

INFOTAINMENT EDGE[™]

Tuesday, October 31, 2023 (Daily E-booklet on Artificial Intelligence, VR, Tech, Robotics, Coding, Global Info, Health, Science & more)

SECTION 1 – TECH BUZZ

ARTIFICIAL INTELLIGENCE



Datasaur Launches LLM Lab

Datasaur, the San Francisco-based AI startup renowned for its expertise in text and audio labeling for AI projects, has unveiled its latest innovation: the LLM Lab. This comprehensive platform serves as a one-stop solution, aiding teams in building and training custom large language model applications similar to ChatGPT.

- Available for both cloud-based and on-premise deployments, the LLM Lab provides enterprises with a foundational framework to create internal generative AI applications without grappling with the common concerns related to third-party services, such as data privacy risks. This approach empowers teams with greater control over their projects, allowing them to focus on development without unnecessary worries.
- Ivan Lee, the CEO and founder of Datasaur, highlighted the Lab's capabilities, emphasizing that it addresses common pain points and integrates evolving best practices. Drawing from their experience in constructing custom models for internal use and clients, Datasaur has crafted a scalable and user-friendly LLM product.

- The LLM Lab offers an all-in-one interface, encompassing various stages of building an LLM application. From internal data ingestion, data preparation, and retrieval augmented generation (RAG) to embedded model selection, similarity search optimization, and cost-efficient server management, the Lab streamlines the entire process. Datasaur's approach focuses on modularity, composability, simplicity, and maintainability, ensuring adaptability to the ever-changing landscape of LLM technology.
- To commence their LLM project, users can select a foundation model and configure settings such as temperature and maximum length. Supported models include Meta's Llama 2, Technology Innovation Institute's Falcon, Anthropic's Claude, and Pinecone for vector databases. Users can experiment with prompt templates, test prompts, and upload documents for RAG. After refining their configuration and deploying the application, users can assess prompt/completion pairs through rating/ranking projects and incorporate human feedback for fine-tuning/reinforcement learning.
- The feedback for the LLM Lab has been positive, with customers appreciating its ability to bridge communication gaps between engineering and non-engineering teams, making the development of LLM applications more accessible and scalable. Datasaur's clientele includes industry leaders in critical sectors such as finance, law, and healthcare, with plans to significantly expand their revenue in 2024.
- Looking ahead, Datasaur intends to enhance the Lab further, investing in LLM development at the enterprise level. Users will have the capability to save successful configurations and prompts, facilitating collaboration within their teams. The Lab will also support new foundation models, aligning with the growing demand for custom, privacy-focused LLM applications.
- With the surge in the use of LLM applications for diverse purposes such as chatbots, customer support, and coding, the need for tailored internal solutions has become paramount. Datasaur's LLM Lab emerges as a timely and crucial tool, empowering enterprises to navigate the complexities of LLM development while ensuring privacy, security, and regulatory compliance.

Webex AI Enhancements

At its annual WebexOne conference, Cisco, a leading enterprise software and networking company, unveiled an ambitious AI strategy geared toward enhancing communication and collaboration on its Webex video conferencing platform. The aim is to make Webex a strong competitor against platforms like Zoom, Microsoft Teams, and Google Meet, all of which have also integrated new AI features recently.

- Cisco's strategy revolves around real-time intelligence spanning text, audio, and video, addressing common challenges faced by organizations during video conferences. This initiative builds upon previous AI updates in March, including meeting summarization.
- The latest updates announced at WebexOne introduce Real-Time Media Models (RMM) to enhance audio and video experiences. Additionally, an improved AI assistant offers suggested responses and summaries, aligning Webex with the demands of the hybrid workspace. Cisco's Webex portfolio comprises both in-room video conferencing hardware and software compatible with regular desktop and mobile systems.

