INFOTAINMENT EDGE™

Monday, October 16, 2023 (Daily E-booklet on Artificial Intelligence, VR, Tech, Robotics, Coding, Global Info, Health, Science & more)

SECTION 1 – TECH BUZZ

ARTIFICIAL INTELLIGENCE

Lenovo Tech World AI

Lenovo is gearing up to host its annual global innovation extravaganza, Tech World, in the vibrant city of Austin, Texas. This significant event, now in its ninth year, will be especially noteworthy as it marks a return to in-person proceedings since 2019.

- The overarching theme for this year's gathering is 'AI for All,' focusing on the realm of artificial intelligence (AI) and delving into how Lenovo is shaping the future of AI products, solutions, and services. The company aims to expedite tangible outcomes driven by AI for both businesses and consumers.
- A highlight of the event will be a compelling keynote session by Lenovo's Chairman and CEO, Yuanqing Yang. Yang will delve deep into Lenovo's strategic prowess, exploring how the company is unleashing the full potential of AI across its diverse business ventures.

- Virtual and in-person attendees alike will have the opportunity to glean insights from Lenovo's influential partners, including Jensen Huang, the Founder, President, and CEO of NVIDIA, and Dr. Lisa Su, the Chair and CEO of AMD.
- In addition to these illuminating talks, Tech World attendees will be treated to an exclusive preview of Lenovo's vision for various AI-focused domains.
- This sneak peek will encompass AI models, AI solutions, AI infrastructure, and AI devices, showcasing Lenovo's commitment to pushing the boundaries of artificial intelligence.
- Lenovo stands tall as a global technology powerhouse, boasting a staggering $62 billion in revenue. Ranked at an impressive 217th position in the Fortune Global 500, the company employs a workforce of 77,000 individuals across the globe. Lenovo's reach extends far and wide, serving millions of customers daily in 180 diverse markets.
- Rooted in a bold vision to provide smarter technology accessible to all, Lenovo has built upon its legacy as the world's largest PC company. The company has diversified its portfolio, venturing into growth sectors that propel the evolution of 'New IT' technologies, including client, edge, cloud, network, and intelligence.
- Lenovo's expansion encompasses areas such as servers, storage, mobile devices, software, solutions, and services.
- This transformative journey, coupled with Lenovo's groundbreaking innovation, is shaping a future that is more inclusive, reliable, and intelligent for people worldwide.
- The company's commitment to advancing technology resonates through events like Tech World, where the fusion of ideas and innovation paves the way for a smarter tomorrow.

AI Program benefits Goose farm

In an innovative venture, a group of 16 college students from Shenzhen University in China has successfully developed an artificial intelligence (AI) program aimed at identifying ill lion-head geese, significantly boosting the survival rate of these creatures by 30 percent. These lion-head geese are a crucial ingredient in crafting local marinated goose delicacies in the Chaoshan region of Guangdong Province, renowned for their high quality but notoriously challenging to raise.

- Traditionally, breeders in Chenghai District, Shantou City, had relied on their experience to gauge the health of geese, observing their stillness and feeling their body temperature. While effective, this method lacked efficiency, particularly in emergencies. Disease outbreaks could devastate a flock of over a thousand geese within days, as witnessed during an unexpected avian influenza outbreak in 2018, leaving only a handful of geese alive in Houxi Village.
- Jin Shutao, a young entrepreneur and professional goose farmer in Houxi Village, envisioned integrating technology to address this pressing issue. In 2022, he collaborated with 16 students from Shenzhen University's Tencent Cloud AI BEng program, along with guidance from university teachers and engineers from Tencent, a prominent Chinese internet company.
- Working within a crowded 500-square-meter space housing over 4,000 geese, the team faced the challenge of identifying sick geese amidst the cacophony. Their innovative

approach involved measuring a goose's stillness duration to determine illness. The project was divided into four groups: hardware, frontend, backend, and algorithm development.

