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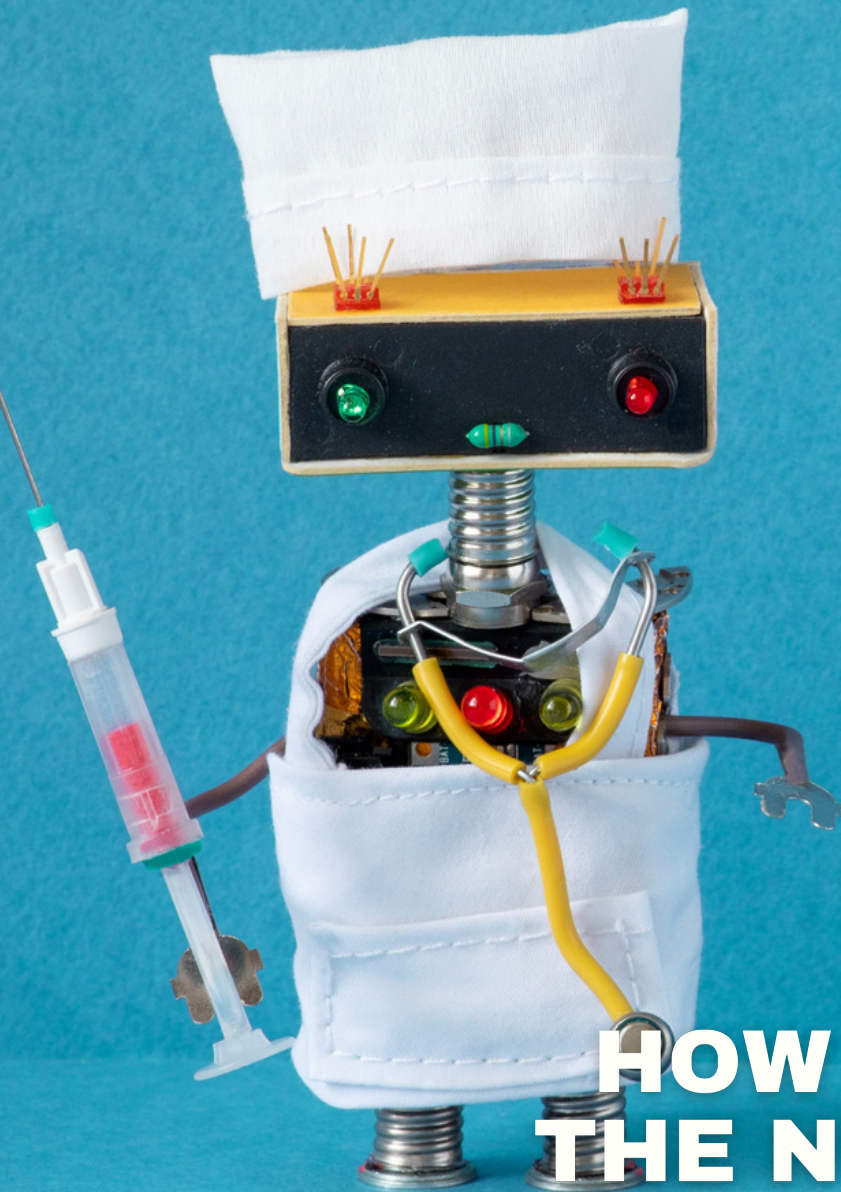
What 'work of the future' means to 5 business leaders

HEADLINE NEWS IN A FLASH

- New AI Technology Eliminates Need For Aquatic Animal Testing!
- Apple Watch Successfully Detected Heart Failure with New App
- Meta has built a massive new language AI—and it's giving it away for free
- Report: Intel's Looking to Sell Computer Vision Software
- Framework to describe individual machine-learning model decisions
- Smelling technology could detect problems in self-driving taxis

INDUSTRY FOCUS

HOW IS AI MOVING THE NEEDLE IN THE PHARMACEUTICAL INDUSTRY?



WHAT 'WORK OF THE FUTURE' MEANS TO 5 BUSINESS LEADERS



For many leaders, work of the future means integrating data and AI programs, honing empathy skills, and meeting workers' wants and needs. Here, five MIT Sloan alumni in leadership roles at Target, Google, and other companies share what work of the future means to them:

1. Going all-in on data

Hayes-Mota, SB '08, LGO '16, the company's founder and CEO, said he is making sure his employees are fluent in data analytics and using large datasets. "They are becoming versed in working with data, analyzing it, and communicating the implications of this information," he said. Data is also top of mind at the leadership level.