- Jeetu Patel, Executive Vice President and General Manager of Security and Collaboration at Cisco, emphasized the company's focus on audio, video, and language intelligence. The goal is to eliminate communication barriers, ensuring seamless interactions despite distances or language differences.
- A key feature of the updates is the Webex AI Assistant, which operates across the entire Webex service portfolio. This assistant provides automated support, including tone modification in written messages, suggested responses, and meeting summaries for latecomers or absent participants. For instance, if someone joins a meeting late, the AI assistant delivers a summary without disrupting the ongoing discussion.
- Cisco aims to enhance meeting summaries by incorporating additional contextual details using AI. Nonverbal cues and nuances in communication often get missed in traditional meeting summaries. By leveraging video intelligence, Cisco plans to capture details like participants stepping away or the tone of the conversation, ensuring a more comprehensive summary.
- Furthermore, Cisco is introducing AI-powered audio and video enhancements to improve communication quality, even in challenging network conditions. By reimagining audio and video codecs using AI technology, Cisco has achieved up to 16 times more efficiency, allowing high-definition audio and video at a fraction of the usual bandwidth. This innovation also enables the reconstruction of dropped packets through generative AI, improving audio quality in high-latency, high-packet-loss environments while reducing storage costs.
- Looking ahead, Cisco intends to expand Webex's AI-powered capabilities, providing users with assistants that can perform tasks previously impossible for individuals. These enhancements aim to simplify communication, bridging gaps and ensuring a seamless experience for users.

Shutterstock AI Image Editing

In the realm of news media, Shutterstock stands as a cornerstone, providing publications with a vast array of stock images, alongside other major players like Getty Images and Adobe Stock. Over its 20-year existence since its inception in New York City, Shutterstock has become essential infrastructure for multinational corporations and businesses of all sizes. Its stock images adorn marketing materials and enhance online presence for countless enterprises. Notably, the company went public on the New York Stock Exchange in 2012.

- However, the landscape of stock image services is shifting dramatically with the emergence of generative AI text-to-image models like Adobe Firefly 2, Midjourney, OpenAI's DALL-E 3 in ChatGPT, and Bing Image Generator, among others. These technologies raise a crucial question: What is the future of stock image services when clients can effortlessly create customized, lifelike images on demand using these innovative tools?
- Shutterstock has responded resolutely to this challenge by unveiling its groundbreaking AI image editing capabilities, seamlessly integrated into its website using OpenAI's prior image generating AI model, DALL-E 2. Remarkably, these capabilities are accessible to even free trial users, transforming their experience with Shutterstock in unprecedented ways.

• Tiffany Gilron, Director of Product Marketing at Shutterstock, explained during a video conference interview with VentureBeat, "We're allowing you to make stock your own and personalize it. So our library of 750 million assets essentially becomes infinite, and whatever's in your head you can really find it on Shutterstock."

The newly introduced features empower users in numerous ways:

- **Magic Brush**: This tool enables users to modify images by brushing over specific areas and describing desired changes, such as additions, replacements, or erasures.
- Variations: Users can generate alternate versions of any stock or AI-generated image.
- **Expand Image**: Similar to zooming out through a camera lens, this feature broadens the view of any image, revealing more of the scene behind the central focus.
- **Smart Resize**: Automatically adjust the image shape to match the required dimensions.
- **Background Remover**: Remove or replace the background with any scene, enhancing the overall image composition.
- **AI Image Generator**: This tool allows users to create high-quality, ethically-sourced visuals in seconds. Users can describe what they are looking for, and the AI generates ready-to-license images suitable for commercial use.

The editing process is remarkably user-friendly. Users can click the "Edit" button that appears on all images in the Shutterstock library, initiating a seamless transition to a virtual "dark room." Here, a set of editing tools is available on the right-hand sidebar.