- The initial hurdle was installing cameras, as traditional QR code-based recognition methods for animals like cows, sheep, or pigs were ineffective for geese. To gather enough data for AI training, the students utilized existing farm cameras, capturing images and manually labelling them. This meticulous labelling process involved categorizing and tagging 6,000 images of 300,000 geese, ensuring the precision necessary for AI operations.
- Continuous algorithm optimization was imperative due to varying scenarios impacting accuracy. Guided by Tencent engineers, the team improved the recognition algorithm for crowded scenes and optimized the tracking algorithm to record individual goose's stillness duration, aiding in anomaly detection. They discovered that a one-size-fits-all algorithm was ineffective; customization based on specific conditions was essential.
- Additionally, the team encountered challenges in measuring the body temperature of adult lion-head geese due to their thick feathers. They adapted by identifying feverish baby geese as supplementary indicators. Research findings revealed a correlation between goose diseases and weather conditions such as typhoons and haze, leading to the incorporation of data observation and analysis functions into the program for further optimization.
- After rigorous effort spanning over a hundred days and nights, coupled with numerous online meetings, the AI goose program was continuously refined. Presently, the program issues real-time alerts for "listless geese" and "feverish geese," displaying temperature, humidity, PM2.5 levels, and data trend changes on the farm. This innovative approach has significantly enhanced the farm's survival rate for lion-head geese by 30 percent.
- Shen Linlin, director of the visual research institute under Shenzhen University, emphasized that developing AI demanded practical hands-on efforts, stating, "Developing AI isn't about sitting in an air-conditioned room and writing code. It's about learning to write code in 'goose dung.'"

AI Governance Shift

The Minister of State for Artificial Intelligence, Digital Economy & Remote Work Applications in the UAE, Omar Al Olama, has emphasized the need for a shift in the global approach to governing artificial intelligence (AI).

- Speaking at the Dubai Assembly for Generative AI, he urged nations to move away from attempting to govern AI as a whole and instead focus on regulating its specific use cases. Al Olama suggested that governing the technology itself is not a viable strategy and that concentrating on the applications of AI would be more effective.
- The event, attended by over 2000 participants from major tech companies and consultancies such as Microsoft, Deloitte, PwC, and IBM, marked the launch of the Dubai Generative AI Alliance by the Dubai Future Foundation (DFF).
- This alliance aims to expedite the adoption of emerging technologies and establish one of the world's most advanced tech-enabled governments. Khalfan Belhoul, CEO of DFF,

- called upon companies and innovators to join the alliance, which will focus on creating innovative technology pilots utilizing AI, the metaverse, and Web3.
- In addition to the alliance launch, the Dubai government unveiled 'Dubai AI,' a generative AI-powered digital city concierge. This city-wide digital platform will provide comprehensive information and services related to health, business, and education for both residents and visitors. The platform is set to transform government services, making them more efficient and accessible.
- The assembly also highlighted the potential impact of generative AI on various sectors. Experts from international tech corporations and consultancies discussed the imminent automation in workplaces, with generative AI expected to handle everyday tasks such as flight bookings and report generation autonomously on a large scale within the next 18-20 months.
- Deloitte's digital expert mentioned that generative AI could significantly benefit sectors like nuclear fusion, climate action, and drug discovery. The industrial and pharmaceutical sectors were recognized as early adopters of this emerging technology.
- Emirates' Chief Operating Officer, Adel Al Redha, announced plans to empower cabin crew with generative AI capabilities through training on complex models, indicating a practical application of this technology in the airline industry. This event showcased the potential of generative AI and emphasized the importance of regulating its specific use cases for global governance.

AUTOMATION

Maximizing UBB Digital Productivity

During the 9th Ultra-Broadband Forum (UBBF 2023), Huawei's Executive Director of the Board and Chairman of the ICT Infrastructure Managing Board, David Wang, delivered a keynote speech titled "UBB5.5G Maximizes Digital Productivity."

- Wang shared insights on the current developments and best practices in the ultra-broadband industry, emphasizing the strategic direction it is heading in - upgrading networks, accelerating the widespread application of digital technologies, and maximizing digital productivity.
- Digital technologies, such as cloud computing, artificial intelligence (AI), 5G, and ultra-broadband (UBB), are rapidly evolving and becoming integral parts of enterprises and households, enabling faster digital transformation. These technologies are enhancing productivity and delivering better intelligent entertainment, lifestyle, and work experiences to people worldwide. The adoption of these new services is compounding advances in digital productivity, making them more accessible to everyone.
- Wang highlighted the shift in focus from mere connectivity to enhancing user experience in the ultra-broadband networks. In the 5.5G era, ultra-broadband will concentrate on unleashing the productivity of digital services, ensuring easy and efficient access for everyone, regardless of their location.
- This next-generation digital infrastructure will provide ubiquitous 10-gigabit access, elastic ultra-broadband transport, and massive computing power supported by hyper-