"As we progress to the future, work will be heavily dependent on making decisions based on large datasets," Hayes-Mota said. "And I am learning new ways to analyze extensive data to tell insightful and meaningful stories for the company's growth and operations."

"At Target, we use data-driven tools to support quicker, more effective decision making," said Heath Holtz, LGO '05, a senior vice president of field operations at Target who is responsible for the company's store replenishment and "direct-to-guest" fulfillment network operations. "The way of the future is using that information to improve speed and quality of service to meet guest expectations," Holtz said.

2. Integrating artificial intelligence into the workplace

Technology, particularly AI and robotics, is a priority for many leaders, who expect intelligent tools to bring substantial returns. Integrating these technologies into the workplace presents unique opportunities and challenges, which vary by industry.

Bots offer a particular opportunity for highly regulated industries like health care that have codified activities, said Isma Bennatia, MBA '18, the vice president of R&D strategy and operations at Amgen, a biotech company. Doctors and other highly trained employees end up doing required administrative tasks that are repetitive and time-consuming, distracting them from more innovative work. "A bot can bring a quick solution, reducing risk of human error and freeing up time for researchers," she said. "Integrating a bot in the existing R&D workflow is usually rapidly adopted by scientists."

Amgen is thinking about existing skills and determining where gaps are, with an emphasis on involving employees in solutions, Bennatia said. This includes explaining why changes are made and how more and new technology will benefit employees by helping them develop new skills and free up time. "People are worried they'll be replaced by technology and lose their jobs," she said. "This can be quickly addressed once individuals understand how these tools will help them perform better and more efficiently."

3. Managing remote teams with technology

Business leaders said they are preparing for remote work to be a long-term trend affecting everything from communication to worker retention. According to a recent Pew Research Center survey, 60% of workers with jobs that can be done from home say that even when the COVID-19 pandemic is over, they'd like to work from home all or most of the time if they have a choice. Some argue that in the future, remote work will just be called "work."

"Personally, I am still working on how to leverage IT tools and best practices to create an inclusive environment, particularly for hybrid work," Appelhaus said. "As a leader, I think we need to be role models in how to use technology efficiently and show our employees how they can leverage it to their advantage and the advantage of their work."

Hayes-Mota said Healr is also expecting employees to use technology to communicate and share information, and become more comfortable with video and virtual meetings. "Currently, my team is learning to share information electronically that will be viewed by others around the globe," Hayes-Mota said. "We also use telecommunications to brainstorm solutions to everyday problems we face in the business. This makes us much more agile and able to react to sudden changes within the market."

