

THE 100 BEST

INNOVATION

OF 2019



Every year, TIME highlights inventions that are making the world better, smarter and even a bit more fun. To assemble our latest list, we solicited nominations and evaluated them on key factors, including originality, effectiveness, ambition and influence. This is the result.



NOMINATIONS



To read more about TIME's Best Inventions, go to time.com/bestinventions2019



GeoOrbital calls its foam-filled tires "flat-proof"; no pressure checks required

SOCIAL GOOD

WATER, OUT OF THIN AIR

Watergen GENNY

Whether you're in a developing country or on the scene of a natural disaster, water is usually the No. 1 need in times of crisis. Watergen, an Israeli company, thinks GENNY could be the answer. The machine, which looks like an office water cooler, pulls moisture from ambient air to create drinkable water through a patented filtration process, much like a fancier dehumidifier. One GENNY unit can produce up to 7 gal. of water a day, and all it needs is electricity or solar power—no plumbing required. The multistage purification process can make clean water even in areas with high air pollution, and larger units are already being used in disaster-relief efforts. But GENNY isn't only for those in need. For an estimated \$1,500 (units will be priced by distributors), consumers can cut down on buying bottled water and reduce their water use at home.

—Isaac Saul



The removable battery features a USB outlet for charging other devices

TRANSPORTATION

HACKING THE E-BIKE

GeoOrbital

Electric bicycles are great for quickly zipping around town without breaking a sweat. But they can also be expensive—some models cost several thousand dollars. With GeoOrbital's electric bicycle wheel, cyclists can upgrade their pedal-powered bicycle into an e-bike in minutes for a fraction of the cost: \$1,495. Riders control the electric motor, and their speed, with a throttle connected to their handlebars. A three-hour battery charge gives riders a range of up to 20 miles, depending on the model, the bicycle and how much pedaling the rider does. Founder and CEO Michael Burtov says the design, inspired by the sci-fi Light Cycles in the movie *Tron*, takes advantage of what he considers formerly wasted space. "Regular wheels have a lot of empty, wasted space in them, and now they don't," he says. GeoOrbital has sold about 3,000 wheels so far and raised \$2.8 million on crowdfunding sites.

—Alex Fitzpatrick

STYLE

21ST CENTURY FASHION

Bee & Kin tech handbags

Designer Tracey Hummel decided that, no matter how stylish, purses should do more than just hold your stuff. "I want to create beautiful bags that do a little bit of work for you," Hummel says. Her luxury handbag line of sleek, smart purses (which start at \$495) comes equipped with a set of interior LED lights that discreetly illuminate their interiors, and a Bluetooth-enabled button that can be programmed via an app to perform tasks like calling an Uber; sharing your location with a friend; or starting a playlist with a simple click, double click or hold. Future editions might include even more life-smoothing features. "Anything that feels like an added convenience to have in your bag, that's what we're looking to integrate," says Hummel. —Megan McCluskey

The bags come in a variety of styles and colors, from evening to all-day totes



ARTIFICIAL INTELLIGENCE

REDUCING FALSE DIAGNOSES

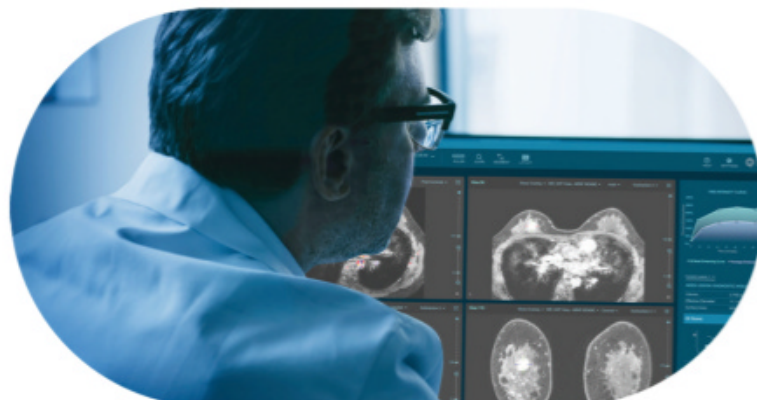
Qlarity Imaging QuantX

Diagnosing breast cancer can be a worrisomely old-school process. For all of the 21st century tech that can image tumors, the ultimate diagnosis still rests with the radiologist's eyes and judgment. With 30 million breast-cancer screenings in the U.S. each year, that can lead to a lot of false negatives and positives. QuantX backstops radiologists

with AI-enabled software that analyzes MRIs to confirm or challenge their diagnosis. The system was approved by the FDA in 2017 when a clinical study showed a 39% reduction in missed cancers and a 20% improve-

ment in overall accuracy. QuantX is currently being tried out at the University of Chicago and the University of Texas MD Anderson Cancer Center, with a bigger rollout planned in the coming months.

—Jeffrey Kluger





BEAUTY

MAKEUP THAT PROTECTS

Supergoop! Shimmershade eye shadow

The skin around the eyes is the thinnest on your face, which is why it's more susceptible to visible aging and skin cancer—studies have shown that up to 10% of skin cancers are found around the eyelids. But despite the heightened risks, Supergoop! founder Holly Thaggard discovered that many people avoid putting on sunscreen near their eyes for fear of irritation. This led her and her team to create Shimmershade, the first and only eye shadow to be clinically tested to provide broad-spectrum SPF 30 protection. “I thought, if we’re going to do this, let’s do it in

a fun and playful way and re-create an eye shadow with UVA and UVB protection,” she says. The product has fielded some skepticism that users will apply an eye shadow thick enough to make the sun protection effective, and dermatologists still recommend using sunscreen wherever skin is exposed. But the product takes the vital step of encouraging users to think more holistically about sun protection. And the fact that the creamy, mineral-based formula won’t crease and lasts for hours doesn’t hurt either. —Cady Lang

GAMING

GAMING FOR POSTERITY

Analogue Mega Sg

Analogue’s Mega Sg is a new console for old games. Aimed at collectors and, critically, historians, the system plays Sega’s early catalog—more

than 2,000 games from three different systems—and is compatible with modern televisions. “[Video-game history is] worth exploring, celebrating and experiencing in the same light as film and music,” says Analogue founder Christopher Taber.

—Matthew Gault



SOCIAL GOOD

PORTABLE POWER

We Care Solar Suitcase

Laura Stachel, a U.S. obstetrician-gynecologist, was observing a complicated baby delivery in Nigeria when the power went out. Electricity cuts are common in the country, which also has one of the world’s highest maternal-mortality rates. So Stachel asked her husband,

a solar-power expert, to build an easy-to-use, suitcase-size solution that could run lights for a delivery room along with a fetal heart monitor for her next trip. When she returned to the Nigerian hospital with the first Solar Suitcase, the midwives begged to keep it. Now, Stachel’s NGO has shipped nearly 4,000 units to 27 developing countries, putting an end to deliveries in darkness.