- Users can select the desired tools, input their changes via a text box, and witness the AI generate multiple versions of the image based on their inputs. The system even offers options to change colours, add borders, or insert text blocks with various preset fonts.
- Shutterstock's objective is clear: to empower users, from publications to brands, not only to discover suitable images within their vast library but also to manipulate these images directly on their platform.
- Whether for digital or printed materials, social media, websites, or video introductions, users can now tailor images precisely to their requirements. This move puts Shutterstock in direct competition with established graphic design programs like Adobe Creative Cloud and Canva, marking a significant evolution in the way stock images are utilized and personalized.

PROGRAMMING

NGINX Modules Can Now Be Written in Rust

NGINX has recently unveiled the ngx-rust project, enabling developers to create NGINX modules using the Rust programming language. Rust has gained popularity due to its stability, security features, extensive ecosystem, and strong community support.

NGINX, originally developed by Igor Sysoev in 2002, is a high-performance, open-source web server and reverse proxy server software that powers a significant portion of the internet. It is renowned for its scalability, versatility, and efficiency in handling web content and internet traffic. NGINX serves three primary functions:

- Web Server: NGINX functions as a web server, handling HTTP and HTTPS requests and serving static web content like HTML files, images, and JavaScript. It is essential for hosting websites and web applications.
- **Reverse Proxy Server**: NGINX acts as a reverse proxy server, mediating between client requests and backend servers. It distributes incoming requests across multiple backend servers, ensuring load balancing and fault tolerance, especially in high-traffic environments.
- **Load Balancer**: NGINX functions as a load balancer, distributing incoming network traffic across multiple servers to optimize resource usage and provide a seamless user experience.

Originally, ngx-rust was developed to expedite the creation of an Istio-compatible service mesh product with NGINX. Over time, the community actively engaged with the project, forking the repository and creating their projects based on the Rust bindings examples provided by ngx-rust.

- Recently, F5's Distributed Cloud Bot Defense team needed to integrate NGINX proxies into its protection services, necessitating the development of a new module. F5 aimed to expand its Rust portfolio and improve the developer experience. With internal support and collaboration with the original ngx-rust author, F5 revived the ngx-rust project. This revival involved publishing ngx-rust crates with enhanced documentation and improved build ergonomics for community use.
- Traditionally, NGINX modules were written in C, but advancements in computer science and programming language theory have enabled languages like Rust to be used for NGINX module development. Modules are fundamental building blocks in NGINX, allowing users to customize features and support specific use cases.
- To begin with ngx-rust, developers can build from source locally, contribute to the ngxrust project, or obtain the crate from crates.io. The ngx-rust README provides guidelines for contribution and local build requirements. Although ngx-rust is in its early stages, F5 plans to enhance its quality and features with community support.

The ngx-rust project consists of two key crates:

- **nginx-sys**: This crate generates bindings from NGINX source code, automating the creation of foreign function interface (FFI) bindings through bindgen code automation.
- **ngx**: The main crate implements Rust glue code, APIs, and re-exports nginx-sys. Module writers interact with NGINX through ngx symbols, eliminating the need for explicit imports.
- Creating a Rust module involves implementing the HTTPModule trait, defining NGINX entry points like postconfiguration, preconfiguration, create_main_conf, etc. The ngx-rust-howto repository provides example code and implementations.
- With ngx-rust, NGINX embraces the Rust programming language, providing developers with a safer and more ergonomic way to write NGINX modules. This initiative aims to enhance NGINX's capabilities and offer developers a more efficient approach to working with the web server. Notably, Cloudflare has also adopted Rust for NGINX module implementation, as detailed in a blog post.

COMPUTING

Computing with atoms

Atom Computing, a pioneering startup in the field of quantum computing, has recently unveiled a groundbreaking development: a quantum computer with a staggering 1,180 qubits. This marks a significant leap for the company, considering their previous system operated with a modest 100 qubits.