4. Focusing on skills technology can't replace

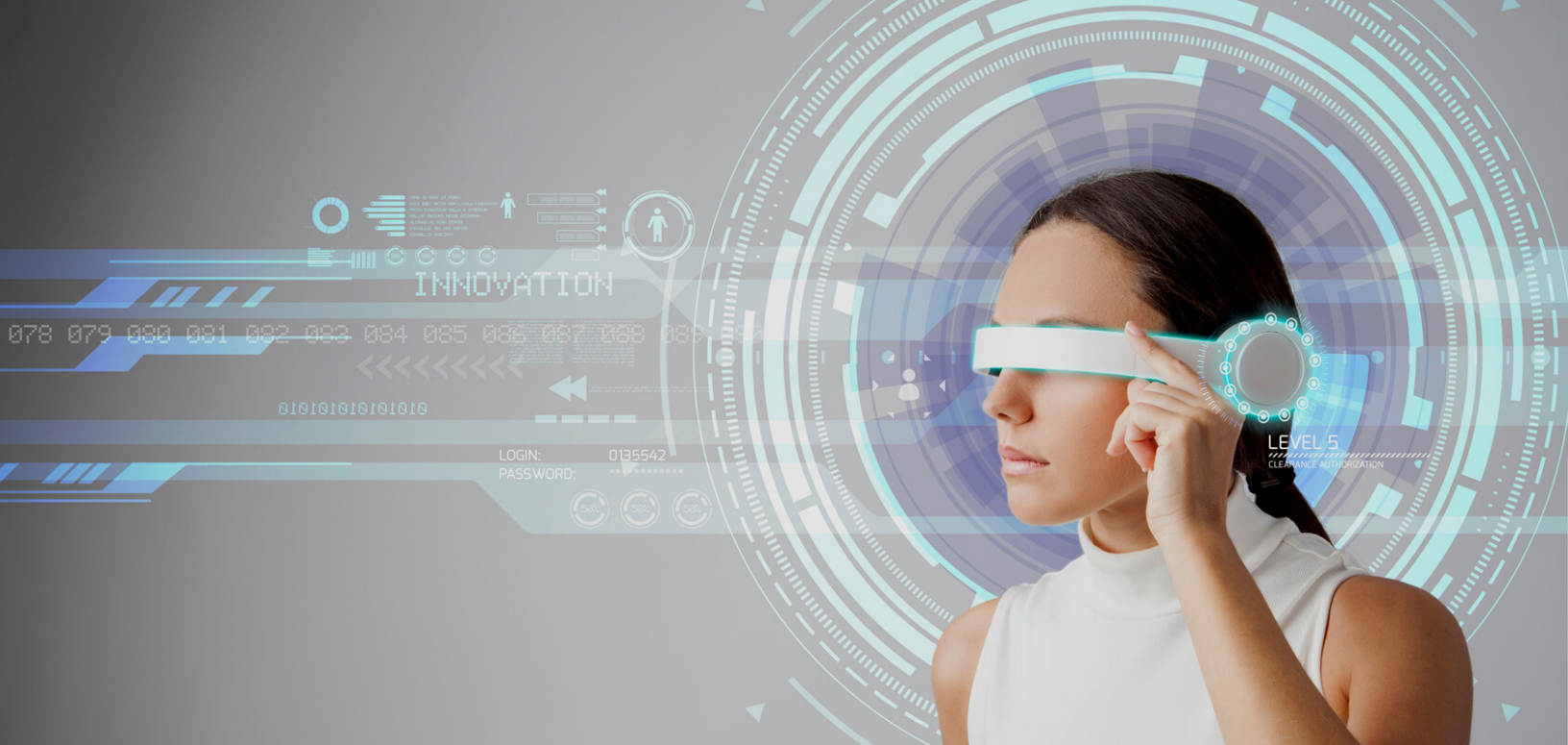
Remote and hybrid work puts a premium on some skills that technology can't replace — such as empathy, collaboration, and communication. An "acute challenge" in the near term is getting the best from employees as they become more geographically dispersed, said Wendy-Kay Logan, LGO '11, a director of business strategy at Google. "How do we equitably collaborate across all locations, given you have some real constraints around time zones," Logan said. "You want to meet people where they are."

This means looking at how meetings are conducted — perhaps with all participants on individual screens, whether they are in the office or remote, and making sure in-person and remote participants can equally engage in a productive way.

Logan said she is also focused on having empathy as people work from different time zones and with different technology infrastructures — making it acceptable for people's cameras to be off, for example, or having people in the U.S. start work earlier one week so people in India don't have to stay up late, and vice versa.

Connection and empathy have always been important to Target's team culture, which is focused on care and connection, Holtz said, and with the team spread across the country, it's always been top of mind. "But the last few years gave us an opportunity to build even more routines to stay connected and collaborate, which will be paramount moving forward," he said.





5. Holding on to talent

Retaining talent will also be extremely important in a world where individuals can switch companies and remain in the same location. “I anticipate that for most organizations, culture, employee engagement, and retention are going to be challenging,” Appelhans said.

“I think the emphasis should be on building relationships and meaningful connections. Because employees now have even more self-agency, we’ll need to recognize the value of these relationships, and will need to be deliberate about the time we dedicate to cultivating them, which happened more organically when everyone was spending their full week in their workplace.”

And above all, Bennatia said, companies should manage the risks of burnout that remote work brings. “The lines between home and office are blurred,” Bennatia said. “Everyone is available around the clock. It is harder to disconnect. We need to adapt and help staff separate and manage work and home life priorities, ensure breaks during the day, and encourage vacation days.”

