics that Feel and Move Like Real Limbs:

Advanced prosthetics equipped with

sensors and AI go beyond functionality; they provide feedback, mimicking natural movement and enabling activities once deemed impossible. This breakthrough brings a new level of realism and functionality to artificial limbs.

2. Brain-Computer Interfaces (BCIs):

Pioneering technologies like BCIs empower individuals with paralysis to control robotic limbs or operate devices using their thoughts. This groundbreaking advancement paves the way for unprecedented independence, offering a glimpse into a future where the mind seamlessly interacts with technology.

SIDDARTH DAGA, Co-Founder, Neomotion, Startup accelerated under Cohort 4 of ATF Enable Acceleration Program

"As we revolutionize urban mobility, the recent success in making metro trains wheelchair accessible is a testament to progress. However, to truly embrace inclusivity, it's imperative that we extend this accessibility to our traditional railways for both long-distance and local travel. While motorized and ergonomically adept wheelchairs, such as those from Neomotion, represent remarkable strides in accessible and independent mobility, it's crucial to recognize that these solutions, while groundbreaking, are only a halfway point. True inclusivity for all individuals, including those with mobility challenges, can only be achieved through comprehensive urban planning that is both integrated and designed with and for assistive technology (AT). These devices open doors to possibilities, but a fully inclusive future requires a cityscape where AT is seamlessly woven into the fabric of urban design, ensuring accessibility becomes a natural part of our communal experience."

3. Sensory Restoration:

Bionic eyes and ears offer hope for the visually and hearing impaired. The potential to restore sight and sound or provide alternative

sensory experiences is not just a scientific marvel but a life-changing prospect for those who have longed for these capabilities.

▼ Cognitive Assistance:

1. AI-Powered Companions:

Adapted virtual assistants like Alexa or Google Assistant become vital companions for individuals with cognitive impairments. They manage tasks, remind users of medication, and offer emotional support, showcasing the transformative power of AI in enhancing daily life.

P RAJASHEKHARAN,
Co-Founder, V-Shesh

"We are witnessing a significant amount of public infrastructure development with accessibility features treated as an afterthought. This is problematic because fixing a flawed design is undoubtedly much more costly. A case in point is several modern Metro Stations in all cities with inaccessible ramps, toilets, and reflective/slippery surfaces. Accessibility must be at the center of any urban planning exercise, and the design stage should include ensuring compliance with accessibility standards. Only then will we make progress toward achieving truly inclusive Smart Cities for all."

2. Augmentative and Alternative Communication (AAC) Devices:

From voice-activated tablets to eye-tracking systems, AAC devices enable effective communication for individuals with speech difficulties. Breaking down barriers to social inclusion, these tools empower users to express themselves with ease.

3. Neurofeedback and Brain Training Apps:

Technologies designed to improve focus, manage emotions, and enhance learning skills are empowering individuals with conditions like ADHD or autism. These apps provide a pathway for individuals to take control of their cognitive well-being.

▼ Accessible Environments:

1. Smart Homes:

Voice-activated devices that control lighting, temperature, and anticipate needs are creating safe and independent living spaces for individuals with mobility limitations. Smart homes are evolving into intuitive environments that cater to specific needs.

2. Exoskeletons:

Robotic suits that augment human strength are enabling individuals with spinal cord injuries to walk again, climb stairs, and experience a newfound sense of physical freedom. Exoskeletons are rewriting the possibilities for mobility.

3. Smart Mobility Aids:

AI-powered wheelchairs are not just tools; they are intelligent companions that navigate obstacles, guide users to destinations, and seamlessly connect with smart homes. These innovations are reshaping mobility, offering a new dimension to wheelchair functionality.

▼ Challenges

While these advancements are undeniably life-changing, challenges persist. Cost, accessibility, ethical considerations surrounding data privacy, and the quest for equitable access demand dedicated efforts. However, ongoing research and collaboration between tech companies, policymakers, and disability rights advocates are paving the way for a future where assistive technology is readily available, empowering everyone to not just exist but thrive. This journey is not without obstacles, but it is a testament to the indomitable spirit of innovation and inclusivity.

▼ Smart Cities for All: Empowering Independent Living

Envision a city where navigating its bustling streets is an effortless experience for everyone, irrespective of physical limitations. Envisage a home that not only meets your daily needs but also anticipates your every move. This is the future promised by the convergence of "Smart Cities for All" initiatives and the transformative

potential of AI-powered assistive technologies.

Cities, brimming with potential, often pose accessibility challenges that hinder inclusivity. Yet, smart city initiatives are leveraging technology to dissolve these barriers, crafting truly inclusive urban environments.