- While the individual qubit operations have a relatively high error rate, preventing the execution of algorithms relying on the full qubit count, the company plans to address this challenge by running smaller algorithms in parallel, increasing the likelihood of obtaining accurate results.
- Unlike other quantum computing companies experimenting with ions, Atom Computing utilizes neutral atoms as their qubits of choice. These atoms are manipulated using lasers to create specific locations where they remain until disturbed by stray gas atoms. Quantum information is stored in the nuclear spin of these atoms, which is remarkably stable and resistant to environmental influences. This stability allows for the close packing of atoms, enabling a densely populated system.
- Atom entangles atoms using a technique called Rydberg blockade, which permits interaction only when atoms are at a specific distance from each other and are in the Rydberg state. By precisely placing atoms in this state using lasers, Atom Computing can entangle any pair of atoms. The homogeneity of the trapped atoms ensures consistent behavior, a key advantage over systems like transmons, where minor fabrication differences lead to variations in qubit performance.
- Atom Computing's quantum computer, now in its internal testing phase, boasts a 35×35 grid of atoms, providing up to 1,225 potential qubit sites, with testing currently conducted with 1,180 atoms. The system is housed within a 12×5 foot box containing lasers, optics, and a vacuum system. To maintain stability and availability, the system is regularly reset due to collisions between trapped atoms and stray gas molecules.
- While the system cannot use all its qubits for a single calculation due to error rates, Atom Computing plans to focus on algorithms requiring fewer qubits and operations. The abundance of identical qubits allows for parallel computation, enabling faster results for algorithms that can be run concurrently on multiple qubits.
- Atom Computing's ultimate goal is to enable quantum error correction by scaling the number of qubits into the hundreds of thousands or even millions within a single system.
- The company has already achieved non-disruptive measurements of atoms during computations, a crucial step toward recognizing and correcting errors. However, challenges remain, such as optimizing the process of moving atoms for entanglement, a potential bottleneck as qubit counts increase.
- Additionally, the company is exploring three-dimensional configurations for qubits, evaluating the trade-offs between complexity and time-to-solution for fault-tolerant algorithms.

CONCEPT DEVICE

Wearable smartphone

Lenovo's Motorola mobile brand is reigniting interest in the concept of a bendable, bracelet-like smartphone. Revealed at Lenovo Tech World '23 in Austin, Texas, the "adaptive display" device revisits an idea that has been discussed for years but has yet to hit the market.

- During the event, Lexi Valasek, 312 Labs' innovation strategy and product research lead for Motorola Mobility, showcased a prototype. Initially resembling a regular smartphone

 an OLED slab with a bold orange chassis Valasek bent the phone into an arch shape. It stood on her hand before she wrapped it around her wrist like a cuff. The phone quickly adapted to its new form, displaying a large clock and transforming into what felt like a smartwatch.
- Interestingly, Valasek placed the phone around a silver band already on her wrist, possibly incorporating a magnet for a secure hold. While Lenovo hasn't confirmed the reason behind this, videos shared by Motorola indicate users wearing a metal-looking band that the smartphone wraps around. The concept device boasts a "FHD+" resolution across its 6.9-inch display when flat and runs the full Android experience in this state.
- This new concept differs from the one showcased at Lenovo Tech World '16 in that it can be arched or bent into an upright position. In this position, the device can run a more compact version of Android on a 4.6-inch display. Users can also wrap the device around their wrist for a similar experience to the external display on the Motorola Razr+, allowing them to stay connected on the go.
- Notably, the phone no longer makes a "crunching noise" when wrapped around the wrist, a significant improvement from previous iterations. However, despite these advancements, practical limitations remain, such as concerns about the device's weight, heat, and the need to wear a separate product for full functionality. Additionally, questions about pricing and durability continue to raise concerns.
- The demand for foldable phones remains relatively low, constituting only 1 to 2 percent of the global market in 2022, according to IDC. However, experts anticipate rapid growth (a compound annual growth rate of 27.6 percent from 2022 to 2027) as prices decrease.
- While Lenovo continues experimenting with various OLED form factors, as seen with their rollable laptop concept and the 16-inch ThinkPad X1 Fold, consumers can expect more innovative concepts to be unveiled on stage before they become available in stores.

