



Best Inventions

For our annual list of the year's most exciting innovations, TIME editors hunted through products and services to select 200 inventions that make the world better, smarter, or just more fun

PHOTOGRAPH BY JO WHALEY FOR TIME

Robotics

◀ **A steady surgeon****Medical Microinstruments Symani Surgical System**

In April, the Symani surgical system, which uses wristed robotic arms with seven degrees of flexibility, became the first FDA-approved robot for microsurgery. “The human body tremors,” says CEO Mark Toland. Robots, much less so. In Europe, Symani has completed nearly 1,000 surgeries across 17 different procedures. Up next: an AI-powered version to do common elements of operations, like tying up arteries post-procedure.

—Chris Stokel-Walker

Social good

A WAY TO DISCONNECT**Yondr Pouch**

Graham Dugoni believes that “society needs protected spaces” from cell phones. In 2014, he founded Yondr, which makes pouches that can lock phones away for a certain amount of time, such as during a concert or theater show, allowing their owners to disconnect. Today, around 70% of Yondr’s business comes from schools, whose leaders are worried about the impact of cell-phone use in class. While teachers previously had to enforce school phone bans themselves, leading to classroom conflict, Dugoni says Yondr has sparked renewed interest in no-phone schools because it offers a simpler fix. Now, about 76% of public schools in the U.S. prohibit nonacademic use of cell phones during school hours. Yondr claims millions of users across thousands of schools in 27 countries. —C.S.W.

Household

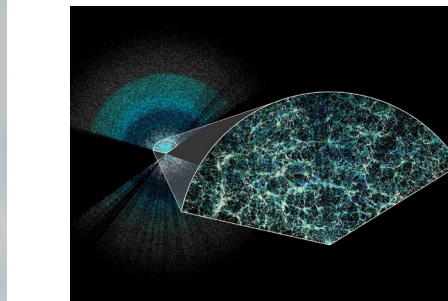
QUICK AT-HOME COLD BREW**Cumulus Coffee Machine**

The process of making cold-brew coffee usually takes hours. But the Cumulus Coffee Machine lets you make genuine cold-brew coffee at home in under a minute. The device uses recyclable capsules of coffee concentrate, brewing them in water that its tower maintains at 34°F. It also makes cold espresso and creamy nitro brew, by drawing nitrogen from surrounding air. Because heat, which releases chlorogenic acids, isn’t involved at any point in the preparation, there’s no “bitter, acidic bite,” says Cumulus Coffee Co. founder and CEO Mesh Gelman, a former Starbucks exec. (Former Starbucks CEO Howard Schultz is an investor.) “You get a more balanced, smooth coffee experience.” —CHRIS NORRIS

Robotics

BLUE COLLAR ROBOT ▶**Agility Robotics Digit**

Finding workers for physical labor in manufacturing and logistics is getting tricky. “There’s over a million jobs open today [in the U.S.] that can’t be filled,” says Peggy Johnson, CEO of Agility Robotics. Agility’s humanoid bots, Digits, were trained by AI and are already doing tasks like lifting and organizing products for companies including Amazon, where trials were announced in 2023, and logistics provider GXO. The \$30 an hour that GXO pays Agility to use each Digit is behind Johnson’s claim that it’s the first humanoid robot being paid to work. So far, Digit works fenced off from human colleagues for safety, but Johnson hopes the bot will be working alongside humans by late 2025. —C.S.W.



Aerospace

VISUALIZING THE BEYOND 3D Map of the Universe

Until recently, only about 2 million galaxies had ever been imaged. But in April, the documented galactic census exploded to 6 million, thanks to the biggest-ever 3D map of the universe, produced by the Dark Energy Spectroscopic Instrument (DESI), an observatory in Kitt Peak, Ariz., funded by the U.S. Department of Energy. The DESI map offers clues to the behavior of dark energy, an invisible force thought to be causing the expansion of the universe; now scientists believe it has waxed and waned over time, and may again in the future.

—JEFFREY KLUGER

Sustainability

A PLASTIC-FREE PHARMACY Cabinet Health

Last year, the global pharmaceutical-packaging market was valued at more than \$105 billion. That translates to a lot of nonrecyclable plastic bottles ending up in landfills. Cabinet Health’s subscription pharmacy instead offers its 1 million customers prescription and over-the-counter medications (but no controlled substances) at cost in reusable, stackable glass containers. In addition, the meds are delivered in compostable packaging. “We wanted [packaging] that was exciting, that looked nice, and had a really scalable economic equation,” says Cabinet Health’s co-founder and president Russell Gong. Cabinet partnered with CVS and Target last year, so customers can also pick up their meds at brick-and-mortar locations. —JESSICA KLEIN

More inventions

The **Garmin HRM-Fit** heart-rate monitor clips onto a sports bra, reducing bulk and chafing.

Blueland Spring Bloom Laundry Detergent Tablets ditch the microplastics but keep the enticing scent.

Mo/Go by Arc’teryx and Skip provides robotic support for sore knees.

Altec Lansing HydraBlast 2.0, a tough, portable outdoor speaker, is “everything proof.”

Canva Magic Studio uses AI to help beginners create professional videos and writing.

Aspivix Carevix is a medical device that can significantly reduce the pain of IUD insertion.

Diagnostic AI **Overjet** helps dentists detect and explain pediatric cavities.

UbiSim’s widely used VR training for nurses has added scenarios with patients who are transgender.

With a vibrant color display, **Rakuten Kobo Libra Colour** is an e-reader for the graphic-novel set.

Dreo ChefMaker Air Fryer monitors and maintains meat moisture while cooking.

Logitech Sight, a multicam video-chat system, lets everyone in the conference room be seen.

Skylight Calendar Max is a wall-mountable touchscreen family calendar that syncs to parents’ devices.

At Ulta Beauty, the **Luum Precision Lash AI robot** applies eyelash extensions faster and more precisely than humans.

The **Graphene Square Cordless Transparent Cooker** bakes using half as much power as a conventional oven.

Fashion retailers Zara and Ganni have signed on to reduce waste by using Ambercycle’s recycled polyester, **Cycora**.

OrCam Hear are smart hearing aids that let users focus audio on one speaker in a crowded room.

Automotive**MAKING SAFER DRIVERS*****Volvo Cars Driver Understanding System***

In 2022, some 16,000 people across the U.S. were killed in car crashes involving distracted or impaired drivers. Volvo makes its car exteriors safe, says Mikael Ljung Aust, senior technical safety leader at Volvo Cars' Safety Center, but it "became clear that assessing the driver's state inside the vehicle was just as critical." Thus the automaker's new system for its EX90 model: Two camera sensors monitor the driver's gaze, while a capacitive steering wheel checks that hands are on the wheel. If impairment is detected, Aust says, the car will alert the driver to take action or, failing that, autonomously stop on the side of the road and activate its hazard lights. —CHRIS STOKEL-WALKER

Food & drink**Fresher herbs*****Eden Green herb program***

Cramming 40 acres of farmland into one acre in its Texas greenhouses, indoor vertical farmer Eden Green this year became the first company to grow and ship a full suite of 10 herbs out of a single facility, where each herb has its own microclimate. Normally herbs come from multiple distributors and nations, raising transportation costs and environmental impact. Global sourcing can also make availability unpredictable. "No one is getting consistent supply," says CEO Eddy Badrina. The company delivers herbs farm-to-shelf in 48 hours to customers like Walmart, restaurant chain Cava, and food-service giant Sysco. —Don Steinberg

Household**A BETTER WAY TO COMPOST*****Mill Food Recycler***

Americans discard some 60 million tons of food annually, and only about 10% of U.S. households have access to compost collection. To help people dispose of food waste more sustainably, Mill Industries last year launched a kitchen appliance that uses a dual grinding system—powerful enough to break down avocado pits—to turn food scraps into dry grounds overnight. The newly upgraded machine looks like a sleek trash can, works quietly, and features charcoal filters so no smell escapes. "When you wake up in the morning, your scraps will look like coffee grounds and smell like dried spices," says co-founder Harry Tannenbaum. Use the grounds to fertilize your home garden or, for an extra fee, Mill will pick them up for you.