1. Accessible Navigation: For visually impaired pedestrians, tactile paving, audible crosswalks, and AI-powered route planning apps are transforming city navigation. The introduction of smart traffic lights, with extended crossing times, and accessible public transportation featuring lowered floors and real-time information addresses the needs of individuals with mobility limitations.

2. Inclusive Infrastructure: The evolution towards inclusive infrastructure envisions wide ramps, automatic doors, and elevators becoming the norm in every building. Smart parking systems, boasting designated accessible spots and digital guidance, alleviate parking struggles. Parks and public spaces are reimagined with universal accessibility, featuring accessible paths, sensory gardens, and inclusive play areas for everyone.

3. Connected Citizenry: Digital

RAMU MUTHANGI,
CEO & Co Founder, SHG Technologies, Startup accelerated under Cohort 4 of ATF Enable Acceleration Program

"The future holds the promise of an interconnected world where AI, ML, and Robotics seamlessly enhance our lives, foster innovation, and usher in an era of unprecedented possibilities. With the same belief, SHG Technologies has developed Smart Vision glass, an innovative Artificial Intelligence-based wearable device that can help the visually impaired read, navigate, recognize objects, and people. The AI and built-in navigation capabilities enable the Smart Vision Glasses to inform the users of the nature of their immediate surroundings, obstacles, locations, and even the expression on people's faces with whom they are communicating. It is the next best thing to having vision. In essence, it acts as a seeing eye and a personal assistant."

kiosks with voice-activated features, accessible websites and apps, and community alerts disseminated through various channels ensure everyone stays informed and connected in the digital age.

▼ AI and Robotics for Independent Living: A Look into the Future

Picture a future where robots aren't confined to factory floors but seamlessly
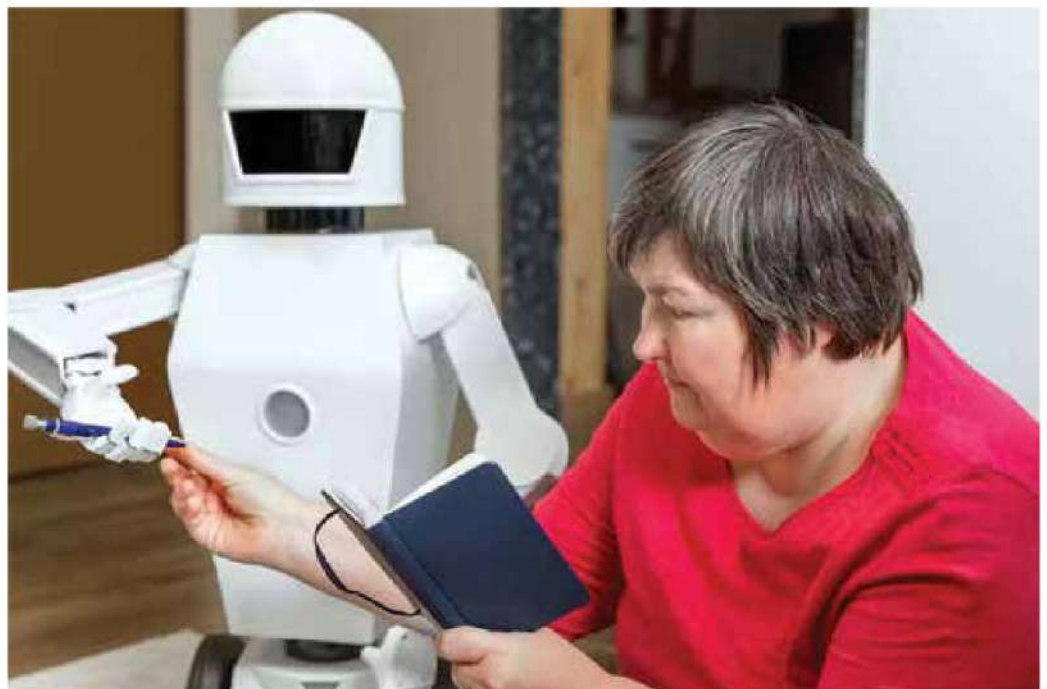
integrate into our homes, becoming indispensable companions that assist with daily tasks and empower individuals of all abilities to live independently. This vision is not rooted in science fiction; it's a tangible horizon within our reach, driven by the convergence of AI and robotics.

▼ Robot Companions

1. Assistive Robots: Envision robotic helpers like Pepper or ElliQ seamlessly integrating into daily life—fetching objects, preparing meals, reminding individuals of medication, and offering emotional support. These robots are not just aids; they represent a reduction in dependence on caregivers, fostering a greater sense of autonomy.