- converged data centers, fostering faster development of the digital economy. Huawei aims to collaborate with customers and industry partners to drive this evolution forward and maximize digital productivity in the ultra-broadband industry.
- To achieve this goal, Wang identified three critical challenges: providing massive computing power for digital services, ensuring guaranteed connectivity for concurrent users, and ensuring ubiquitous access and high-quality user experience. He elaborated on the upgrades needed in productivity-centric ultra-broadband networks.
- Ubiquitous 10-gigabit access could be achieved by upgrading mobile broadband, home broadband, enterprise campus networks, and enterprise private line services to 10 Gbps. This upgrade would enable 10-gigabit mobile broadband, seamless 10-gigabit home networks, upgraded campus connectivity, and high-throughput, 10-gigabit private line services, benefiting individuals and organizations globally.
- Converged bearer networks would evolve into high-quality, elastic transport networks, supporting 400G and even 800G for IP and optical metro networks. Backbone networks would also support 400G, enhancing transport capabilities and ensuring low latency for various services. Hyper-converged data centers adopting advanced architectures would fully unleash AI computing power, increasing return on investment and efficiency.
- Additionally, Wang emphasized the importance of telecom large models to make networks more autonomous, allowing self-optimization and enhancing human-computer interaction. These models enable the development of L4 autonomous driving networks (ADNs), supporting engineers in managing equipment more efficiently.
- Wang stressed that ultra-broadband is critical infrastructure essential for driving digital economic growth. He called for collaboration among ecosystem players to provide policy support and accelerate business innovation, product application, and ecosystem development. Through collective efforts, Wang concluded, the ultra-broadband industry will continue advancing, maximizing digital productivity, and ensuring that more individuals and organizations benefit from digital services.

ROBOTICS

Professional Service Robots Surge
In 2022, the professional service robot industry experienced a remarkable surge, witnessing a 48% increase in sales, totalling 158,000 units. This rapid growth can be attributed to the prevalent scarcity of skilled labour, compelling companies to turn towards automation solutions.

- According to Marina Bill, President of the International Federation of Robotics, the service robot sector is advancing swiftly due to the shortage of qualified employees and a dearth of applicants for service-oriented positions. Globally, nearly 1,000 service robot suppliers have been identified, all catering to the rising demand for autonomous services.
- Among the various applications of professional service robots, mobile solutions for transportation and logistics dominated the market. More than 86,000 units were sold in 2022, marking a 44% increase. These robots were primarily designed for the transportation of goods and cargo, surpassing other functions in terms of sales volume.

- Hospitality robots also witnessed a surge in popularity, with sales reaching over 24,500 units in 2022, reflecting a substantial 125% growth. These robots were predominantly utilized for mobile guidance, providing information, and telepresence services.
- However, the medical robot sector experienced a minor setback, with a 4% decline in sales, amounting to about 9,300 units. Despite this, the sales of surgery robots increased by 5%, reaching nearly 4,900 units. In contrast, robots designed for rehabilitation and non-invasive therapy saw a 16% decrease, with sales falling to less than 3,200 units.
- Agricultural robotics marked a significant advancement with an 18% growth in sales, totalling almost 8,000 units in 2022. More than 5,800 robots, a 9% increase from the previous year, were sold for agricultural tasks such as milking and barn cleaning. The shortage of human labour in agricultural regions and the demand for sustainable farming practices have positioned service robots as essential assets in this industry.
- Additionally, the professional cleaning robot market experienced an 8% growth, with sales reaching close to 6,900 units. Floor cleaning applications were the primary focus, constituting over 70% of the shipments in this category, with 4,900 units sold – a 10% increase from the previous year.
- In contrast to the professional sector, consumer service robots saw a significantly higher volume, with approximately 5.1 million units sold in 2022. The majority of these robots were dedicated to domestic household tasks, accounting for nearly 4.9 million units sold, showcasing the robust demand for automation in home environments.

CODING

Swift 5.9 Enhancements & Interoperability

Swift 5.9 has arrived with a host of new features and improvements, enhancing the language's capabilities and making it even more versatile for developers. One of the standout additions is the introduction of parameter packs, addressing a limitation in Swift's generic types and functions. With parameter packs, developers can define generic types or functions that accept an arbitrary number of types, streamlining the code and making it more flexible.