—JARED LINDZON

Education**COLLEGES COME TO YOU******Niche Direct Admissions***

Few high school students enjoy applying to college. Niche—the website that lets students rank and review schools—is trying to break down some of the barriers to college entry with its Direct Admissions platform. Instead of filling out, and paying fees for, while separate applications for each college, students simply complete a free profile (with details like grade point average) and colleges come to them—automatically offering admissions and even scholarships via the platform. Direct Admissions began rolling out for the 2024–25 school year; over 930,000 high schoolers have already received at least one admissions offer through Niche. "We want colleges going directly to the families saying, 'We admit you,'" says Niche CEO Luke Skurman. —JEFF WILSER

*INVESTORS IN NICHE INCLUDE SALESFORCE, WHERE TIME CO-CHAIR AND OWNER MARC BENIOFF IS CEO

More inventions

Bounce Imaging's **Pit Viper 360** is a small thermal imaging camera that can be thrown into dangerous situations or disaster rubble to find survivors.

PherDal Kit is the only sterile, FDA-cleared at-home insemination kit available in the U.S.

Sakuu Kavian cuts toxic chemicals from batteries by 3D-printing the electrodes.

The **Whispp** app converts voices impaired by illness, trauma, or disability into clear speech in real time.

Regenesis SourceStop uses activated carbon to absorb "forever chemicals" in polluted soil.

The **Babyark Convertible Car Seat Premium** has 14 sensors and an app to ensure proper installation and buckling, and send forgotten-child alerts.

Air Canada will ditch chemical spray for **De-Ice's** defrosting strips, which don't slow down boarding, on its airplanes.

The **Masimo W1 Medical** watch is the only FDA-approved wearable that tracks oxygen saturation and pulse rate.

Hero's **Surge S32** is an electric motorcycle that converts to a three-wheeler, and back.

ZeroAvia's **ZA600** hydrogen-electric engine can power a 19-seat aircraft with only water-vapor emissions. Regional operators have placed orders.

TomTex's plastic-free luxury leather alternatives will soon be used by BMW and Mercedes-Benz.

Badge lets users sign into apps with a fingerprint but doesn't store the data, reducing the risk of hacks.

Rizz uses AI to help users up their game when messaging online dating prospects.

Atmo's ultra-precise AI weather forecasting is used by Tuvalu, the Philippines, and the U.S. Defense Department.

AI**AI EXPLAINS IT ALL*****Google NotebookLM***

Released in July 2023 by Google Labs, the AI-powered NotebookLM helps users make sense of complex information by digesting up to 50 sources—documents, YouTube videos, even entire books—and summarizing them, suggesting follow-up questions, or creating a study guide. A feature released in September that converts such source information into an eerily realistic podcast, complete with AI-generated hosts, went viral. Steven Johnson, Google Labs' editorial director and a best-selling nonfiction author, says he long dreamed of a digital companion that could take great amounts of information about a subject and help you make sense of it all. "I really spent 30 years effectively fantasizing about what eventually became NotebookLM," he says. —HARRY BOOTH

Beauty**TOP-TIER SKIN CARE*****NuFACE Trinity+ Complete***

NuFACE's facial-toning devices have been gaining popularity in recent years, but the latest model, the Trinity+ Complete, offers the combination of microcurrent and another proven—and hugely popular—skin-care treatment: red-light therapy. The handheld facial device has three magnetized attachments that aim to tighten facial muscles and smooth wrinkles. Thirty-six concentrated red LED lights are designed to smooth skin, while two attachments for administering microcurrents (one for targeting around the eyes) use up to 425 microamps to increase cellular adenosine triphosphate, providing a nearly instant at-home facelift. As a safety feature, the device automatically shuts off after 20 minutes.

—JESSICA KLEIN

Parenting**Practical play*****Nugget Chunk***

The creators of the famous **Nugget**, a modular couch that is attractive enough for the living room but comes apart into pieces made for climbing and fort-building, have created the product's little sister: an equally attractive, play-encouraging ottoman. "Real furniture can be a Trojan horse for a toy," says Nugget CEO and co-founder David Baron. Nugget's products embrace that idea, extending an olive branch to kids. Made of four circular, microsuede-covered foam parts with a modern look that blends in with adult furniture, users age 3 and up can "nest" in Chunk's parts, roll them around, or reconfigure them for "open-ended play," Baron says. **Chunk** now makes up 20% of the company's sales since its May debut. —J.K.

Green energy**USING THE POWER OF GRAVITY*****Energy Vault EVx***

Solar and wind energy are renewable, but rely on the weather. Energy Vault's EVx Gravity Energy Storage System instead employs massive concrete blocks, which, after being raised, store the energy that went into lifting them, and when lowered, release that energy when it's needed. The ever-present pull of gravity amounts to a natural battery that can provide short-, medium-, or long-term storage, says CEO Rob Piconi. In May, the company connected its first commercial project to a grid in China, and announced a partnership with architecture firm Skidmore, Owings & Merrill to design skyscrapers that incorporate the system, potentially providing a way buildings can act as their own emergency generators.

—MICHELINE MAYNARD

Apps & software**CLICK HERE FOR 'I DO'*****Diia***

Since September, Ukrainian citizens have been able to get married in a most unusual way: via Diia, the country's statewide app, which has more than 20 million users. The system is simple, if unromantic: One partner proposes through the app, and the other is sent a notification. If the second party says yes within 14 days, the two agree on a date for a video-call wedding, complete with officiant, on the Webex platform. It might sound like an austere way to profess one's love, but it was designed to help the many Ukrainian couples who are physically separated by Russia's invasion of the country carry on with their lives. More than 1.1 million Ukrainians proposed using the tech in the first month it was available, and 435 couples married in that time frame. —C.S.W.

Accessibility**SUBTLE HEARING HELP****Apple AirPods Pro 2**

It might have seemed an inevitable development, but your AirPods can now double as hearing aids. The FDA has cleared Apple's software update that uses iPhones for clinical-grade hearing tests—similar to the ones audiologists perform—and turns AirPods Pro 2 into hearing aids if they determine you have mild to moderate hearing loss. With the software and the Apple Health app, users can adjust the AirPods to their specific hearing needs, without having to invest in costly hearing aids. It's Apple's latest foray into optimizing the potential health uses of its devices, which chief operating officer Jeff Williams says the company views as "a moral responsibility to do more in this space, since so many people have our devices with them." —ALICE PARK

Experimental**LAB-GROWN FABRIC****Galy Literally Cotton**

As its name declares, Literally Cotton is identical, on a cellular level, to the natural material grown for clothing. But it isn't grown the conventional way, which contributes to deforestation and uses significant water and chemicals. Galy's version is cell-cultured cotton: cells from a farm-grown plant are multiplied in a succession of fermentation vessels, in a process analogous to brewing beer. The system uses fewer resources and produces more consistent results than farming. "With all due respect to agriculture," says founder Luciano Bueno, "we believe we can produce the same thing in a lab facility, better." It's not yet commercially available, but interest is high; Inditex, parent company of fast-fashion giant Zara, acquired a stake in the company this year. —CHRIS NORRIS

Green energy**A LONGER-LASTING CHARGE****South 8 LiGas**

Lithium-ion batteries have quickly become the standard for powering vehicles, but South 8 CEO Tom Stepien says they have three problems: "fire, cold, and cost." South 8 addresses all three with LiGas, a liquefied gas electrolyte that, when injected into battery cells, provides a more stable and longer-lasting charge. LiGas batteries reduced fire risk compared with lithium-ion in a U.S. Army test; they work at -60°F vs. -30°F ; and they cost around \$100 per kilowatt-hour vs. \$150. They also charge in minutes vs. hours. South 8 has a contract with the U.S. Department of Defense and is talking to major car companies.