6. Rethinking geolocation

The future is likely to include new business hubs as companies reconsider their location strategies in response to remote work. How to make ‘work of the future’ work for everyone5 traits of the workforce of the futureWhy ‘the future of AI is the future of work’

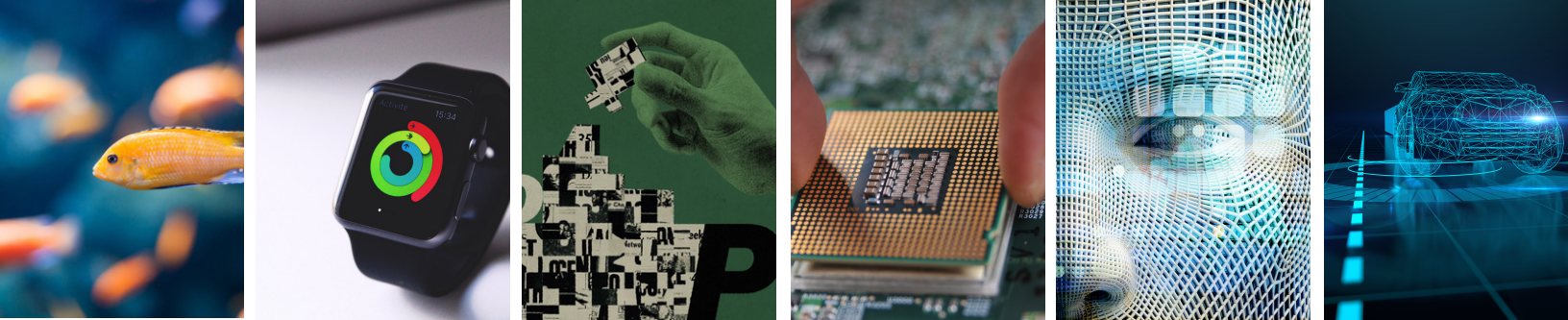
“We should be going where talent is,” Logan said, noting that Google has publicly announced that it is growing its footprint in Atlanta, New York, and Chicago, where there is a more diverse talent pool than Silicon Valley. This will help Google attract talent who are generally underrepresented in tech hubs, she said. “We want to tap into the richness of perspectives and have a diverse workforce so we build products for a broader range of users.”

There tends to be a lack of Black and Latinx talent in traditional tech hubs, and “you can’t rely on importing diversity because it’s not just about how many Black employees can be convinced to relocate near a company’s headquarters, because life isn’t just work,” she said. “If the second you step out of your work you don’t see anyone else who has the same lived experience, then it doesn’t work.”

This means rethinking major tech hubs.

“It’s showing there isn’t just one place where innovation happens and where the next big AI company, the next big unicorn is going to be,” Logan said. “It’s about being flexible and thoughtful, about how do you position yourself for talent, because that is the most important asset.”//

Source: MIT Sloan



HEADLINE NEWS IN A FLASH

NEW AI TECHNOLOGY ELIMINATES NEED FOR AQUATIC ANIMAL TESTING!

In a huge win for animals, Smarter Sorting was developed and uses artificial intelligence to tell whether a product is toxic to aquatic animals without the need to use animals for testing. Smarter Sorting uses testing data from state websites and finds the median level for a certain ingredient. Then, through some calculations, it can create an analysis that mimics an animal toxicity test. States like Washington and Minnesota already accept these ways of testing, and Smarter Sorting is introducing a bill to the California House that would allow computational toxicology instead of animal testing. Animal testing is not necessary, and companies like this are helping us move away from these cruel practices.

Source: [onegreenplanet](#)

APPLE WATCH SUCCESSFULLY DETECTED HEART FAILURE WITH NEW APP

A new study indicates that an Apple Watch app may be useful in detecting left-ventricular dysfunction. Left-ventricular dysfunction is a condition where the heart cannot pump properly. The app used in the study performed similarly to a traditional 12-lead electrocardiogram. Experts say this may enable patients to detect and monitor heart failure without an office visit. In addition to performing a single-lead ECG, the Apple Watch is able to monitor heart rate, oxygen saturation, step counts, standing frequency, calories expended, and sleep patterns, which can all be useful information in patient care.

Source: [healthline](#)

META HAS BUILT A MASSIVE NEW LANGUAGE AI—AND IT'S GIVING IT AWAY FOR FREE

Meta's AI lab has created a massive new language model that shares both the remarkable abilities and the harmful flaws of OpenAI's pioneering neural network GPT-3. And in an unprecedented move for Big Tech, it is giving it away to researchers—together with details about how it was built and trained. Meta's move is the first time that a fully trained large language model will be made available to any researcher who wants to study it. The news has been welcomed by many concerned about the way this powerful technology is being built by small teams behind closed doors. Large language models—powerful programs that can generate paragraphs of text and mimic human conversation—have become one of the hottest trends in AI in the last couple of years. But they have deep flaws, parroting misinformation, prejudice, and toxic language.