2. Social Robots: Combatting loneliness and isolation, social robots are designed to provide companionship, engage in conversation, and remind individuals of social appointments. These friendly bots go beyond functionality; they contribute to mental well-being by creating meaningful connections.

▼ Smart Homes

1. Adaptive Environments: Think of homes that anticipate your needs—adjusting lighting, temperature, and controlling devices based on your preferences and routines. AI-powered systems learn habits, creating a personalized haven of comfort and convenience that adapts to individual lifestyles.

2. Robotic Assistants: Imagine robotic arms seamlessly handling household chores, cleaning floors, or assisting with cooking. These robotic assistants not only save time but also enhance overall quality of life, allowing individuals to focus on activities they enjoy.

▼ Mobility Assistive Technologies

1. Exoskeletons: Robotic suits, or exoskeletons, amplify human strength, enabling individuals with spinal cord injuries or muscle weakness to stand, walk, and regain physical freedom. The transformative potential for rehabilitation is groundbreaking, offering renewed independence.

2. Smart Wheelchairs: AI-powered wheelchairs are evolving into intelligent companions, navigating obstacles,

PRATEEK MADHAV,
CEO & Co-Founder,
ATF

"The AT ecosystem has come a long way. When ATF began its journey, there were only a handful of startups, not more than single digits. Today, we witness a thriving ecosystem with over 450 AT startups, reflecting the nation's commitment to empowering abilities through technological advancements. This transformative surge is a testament to the evolving nation and its prime focus on innovation."

avoiding collisions, and guiding users to destinations. These innovations redefine mobility, transforming wheelchairs from mere transportation tools into personalized, adaptive devices.

▼ Challenges and the Way Forward

While these advancements are promising, challenges persist. Ethical considerations surrounding data privacy, job displacement, and the imperative of ensuring equitable access demand careful attention. Collaboration between tech companies, policymakers, and disability rights advocates is pivotal for responsible development and inclusive deployment of these technologies.

As we reflect on the current state of assistive technology and its trajectory, it's evident that the journey is both promising and imperative. The collective efforts to empower individuals with diverse abilities through AT are not just about technology; they're about reshaping the future for a more inclusive and technologically empowered society. The journey towards a world where abilities are celebrated, and barriers are dismantled is well underway, and the role of assistive technology is central to this transformative narrative. ■

Unleashing a technological metamorphosis

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The cloud revolution is not just about technological advancements; it's a seismic shift that empowers organizations to transcend traditional boundaries, fostering innovation, collaboration, and efficiency

In the dynamic tapestry of technological evolution, the Cloud Revolution stands as an unrivaled force, orchestrating a profound metamorphosis across industries and reshaping the very essence of how we perceive and engage with the digital realm. According to a recent TechJury study, the cloud market is poised to soar to $1.55 trillion by 2027, underscoring its pivotal role in the global IT landscape. Beyond mere statistics, this revolution is a seismic shift, empowering organizations to transcend conventional boundaries, fostering a new era of innovation, collaboration, and

operational excellence. Let's embark on a comprehensive exploration of the multifaceted dimensions of the Cloud Revolution and its far-reaching impact on diverse sectors.

▼ Cloud Agility Fuels Innovation and Operational Excellence

At the heart of the Future Tech realm, the Cloud Revolution emerges as a transformative catalyst, reshaping the way businesses operate. Organizations now prioritize on-demand scalability, seamlessly adjusting resources to meet fluctuating needs. Tools like Kubernetes facilitate swift deployments, while Continuous Integration/ Continuous Deployment (CI/ CD) streamlines Software Development Life Cycle (SDLC) management. The future emphasizes a meticulous focus on the total cost of ownership, employing advanced monitoring for rapid failure detection.

The amalgamation of open-source systems and cloud computing accelerates development, fostering

PIYUSH SOMANI.
Chairman and MD
ESDS Software
Solutions

"The cloud revolution has reshaped the global IT landscape, turning businesses into strategic enablers. It goes beyond technology, fostering adaptation, thriving, and innovation in the digital age. Its impact spans from global enterprises optimizing workloads to cloud-born startups. The interplay of cloud and AI is transforming our understanding of the world, shaping the future, redefining industries, and empowering businesses for accelerated growth and innovation."

MOIZ ARSIWALA,
CTO, WorkIndia

"In the fast-paced world of Future Tech, the Cloud Revolution transforms businesses with on-demand scalability and operational excellence. Tools like Kubernetes and CI/CD streamline development, while a focus on total cost of ownership and advanced monitoring ensures robustness. The synergy of open-source systems and cloud computing accelerates development, enhancing cost efficiency and expediting innovation. The cloud becomes a dynamic catalyst, propelling us into an era of unprecedented progress and experimentation."