—MICHELINE MAYNARD

Consumer electronics**A PEACEFUL POCKET DEVICE****Boox Palma**

Modern phones are anxiety-provoking attention suckers, to put it lightly. China-based Boox's stylish Palma, a smartphone-size e-reader, is designed to provide on-the-go entertainment without distractions via its black-and-white e-paper display and lack of a cellular connection (it only supports wi-fi). Though the device runs Android software, the display's slower refresh rates mean most entertainment apps are less functional compared with a smartphone. You're not supposed to try to do more things with a Palma; it's made for reading e-books and listening to music or podcasts. Ultimately, Boox CEO Kim Dan says, the Palma is a stab at helping people "regain inner order and peace."

—RAYMOND WONG

Medical care**WHAT'S YOUR WEIGHT-GAIN TYPE?****Phenomix Sciences MyPhenome**

As effective as weight-loss drugs like Wegovy and Zepbound are, they don't work for everyone. Mayo Clinic obesity expert Dr. Andres Acosta and his team studied thousands of obesity patients to understand which factors contributed to weight gain—including genetics, microbiome, metabolic characteristics, and behavioral habits—and created MyPhenome, a genetic test that, together with a detailed questionnaire, categorizes people into four weight-gain types. One, called HungryGut, is most likely to respond well to GLP-1 weight-loss drugs. People identified as HungryGut lost twice as much weight while on the drugs as those who tested negative for HungryGut. —A.P.

Food & drink**FILTERED WATER, ANYWHERE****LifeStraw Sip**

LifeStraw's Max water cleanser, designed to clean impure water at a population level, was one of TIME's Best Inventions of 2023. The company's new device is more personal. The Sip reusable water filter straw, made of stainless steel, uses a high-flow microfilter membrane with 0.2-micron pores to block out 99.99999% of bacteria, 99.999% of parasites, and 99.999% of microplastics. Users can sip 1,000 liters of water over the lifetime of each straw, which comes in its own carrying case. The ultra-portable filter is ideal for world travelers and outdoors adventurers, and they'll be helping others: CEO Alison Hill says that for every purchase, LifeStraw donates a year's worth of safe drinking water to a child in need.

—CHRIS STOKEL-WALKER

Outdoors**Glowing flora****Light Bio Firefly Petunia**

By day, the petunias look like normal white flowers. In the evening, they emanate a soft glow that looks like moonlight. It feels like magic, but is rooted in science: the startup Light Bio spliced the petunia's DNA with that of bioluminescent mushrooms, creating the soothing glow-in-the-dark wonder. (The plants are commercially available via Light Bio's website but have been so popular, they sold out; the company expects more inventory in early 2025.) "Psychologically and emotionally, we attach light with life, with spirit, with soul," says Keith Wood, CEO and co-founder of Light Bio. "We wanted to show that science can be more than just practical. We wanted to show that science can be joyful." —Jeff Wilser

PETUNIA: JO WHALEY FOR TIME

More inventions

Shiru Protein-Discovery.ai uses AI to predict the functions of naturally occurring proteins.

Bimotal Elevate turns a pedal bike into an e-bike with a cell-phone-size clip-on device.

NASA's **Europa Clipper**, which launched in October to explore Jupiter, is the largest planet-bound spacecraft ever.

Mustang Survival Atlas 190 DLX is a sleeker, more comfortable life jacket.

Captions' AI video editor can dub users' voices into 28 languages with synched lip movement.

InnerPlant CropVoice engineers plants to emit a signal, detectable by sensors, when they are stressed by fungal infection, so farmers can treat and save crops earlier.

Fervo Energy's FervoFlex can produce or store clean energy, depending on demand.

BackAware Belt tracks spinal motion and gives real-time form feedback during exercise.

AISeer's **Facticity.AI** fact-checks submitted text, claiming a 92% accuracy rate as compared with 72% for competitors.

Prenosis Sepsis ImmunoScore is the first AI-driven diagnostic test for sepsis to be authorized by the FDA.

Sports-recovery boots **Hyperice Normatec Elite** use air pressure to massage legs, wirelessly.

Ready Rocker turns any seat into a rocking chair.

Manufacturing Allbirds' **MO.0nshot Zero** sneaker generates no greenhouse gases.

Tosy Flying Disc produces an LED light show when thrown, and a different one when lost.

ThredUp AI Search helps shoppers find secondhand pieces to fit ultra-specific criteria.

Home health**AN AT-HOME NASAL VACCINE**
AstraZeneca FluMist

For the first time, you can vaccinate yourself against flu. The FDA recently approved the first at-home vaccine to prevent influenza, the nasal spray FluMist, which was originally approved in 2003 but only to be administered by doctors. FluMist works just like a regular vaccine, sans needle—it contains a weakened form of influenza that can activate the immune system to fight the virus, but won't cause infection. Beginning next year, doctors can write prescriptions for FluMist for anyone under age 50, and users can pick up the spray from the pharmacy to give themselves. (Caregivers can administer the spray for children.) The drug's maker MedImmune, a subsidiary of AstraZeneca, expects to have doses ready for the fall-2025 flu season.

—ALICE PARK

Transportation**A MODERN RV**
Pebble Flow

When Bingrui Yang rented an RV for the first time, he loved the freedom but hated the broader experience. “The products on the market are really bad,” he says. Yang had worked on the iPhone at Apple and later at self-driving-vehicle companies Zoox and Cruise, and thought there was a better way. His Pebble Flow is a sleek, all-electric, semi-autonomous travel trailer. Inside, modern Scandinavian design feels like an upscale hotel, complete with an indoor-outdoor induction cooktop, and bathroom walls that toggle from opaque to transparent for a more spacious feel. The 45-kWh battery stores 3.5 times the energy of a Tesla power wall. That helps power an iPad from which drivers can control things like autostabilization and hitching the trailer to a vehicle. —CHRIS STOKEL-WALKER

**Fitness****Next-gen athletics***On Cloudboom Strike LightSpray*

While many running-shoe companies innovate from the bottom (think: soles with superfoams and carbon plates), Swiss sportswear brand On took a top-down approach with the laceless Cloudboom Strike LightSpray, which made its debut on a handful of athletes at the 2024 Paris Olympics. (Kenyan runner Hellen Obiri won the Boston Marathon this year in a prototype version.) To craft the socklike design, an automated robotic arm sprays 1.5 km of an elastic thermoplastic material onto a performance midsole. “It’s not a weave, it’s not a knit, it’s something new,” says Nils Altrogge, On’s director of innovation technology and research. That three-minute process eliminates hundreds of manufacturing steps (and the need to tie your shoes). —Ashley Mateo

More inventions

Abridge AI does doctors’ paperwork so they can focus on patients.

Bose Ultra Open Earbuds balance immersive audio with awareness of your surroundings.

NEMO’s **Endless Promise Collection** is a line of fully recyclable backpacks and sleeping bags.

BeeHero’s **Pollination Insight Platform** uses a small device that monitors bee activity and health inside each hive.

DeWalt PowerShift runs larger tools like compactors on a battery instead of gasoline.

Rion Aesthetics’ antiaging **Plated Intense Serum** uses cell-healing exosomes derived from platelets to help skin regenerate.

Daye Diagnostic Tampon can detect vaginal ailments—from bacteria, fungi, or STIs—at home.

GyroGear’s **GyroGlove** uses a gyroscope on the back of the hand to steady tremors.

Beflo Tenon Smart Adjustable Desk is a simple, elegant standing desk.

Whisker Litter-Robot 4 is a smart litter box that keeps your cat and home clean and odorless.

With the wireless **ThermoPro Twin Temp-Spike Plus**, cooks can track meat temps by app from up to 500 ft.

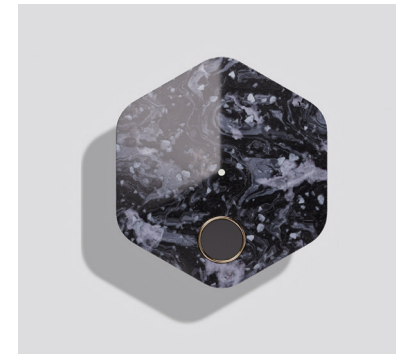
Lenovo **Think-Book Transparent Display Laptop Concept**’s screen looks like a pane of glass, and a flat touchscreen can be a keyboard or drawing pad.