—Aryn Baker



WELLNESS

CLOSING THE PLEASURE GAP

Osé by Lora DiCarlo

A third of women infrequently, if ever, orgasm during sex. It’s a major inequity, one that Osé founder Lora Haddock was trying to solve when she came up against another: sexism in tech. Osé, a first-of-its-kind hands-free vibrator that uses microrobotics and biomimicry, raised over \$3.2 million and was initially honored at the 2019 Consumer Electronics Show—until the award was rescinded for not being in line with the show’s “image.” After public outcry, Osé got its prize back and Haddock has become a leader for equality in tech. —Emily Price

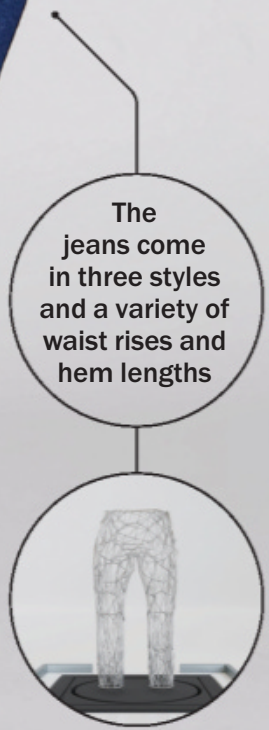
PREVIOUS SPREAD: GEOORBITAL; THIS SPREAD: SHIMMERSHADE: JOE LINGEMAN FOR TIME

STYLE

A PERFECT FIT

denim unspun

Finding great-fitting jeans can seem like an impossible task. But what if there were a way to guarantee you'd end up with the perfect pair without ever trying them on? That's the goal of denim unspun, an apparel startup that uses a 3-D body scanner to generate virtual customer avatars made up of 100,000 data points to produce custom-fit jeans. After being scanned, customers select the fabric, thread color and style they want. The best part: no sizes. "Customers are happy because they don't have to think about their measurements," denim unspun co-founder Beth Esponnette says. "It's not about size anymore, it's just you." The process, which is now offered at stores in San Francisco and Hong Kong, also works to eliminate unsold inventory and fabric waste for a sustainable fashion model that doesn't skimp on quality or style. A pair of the personalized jeans starts at \$200. —Megan McCluskey



EDUCATION

AN AI-POWERED EDUCATOR

Roybi Robot

This robot may look like a cute alien, but don't let the design fool you—it's an artificial-intelligence-powered tool designed to help kids ages 3 through 7 learn language and STEM skills. Using machine learning, Roybi Robot gradually tailors its lessons and responses to a child's unique learning style, even recognizing the child's emotions and incorporating content he or she most enjoys. Kids can hear a story, sing a song or learn a lesson. Kayla Prochnow, a content specialist at Roybi, says the robot gives children personalized education in early childhood, a crucial time when they're soaking up language like a sponge. The company hopes the robot—which costs \$189 on Indiegogo—will give kids a strong foundation for success. —Madeleine Carlisle

CONSUMER ELECTRONICS

BREATHING EASIER

Airthings Wave Plus

Most people have a carbon-monoxide detector in their home but nothing to warn of elevated levels of radon, the leading cause of lung cancer for nonsmokers in the U.S. The Airthings Wave Plus is the first app-supported radon and indoor air-quality detector. "We spend 90% of our time indoors,

yet indoor air quality constantly takes a back seat to outdoor pollution in the discussion about how air impacts our health," says Airthings CEO Oyvind Birkenes. In addition to radon, the battery-powered Wave Plus detects CO₂ levels along with total volatile organic compounds (TVOCs) and gases emitted from chemicals in the home, giving you a comprehensive view of your home's air quality and any potential dangers it may present. —Patrick Lucas Austin



EDUCATION

CREATE YOUR OWN COMPUTER

Kano Windows 10 PC

Kano made a name for itself with a DIY computer kit that utilized a custom OS to teach kids (and, let's be honest, parents) how computers work. Now, Kano PC moves that conversation forward by helping users put together the hardware aspects of a PC while simultaneously teaching them all about the bits and bytes that make a computer run. In the end, the user has "the power, the security, the safety ... of Windows 10 in S Mode," says Chris Mann, Kano's senior communications manager, meaning the computer can only be used for limited tasks. Although the kit is designed for education, it could also be a great first computer for a young teen. —Jason Cipriani



CONSUMER ELECTRONICS

THE WORLD'S MOST ADVANCED MATTRESS

Eight Sleep Pod

If you take sleep seriously, you can't do much better than this smart mattress. Using thin water channels, it dynamically regulates

its temperature throughout the night based on your presets and biometric feedback, which its inventors say can help you

consistently sleep better. An array of sensors track sleep phases, heart rate, respiratory rate and more for up to two people, delivering a "sleep fitness score" via a companion app. "There's a bunch of trackers that can tell you how bad you slept last

night," says CEO and co-founder Matteo Franceschetti. Pod, he says, takes that data and uses it to actually improve your sleep. Even at \$2,135 for a queen, the Pod sold out in just 15 days when it launched in February. —Alejandro de la Garza



FOOD & DRINK

A NEW BREAKFAST BAR

Soylent Squared

When the makers of Soylent, the cult "complete meal in every bottle" nutritional drink, discovered that most people consumed their original 400-calorie product in the morning for breakfast, they decided to create a quicker, breakfast-

bar version: Soylent Squared. At just 100 calories, the bar gives people more flexibility in choosing how much they want to consume, says Andrew Thomas, Soylent's vice president of brand marketing. Rather than drinking another

400-calorie Soylent drink if they're still hungry, people can eat one or two Soylent Squared bars as a snack. And with 5 g of protein per bar, three or four make a satisfying meal. The bars are also sustainable. "We use ingredients that not

Each Soylent Squared bar contains only 3 g of beet sugar

only make the bar good for you but good for the planet," Thomas says. The bars, which come in three flavors, have been on the market since April and cost \$1 each. —Jasmine Aguilera

THIS SPREAD: FARMER'S FRIDGE; JOE LINGEMAN FOR TIME; SOYLENT SQUARED: KIM BUBELLO FOR TIME
NEXT SPREAD: ORU KAYAK INLET; ELVIE BREAKFAST PUMP; JOE LINGEMAN FOR TIME

FOOD & DRINK

VENDING VEGGIES

Farmer's Fridge

There's a panic that sometimes creeps in around lunchtime, when hunger meets indecision and, suddenly, the only thing immediately available is unhealthy fast food. Farmer's Fridge is attempting to solve that problem by putting freshly made, produce-filled meals into vending machines. Gone are

the chips and candies you might have bought in a hunger-fueled frenzy; instead, the machines distribute salads, wraps, sandwiches and more—all made from scratch in a kitchen in Chicago and shipped or delivered to the machines daily, Monday through Friday. The average lunch: \$7. To address the issue of waste, the company delivers food that's perhaps a bit wilted but still good to eat to community food services for those in need. With more than 400 vending machines throughout the U.S.—including in Chicago, New York City and Philadelphia—Farmer's Fridge is aiming to be near urban offices, gyms and homes soon.