MOHAMMED IMRAN K R, CTO, E2E Networks

"Over the last decade and a half, cloud technologies have fundamentally transformed how businesses build, scale, and launch their platforms. In the past, significant investment in infrastructure was a barrier to innovation. Cloud technology has democratized access to this infrastructure, providing instant access to compute and GPU resources. This enables businesses to innovate at an accelerated pace and scale rapidly. Cloud technology allows businesses to experiment, fail fast, and rebuild, all without the constraints of traditional infrastructure. Now, as we step into the decade of AI, instant access to advanced cloud GPUs like HGX 8xH100, A100, and others, offered by hyperscale cloud providers will enable businesses to safely and securely deploy AI and harness their benefits, paving the way for a new era of technological advancement and business innovation."

agility. This synergy not only enhances cost efficiency but also facilitates value delivery and expedites experimentation, propelling us into an era where the cloud is a dynamic catalyst for unprecedented innovation and progress.

▼ Cloud's Role in Operational Efficiency and Resilience

As businesses ascend into the digital stratosphere, the Cloud Revolution acts as a catalyst that transforms operations and propels organizations into unprecedented efficiency, scalability, and resilience. The ability to provide agile infrastructure allows companies to rapidly provision precise IT resources, crucial for supporting remote work, fostering collaboration, and ensuring seamless access to data and applications. This fluid digital environment enables businesses to remain resilient and act with agility in response to new opportunities and unpredictable events.

However, resilience is key to fully harnessing the cloud's potential. Recent industry studies highlight that outages have an estimated cost of $365,000 per hour of downtime for businesses. As more mission-critical workloads move to the cloud, firms must architect resilience upfront with disaster recovery provisions to ensure business continuity. Prioritizing cyber-resilient cloud adoption empowers businesses to compete globally, spurring technology-led growth.

▼ Cloud AI Revolutionizing End-User Experiences and Data Centers

The Cloud AI revolution is transforming every domain, streamlining daily end-user tasks, and sparking revolutions across industries such as automobile, healthcare, and education. On the data center provider side, Cloud AI is rapidly changing the infrastructure, especially traditional cooling

SANJEEV CHHABRA, Managing Director & CEO, Beetel Teletech

"As businesses soar into the digital realm, the Cloud Revolution is a transformative catalyst, offering unprecedented efficiency, scalability, and resilience. Its agile infrastructure supports remote work, fosters collaboration, and ensures seamless access to data. Beyond a technological evolution, the cloud is a seismic shift in how enterprises thrive in an ever-evolving landscape. In India, the public cloud services market is expected to reach $13.5 billion by 2026, growing at a CAGR of 24%. The dawn of the cloud era brings boundless opportunities for Indian businesses."

DHARMENDRA CHOUHAN, Director of Engineering, Kyvos Insights

"The cloud has enabled small organizations to scale their processing capacity based on their needs, which has enabled them to create solutions that they could have never done with a datacenter. Large organizations have adopted the cloud to address the challenges of processing large data volumes while still adhering to stringent security compliances".

systems, insufficient for GPU-intensive AI workloads. Liquid-cooled GPU systems offer a more efficient solution in heat absorption and transport, addressing the demands of high-performance computing requirements.

▼ Evolution of Cloud Technologies

Reflecting on the journey of cloud technologies, from the launch of AWS around 2006 to the present, we witness multiple evolutionary milestones. Initially, it addressed storage and compute services, and today, it encompasses data products and Generative AI-based services. The

–"We are in the midst of the Cloud AI revolution! On the end-user front, this revolution is transforming every domain right from streamlining daily end-user tasks to sparking revolutions across industries especially in automobile, healthcare and education. On the datacentre provider side, Cloud AI is rapidly changing the DC infrastructure, especially the traditional cooling systems which are insufficient as the GPU-intensive AI workloads generate significant heat. These requirements are now increasingly being met through a Liquid-cooled GPU system which is more efficient in heat absorption and transport and offers an advanced solution to the high-performance computing requirements."

JATINDER SINGH PABLA, Chief Sales & Marketing Officer of ST Telemedia Global Data Centres (India)

cloud has become an integral part of any enterprise architecture stack, enabling small organizations to scale processing capacity based on their needs.

Large organizations have adopted the cloud to address challenges in processing large data volumes while adhering to stringent security compliances. Yet, the question arises: What does the future hold for the cloud? What new shift will drive the next leg of technologies transforming businesses?