SECTION 2 – GLOBAL INFO EUROPE

RUSSIA

Russians gathered to honour the victims of Stalinist terror, marking a solemn occasion amidst Moscow's ongoing military campaign in Ukraine, now in its 20th month. Amidst this conflict, the Kremlin has intensified its efforts to control historical narratives, often downplaying Stalinist atrocities. Public events commemorating Soviet-era repression are viewed with suspicion and are considered unpatriotic.

- Despite these challenges, many Russians participated in the "Returning of the Names" event, an initiative organized by the Nobel Prize-winning Memorial, a group dedicated to human rights and historical memory.
- Memorial, which was shut down by authorities just weeks before Moscow launched its military offensive in 2022, orchestrates this event annually. During the ceremony, participants take turns reading out the names of individuals who were executed during Stalin's Terror between 1936 and 1938.
- In Moscow, the commemoration traditionally takes place at the Solovetsky Stone memorial, located opposite the Lubyanka headquarters of the KGB, which is now occupied by its modern successor, the FSB.
- However, Memorial announced prior to the event that authorities had banned them from holding the commemoration on the central Lubyanka Square. Despite these restrictions, the event served as a poignant reminder of the importance of remembering the victims of historical injustices, even in the face of current political challenges.

MIDDLE EAST

Israel-Hamas War

In the midst of intense conflict, Hamas announced its involvement in heavy combat against Israeli forces in northern Gaza on Sunday, urging the besieged residents to flee southward. Following weeks of relentless airstrikes, Israel declared a new phase in the war, a situation Prime Minister Benjamin Netanyahu had forewarned to be prolonged and challenging.

- On Sunday night, the Israeli military released footage purportedly showing a substantial deployment of tanks, infantry, and artillery within Palestinian territory. The military asserted hitting more than 450 targets linked to terrorism, including operational command centers, observation posts, and anti-tank missile launch sites.
- Hamas, through its armed wing, the Ezzedine al-Qassam Brigades, stated it was already deeply engaged in fierce combat against the invading Israeli forces. With the anticipation of a fierce door-to-door urban warfare, Israeli army spokesman Daniel Hagari advised Palestinian civilians to relocate to safer areas in the south, emphasizing the necessity of finding secure shelter amidst the escalating conflict.

NORTH AMERICA

UNITED STATES

The filing period for the presidential primaries in New Hampshire has concluded, and it was a period marked by various noteworthy events. Former Vice President Mike Pence, who eventually dropped out of the race two weeks later, stood out as the sole candidate with his own studio lights, illuminating him as he signed up for the upcoming Republican contest, the date of which is yet to be scheduled.

- In contrast, former President Donald Trump's team removed tape on the floor that was reserved for local journalists, replacing it with a prominent placement for his campaign photographer.
- Surprisingly, President Joe Biden chose to abstain from signing up altogether, a decision influenced by the changes being implemented by the Democratic National Committee in the nominating calendar. Instead, Biden plans to rely on a write-in campaign.
- However, the Democratic ballot will not be devoid of candidates. U.S. Rep. Dean Phillips of Minnesota made a significant announcement on the final day of the filing period. He not only declared his candidacy but also completed the necessary paperwork to secure a spot on the Democratic ballot.
- Additionally, self-help author Marianne Williamson had already filed her paperwork on October 12, ensuring a diverse field of candidates for the Democratic primary.

AFRICA

Nigeria- Germany

German Chancellor Olaf Scholz held talks with Nigerian President Bola Tinubu on Sunday, focusing on trade and investment prospects during Scholz's West Africa tour. This visit signifies Germany's effort to diversify trade partners and strengthen economic ties in the energy-abundant region.