- In addition to parameter packs, Swift 5.9 brings significant changes to memory management through ownership-based memory management. This feature introduces the concept of consuming and borrowing variables and arguments, as well as noncopyable structs and enums. The new consume operator allows developers to control the lifetime of a variable, enabling precise management of memory resources in performance-critical code. This capability enhances Swift's efficiency and performance.
- Swift 5.9 also extends its interoperability by introducing a limited form of compatibility with C++ code. While this feature currently applies to specific types of APIs, it represents a step forward in expanding Swift's integration with other programming languages. Developers can now call C++ functions directly from Swift, paving the way for more diverse and complex applications.
- Moreover, Swift 5.9 introduces improvements in the language's expressiveness with the ability to use if and switch statements as expressions for variable assignment and return

values. This enhancement simplifies code and makes it more readable, enhancing the overall developer experience.

- On the debugging front, Swift 5.9 includes an enhanced debug expression evaluator and improved crash handling mechanisms. The Swift runtime now displays detailed backtraces on the output console in the event of a crash, aiding developers in identifying and fixing issues quickly. Additionally, the evaluation of simple expressions using the p and po commands is faster, streamlining the debugging process.
- The Swift community has been quick to embrace these new features, building tools and frameworks based on macros and leveraging the enhanced capabilities for more efficient and powerful Swift applications. As Swift 5.9 continues to evolve, developers can expect further refinements and enhancements, making Swift an even more robust and developer-friendly language for building a wide range of applications.

SECTION 2 – GLOBAL INFO

OCEANIA

NEW ZEALAND

In a decisive electoral triumph, former conservative businessman Christopher Luxon has emerged as New Zealand's next prime minister. This significant shift comes after six years of a liberal government, primarily led by Jacinda Ardern.

- The outcome signals a popular demand for change among the electorate. While the precise composition of Luxon's government remains uncertain, ongoing ballot counting will determine the final details.
- Luxon was greeted with enthusiastic applause as he made his appearance at an event in Auckland, where he was joined on stage by his wife, Amanda, and their children, William and Olivia. Expressing his deep humility at the victory, he eagerly anticipated embarking on his new role. Luxon extended gratitude to people from all corners of the nation, acknowledging their collective pursuit of hope and their choice for a transformative shift in governance.
- During his speech, Luxon reiterated his campaign promise, which resonated strongly with his supporters: a commitment to getting the country "back on track." This mantra echoed the desire for a new direction, encapsulating the aspirations of those who had cast their votes for change.

AUSTRALIA

Australians have overwhelmingly rejected the prospect of granting enhanced rights to Indigenous citizens, thereby thwarting efforts to amend the nation's 122-year-old constitution following a contentious and racially charged referendum campaign.

- With 88 percent of polling places accounted for, it became evident that approximately 59 percent of the population voted against the proposal, which aimed to formally recognize Aboriginal and Torres Strait Islander peoples within the 1901 constitution for the very first time.
- The proposed reforms not only intended to acknowledge the historical significance of Aboriginal and Torres Strait Islander communities within the constitutional framework but also sought to establish a consultative body, often referred to as a "Voice" to Parliament. This body would have been instrumental in providing input on legislation affecting Indigenous communities and addressing the deep-seated social and economic disparities faced by these groups.
- The acrimonious campaign laid bare the profound racial divisions still prevalent in Australia, challenging the nation's self-proclaimed status as the "Lucky Country." Despite the hopes of advocates for a more inclusive and equitable society, the majority of Australians voted against ushering in these constitutional changes, underscoring the complex and deeply rooted challenges faced in fostering unity and understanding among different cultural groups within the country.

MIDDLE EAST

US-Saudi Arabia
US Secretary of State Antony Blinken, currently on a crisis tour of the Middle East, sought support on Sunday from Saudi Arabia's de facto ruler, Crown Prince Mohammed bin Salman.
- Despite their warming ties with Israel, Saudi Arabia had put normalization efforts on hold. The top US diplomat engaged in a nearly hour-long meeting with the Crown Prince at his farm residence in the Riyadh area, as confirmed by a US official.
- Blinken, upon returning to his hotel, described the meeting as "very productive." His visit to the region comes in the aftermath of a crisis triggered by Hamas fighters infiltrating Israel from the blockaded Gaza Strip on October 7, resulting in the tragic loss of 1,300 lives, predominantly civilians. In response, a massive retaliatory campaign was launched against the Islamist group in Gaza, claiming the lives of more than 2,300 individuals.
- Before the outbreak of violence, Crown Prince Mohammed bin Salman had previously expressed optimism about the progress made in US-led diplomatic efforts aimed at normalizing relations between Saudi Arabia and Israel. However, the recent crisis has put these normalization discussions on hold, prompting Blinken's urgent visit to garner support and navigate the complex situation in the region.