—Mahita Gajanan

Any unsold food that can't be donated is composted by the company



Jars can be recycled or returned to the vending machine for reuse



BEAUTY

FACE WASH OF THE FUTURE

Artis Phantom Cleansing Silks

In recent years, skin-care obsessives have made the case for multistep face washing for a more thorough removal of makeup and grime. But every extra step can mean another product. That's why Artis created its Phantom Cleansing Silks, a facial cleanser that streamlines three steps—oil, foam and exfoliation—into one easy ritual. The cleanser comes in the form of "silks," small sheets made from ingredients like jojoba oil and vitamin E, woven using patented nanofiber technology (\$55 for a pack of eight). To use, simply stick the patch to your skin, mist with water, and rub to cleanse and exfoliate. The benefits go beyond effective and efficient skin care; since the product doesn't activate until it touches water, there's no need for excess preservatives to stabilize the ingredients, as there would be in a conventional cleansing gel, cream or foam.

—Cady Lang



FOOD & DRINK

AN OVEN THAT MULTI-TASKS

KitchenAid Smart Oven+

Inspired by the versatility of a KitchenAid stand mixer—which can take on different attachments that allow it to make all sorts of foods—the Smart Oven is here to make more than your average sheet-pan dinner. The oven offers a power outlet for attachments that allow home cooks to make pizzas on a quick-heating baking stone; steam entire dinners for a family of four; or grill the perfect cut of meat without stepping outside. Like many “smart” household items, the tech-enabled oven also allows users to monitor their meals and remotely control the attachments through a smart-phone app or virtual assistant. A touchscreen on the oven even provides instructions for a variety of recipes. Double and single versions of the oven launched in the spring of 2019, starting at \$3,199, and a combination oven (which includes a microwave) will be released in 2020.

—Mahita Gajanan

PARENTING

A MORE SUBTLE BREAST PUMP

Elvie breast pump

Two years ago, a portable, wearable breast pump appeared on TIME’s Best Inventions list as an alternative to heavy, noisy pumping machines. Since then, more

have come to market, including Elvie, which has emerged as a leader in the field. Elvie has no tubes or wires, and uses a nearly silent motor. It is lighter, slimmer and quieter than competitors, allowing moms to discreetly pump while performing daily activities. A set costs \$499, or moms can opt for one pump for \$279. —Emily Barone



SUSTAINABILITY

GREENER FLIGHT

Eviation Alice

Flying is dirty work—the aviation industry emits nearly a quarter of total transportation-related greenhouse-gas emissions in the U.S., according to the EPA. One way to clean it up could be Eviation’s all-electric Alice, an Israeli-made nine-seater meant to convince the gas-guzzling aviation world that electric power is ready for takeoff. “The real innovation is in the lightweight materials rather than the batteries and motors and controllers and all that,” says Eviation CEO Omer Bar-Yohay. If successful, the design could pave the way for larger electric commercial aircraft. Alice, which has a range of 650 miles and should be quieter than gas-powered aircraft, begins flight testing in 2020. —Alex Fitzpatrick



OUTDOORS

A KAYAK TO GO

Oru Kayak Inlet

Kayaks are fun, but they’re also hard to travel with and store—unless you’re using Oru’s foldable Inlet. “It came out of my own personal need,” says chief design officer and founder Anton Willis, who had to put his full-size kayak in storage while living in a studio apartment in San Francisco and couldn’t easily get out for a paddle on the bay. The original model’s folding design was inspired by a *New Yorker* article he read about origami and pulled in nearly half a million dollars in funding on Kickstarter in 2012. A 2014 appearance on *Shark Tank*—and investment from Robert Herjavec—helped the company expand into a worldwide business. Since then, Oru has created a handful of models for differing uses: one for lighter, beginner use; another for comfort with longer paddles; a more advanced model for rough ocean waters; and one for two-person paddling. The new 10-ft., \$899 Inlet is the smallest, lightest and least expensive option yet and is best for general recreational use on calm waters. Made of a custom extruded, UV-treated plastic and able to fold into a compact 20-lb. box about the size of a large duffel bag, the Inlet can be unpacked in less than five minutes (with a little practice) and is small enough to check on an airplane. The company also sells a custom duffel for toting and storing the boat, and even the paddles break down into smaller pieces that can easily fit into a closet, under a bed or up on a shelf in the garage. —Emily Price

SUSTAINABILITY

KEEPING FOOD FRESH

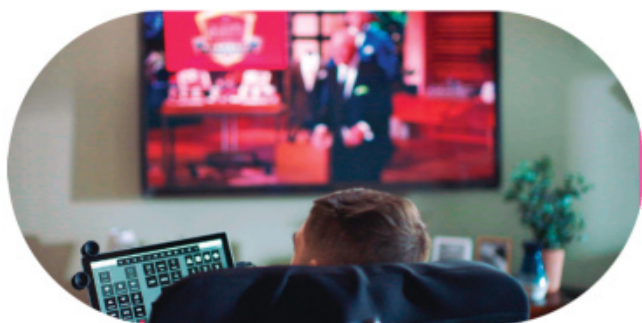
Apeel

Few things are more frustrating than when an unripe avocado turns to mush before you can blink an eye. Some 40% of produce currently goes to waste, often because it goes bad before we can eat it. To cut that waste, Apeel Sciences developed an edible, plant-derived coating for fresh fruits and vegetables that helps them last longer by slowing the ripening process. The company claims the artificial peel can double or even triple the shelf life of a fruit or vegetable. Apeel introduced its treated avocados to more than 1,000 Kroger locations across the U.S. in September and hopes to expand to other stores and other produce, like limes and asparagus. Soon, consumers may be able to buy things like bananas without worrying they'll go brown in the shopping bag. —M.G.



The Inlet can go from box to boat in less than five minutes

The paddles break down into four pieces and weigh less than 3 lb.



ACCESSIBILITY

ENTERTAINMENT BY SIGHT

Comcast Xfinity X1 Eye Control

This web-based remote control for computers, tablets and TVs is designed to help those with physical disabilities, by letting users control devices with their eyes. Using their own eye-gaze software or other assistive tech-

nology, users log in to Xfinity's free site and can surf, search and record just by looking at different buttons on the web page. For many, it will be the first time they've had the power to change the channel.