As we look ahead to 2024, the cloud is poised for another shift, with advancements that will enable organizations to transform their business models. The cloud will continue to democratize access to infrastructure, allowing businesses to innovate at an accelerated pace and scale rapidly. Advanced cloud GPUs offered by hyperscale cloud providers will enable businesses to safely deploy AI and harness its benefits, ushering in a new era of technological advancement and business innovation.

▼ Conclusion

The Cloud Revolution is not just a technological evolution; it's a force that reshapes how businesses operate, collaborate, and innovate. Its impact goes beyond the digital realm, influencing societal, economic, and global landscapes. As we navigate the evolving digital terrain, the cloud's transformative power continues to shape the future, redefine industries, and empower businesses to lead the way in accelerated growth and innovation. The Cloud Revolution is more than a trend; it's a paradigm shift that propels us into a future where the sky is not the limit but the starting point for technological metamorphosis. ■

"Adopting microservices architecture ensures efficient and dense computing, transforming old systems and increasing overall efficiency. Cloud-native applications, especially with a focus on private cloud and HCI, are accelerating rapidly, providing flexibility, scalability, and seamless workload amalgamation. In this evolving landscape, the cloud sits at the center, facilitating real-time resource utilization and transformative business changes."

HEMANT AGGARWAL, CTO, Netweb Technologies

Ashok Pandey
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AMD

RADEON RX 7600 DESKTOP GRAPHICS CARD

GRAPHIC CARD

Price: ₹ **Starts at 27,000**

Are you in search of a midrange graphics card capable of high-end 1080p gaming? AMD recently introduced the Radeon RX 7600 graphics card, featuring up to 8 GB of GDDR6 memory, rapid clock speeds, and advanced AMD RDNA™ 3 compute units. The specs seem promising for delivering breakthrough performance.

▼ Features

AMD employs the RDNA 3 graphics cores in the Radeon RX 7600, mirroring the flagship 7900-series GPUs. This architecture introduces dedicated AI accelerators, AV1 encoding, DisplayPort 2.1, second-gen ray tracing, and Infinity Cache hardware. A departure from the RX 7900-series, this budget-friendly chip adheres to a traditional single 6-nanometer die (204mm2). With boosted memory and GPU clock speeds, increased stream processor and RT accelerator counts, and the debut of AI accelerators, the Radeon RX 7600 presents a substantial generational performance upgrade.

Featuring 8GB of GDDR6 memory and a 128-bit bus, the Radeon RX 7600 is tailored for 1080p gaming, though 1440p is possible with adjusted settings. But moving to 1440p may strain the 128-bit bus. Sporting a single 8-pin connector, the card is two-slots thick, compact at 8 inches, and runs quietly. The reference card offers HDMI and three DisplayPort 2.1 connections, with the option for partners to use DisplayPort 1.4 on custom cards.

▼ Performance

The Radeon RX 7600 is a midrange yet mainstream solution for 1080p gaming. It delivers an enjoyable gaming experience without breaking the bank. Playing games like Thief, NFS, etc. on it is a pleasure. We didn't find any performance lag while playing Shadow of Mordor, which is a high graphic intensive game. You can play all the latest games on this Full HD card with a robust performance in these resolutions.

The GPU emerges as a powerhouse for 1080p gaming, comfortably hitting 80 frames per second or more at Ultra settings in most games. In terms of ray tracing and FSR performance, the RX 7600 disappoints. While equipped with second-gen RT accelerators, the card struggles with these features, and FSR isn't recommended for a 1080p card.

It runs quietly, making it a suitable choice for various PC setups. Ultimately, as a midrange option, the RX 7600 stands out for its 1080p gaming prowess, combining solid performance with an attractive price point. ■

SCORE

Overall: 8/10

PRICE: **8**/10
PERFORMANCE: **8**/10
FEATURES: **8**/10

KEY SPECS
AMD Navi 33 Graphics Processor; GPU Base Clock - 2250 MHz; 8 GB GDDR6 Graphics Memory; 165 watts; 8-pin Power Connector

PROS:
Effective 1080p Performance; Efficient Power Consumption; 8GB GDDR6 Memory; Single 8-pin Power Connector (No Adapter Required); Quiet Operation; Competitive Pricing

CONS:
Limited Performance Beyond 1080p; Subpar Ray Tracing Performance

Bottomline: The Radeon RX 7600 excels in 1080p gaming at 60fps, establishing itself as a top pick at this resolution. While its performance falters beyond FHD, its affordability and power efficiency make it a compelling option for an excellent and budget-friendly gaming experience.

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