SOUTH AMERICA

ECUADOR
Ecuador is on the brink of a significant political shift as citizens prepare to elect a new president amidst a backdrop of intense violence and political turmoil. The popular candidacy of one hopeful was tragically cut short due to a wave of political assassinations and a brutal drug war that has plagued the nation.

- The remaining contenders, 45-year-old lawyer Luisa Gonzalez and 35-year-old heir to a banana empire, Daniel Noboa, have been forced to campaign under the shadow of fear, often donning bullet-proof vests. The pervasive climate of terror has gripped this once-peaceful country, compelling both candidates to pledge their commitment to addressing the escalating violence that has crippled their nation.
- Recent polls reflect the deep-seated concerns of Ecuadorians, with crime and insecurity ranking as their primary worries. Over the past four years leading up to 2022, the country's murder rate has skyrocketed, a concerning trend that has left citizens living in fear. To ensure the safety of the electoral process, an extensive security force comprising 54,000 police officers has been deployed across the nation.

- Ecuador, once a haven nestled between major cocaine exporters Colombia and Peru, has experienced a surge in violence in recent years. Rival gangs, with affiliations to powerful Mexican and Colombian cartels, have engaged in brutal battles for control, transforming the nation into a battleground. This violent struggle has resulted in horrifying incidents, such as the massacre of at least 460 inmates in prisons since February 2021. These tragic events, marked by mass riots where prisoners were mercilessly beheaded or burned alive, serve as a grim testament to the dire situation faced by Ecuadorians today.

SECTION 3 – MIXED BAG

HEALTH

Virtual Reality Detects Alzheimer's
A recent study conducted by experts from University College London (UCL) suggests that people in the early stages of Alzheimer's disease face difficulties in turning while walking.
- The researchers utilized virtual reality technology to explore navigational errors among individuals exhibiting initial signs of the disease. The aim was to create straightforward tests for diagnosing Alzheimer's disease.
- Published in Current Biology, the study compared 31 healthy younger individuals, 36 healthy elderly participants, and 43 patients diagnosed with mild cognitive impairment. Each group was tasked with completing a virtual reality-based activity wearing goggles that allowed real movements. Participants followed a route outlined by numbered cones, involving straight walks connected by a turn. They then had to return to the starting point relying solely on their memory. This task was repeated under various conditions.
- The research revealed that individuals in the early stages of Alzheimer's consistently overestimated the turns on the route and had a higher variability in their sense of direction. Dr. Andrea Castegnaro, the study's author from the UCL Institute of Cognitive Neuroscience, emphasized that navigation difficulties are a significant early sign of

Alzheimer's disease. The study found specific disruptions in navigation patterns unique to Alzheimer's, distinct from the normal decline seen in healthy aging.

- The mild cognitive impairment group was further divided into individuals with underlying Alzheimer's (14) and those without (11). Confirming early Alzheimer's required an invasive lumbar puncture, which some participants declined. Dr. Castegnaro stressed the importance of these findings, suggesting they could pave the way for early Alzheimer's diagnosis by focusing on specific navigational errors. The goal is to develop practical tests suitable for clinical settings, considering limitations such as space and time.
- Dr. Leah Mursaleen, head of research at Alzheimer's Research UK, highlighted the urgent need for precise early detection techniques as dementia becomes a treatable condition. While the study showed promise by using virtual reality to detect differences in individuals with early Alzheimer's, she emphasized the necessity for larger studies to fully grasp the potential of this discovery. Combining digital technologies like virtual reality with emerging methods such as blood tests could offer comprehensive insights into Alzheimer's diagnosis.
- Sian Gregory, Alzheimer's Society research communications manager, acknowledged the challenges in diagnosing dementia and appreciated the study's focus on navigation issues, which are among the earliest noticeable changes in Alzheimer's disease. Although the technology is in its early stages, it holds promise in detecting disease-specific brain changes during the initial phases of dementia. This innovation could potentially benefit hundreds of thousands of individuals living with Alzheimer's disease in the future.

SPACE

Astronaut Rubio's Space Journey

After spending an entire year in space, astronaut Frank Rubio is readjusting to life on Earth, and gravity isn't making it easy for him. Rubio shared his experience during a news conference at NASA's Johnson Space Center in Houston, Texas, where he described the discomfort he felt upon returning to our planet.