Source: [technologyreview](#)

REPORT: INTEL'S LOOKING TO SELL COMPUTER VISION SOFTWARE

Intel reportedly plans to introduce a computer vision development kit, code-named Sonoma Creek, to make it easier for developers to incorporate artificial intelligence in their products. The Register reports that it's obtained internal documents related to Sonoma Creek, which the outlet describes as "a software platform that promises to simplify and speed up the training of AI models for computer vision," ahead of its scheduled launch sometime this fall. Sonoma Creek is reportedly designed to work with Intel processors and Nvidia graphics—with plans to support Intel's upcoming Arc graphics cards—as well as the company's OpenVino toolkit and the PyTorch and TensorFlow frameworks popular with machine learning developers.

Source: [pcmag](#)

FRAMEWORK TO DESCRIBE INDIVIDUAL MACHINE-LEARNING MODEL DECISIONS

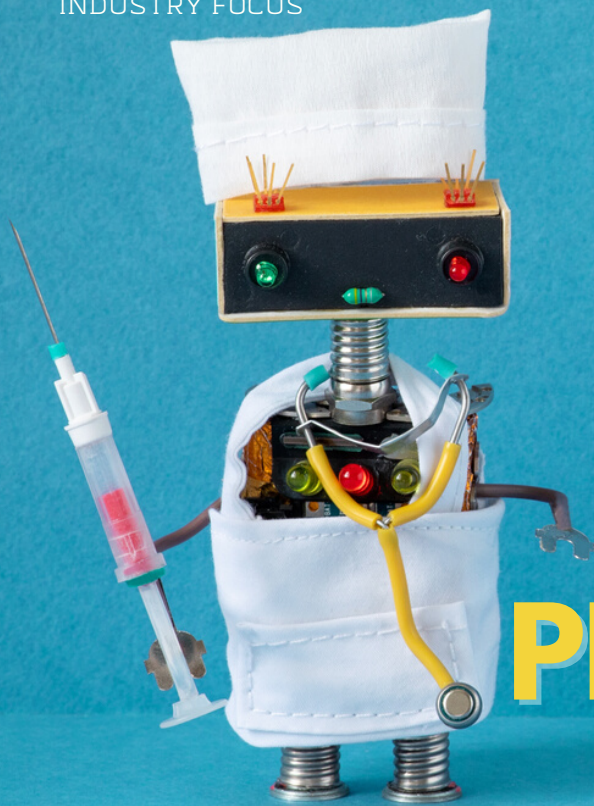
Modern machine-learning models, such as neural networks, are often referred to as "black boxes" because they are so complex that even the researchers who design them can't fully understand how they make predictions. To provide some insights, researchers use explanation methods that seek to describe individual model decisions. But these explanation methods don't do any good if humans can't easily understand them, or even misunderstand them. So, MIT researchers created a mathematical framework to formally quantify and evaluate the understandability of explanations for machine-learning models. This can help pinpoint insights about model behavior that might be missed if the researcher is only evaluating a handful of individual explanations to try to understand the entire model.

Source: [techxplore](#)

SMELLING TECHNOLOGY COULD DETECT PROBLEMS IN SELF-DRIVING TAXIS

An AI-powered nose could help robotaxi operators sniff out problematic odors — like the lingering scent of a passenger's tuna sandwich — and reroute the vehicle to a maintenance hub for cleaning before its next ride. With driverless taxis, there's no one onboard to keep passengers from smoking or leaving behind offensive odors, from food to vomit. But new digital olfaction technology could be able to help. Aryballe, a Grenoble, France-based startup, uses biochemical sensors, optics and machine learning to detect odor and turn it into data that can be stored in a smell library, journalist Martin Kahl writes for Ground Truth, a blog about autonomous vehicles.

Source: [axioms](#)



HOW IS AI MOVING THE NEEDLE IN THE PHARMACEUTICAL INDUSTRY?

Artificial intelligence (AI) is shaking up the healthcare industry. With applications in drug discovery, medical imaging, disease modeling and clinical trial conduct, it promises to revolutionize the ways in which we perform research, treat disease and work with patients.

In drug discovery, we have seen some of the realization behind the hype and early demonstrations of AI enabling target identification and pipeline development. AI can also support diagnostic decision-making in the medical imaging space, reading scans with exceptional speed and accuracy and detecting abnormalities invisible to the human eye.

Artificial intelligence can help drug study teams solve operational, scientific and ethical challenges. For example, AI can be used to flag real-time trends emerging in drug trials that might otherwise not be obvious until the end of a study when all the data is analyzed.