- Scholz, visiting Africa for the third time since assuming office in 2021 and his second visit this year, emphasized the need to enhance Nigeria's ability to meet domestic demands while fostering improved trade relations with Nigeria, its second-largest trading partner in sub-Saharan Africa. The annual trade volume between Germany and Nigeria is approximately 3 billion euros.
- Key areas of collaboration between the two nations include addressing regional and global challenges such as migration, security concerns, and political instability in West and Central Africa.
- During their meeting in Abuja, the capital city, Scholz underscored the potential for cooperation beyond the conventional sectors of gas and oil. He highlighted the opportunity for Nigeria to leverage its capacities and invest in future technologies, specifically mentioning hydrogen energy.

- Experts have identified Africa as a potential exporter of hydrogen energy, aligning with the global push for energy transition.
- Scholz, facing significant domestic pressure concerning migration-related issues in Germany, proposed a collaborative approach, emphasizing "co-management" that would mutually benefit both countries.
- He outlined the ongoing development of a framework with the European Union to enhance migration policies. This framework aims to ensure that individuals without the right to stay in Germany are repatriated, contributing to a mutually beneficial outcome for both nations.
- The discussions between Chancellor Scholz and President Tinubu reflect Germany's strategic efforts to strengthen economic partnerships, promote sustainable investments, and address shared challenges with Nigeria, thereby fostering a positive and cooperative relationship between the two nations.

SECTION 3 – MIXED BAG

HEALTH

Stroke Awareness and Prevention

Stroke, the second leading cause of death and long-term disability globally, remains poorly understood by many. Despite its prevalence, awareness about the symptoms and warning signs of stroke remains low among the general population. World Stroke Day, observed annually on October 29, aims to increase awareness about stroke and its prevention. This year's theme, 'Together we are #Greater Than Stroke,' emphasizes the collective effort needed to combat this debilitating condition.

- According to Dr. H S Mann, Director of the Department of Neurology at Fortis Hospital Mohali, a stroke occurs when blood flow to a part of the brain is blocked (ischemic stroke) or when a blood vessel in the brain bursts (hemorrhagic stroke). This disruption in blood flow can lead to the death of brain cells due to a lack of oxygen, making stroke a medical emergency that requires immediate intervention.
- Several factors can trigger a stroke, including hypertension, diabetes, high cholesterol levels, obesity, smoking, excessive alcohol consumption, and cardiac conditions. Recognizable symptoms of stroke include loss of balance, visual disturbances, sudden weakness or paralysis of the face, arm, or leg (especially on one side of the body), and sudden speech difficulties. It is alarming that approximately 20% of stroke cases occur in individuals below the age of 45. Additional risk factors include cardiovascular conditions, artery dissection, substance abuse, and vasculitis. Time is of the essence in stroke cases, as even a minute of reduced oxygen supply to the brain can result in the loss of 1.8 million neurons. Immediate medical intervention, such as intravenous thrombolysis

(within 4.5 hours) and mechanical thrombectomy (within 24 hours for select patients), is crucial.

Dr. Anil Dhingra, Associate Director of Neurology, emphasizes the importance of correctly identifying the cause of stroke, whether it's due to a blocked blood vessel or leakage from a blood vessel causing a hemorrhage. Dr. Aman Batish, Associate Consultant in Neurology, highlights that stroke is preventable in over 80% of cases. Regular screenings for high blood pressure, blood sugar, and cholesterol in individuals above 30 are essential. To reduce the risk of stroke, people should manage their blood pressure, diabetes, and cholesterol levels, quit smoking, maintain a healthy weight, follow a low-sodium diet with at least 5 servings of fruits and vegetables daily, and engage in physical activity, aiming for at least 150 minutes per week.

SPACE SCIENCE

Mouse embryos grown in space for first time: Japan researchers

A groundbreaking study conducted by a team of Japanese scientists has raised the possibility of human reproduction in space. In a pioneering experiment, researchers, led by Teruhiko Wakayama, a professor at the University of Yamanashi's Advanced Biotechnology Centre, collaborated with the Japan Aerospace Space Agency (JAXA) to send frozen mouse embryos aboard a rocket to the International Space Station (ISS) in August 2021.