- "Walking hurts a little bit the first few days, the soles of your feet and lower back," he explained, attributing the pain to the fact that his lower back now had to support half his weight.
- Rubio's space odyssey began in September of the previous year when he embarked on what was supposed to be a routine six-month mission aboard a Russian rocket. However, his return journey faced an unexpected twist. The Soyuz spacecraft meant to bring him back developed a coolant leak, likely caused by a micrometeoroid, forcing the Russian space agency, Roscosmos, to return the vessel to Earth. In an unexpected turn of events, Rubio and his crewmates found themselves extending their stay in space.
- The situation meant Rubio had to adapt to spending an entire year confined within the space station, a prospect he found mentally challenging. "The fact that I was going to spend a whole year cooped up was a kind of torture for me because I love being outside,"

Rubio said. "But that's part of the mission. It took a little bit of a mental shift and saying, 'Hey, this is my world for the next 12 months, and I have to deal with that.'"

- Despite the challenges, Rubio's extended stay allowed him to set a new American record for the longest time spent in space, surpassing the previous record set by Mark Vande Hei in 2022. The world record, held by Russian cosmonaut Valeri Poliakov, stands at 437 days.
- Returning to Earth wasn't a seamless transition. Rubio described the peculiar sensation of trying to walk straight but finding himself drifting to the right or left. "Your mind is perfectly clear, but your body just doesn't respond the way you expect it to," he said, highlighting the physical disorientation returning astronauts often experience.
- During his time aboard the International Space Station, Rubio also attempted a unique experiment – growing a tomato in space. However, his attempt took an unexpected turn when he lost track of the tomato. He humorously speculated that some might say he ate it, but the fate of the space tomato remained a mystery.
- As Rubio readjusts to Earth's gravity, he reflects on his extraordinary journey, marking a historic chapter in American space exploration. His experience serves as a testament to the challenges and resilience of astronauts, pushing the boundaries of human endurance beyond our home planet.

OFFBEAT

Skygazing: Rare Solar Eclipse
Sky enthusiasts throughout the Americas gazed skyward to witness a rare celestial phenomenon: an annular solar eclipse. In Albuquerque, New Mexico, a group of spectators wearing protective eyewear gathered, among many others across the western United States, to observe the Moon passing between the Sun and Earth at its farthest point from our planet.

- The Moon's distance prevented it from entirely obscuring the Sun, resulting in a mesmerizing "ring of fire" effect that elicited cheers from the Albuquerque crowd.
- "It's majestic. We're in awe," shared Shannon Cozad, one of the viewers in Albuquerque.
- Over the span of a few hours, the most prominent path of the eclipse, known as the "path of annularity," traversed several major cities, including Eugene, Oregon, and San Antonio, Texas. Partial eclipse phases lasting an hour or two preceded and followed the event.
- Eight-year-old Mubaraq Sokunbi, attending a hot air balloon festival in Albuquerque with his family, enthusiastically described the eclipse, comparing it to a "black hole" where the Moon covered the Sun, leaving a ring around it.
- While the eclipse was visible for between 30 seconds and five minutes at any given location, safety precautions were crucial. Spectators were urged to use solar viewing glasses (not regular sunglasses) to protect their vision. NASA emphasized the importance of avoiding looking at the Sun through optical devices like camera lenses, telescopes, or binoculars while wearing eclipse glasses, as the concentrated solar rays could cause serious eye injury.

- The eclipse extended its path into Mexico and Central America, then proceeded into South America through Colombia and northern Brazil, concluding at sunset in the Atlantic Ocean.
- This event also served as a practice run for a total eclipse scheduled for April 2024. According to Madhulika Guhathakurta, a heliophysics program scientist, both eclipses promise to be "absolutely breathtaking for science." Solar eclipses have discernible effects on the upper atmosphere, particularly the ionosphere, rich in charged particles responsible for reflecting and refracting radio waves.
- Guhathakurta highlighted the persistent mysteries surrounding the atmospheric effects of solar eclipses, despite over 50 years of research. To delve into these phenomena, NASA launched three rockets from the White Sands Missile Range in New Mexico on Saturday. These rockets aimed to collect data on electric and magnetic fields, electron density, and temperature.
- The last total eclipse occurred in the United States in 2017. Following the upcoming total eclipse in April, there will be no similar event until 2044. As for annular eclipses, the next occurrence is anticipated in 2046.