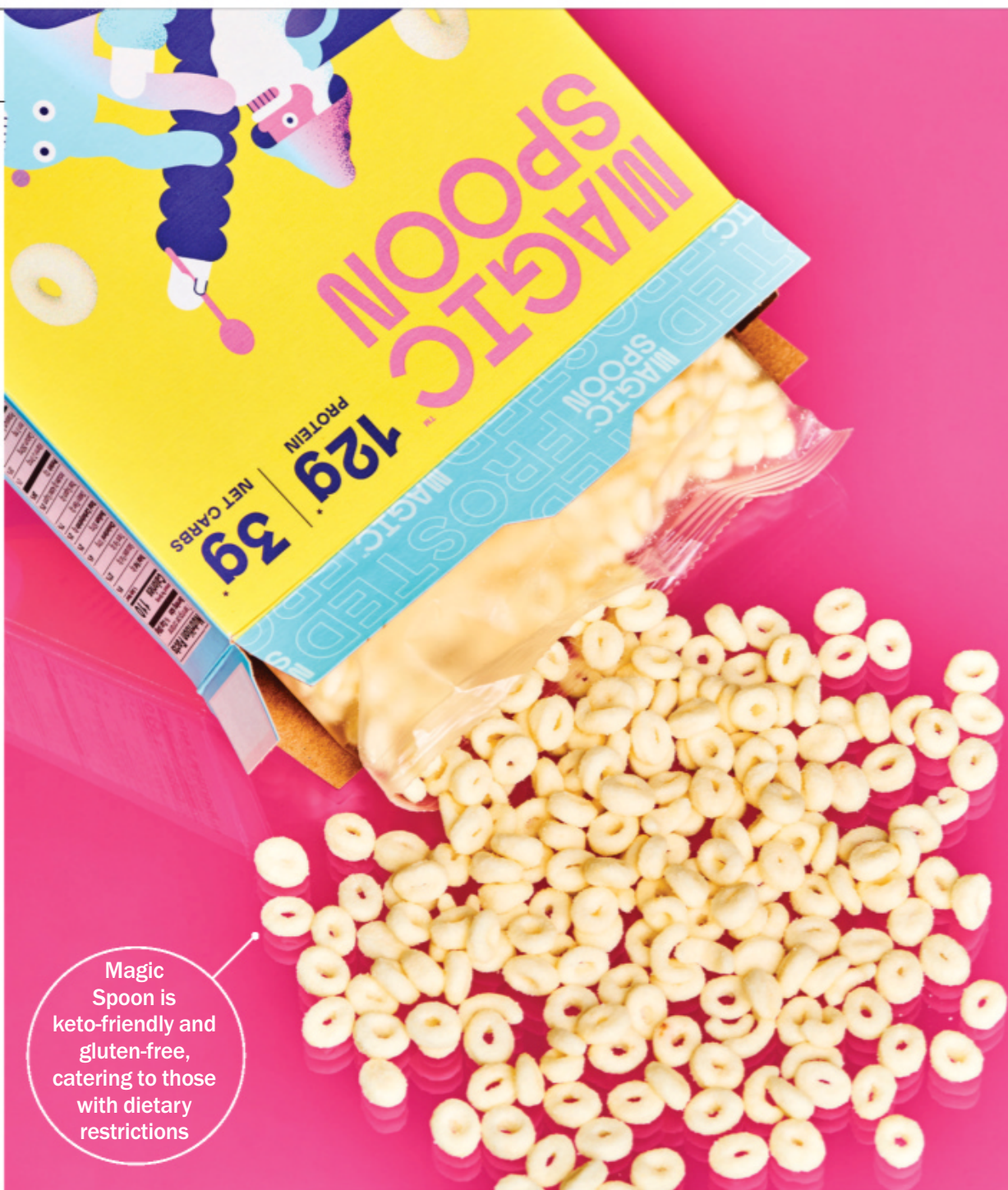
—Josiah Bates

SUSTAINABILITY

HARNESSING WIND, MORE EFFICIENTLY

GE Haliade-X 12 MW offshore wind turbine

As temperatures rise, political pressure has grown to move the world toward clean energy. GE's Haliade-X offshore wind turbine, the first of which was raised this year, offers one piece of the puzzle. Each blade of the world's largest offshore wind turbine stretches more than the length of a football field, and its height tops that of the Washington Monument. This is a significant advance: when it comes to offshore wind turbines, bigger often means better. With digital controls and other upgrades, it's the most efficient in the industry, churning even when the wind is not strong enough to drive other turbines. Soon, GE expects it to enter service in the Northeast U.S. as well as across Europe, China and Japan. —Justin Worland



Magic Spoon is keto-friendly and gluten-free, catering to those with dietary restrictions



TRANSPORTATION

CLEANING UP PICKUPS

XLP Plug-in Hybrid Electric System

While it's easier than ever to find a hybrid sedan, a hybrid work truck is far more challenging. Automakers just aren't building them yet. With XL's new hybrid program, technicians convert hardworking pickup

trucks like the Ford F150 and F250 into plug-in hybrids, adding an electric motor and battery that boost the trucks' existing power train during acceleration. Without voiding the warranty, the conversion improves trucks' gas mileage by as much as 25% to 50% while reducing CO₂ output by 20% to 33%, XL claims. The next step, says XL's Eric Foellmer, is a fully electric conversion. "We're getting fleets used to the fact that you can plug in your work truck, and it's going to perform for you," he says.

—Alex Fitzpatrick

HEALTH CARE

RELIEVING SINUS PAIN

Tivic Health ClearUP

Nearly 30 million people suffer from sinus pain, without satisfactory treatments. FDA-approved ClearUP emits a microcurrent of electricity from its penlike tip, which users glide around the eye for about five minutes a day to calm nerves connected to the sinuses that can be aggravated by allergies and infections. ClearUP costs \$149. —Alice Park



THIS SPREAD: MAGIC SPOON: JOE LINGEMAN FOR TIME; NEXT SPREAD: BRAINBOTICS PROSTHETIC HAND: JOE LINGEMAN FOR TIME; HELM PERSONAL SERVER: KIM BUBELLO FOR TIME

FOOD & DRINK

PROTEIN- PACKED CEREAL

Magic Spoon

After selling Exo, a company that makes protein bars out of powdered crickets, Gabi Lewis and Greg Sewitz embarked on their next venture: sweet cereal for diet-conscious grownups. And this one is not made out of bugs. In April, the pair launched Magic Spoon—a cereal that’s high in protein, gluten- and grain-free, and low in sugar and carbs—to stand up against brands of cereal that are marketed as healthy options. “What we’re doing is completely flipping the nutritional profile of cereal on its head,” Lewis says. “It’s basically turning a protein shake or protein bar into the taste and texture and shape as cereal.” Magic Spoon costs \$10 a box, and its four flavors are currently sold only via the company’s website. But that hasn’t stopped consumers; the company sold out of its many months’ supply within a few weeks of launching, Lewis says, and has already received \$6.5 million in seed funding. —*Jasmine Aguilera*

CONSUMER ELECTRONICS

BETTER BIKE NAVIGATION

SmartHalo 2

Riding a bike around town while looking at a smartphone for directions is downright dangerous. The SmartHalo 2 translates directions from your smartphone into colorful LED lights on your handlebars that point to the next turn.