Bandit managed to fit six pockets into its workout **Stamina Nova Crop top**.

iFixit’s USB-powered **FixHub Smart Soldering Iron** makes for safer home tinkering.

Rebind uses AI to let readers discuss books with experts and authors.

Figure 02 is a humanoid robot in trials as a warehouse worker at BMW’s South Carolina plant.

**Crypto & blockchain****SAFEGUARDING BITCOIN**
Block Bitkey

Block, the financial-services company founded by former Twitter CEO Jack Dorsey, created Bitkey to more easily let users store bitcoin outside of web-based exchanges, which historically have been unstable or even collapsed. To access your crypto, just unlock the physical device (made of quartz) with your fingerprint and tap it with your phone. The system has safeguarded methods to regain access should you lose your phone, the hardware, or even both, via “trusted contacts”—you can choose, say, your mom. Bitkey brings bitcoin “self-custody to the mainstream,” says Block’s head of hardware, Thomas Templeton.

—JESSICA KLEIN

AI**THE LARGEST-EVER CHIP**
Cerebras Systems Wafer-Scale Engine 3

To run AI models, computers constantly shift vast amounts of data between separate memory and logic chips, which chokes performance. To solve this, Cerebras Systems in 2019 engineered a dinner-plate-size chip—the largest ever—that embeds both memory and logic. “People thought we were mad hatters,” says co-founder and CEO Andrew Feldman. In March, the company released a record-fast third generation, the Wafer-Scale Engine 3, which can train models 10 times the size of OpenAI’s GPT-4, and will power the Condor Galaxy 3, a supercomputer being built in Texas. —HARRY BOOTH

Aerospace**RETAIL DELIVERY BY DRONE**
Wing

Google sister company Wing has built one of the world’s largest residential drone-delivery operations, pushing aerial product drops past proof of concept and into shoppers’ neighborhoods. In the Dallas-Fort Worth metroplex, Wing and Walmart had already reached 60,000 households as of May and have their sights set on serving the full population of 8 million. Shoppers mark a delivery location on their property, a store employee packs the shipment, and Wing’s software calculates the flight route. A hovering drone lowers a tether to pick up and release packages, and returns to the store for docking. In March, Wing expanded its DoorDash partnership in Virginia, and in Europe, its drones are making urgent hospital deliveries.

—DON STEINBERG

Health & wellness**MACHINE MASSAGE***Aescape robot massager*

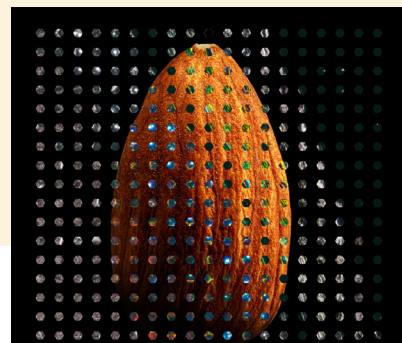
Aescape’s fully automated robot arms reimagine massage with a full-body scan and machine learning to create a personalized plan for each patient. “This new concept of an on-demand massage puts people in control,” says founder and CEO Eric Litman. A touchscreen lets users direct the two robotic arms’ pressure, target specific areas, and change the music and lighting. Patrons can now book an Aescape massage at some Equinox gyms in New York City, the Kimpton Epic Miami, the Four Seasons Resort Orlando, or the Four Seasons Baltimore (with more locations coming). A 30-minute session starts at \$60, but because it can work on both sides of the body at once, Litman says it offers “at least twice the work in half the time you’d spend in a traditional massage.” —A.M.

Fitness**COOL RUNNINGS*****Omius Headband***

Dutch runner Sifan Hassan didn't need a crown of laurels when she won the women's Olympic marathon this summer—she was already wearing Omius' cooling headband. The gear's 20 cubic cooling units are cut from a porous graphite that pulls water in; when wet, the units' uneven surface increases the area from which moisture can evaporate, amplifying the body's natural cooling mechanism; it's like working out with a cool cloth on your forehead that never dries out. "That either makes you perform better because you feel like you're exerting yourself less, or makes you more comfortable performing at the same level," says Omius CEO Jake Leschly. The company says sales skyrocketed after the Paris Games. —ASHLEY MATEO

Food & drink**More nutritious plants*****Brightseed Forager***

Many plants and fungi contain bioactives, little-understood natural compounds that could benefit human health. "Somewhere along the way, we lost a lot of that knowledge," says Lee Chae, CTO of Brightseed and creator of Forager, which uses AI to help map the plant genome. Forager has now assembled the world's largest library of natural small molecule compounds—over 7 million and counting—and linked them to potential health benefits. This map can be used by food companies to understand their bioactives, as with Brightseed's partnership with Blue Diamond, attempting to optimize its almonds. —Jeff Wilser

Social good**A GAME-CHANGING VACCINE**
R21/Matrix-M

After decades of development, the World Health Organization has recommended two vaccines to combat malaria, which infects hundreds of millions and kills 600,000 people a year, mostly children. One was developed by researchers at Oxford University and the Serum Institute of India: R21/Matrix-M targets the malaria antigen R21 and includes an adjuvant from Novavax, which helps to amplify the immune response generated. Serum began shipping the first doses in May at just under \$4 per shot, and CEO Adar Poonawalla anticipates continuing to provide 50 million to 60 million doses annually to Africa, where malaria remains endemic, over the next three years. "We have the capacity, the demand, and the will of the people to want this vaccine," he says. —ALICE PARK

Automotive**A NOSTALGIC EV**
Volkswagen ID. Buzz

"So many cars on the road today look angry," says Mark Gillies, director of PR and reputation at Volkswagen U.S. "The ID. Buzz looks friendly and happy." The first EV minivan to hit the U.S., the ID. Buzz takes its design cues from the famed VW minibus, originally released in 1950. Although nostalgia is undoubtedly part of the appeal, Gillies argues that the seven-seater is a practical vehicle too: "You get the same interior space as a full-sized SUV, but it's 30 in. shorter." A long wheelbase and the hefty batteries beneath the floor make the minivan incredibly stable, and the fast-charging lithium-ion battery charges to 80% in just 30 minutes with maximum charging speeds. The vehicle goes on sale in the U.S. this fall.

—CRAIG WILSON

Entertainment & gaming**Immersive gaming**
Tecno Pocket Go

At first glance, the Tecno Pocket Go gaming system seems to be missing an important element: a screen. But when users slip on the augmented reality glasses that come with the handheld console, it opens up a display projection comparable to a 215-in. TV screen. Marrying the headset—which includes head-tracking, vibration, and adaptive posture technology—to a compact controller that doubles as a Windows 11 computer creates a more portable and immersive experience for gamers on the go, or with limited space at home. Users can even sync the glasses to their phone, TV, and other devices to create a DIY spatial reality. This fall it will be available in Europe. —A.M.

**More inventions**

The **Harbor Baby Monitor** is end-to-end encrypted and works with or without internet connection.

Windfall Bio's Methane-Eating Microbes fertilize farm soil and help it absorb more climate-change-causing methane.

Guardant Health Shield can detect colon cancer with a simple blood test.

Humanitarian orgs in Colombia 3D-printed **Filter Caps**—bottle caps that can make river water potable.

Sony Bravia Theater U is a wireless neckband speaker that envelops the wearer in sound without disturbing others.

Laguna Insight AI aims to reduce nurse burnout by providing key information about patients before telehealth calls.

Bristol Myers Squibb Cobenfy is the first new treatment for schizophrenia in decades, with fewer side effects.

Petlibro Polar Wet Food Feeder refrigerates wet cat food for up to three days, and lets you feed via an app.