AI produces actionable operational insights

From an operational standpoint, trial sites can vary in terms of their performance, particularly with regards to the speed and diversity of patient enrollment. Through AI analysis, sponsors and contract research organizations (CROs) can leverage historical trial data or real world data to better understand site performance, and thus make more informed decisions with regards to time and resource allocation.

This knowledge and oversight can result in shortened development timelines, which ultimately benefits patients. This use of AI has been particularly important in the face of Covid-19, where AI has proven invaluable in rare disease and oncology trials by helping sponsors make rapid pivots based on real-time predictions and insights based on backlogs at trial sites due to an influx of Covid patients. While still in its early days, AI is being used to assess data on patient availability and diversity, thus enabling sponsors and CROs to de-risk their decisions in a competitive landscape.

Scientific hypotheses can be pressure tested by AI

The recipe for trial success requires deep understanding of the disease in question, the patient population it affects and the potential treatments. Historically, this has been achieved through review of scientific literature and preceding clinical research.

AI is now being used to augment the intelligence underpinning a trial. By analyzing multiple sets of inputs, including historical trial designs, drug biology, sponsor characteristics and clinical trial outcomes across development programs, it allows us to sharpen protocols and accurately predict trial success.

In particular, incorporating real world data alongside clinical trial data can provide deeper clinical insight into patient outcomes and improve risk monitoring. It can also support decisions around endpoint selection, better equipping sponsors and CROs to target the best and most clinically relevant endpoints possible. AI is also being used to flag real-time trends emerging in trials that might otherwise not have been obvious until the end of a study when all the data is analyzed.

AI supporting more diverse trials

One further challenge that has long plagued clinical trials is a lack of diversity of trial participants. From both a scientific and ethical standpoint, it is essential to address the underrepresentation of certain populations within trials. Research that fails to address different ethnicities, ages, genders and lifestyles will not result in impactful treatments that are representative of patient populations.

AI can play a role in bridging this gap, through identifying which trial sites are best placed to serve underrepresented communities. By simulating patient models, certain conclusions and hypotheses can be reached about the proportion of patients in a subgroup who will respond to a particular treatment. This can inform how clinical trial teams think about recruitment and the diversity of recruitment.

However, those involved in developing and employing AI systems need to pay close attention to dismantling rather than reproducing bias in their collection and use of data. This includes building models which are translatable to a broad, epidemiologically representative population. As ever, regulation has a role to play in shaping approaches to risk management, data provenance and mandating transparency.





Synthetic control arms as a powerful data-enabled tool

Synthetic control arms (SCAs), also known as external control arms, are another innovative tool enabled by big data, powerful computing and advanced analytics. While AI serves to mimic real life, SCAs use actual, patient-level data and biostatistical methods to replicate a control arm, removing the need for a placebo group.

Similarly to AI, these advanced statistical methods and analytics require huge amounts of data to accurately emulate real life. While well-established biostatistical approaches may fall outside of the definition of “AI,” it’s important to note that traditional methods paired with high quality data have shown great promise and success in regulatory settings.

Beyond diversity, patient recruitment comes with other challenges, particularly the time pressure to recruit as quickly as possible, as well as the ethical implications of recruiting for a control arm of a trial for conditions where there may not be effective treatments available, such as many rare diseases. Synthetic control arms create a proxy for real clinical trial patient-level data and can offer representative datasets that provide valuable information about a disease, indication or treatment.

Additionally, models can be run iteratively, meaning that dynamic datasets can be run through a variety of analyses to model for several different outcomes. A small number of synthetic control arm submissions have been approved by the FDA, including one for a hybrid design in a phase III trial in recurrent glioblastoma, an illness with few treatment options and high unmet need. SCAs are just one of a myriad of advanced analytical tools and statistical methods with huge potential in the clinical stages of drug development.

The untapped potential of AI in clinical research

By tapping into the power of AI, we have gained a deeper understanding of disease, patient populations and potential treatments. Technology is transforming the way we run clinical trials: It is improving elements of trial design, including target population selection, comparator arms and clinical endpoints. It is also improving patient safety and patient enrollment and giving pharmaceutical companies crucial insights and analysis into how their drugs work. But we’ve only just scratched the surface of what we can truly achieve.

The potential is enormous and AI is certain to become an essential part of clinical research and drug development in the future.//

SOURCE: MEDCITYNEWS



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