Cyclists can choose turn-by-turn navigation or a “compass” setting that points them in the right direction, but lets them pick the best route from A to B. It also has an antitheft alarm and syncs with popular fitness apps. —*A.F.*

PARENTING

HANDS-FREE PARENTING

MiniMeis child carrier

When kids get tired from walking, they often end up on their parents’ shoulders. “The downside is you have to hold them and your hands get occupied,” says Julius Winger, a father of three who invented MiniMeis, a lightweight, foldable and ergonomic shoulder carrier that is comfortable for both parents and kids. The MiniMeis comprises a seat with a backrest and a system of straps to attach the child securely to the parent. Unlike front or back carriers, it distributes the child’s weight squarely over a parent’s center of balance and kids as old as 5 can ride with an unobstructed view. At \$149, it’s similar in cost to other carriers, and parents are jumping at the opportunity to free up their hands; in three years, the company has grown from 7,000 sales a year to 15,000 a month online and in Europe, and the carrier is expected to hit U.S. stores this winter. —*Emily Barone*



SUSTAINABILITY

RECYCLING POLLUTION

Graviky Labs AIR-INK

Air pollution isn’t something most people like to keep around. It kills around 7 million people annually, according to the World Health Organization. But MIT spin-off Graviky Labs is stockpiling soot emitted by diesel-burning engines to recycle into black ink. “Pollution is bad, but pollution happens to be a really good raw material to make inks,” says Graviky co-founder Anirudh

Sharma. Most of the black ink we use in pens and printer cartridges comes from burning fossil fuels. To reduce that, and cut existing pollution, Sharma and

his team came up with a technology called KAALINK that harnesses one of the world’s most health-damaging particulates, known as PM 2.5. The carbon from that pollution is then transformed into a certified-safe AIR-INK pigment that can be used in pens, textiles, packaging and artwork. For now, AIR-INK is commercially available only in marker form. But in the coming months, Graviky plans to launch an online platform for customized printing.

—*Laignee Barron*



PRODUCTIVITY

PROTECTING YOUR DATA

Helm personal server

Our personal information, stored by corporations like Google and Yahoo, seems more vulnerable than ever to hacks and leaks. One way to help keep it private is by storing it yourself using an email attached to a custom domain name; Helm CEO Giri Sreenivas calls email the “core of your online identity” through which you access nearly “every account that you have online.” For \$499, the Helm Personal Server is a service and device that gives you private email and stores it securely, along with files, contacts and calendars. Its first two manufacturing runs have already sold out. —Tara Law



SOCIAL GOOD

CONSCIOUS HYGIENE

Saathi pads

In parts of India, huge numbers of women don't have access to sanitary napkins. When the founders of Saathi pads decided to try to tackle the problem, they wanted to do it in an eco-friendly way. So they created pads made from

banana fibers that they say are 100% biodegradable. This also helps the local community: Saathi buys its materials from farmers who might otherwise throw the banana fibers away, and employs underprivileged women to produce the pads. The company recently launched a new product made from bamboo fibers. The innovative products provide “a hygienic, effective alternative to improve the lives of women without creating any negative environmental impact,” says Kristin Kagetsu, one of the company's co-founders. She estimates that more than 6,000 women now use Saathi pads. —Amy Gunia



Each finger functions freely, which allows for easy replacement or repair

Sensors in the wrist read the user's arm-muscle signals for more motion control



The index finger can be used on its own when the others are in rest mode

EXPERIMENTAL

A MORE LIFELIKE PROSTHETIC

BrainRobotics
AI prosthetic hand

The BrainRobotics prosthetic hand is a first in its field: an intuitive AI-powered hand that allows the user to make unlimited gestures and grips. Unlike other prosthetic hands that came before it, this one employs an algorithm that allows the hand and user to learn from each other and becomes more lifelike with each use. The device also uses eight multichannel electromyography sensors in the wrist, which enable the hand to process muscle signals from the user's arm, allowing more accurate control over grips and hand motions. Although the product is still in the testing phase, one beta tester was able to play a piano duet with great success. "We hope our invention can give amputees the ability to proudly control prosthetics just like they are using their real hands," says Max Newlon, the president of parent company BrainCo. When available, the hand will cost \$10,000 to \$15,000—relatively affordable, considering similar devices can cost significantly more. —*Josiah Bates*



SOCIAL GOOD

VITAMINS FOR ALL

Sanku Dosifier

An estimated 243 million people in Africa are undernourished, largely because of a starchy diet lacking vitamins and minerals. Local millers have not been able to fortify their flours with iron, B12, zinc and folic acid, as industrial millers do, until now. The Sanku Dosifier enables any miller to "dose" flour with the precise ratio of nutrients to ensure a healthy diet. Sanku has outfitted 300 flour mills in East Africa and plans to reach 15,000 more by 2025, helping 100 million people. —*Aryn Baker*

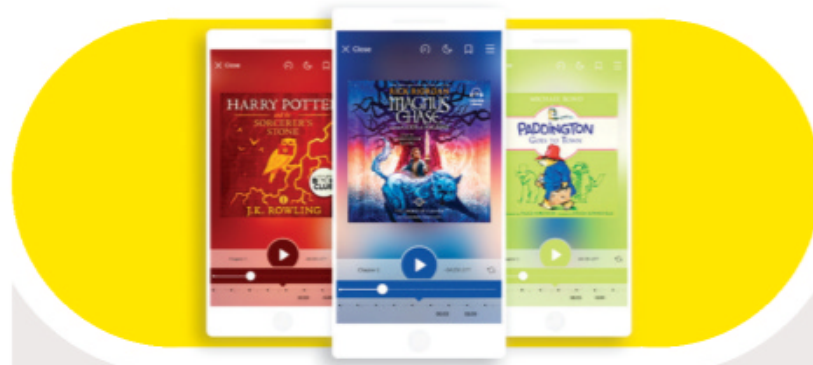


HEALTH CARE

AN EASY-ACCESS DOCTOR

TytoHome

Getting to the doctor's office isn't always easy, but the creators of the \$299 TytoHome hope to eliminate that trip altogether. Its handheld device measures vitals; examines lungs, ears, skin and throats with special adapters; and videoconferences with a doctor to monitor the metrics in real time. "It transforms primary care by putting health in the hands of consumers," says CEO Dedi Gilad. —*Hillary Leung*



EDUCATION

TRACKABLE READING

Sora From Rakuten OverDrive

The company behind one of TIME's Best Apps of 2018 has a new e-reading app for children. Sora lets kids check out e-books and

audiobooks in multiple languages as they would at a library, make notes as they read, and share those notes with their teacher or classmates. Teachers can also track the time students spend reading. The app is free for students and is being used by 23,000 schools and districts globally.