UVeye Vehicle-Inspection Systems use cameras to scan cars for damage in seconds.

Haikubox records bird calls, identifies species, and shares info with the birder community.

GE Profile Smart Indoor Smoker lets you smoke barbecue without smoking your kitchen.

Brainbox AI ARIA automates a building's HVAC system and claims to cut energy costs by up to 25%.

AM Batteries' Powder to Electrode Method reduces the cost, time, and energy needed to make batteries by using a dry process instead of the current wet.

Honor Magic V3 is the thinnest foldable smartphone, thanks to a battery that's as thin as a credit card.

Parenting

Better breast-milk storage

Mila's Keeper
MilKeeper

Breastfeeding is healthy for babies but can be burdensome for parents. When away from home, certified lactation educator Lara Vu found that most milk containers could keep cold for only a few hours at most. So Vu created the MilKeeper, a stylish, portable breast-milk cooler with a reusable high-density polyethylene ice pack to keep 12 oz. of milk safe on the go for up to 20 hours. The glass bottle attaches to breast-pump flanges for pumping, a sealed top for storing, and a nipple for feeding, eliminating the hassle of transferring milk between different containers. —Jared Lindzon



Consumer electronics

WIRELESS HEADPHONE LUXURY

Sonos Ace

Renowned speaker maker Sonos' first pair of headphones, the Ace, features plush vegan-leather ear cushions, a sturdy stainless-steel headband, and ear cups made partially from recycled plastic. Sonos VP of product Chris Kallai says that over the course of 25 months, the company "rigorously tested multiple designs with a diverse set of people across age, sex, tech savviness, and personal style" to come up with the super-comfortable wireless design. Sound quality is top-notch, as is the active noise cancellation. But the Ace's, well, ace in the hole is its "TV Audio Swap" feature: a long press of a button instantly sends audio from a Sonos soundbar that's connected to a TV to the headphones for private listening. —RAYMOND WONG

AI

FINDING CURES

Google DeepMind
AlphaFold 3

In 2020, Google DeepMind unveiled AlphaFold 2, a machine-learning algorithm that in 2022 would prove capable of predicting, with near experimental accuracy, the structure of nearly every known protein. The breakthrough recently earned co-founder and CEO Demis Hassabis and AlphaFold team lead John Jumper a Nobel Prize in Chemistry. Now there's a sequel: AlphaFold 3, released in May, predicts how proteins interact with DNA and other molecules. "AlphaFold 2 was a story about proteins," Jumper says. "AlphaFold 3 is about how proteins talk to everything else." Many in pharmaceuticals and medicine believe that the new model's predictions will accelerate research and drive faster drug discovery. —HARRY BOOTH

Finance

SIMPLIFYING TAX RETURNS

Column Tax

Millions of Americans eligible for free income tax filing don't take advantage of it, in part because it isn't well integrated with the rest of their financial lives. Column Tax figures it's cheaper and easier when tax filing is part of a banking or accounting application you're already using, so it's building a bridge to connect those apps with tax prep. "There's no reason tax needs to be separate," says CEO and co-founder Gavin Nachbar. The company's application programming interfaces (APIs) allow apps like Chime and NerdWallet to embed free tax filing into their offerings, using already stored data plus other sources as needed. This year, Column Tax says it processed over \$150 million in refunds in its first full tax season for people in all 50 states. —DON STEINBERG

Education

ROLLING ROBOTICS

Sphero Bolt+

Sphero's 2018 Bolt—a baseball-size orb that could be programmed to roll and scurry around—offered students a visceral experience in early coding. Now, the Sphero Bolt+, aimed at kids ages 8 to 13, boasts a ground-up redesign, which adds a durable, waterproof polycarbonate shell and a more robust internal navigation system, so kids can send it through a stream or off a jump without damage. The robot also features a larger screen—a 128-by-128-pixel LCD—which displays over 650 images and animations to enhance lessons on "lifecycles, the solar system, history, and a whole bunch of other subjects well beyond STEM," says Sphero's senior product manager, Nate Ubowski. Bolt+ is sold individually or in sets for classroom use. —CHRIS NORRIS



Connectivity & communication

BEAMING THE INTERNET

X Taara

Worldwide, 2.6 billion people lack an internet connection. The mission of Taara, which sits within X, Alphabet's moon-shot factory, is to bridge that gap. Taara uses beams of light to transmit data between small terminals, offering an alternative to traditional fiber-optic cables in places where installing ground-based systems is tricky. "Think of it like fiber, but without having to run any fiber—it's just over the air," says Mahesh Krishnaswamy, general manager of the project. The beams can reach over 20 km. Taara has been installed in 13 countries, including India, Kenya, Fiji, and even the U.S. (in rural areas and at events like Coachella). Most recently, in Ghana, 20,000 new users and 320 businesses have come online thanks to Taara. —CHRIS STOKEL-WALKER

Accessibility

A TREADMILL FOR WHEELCHAIR USERS

Kangsters Wheely-X

Five years ago, John Cho's father became paralyzed after a medical procedure went wrong, leaving him with few ways to exercise. So Cho, co-founder of the South Korean startup Kangsters, helped create one: Wheely-X, a wheelchair treadmill that pairs with a mobile device (there's a free app) or a PC to offer workouts such as wheelchair racing games, endurance training, and seated yoga. Thanks to Wheely-X, Cho says, his father is now strong enough to climb a steep hill in his chair and transfer himself from chair to bed without assistance. The company showcased the system at the 2024 Paralympic Games and has begun selling to private users, gyms, hospitals, and rehabilitation centers. —JAMIE DUCHARME



Household

EASY-TO-ADD SPACE

Samara Backyard

Adding more space to your home can be tough. Building an additional dwelling unit (ADU) on your property often comes with months of disruption and contractors. Samara's Backyard homes aim to cut out the turmoil. "We think that an ADU should be as easy to get as a Tesla," says co-founder and CEO Mike McNamara. "Homeowners deserve flexible space that's beautifully designed and that can be financially empowering." To that end, the company is a one-stop shop—from selection (its five models start at \$274,000 and range from 420 to 950 sq. ft.) to permitting and financing. The whole process takes about seven months, but the ADU is built entirely off-site and the actual installation takes about six weeks. —ASHLEY MATEO

Sustainability

TRACKING EMISSIONS FROM SPACE

GHGSat-C10 'Vanguard'

Legions of satellites orbit the earth, but only a few monitor our planetary health. GHGSat has 11 satellites in orbit to track methane emissions, and a 12th, named GHGSat C-10 "Vanguard," launched in November 2023 to look for carbon dioxide emissions and leaks. "Every gas in the atmosphere has a spectral fingerprint that absorbs light at specific wavelengths. When we want to look for [CO₂], we tune our spectrometer to look for that fingerprint," says CEO Stéphane Germain. He believes the company will need 20 satellites total to track daily methane and CO₂ spikes, with potential clients including oil and gas companies looking to mitigate emissions. —C.S.W.

More inventions

The **Tilta Khronos Ecosystem** turns an iPhone into a professional film-making camera.

Sarepta Therapeutics Elevidys is the first-ever gene therapy for Duchenne muscular dystrophy, paving the way for other genetic therapies.

Practice your balance on Gibbon's **GiBoard**, a portable slackline.

Virtue Damage Reverse Serum uses a proprietary protein, Alpha Keratin 60ku, that aims to seal hair's split ends.

Meatable's Opti-Ox tech turns stem cells from live pigs into lab-grown pork, available in Singapore next year.

***Cohere Command R+** is AI for businesses, summarizing documents in multiple languages.

NanoTech Materials puts its **Insulative Ceramic Particle** into coatings that insulate buildings from external heat and fire damage.

Segway GoKart Pro 2 can drive around town or connect at home as a seat and controller for racing games.

Cavnue turned a stretch of I-94 in Michigan into a **Connected and Automated Vehicle Corridor**, embedded with sensors that track road conditions in real time.

Pivot Bio N-Ovator connects companies with farmers who avoid synthetic nitrogen fertilizer, to clean up the supply chain.