- Once in space, astronauts utilized a specially designed device to thaw the early-stage embryos, which were then cultivated on the ISS for a duration of four days. Remarkably, these embryos, subjected to microgravity conditions, developed normally into blastocysts—the precursor cells for both fetus and placenta. This crucial observation was detailed in a study published online in the scientific journal iScience.
- The researchers noted that gravity had no significant impact on the development of these embryos, dispelling previous concerns about the effects of space conditions on mammalian reproduction. After the embryos were sent back to Earth, thorough analysis revealed no significant alterations in the DNA and genes.
- In a joint statement, the University of Yamanashi and the national research institute Riken hailed this achievement as the "first-ever study that shows mammals may be able to thrive in space." The experiment marked the world's inaugural attempt at cultivating early-stage mammalian embryos under the complete microgravity conditions of the ISS.
- Looking ahead, the researchers emphasized the need to transplant the blastocysts developed in the ISS's microgravity back into mice on Earth. This step is crucial to confirming the normalcy of these embryos and holds the key to understanding the feasibility of mammalian reproduction in space. The implications of this research extend far beyond the confines of our planet, potentially shaping the future of space exploration and colonization efforts.
- This groundbreaking study assumes particular significance against the backdrop of NASA's Artemis program, which aims to return humans to the Moon, fostering essential knowledge for sustainable habitation and paving the way for future missions to Mars, anticipated to occur in the late 2030s.

GLOBAL WARMING

Carbon Capture Innovations

In the urgent battle against global warming, experts emphasize the crucial need to remove carbon dioxide from the atmosphere. One innovative solution comes from Heirloom Carbon, a startup based in San Francisco, which aims to scrub carbon dioxide from the air using limestone as a carbon-absorbing material. This groundbreaking technology has garnered significant attention, including a partnership with Microsoft to support the tech giant's zero-carbon initiatives.

- Governments worldwide are exploring similar innovations to achieve their climate objectives, especially as carbon dioxide emissions continue to contribute significantly to the greenhouse effect and climate change devastation. Heirloom Carbon's CEO, Shashank Samala, views direct carbon capture from the atmosphere as a "time machine" that can restore cleaner air conditions. He emphasizes that carbon removal is essential to reversing climate change and eliminating legacy emissions from the atmosphere.
- Carbon capture technologies, including Heirloom's approach, will be a central focus of discussions at the upcoming COP28 climate talks in Dubai, scheduled from November 30 to December 12. While many experts view carbon capture as a necessary step toward a zero-emission world, some skeptics worry that it might be seen as an easy way to avoid the necessary sacrifices needed to combat climate change.
- Heirloom Carbon has set an ambitious goal to remove one billion tonnes of CO2 annually from the atmosphere by 2035, without encouraging companies to continue burning fossil fuels. The company utilizes limestone, a naturally occurring mineral, which is transformed into a superpowered sponge capable of absorbing CO2 from the atmosphere. Once absorbed, the CO2 is permanently stored underground, contributing to the reduction of carbon emissions.
- Samala, deeply affected by the climate-related challenges he witnessed in his childhood in India, shifted his focus from the tech industry to climate solutions after extensive research on carbon capture. Heirloom's approach, known as Direct Air Capture (DAC), distinguishes itself from systems capturing carbon at the source (CCS), like factory chimneys.
- The choice of limestone is strategic due to its abundant availability and vast storage potential. Heirloom asserts that there is ample storage space within the United States alone to accommodate all emissions since the industrial revolution.
- Critics argue that capturing CO2 directly from emission sources, such as factories or steel plants, is more practical than extracting it from the general atmosphere, where its concentration is significantly lower. Despite differing opinions, innovators like Heirloom Carbon are steadfast in their commitment to combating climate change.
- Samala emphasizes the importance of holding companies accountable, ensuring they do not merely resell captured CO2 to businesses that might release it back into the atmosphere.

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