—*Jasmine Aguilera*



Future generations of the shoe will vary in color and design as they're recycled

The shoes are made out of a single material and contain no glue or solvent

EXPERIMENTAL

FULLY RECYCLABLE SNEAKERS

Adidas FUTURECRAFT.LOOP

Upon first glance, these sneakers, while notably stylish, look no different from any other high-end running shoes. The innovation comes once you're done with them. Instead of throwing

the sneakers away, you can return them to Adidas so 100% of each shoe can be reused to create future generations of FUTURECRAFT .LOOP shoes. It took more than seven years of research,

including developing new technology to build the shoes out of a single material with no glue or solvent. James Carnes, vice president of global brand strategy at Adidas, says the FUTURECRAFT

.LOOP is meant to be a first step to "clean up some of the environmental impact that we create through our massive product creation every year." But you'll have to wait to get your hands on them; they're still in the beta-testing phase, and the tentative schedule for public consumption isn't until 2021. —*Madeleine Carlisle*

SOCIAL GOOD

**INTERNET,
ACCESSIBLE**

KaiOS

About half the people in the world don't have access to the Internet, which puts them at a disadvantage in business, education and other areas. KaiOS is working to bridge the digital divide with a lightweight mobile operating system that brings wi-fi, GPS, apps and other advanced features to affordable, nontouch phones. With KaiOS-powered devices, users can access hundreds of apps—like WhatsApp, Facebook and Google Maps—through the company's online store. Launched in mid-2017, the operating system is now in use on over 100 million devices in Southeast Asia, Africa, Latin America and Europe. Devices with KaiOS start at about \$17—an investment that Sebastien Codeville, the company's CEO, says has the potential to make a real impact. "First-time access to vital digital services and resources has changed lives," he says. —Amy Gunia



Users have thrown more than 110 million punches this year

WELLNESS

BOXING SOLO

FightCamp

FightCamp aims to eliminate the friction of a typical boxing class—including the commute to the gym—by combining smart gloves, a standing bag and video-based instruction. Sensors under the gloves track the volume, speed and intensity of punches, and a leaderboard lets you see how your output stacks up against that of users across the U.S. The whole set costs \$1,219, plus a \$39 monthly subscription for access to hundreds of guided workouts.

—Sean Gregory



TRANSPORTATION

A SOLAR-POWER FIRST

Lightyear One

Electric cars are all the rage. But there is the problem of batteries running low far from a charging station. Dutch automotive startup Lightyear has a potential solution in the Lightyear One, a futuristic-looking electric sedan adorned with solar panels that recharge the car. Solar generates only about 7.5 miles of range every hour, but with an impressive 450 miles of single-charge range to begin with, owners won't be relying on sunshine alone to get around. —Alex Fitzpatrick

SUSTAINABILITY

REPURPOSING PLASTIC

PureCycle

Just 9% of all plastic—which almost never fully degrades—has ever been recycled. Because of odors, colors and contaminants, much of what we put in our bins is not reusable. Hoping to remedy this, PureCycle Technologies is using a new method to restore used polypropylene into resin that's effectively as good as new. This purification process churns out colorless pellets hygienic enough for even food-grade applications, PureCycle says. And it uses only

a fraction of the energy involved in making virgin resin. "We're actually taking plastic that wouldn't ever be recycled again and making it indefinitely recyclable," says Mike Othworth, PureCycle's CEO. Production is scheduled to start in 2021, but it's already so popular it's presold for the next 20 years.

—Laignee Barron





Powerful headlights and rear brake lights make late-night commutes safer

Unique electric brakes add drag to the existing classic hand and foot brakes

Extra-wide, air-filled tires absorb shock and improve stability

TRANSPORTATION

A SERIOUS SCOOTER

Boosted Rev

The proliferation of shared electric scooters is undeniable; Limes, Birds and Spins litter the country, from the suburbs of California to the streets of New York. There's a clear demand for a way to get around that's easier than biking, greener than driving and cheaper than using larger electric vehicles like mopeds. So electric-skateboard maker Boosted decided to make a scooter for the more dedicated eco-commuter. The \$1,600 Rev is a beefier, more powerful version of the scooters you'd pay a few bucks to ride to your next location, with a top speed of 24 m.p.h. and a range of 22 miles on a full three-hour charge. The Rev weaves through city terrain and conquers hills with aplomb. That's thanks to its pair of electric motors, wider base for improved stability and air-filled tires for increased shock absorption—but all those features do make it a hefty 45 lb. The integrated odometer lets you see your speed and swap among three driving modes, and the companion app lets you track your miles. Its steel frame makes it bike-lock-friendly, so you won't have to roll it into class or the office, and its three different braking options ensure you've got control when you need it.

—Patrick Lucas Austin



FOOD & DRINK

AGRICULTURE, UPDATED

AeroFarms indoor vertical farming

Millions of people around the globe suffer from food insecurity, and experts say that number could increase as the climate changes. The founders of AeroFarms say its

technology, which includes a technique for indoor farming that uses 95% less water than field farming, can help. A key advance to the company's patented technology

is a new growing medium: rather than grow in dirt, these crops grow in a reusable cloth made from recycled water bottles. Instead of being doused with water, the crops are hydrated with a gentle mist. AeroFarms has already produced crops like kale

and arugula at scale, selling to big grocery chains, restaurant providers and, beginning this year, even an airline. "We're the only commercial grower in the world doing what we're doing," says co-founder Marc Oshima.

—Justin Worland



DESIGN

A MORE SUPPORTIVE SEAT

The Cosm chair

The Cosm chair, by Berlin-based designers at Studio 7.5 for Herman Miller, is the pinnacle of personalization. Among its features are auto-harmonic tilt, which lets the chair instantly adjust to a user's body and posture—no turning a dial or pulling a lever necessary—and intercept suspension, which molds the chair to the body, removing the gap behind a user's back and providing spinal support. The flexible frame and woven seat are designed to make you feel weightless. The chair's leaf arms, which have “Dumbo ears” and are set at an angle that keeps them from getting in the way of a desk, are the first of their kind. The Cosm starts at \$895.

—Anna Purna Kambhampaty

BOOSTED REV: JOE LINGEMAN FOR TIME; SKINCEUTICALS: KIM BUBELLO FOR TIME

BEAUTY

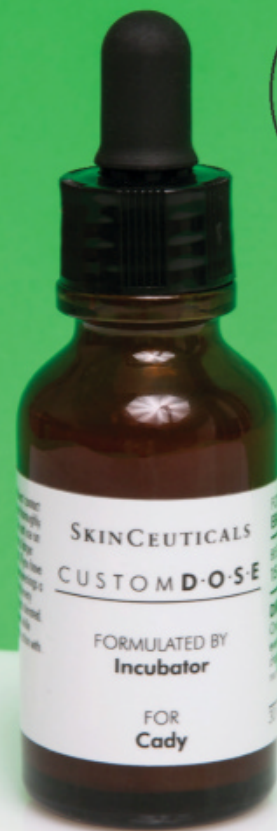
UNIQUE SKIN CARE

SkinCeuticals Custom D.O.S.E. corrective serum

No one skin-care product works for everyone, but cult brand SkinCeuticals has taken personalized beauty routines to the next level. With Custom D.O.S.E., a personalized clinical-grade serum (\$195), the company hopes to make professional customized results more accessible. Users first visit their dermatologist, who identifies their skin concerns—

from oily to dry, aging to discolored—before using SkinCeuticals' machine to whip up a formula just for them on the spot. L'Oréal's Technology Incubator combined tech and beauty research to help create the D.O.S.E. system, which uses 2,000 algorithms to process personal data before concocting a unique formula, drawing from eight (and counting) highly concentrated ingredients like retinol, glycolic acid and niacinamide.