Farmerline's **Darli AI** chatbot translates advice on regenerative farming into local languages in Africa, Asia, and South America.

Autonomous crop-dusting aircraft **Guardian Agriculture SC1** is the first electric vertical take-off and landing vehicle to get FAA approval.

Unify Medical Amplio offers surgeons more precise vision via digital loupes, an advanced version of the magnifying glasses.

Medical care**CATCHING CANCER EARLY****Northwell Health iNav**

The five-year survival rate of pancreatic cancer is just 13%, largely because it's often not detected until it's too late. That's why at Northwell Health, New York State's largest health care system, hospitals use the AI-powered iNav (developed in-house) to proactively analyze images of patients' MRIs and CT scans—taken for unrelated health issues—searching for evidence of cancerous masses or lesions. Northwell says the system has slashed time to treatment, the period from diagnosis to the beginning of addressing the disease, by 50%. Dr. Daniel King, a developer of iNav, says it has “totally revolutionized our ability to get these people connected to care.” Northwell is currently exploring licensing iNav to other hospitals. —JEFF WILSER

Design**Simpler cycling****8 Degree Pedal X8-1 Floating Pedal**

Bike pedals have trade-offs. Many clip-in pedals provide “float,” meaning they have some wiggle room side-to-side, which is gentler on your knees. The downside is that you need special shoes and your feet are stuck to the pedals (until you decide to unclip), which many riders are reluctant to do, fearing worse injuries in the event of a crash. So 8 Degree Pedal created a “flat” pedal (no clips or special shoes required) with internal springs that offer float. “You get the 100% freedom of a normal tennis shoe,” says founder Kenneth Belknap. And you could save your knees some pain. —J.W.

Apps & software**BATTLING FAKE PHOTOS****Content Credentials**

The image of Taylor Swift supporting Donald Trump? Fake. With generative AI, misinformation is easy to weaponize. That's why the Content Authenticity Initiative—over 3,000 tech and media companies, including Adobe, TikTok, and the Associated Press—and the Coalition for Content Provenance and Authenticity, which includes Google, OpenAI, and the BBC, have created Content Credentials, a system of watermarks and metadata intended to ensure image authenticity. Under the system, a participating company's digital camera could affix the original image with metadata, while Photoshop could track any AI edits. Andy Parsons, senior director of the Content Authenticity Initiative at Adobe, calls it “a way to provide a ‘nutritional label’ for digital content.” —J.W.

Household**A TRUE ROBOTIC LAWN MOWER****Mammotion Luba 2 AWD Series**

Robot lawn mowers aren't new, but most need underground wires to define a perimeter and ensure safety. Mammotion's Luba 2 AWD is completely wireless, using a system of GPS, cameras, ultrasonic radar, and 3D vision to dynamically map the terrain and avoid obstacles like chairs and cats. The size of a tricycle, the battery-powered mower (so no gas guzzling) even lets users custom “write” words in the grass, should they be so inclined. With a sleek white design, it is also the rare stylish piece of lawn equipment. “It looks like a Formula One racing car,” says José Cuervo, Mammotion's head of DIY Channel Europe. “It's really an eye catcher.” —J.W.

More inventions

Filterbaby Eco-Pro Shower Filter claims to remove 99% of chlorine, lead, and PFAS from water without plastic casings on its filters.

***Runway Gen-3 Alpha** makes AI-generated video and is partnering with Lionsgate on films.

ALZpath pTau217 Antibody lets doctors blood-test for Alzheimer's before symptoms appear.

3M Peltor WS Alert XPV Headset powers ear protection and communication with indoor and outdoor light.

The long-lasting **Torus Nova Spin** uses a rotor inside a dishwasher-size unit to store energy for backup power.

Wearable pregnancy monitor **Nuvo Invu** lets doctors check on high-risk patients remotely.

Electric spice grinder **FinaMill FinaPod GT** comes with swappable pods of different spices.

*INVESTORS IN RUNWAY INCLUDE SALESFORCE, WHERE TIME CO-CHAIR AND OWNER MARC BENIOFF IS CEO

Merrell Speed-ARC Surge B0A slims the hiking shoe by using a nylon plate in the sole to create a suspension system.

Dyson's **OnTrac** is an exceptionally stylish over-ear headphone.

Prolific Machines Photomolecular Platform uses light beams to change the functions of cells. It's already making lab-grown meat and therapeutics.

The **LG Signature OLED T** is a transparent TV.

Spiritus Carbon Orchard makes reusable tennis-size balls that absorb carbon from the air in any open space.

Smart Box Health Monitoring Cat Litter changes colors to flag abnormalities, and is fully biodegradable.

Founded by a former SpaceX scientist, **Arbor Power Station** uses oxy-combustion—like in rocket engines—to convert organic waste into low-cost energy.

Sustainability**WATER FROM THE SKY****Aquaria Atmospheric Water Generators**

Potable water is becoming an ever scarcer resource, even though our atmosphere is laden with 38 million billion gal. of the wet stuff. Tapping into it is the tricky part. Aquaria does so using large-scale heat-exchange systems, which suck air in and pass it through multiple filters. The humidity is condensed out of the air and turned into water, which is then purified. Developers working with Aquaria just broke ground on a \$26 million project in Hawaii that aims to see 1,000 homes installed with Aquaria devices eventually producing 260 gal. of water a day. “Our vision is to be able to one day supply water for entire cities from the sky,” says company co-founder and CEO Brian Sheng.

—CHRIS STOKEL-WALKER

Aerospace**SPEEDIER SPACE TRANSMISSIONS****NASA Deep Space Optical Communications**

NASA's Deep Space Optical Communications experiment—currently aboard the Psyche spacecraft en route to a distant asteroid—includes a laser transmitter that works like a radio, but with more data-carrying oomph. In December, 19 million miles from Earth, the system sent a 15-second transmission home at a speed equivalent to internet broadband. The tech portends big things for future missions. “If you look at Mars rovers, you get several images per day,” says Abi Biswas, NASA's project technologist for the system. “With this optical communications link, we expect to be able to deliver ultra-high-definition video and stream it.” —JEFFREY KLUGER

Fashion**High-tech tint****Chamelo Lens Technology**

Transition lenses typically take around 30 sec. to darken in UV light and a few minutes to go transparent inside. Chamelo lenses change tint in less than 0.1 sec., thanks to a “flexible, liquid crystal film” that is controlled electronically by tapping or sliding a finger across the temple. The glasses come in a variety of fashion or sport styles, including a Prismatic collection with color-changing lenses, and a Music Shield version that includes subtle speakers in the temples to let wearers listen to music or take phone calls. The company has shipped glasses to more than 100 countries since its May launch, and plans to roll out prescription versions in the future. —Jessica Klein

Consumer electronics**A TRI-FOLD SMARTPHONE****Huawei Mate XT Ultimate Design**

In September, Chinese smartphone maker Huawei one-upped its global competitors, becoming the first company to bring a triple-screen foldable phone to market. The Mate XT Ultimate Design, which is currently available only in China, boasts an eye-popping 10.2-in. display when fully unfolded into a tablet-like landscape configuration. (It also has a two-screen mode and normal smartphone-size capabilities.) Users can get up to 1 TB of storage on the device, which features a four-lens camera that can operate in any of the phone's folding configurations. The 5,600 mAh battery is plenty powerful, and all the more impressive given the phone's slimmest: just 3.6 mm when unfolded. —C.S.W.

Home health**FALL ASLEEP FASTER****Moonbird**

Frustrated by her long-term insomnia, and wanting a better form of guidance for the breathing exercises that can help, Stephanie Broes and her brother Michael created Moonbird, a palm-size, screen-free breathing coach. “Traditional meditation tools can feel overwhelming, and screens disrupt the relaxation they aim to promote,” says Broes. Hold the ergonomic device in your hand, and breathe in when it gently expands and out when it contracts. The soothing guidance encourages the holder to adapt rapid or inconsistent breathing to a more restful pattern, shifting their body into a “rest-and-digest” state so they feel calmer and more relaxed, and can fall asleep more easily. Moonbird can be used by adults or kids.