—Cady Lang



After a consultation, it takes only 10 minutes to create the custom formula

GAMING

CHARGED-UP PLAY

Logitech G502 Lightspeed wireless mouse

When the team at Logitech G decided to make a wireless version of the beloved G502 wired gaming mouse, used by more than 4 million gamers, they knew they couldn't take any shortcuts. In addition to being wireless, the G502 Lightspeed offers battery life of up to 60 hours, keeps the same 11 programmable buttons as its sibling's and is 7 g lighter. Chris Pate, a portfolio manager at Logitech G, and his team used years of experience, research and technological advances to create a new energy-efficient HERO sensor that enables the speed and responsiveness required for fast-paced gaming. Paired with the PowerPlay Wireless Charging System—a \$119.99 mouse pad that charges the mouse while you play—the \$149.99 G502 Lightspeed is always ready to go. —Jason Cipriani



GAMING

SCREEN TIME, OUTSIDE

Biba Playground Games

With its free mobile app, Biba Playground Games is trying to turn screen time into quality time spent outside. Parents use the app, which blends gaming with playground activities, to relay “missions” that kids can complete in the real world. Since its 2016 launch, Biba has set up augmented-reality tags in almost 5,000 parks. When scanned with a smartphone camera, the tags launch games like a dinosaur-themed adventure in which players cross monkey bars and travel down slides. —Matthew Gault



SOCIAL GOOD

HELPING RURAL FARMERS CONNECT

Farmerline Mergdata

Alloysius Attah grew up on his aunt's farm in Ghana, so he knows how difficult it can be for small-scale farmers to access the resources they need to succeed. That's

why he developed a mobile and web platform just for them. Mergdata sends farmers information about the weather and produce prices via voice message in their language, bridging any literacy gaps. The farmers—who might not otherwise have access to financial services like loans—can also get farm supplies

on credit through the platform. Localized farming tips for the season come free when farmers purchase supplies. "We need to get them everything they need to produce and sell more food and make lasting profit for their families," Attah says. More than 200,000 farmers in 13 countries in Africa are currently using Mergdata.

—Amy Gunia



SPORTS

DIGITAL DUNKS

NEX Team HomeCourt

A challenging pickup basketball game in early 2017 left NEX Team co-founder David Lee wishing for a way to track his performance in real time and share it. A year later,

the company released the HomeCourt app; just position an iPhone or iPad camera on a basketball court, and AI recognizes the rim, counts your swishes and lets you compete with players around the world. High-profile backers include Mark Cuban, the NBA and Steve Nash.

—Sean Gregory

PARENTING

A DOLL FOR EVERYONE

Mattel Creatable World dolls

For half the world's children, playing with a doll is still considered taboo. Mattel aimed to tap that underserved market and overthrow outdated gender norms with the Creatable World doll, which launched in September. The doll can be a boy, a girl, neither or both. It comes in a range of skin tones and hair textures, each with a short haircut that can be fitted with a long wig. (A kit, which includes both hairstyles and several outfits, costs \$30 on Mattel's website and at retailers like Target and Amazon.) Its youthful features intentionally betray no gender so that any child—boys who like dolls, girls who don't usually like dolls, gender-fluid kids, trans kids, gender-nonconforming kids—can find a figurine that looks like them. "Kids have more of an emotional connection to dolls than they do to other toys," says Kim Culmone, the head of design at Mattel. "It was important that this particular doll was a blank canvas so kids can really take it wherever they want to." —*Eliana Dockterman*



FOOD & DRINK

MEAL DELIVERY, MODERNIZED

Postmates Serve

Your next Postmate might not arrive in a car. Meet the delivery service's newest rover, Serve, which has two eyes and four wheels and navigates the sidewalks remotely monitored by a human pilot. The robot, which

Postmates says can carry 50 lb. and travel 30 miles on a single charge, will join more than 350,000 people who deliver food for the company. Customers receive their meals by using a touchscreen on the rover. Designed to

navigate in urban spaces with more ease and less environmental impact than a larger vehicle, Postmates says Serve reduces delivery costs and traffic while increasing sales for local restaurants. The service has initial plans to roll out in Los Angeles and San Francisco.

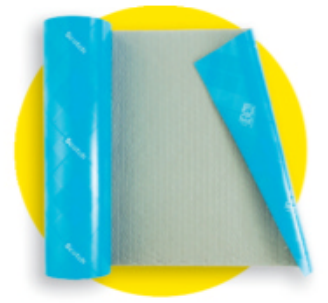
—Mahita Gajanan

MATTEL: JOE LINGEMAN FOR TIME

Each doll kit lets kids put together more than 100 different outfits and styles



Unlike Barbie, the more youthful dolls have flat feet and childlike bodies



PRODUCTIVITY

THE FUTURE OF PACKING

Scotch Flex & Seal Shipping Roll

3M believes its Scotch Flex & Seal Shipping Roll could replace shipping tape, boxes and packing peanuts altogether. The roll comes in four sizes of waterproof, cushioned material and—with 3M's proprietary adhesive material—sticks securely only to itself. Simply cut to fit around your item, and seal. By reducing packaging, it cuts waste and shipping costs and could mean fewer delivery trucks on the road.