—ASHLEY MATEO

Design

NO MORE BULKY SPEAKERS

Samsung Music Frame

Samsung has managed to beautify the home speaker—by disguising it as a picture frame. Propped up on its stand or mounted on a wall, the 13.8-in.-by-13.8-in. Music Frame can display 8-in.-by-8-in. prints, while packing six powerful yet invisible speakers that play music wirelessly over Bluetooth or wi-fi, and integrate with voice assistants including Alexa. Multiple Music Frames can be paired together or with other Samsung-compatible audio products as part of a whole-room or whole-home soundscape. The original frame comes in black, but users can make it white to match their decor—after all, aesthetics are of utmost importance here—with an optional snap-on bezel.

—RAYMOND WONG

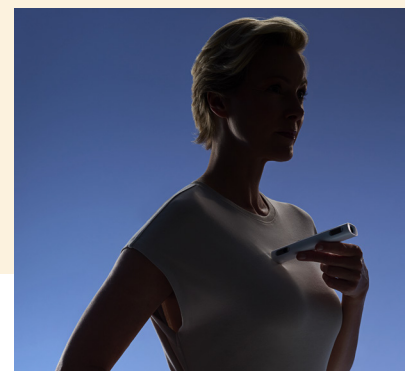
Home health

Home checkup

Withings Beam0

Imagine a medical checkup that doesn't require a visit to a doctor's office. Withings' Beam0 combines four different sensors in one TV-remote-looking device that can detect body temperature, listen to lungs, scan the heart, and check blood-oxygen levels. "It represents the at-home health-monitoring revolution," says product manager Livia Robic. That medical data syncs to an app, where users can monitor up to eight family members as well as send info to their doctors for remote diagnoses. The company says it expects FDA clearance for over-the-counter sales in November.

—Ashley Mateo

Sustainability

ZAPPING PFAS AWAY

Gradiant ForeverGone

Forever chemicals—specifically per- and polyfluoroalkyl substances (PFAS), which have been linked to cancers—have become ubiquitous, including in our water supplies. Governments are finally cracking down; in April, the EPA announced the first legal limits on PFAS in drinking water. Now, companies and municipalities need help cleaning up. Gradiant's ForeverGone injects billions of microbubbles into water supplies to break PFAS away from water molecules. The resulting concentrated PFAS foam is cleaned by electrodes that zap the PFAS away. "We are not sweeping [PFAS] under the carpet," says co-founder and COO Prakash Govindan. "It's complete destruction." Gradiant's clients include utilities and companies like Coca-Cola and BMW. —CHRIS STOKEL-WALKER

Parenting

AN E-ASSIST STROLLER

Cybox e-Gazelle S

Martin Pos' son was the inspiration for the versatile e-Gazelle S motorized stroller. The kid was "a pretty heavy baby," says Pos, founder of German company Cybox, and the steep hills of the German countryside didn't help matters. "I was just thinking, Man, it would be really cool to put an engine on a stroller." That was decades ago, but the miniaturization of batteries has since helped make the luxury stroller, which has an automated rocking function, a reality. The lithium-ion battery runs the stroller for 28 miles on level ground or five on rugged terrain. The motor will kick in to help push up hills, or hold back on downhill to save parents' backs. The stroller has more than 20 configurations and can carry up to two little ones with attachments. —C.S.W.

More inventions

EarliTec Diagnostics EarliPoint is a screening test that can detect autism as early as infancy.

EXeX ExperienceX software keeps operating rooms organized to each surgeon's liking.

Electra partnered with the largest U.S. steelmaker, Nucor, to lend its **Clean Iron** process and cut emissions.

The **Nuvo Invu** wearable lets OBs monitor pregnancies remotely.

***ArteraAI Multimodal Artificial Intelligence** creates custom treatment plans for prostate-cancer patients.

Aporia Guardrails intercept inaccurate and inappropriate responses from AI chatbots.

Toi Labs' toilet seat **TrueLoo** scans human waste for signs of illness.

BiVacor's Total Artificial Heart has succeeded in keeping transplant patients alive until donor hearts arrive.

*INVESTORS IN ARTERAAI INCLUDE TIME CO-CHAIR AND OWNER MARC BENIOFF

Some electric buses in Washington State charge simply by pausing over plates in InductEV's **Wireless Charging Network**.

Winx Health UTI Test & Treat is an at-home service that lets users have UTI treatments sent as soon as they test positive.

Paragonix Baroguard protects transplant lungs from damage on flights.

Signature Kitchen Suite's **30-in. Transitional Series Combi Wall Oven** cooks via microwave, convection, steam, and more.

Amgen Imdelltra treats notoriously difficult small-cell lung cancer.

NASA Advanced Composite Solar Sail System propels spacecraft with photons from the sun.

Brelyon's desktop **Ultra Reality** monitor uses projections to create an immersive experience sans goggles.

Home health

IMPROVING FERTILITY COMFORT

Dandi IVF Care Kit

Fertility journeys take a mental and physical toll, and at-home progesterone injections can be painful and tricky—the shot's thick oil must be warmed to thin. Doctors historically advised "putting the vial in your armpit," says Dandi CEO and co-founder Jake Kent. The company's IVF Care Kits include a heating pad with a progesterone vial pocket, a cooling pad to numb the injection site, shot targets to help users inject accurately, a hands-free belt to hold it all in place, and a massage ball to disperse internal progesterone clumping knots. A care platform provides video calls with registered fertility nurses. Dandi says sales hit six figures in its first two months and reports more than 20 successful customer pregnancies. —JESSICA KLEIN

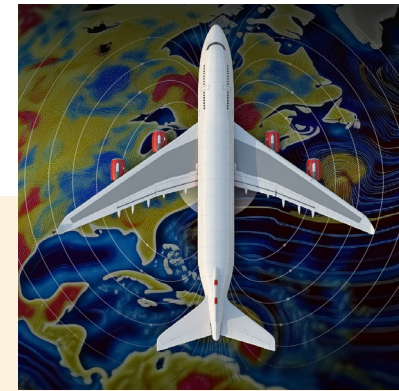
Manufacturing & materials

SPEEDY 3D PRINTING

Formlabs Form 4

3D printing is a game-changing technology, but it's still pretty slow. Formlabs is changing that with Form 4. The desktop-size 3D printer boasts print speeds up to five times faster than its predecessor by using a system that includes powerful LED lights and a custom LCD that help turn liquid resin into solid layers. Projects that once had to be done overnight can now be completed in a matter of hours, making the tech a viable replacement for traditional injection molding. The machine allows for multiple iterations in a day, which Formlabs CEO and co-founder Max Lobovsky says lets hardware developers "take more design risks and, ultimately, bring better products to market." Early customers include Microsoft, Ford, and NASA.

—JARED LINDZON

Experimental

Unspoofable navigation

**SandboxAQ AQNav*

GPS spoofing—deliberate disruption of a satellite signal with false location data—is wreaking havoc with civilian and military navigation. Ex-Googler Luca Ferrara's passion project, AQNav, uses quantum magnetometers that track waves from the earth's crust, cross-checking them against known maps using AI to pinpoint location more reliably, without GPS. The only way to spoof the tool would be to create planet-size rock formations to throw off the natural wave signals. "It's a use case for quantum AI that can directly benefit people with a real need," says Ferrara. —C.S.W.

*INVESTORS IN SANDBOXAQ INCLUDE TIME CO-CHAIR AND OWNER MARC BENIOFF

Outdoors

MORE DURABLE HIKING BOOTS

Keen Targhee IV

A hiking boot breaks down when dirt, mud, and water cause the midsole (the part that touches your sock) to come unglued from the outsole (the part that touches the ground). This is called delamination, and delamination is the enemy of durability. With the Targhee IV, Keen has re-engineered the way these two parts are joined; using new Keen.Fusion tech, a robot directly blasts the soles with a liquid polyurethane that solidifies within seconds, creating a bond that's three times as strong as normal glue. "You can flex the shoe over 1 million times, and nothing's going to happen," says Scott Labbe, Keen's senior vice president of product. —JEFF WILSER

Toys & play

A FUN, FLEXIBLE ENGINEERING TOY

Thames & Kosmos Gecko Run

How much can one innovate the classic marble run, a toy nearly as old as time? STEM toy company Thames & Kosmos has managed to do so with Gecko Run. Designed for kids 8 and up, it features bendable tracks that can curve, loop-de-loop, and connect to each other as well as to kinetic diversions like a rubber-band trampoline, a snake maze, levers, funnels, and more. But the best part: a normal marble run requires tons of support pieces to achieve height, and takes up floor space; Gecko Run uses gentle sticky pads to cling to vertical flat surfaces like a wall, window, or appliance, letting kids build upward without extra parts. An eco-bonus: the toy is made with renewable bioplastic.

—EMMA BARKER BONOMO

Medical care

FORGING BRAIN-SPINE CONNECTIONS

Northwell Health Double Neural Bypass

In 2020, Keith Thomas dived into a pool, hit his head, and broke his neck. He was paralyzed from the chest down. Then, in a first-of-its-kind surgery last year, scientists implanted microchips into his brain to connect his thoughts to arm and hand movement, creating a two-way link—a "double bypass"—that allowed signals to travel in both directions. Now Thomas can open his hand, lift his arms, flex his biceps. "He used to have family members scratch his face if he had an itch," says inventor Chad Bouton, professor at the Northwell Health Feinstein Institutes for Medical Research. "Now he can pet his dog." His team hopes it could also help stroke survivors in the future. —J.W.

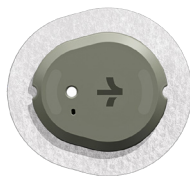
Consumer electronics**A SELF-LEVELING TRIPOD**
Edelkrone Tripod X

Kadir Koymen, the founder and CEO of Turkey-based Edelkrone, was a frustrated filmmaker. Frustrated because tripods, which require that you manually adjust each leg, one at a time, slowed down his process. “I wanted a solution that matched my need for speed and comfort, especially when using heavier setups,” he says. Following years of experimentation, he invented the Tripod X—a fully motorized tripod that can change its height and automatically level on uneven surfaces at the push of a button on an associated app, or on the body of the tripod. Its smooth movement is especially helpful for time-lapse videos. The device was soft-launched earlier this year, with plans to fully introduce it in 2025.

—CHRIS STOKEL-WALKER

Home health**OTC GLUCOSE MONITOR***Dexcom Stelo*

In March, the FDA cleared the Stelo by Dexcom, making it the first glucose biosensor that doesn't require a prescription in the U.S. The small, wearable device, worn on the back of the upper arm, is designed for people with Type 2 diabetes or pre-diabetes who are not using insulin, to prevent the disease from exacerbating using simple monitoring. The corresponding app offers readouts, showing when users' glucose levels spike and ebb throughout the day. “When someone sees their own personal data, that's empowering, because they can do something about it,” says COO Jake Leach. The app helps teach users how to minimize glucose spikes by, say, eating fiber first during meals or taking a walk straight after eating. —JESSICA KLEIN

Fitness**AN AI FITNESS TRAINER***Magic AI Mirror*

Magic AI's sleek rectangular mirror aims to replace personal trainers. Using computer vision technology similar to that used in self-driving cars, the mirror guides users through strength training, counting reps and providing real-time feedback on form. It features over 25 trainers—including celebrities like England's former cricket captain Alastair Cook—who appear as holograms, offering guidance, and can recognize 400 distinct exercises, combining them into hundreds of classes, tailored to each user. The mirror costs less monthly than a personal trainer, and has proved particularly popular with people who typically avoid gyms because “they find it too intimidating, they're too time poor, or it's too expensive,” says co-founder and CEO Varun Bhanot.

—THARIN PILLAY

Medical care**DETECTING SKIN CANCER***DermaSensor*

When it comes to skin cancer, primary-care physicians often struggle to distinguish malignant lesions from nonmalignant ones, while dermatologists have long wait times. DermaSensor's namesake device is the first of its kind cleared by the FDA for use by nonspecialist physicians. It uses optical spectroscopy—the deployment of light to analyze tissues—to promptly detect likely cancerous skin lesions at a rate similar to that of in-person dermatologists. —C.S.W.

Social good**FUNDING KIDS***UNICEF Child-Lens Investing Framework*

Globally, nearly 6 of 10 children are unable to read proficiently before age 10. And more than 47 million children have been displaced because of conflict. Grim statistics like these spurred UNICEF to create the first-ever “child lens” for impact investing, a tool for potential funders to analyze how companies benefit (or impede) the well-being of children. The framework—which includes tool kits, due-diligence questionnaires, and metrics—is freely available online and already being used by investing firms like Calvert Impact. “Our goal is to steward and to ensure that the multitrillion-dollar capital markets are considering children's well-being,” says Cristina Shapiro, UNICEF's chief strategy officer. —JEFF WILSER

Sustainability**REDUCING CATTLE'S FOOTPRINT***DSM-Firmenich Bovaer*

Cow flatulence is a major contributor to the greenhouse gas in our atmosphere. Dutch company DSM-Firmenich's Bovaer addresses the issue at the source: the feed additive slows down the last step of the methane-production process in cows' rumens, the largest part of the stomach, by suppressing enzyme activity. “It works within 30 minutes,” says Maik Kindermann, head of research and development on the project. Shown to reduce methane emissions by an average of 30% in dairy cows and 45% in beef cattle, the additive was approved by the FDA in May for use in the U.S. In 2025, a facility in Scotland is set to supply Bovaer for 4 million to 5 million cows each year. —C.S.W.

LAIFEN: JO WHALEY FOR TIME

Home health**The toothbrush zenith***Laifen Wave*

Most electric toothbrushes either oscillate or vibrate. China-based Laifen's Wave brush both oscillates (up to 60 degrees) and vibrates (up to 66,000 times per minute). With an app featuring three toggles controlling oscillation range, speed, and vibration strength, users can customize their brushing experience to their mouth's specific needs. Manufactured the same way MacBooks get their curves—material is stretched bit by bit to create strong, even surfaces—the Wave's sleek handle doesn't have any divots where bacteria or mold could flourish. The internal parts of the brush are attached to the exterior via what's known as nano-molding technology, so they won't separate and rattle around. —J.K.

More inventions**Impulse**

Cooktop is a high-tech induction stove that boils water in 40 seconds.

Wndr Alpine

Shepherd is a snowboard made from microalgae, not plastic.

Onward Medical

ARC-EX uses external electrodes to help spinal-cord-injury patients recover strength.

X Bellwether

analyzes 20 years of earth's geodata, past and present, to predict natural disasters.

With two ultra-wide lenses and 8K capture, the 360-degree **Insta360 X4** takes multi-angle video with one camera.

Adobe Acrobat

AI Assistant lets PDF users ask the doc for summaries, clarifications, or definitions.

FDA-approved in 2023,

Vertex Pharmaceuticals and **CRISPR Therapeutics'**

Casgevvy broke ground as a gene therapy for sickle-cell disease.

Asensus Surgical

AugmentOR Portal analyzes video to assess surgeons' weaknesses and help them improve.

Brane X is the

first portable speaker with an internal subwoofer.

Montage

Health's Ohana Center is a nature-centric place for treating youth mental illness.

Samsung's

Neo QLED 8K TV uses AI to upscale SD and HD video into 8K.

Roche HPV Self-

Collection Solution lets women perform their own Pap smears at home.

Typeface Arc

uses AI to analyze past marketing campaigns and generate new ones.

GE Lighting

Cync Reveal HD+ Smart Undercabinet Fixtures provide diffuse light in any color.

Carbonfact

helps fashion companies track emissions from their often complicated supply chains.