—Isaac Saul

ACCESSIBILITY

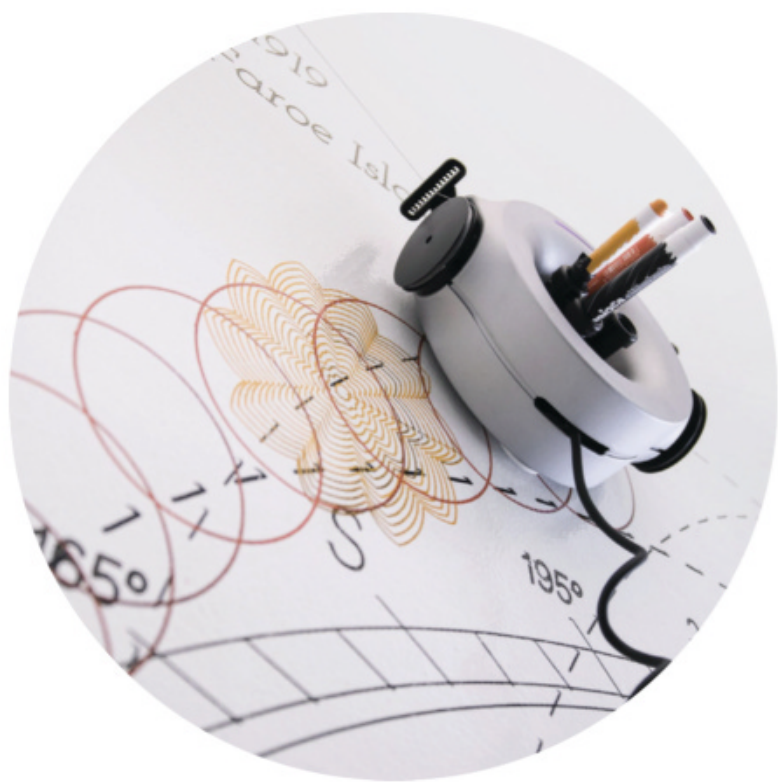
VISION MADE AUDIBLE

OrCam MyEye 2

For those living with visual impairments, the OrCam MyEye 2 could be a game changer. Described as “talking glasses,” the artificial-intelligence device attaches to the frame of any glasses and can identify faces and currency or read text and information from bar codes aloud. Fitting all this power into such a small device is like “putting an elephant into a small closet,” says Amnon Shashua, inventor of the technology. OrCam MyEye 2 can also be useful for those with reading difficulties like dyslexia.



A newer version, which is scheduled to come out next year, will allow users to get even more specific, like telling the machine to read only the headlines of a newspaper, or only the appetizer section of a menu. The device is available in 48 countries and has even been used in Israeli elections to help blind and visually impaired citizens cast their ballots. —Sanya Mansoor



HOME

DIY WALL DECOR

Scribit

It's not a whiteboard. It's not a digital billboard. It's something in between. Equipped with erasable markers, Scribit—a write-and-erase robot—can re-create artwork on walls and other vertical surfaces by drawing, line by line. The creators aim to bring “a touch of analog” into our digital lives, says Scribit co-founder Andrea Baldereschi. Teachers can have Scribit write lessons on classroom walls. Restaurant owners can alert customers to new menu options. And art aficionados can

regularly update the illustrations throughout their homes. Scribit currently sells for \$499. Users can upload their own designs or use premade drawings from independent artists or access art from Scribit's library. The company says a new feature allows users to convert any picture, even a selfie, into an erasable drawing on the wall. Scribit recently received recognition as one of Kickstarter's most successful campaigns and raised more than \$2.4 million in crowdfunding.

—Sanya Mansoor



ACCESSIBILITY

A SMARTER CANE

WeWALK

A few years ago, Kursat Ceylan, who is blind, was trying to find his way to a hotel, using

a smartphone map app and a cane while pulling luggage, when he walked into a pole, cutting his forehead. He co-developed the WeWALK—a smart cane that detects objects above chest level and pairs with apps, such as

Google Maps—to help the 250 million visually impaired and blind people worldwide navigate a digital world without having to juggle a smartphone. The WeWALK costs \$499.

—Tara Law

The ZERO1 Youth is specially tuned to absorb kids' impact forces



SPORTS

SAFER SPORTS FOR KIDS

VICIS ZERO1 Youth helmet

Over the past decade, an emerging body of medical research has shown that playing football can increase the risk of brain injury, and youth football participation

has declined significantly. But at least 1.2 million kids under the age of 13 still play tackle football, according to the Sports and Fitness Industry Association. So VICIS, the



A wide field of view reduces the risk that a player will be blindsided by a hit

Seattle-based startup whose football helmets have topped annual safety ratings published by the NFL and NFL Players Association, is turning its attention to the youth market. “Our birthright,” says VICIS CEO Dave Marver, “was to come out with a better helmet for kids.” The ZERO1 Youth, which launched in May, has thicker force-absorbing

support on the front and sides of the helmet, where kids are more likely to incur more jarring hits. Players on 1,500 different youth teams have now worn the helmet. While no helmet can prevent concussions altogether, in Virginia Tech’s inaugural youth-helmet rankings, VICIS finished first once again. —Sean Gregory



CONSUMER ELECTRONICS

PRO VIDEO MADE EASY

Remo Tech OBSBOT Tail

If you’ve ever shot home movies or YouTube videos solo, you know how hard it is to keep yourself in frame. Now the OBSBOT Tail can be your cinematographer. Just set the \$589 camera on a table or tripod; select your subject in the companion app; and the OBSBOT Tail will pan, tilt and zoom

to follow them as they prowl the stage or dart across the football field, capturing their movements in 4K video. You can also give commands using hand gestures or through the app, where you can further customize your shooting preferences or style. —Patrick Lucas Austin



SOCIAL GOOD

POWER TO THE PEOPLE

YOLK Solar Cow

The YOLK Solar Cow is helping to improve access to electricity and education in developing nations. Placed near schools, the solar charging system that literally looks like a cow has “power milk”—white, portable batteries—that students can take home to their families. Around 500 kids took charged batteries home during pilot programs in Kenya and Tanzania. YOLK says the product will chip away at broader global inequality issues by providing energy to low-income families and encouraging them to send their children to school. —Isaac Saul

HEALTH CARE

ZAPPING MIGRAINES

Nerivio

Worn on the upper arm, Nerivio electrically stimulates the body’s own neural pathway for tamping down pain signals.

When they feel a migraine aura starting, patients put on the device, which is calibrated to a wavelength that addresses their pain. For now, the \$99 device requires a doctor’s prescription and is only available at designated pharmacies.

—Alice Park



ZERO1 YOUTH HELMET: JOE LINGEMAN FOR TIME



DESIGN

A MORE FLEXIBLE SHOWER CADDY

OXO Good Grips Quick-Extend aluminum pole caddy

If you're suffering from a shower-storage shortage, Oxo's new Quick-Extend aluminum pole caddy is a well-reviewed, high-end solution. The pole on the easy-to-install caddy—which is made of rust-proof anodized aluminum—extends from just over 5 ft. to 9 ft., so it can fit in the corner of most showers, small or large. Four adjustable shelves provide storage for everything from soap to oversize bottles of shampoo, and extras like hooks for razors and loofahs ensure that your shower essentials have their own designated places. Assembly is tool-free, and when it's time to move it, the caddy pops out of your shower with the press of a button. At \$150, the caddy's unique, customizable fit might be well worth the cost for those with limited shelf space.

—Emily Price

WELLNESS

MONITORING HEALTH

Omron Healthcare HeartGuide

HeartGuide's developers are quick to say it isn't a wearable; it's a blood-pressure monitor that just happens to be worn on the wrist. That design is geared toward the 103 million Americans who have hypertension and struggle to check their readings in a consistent and inconspicuous way. "Those people spend about five hours a year talking with their physician, and about 5,000 hours a year

at home, trying to deal with this on their own," says Jeff Ray, executive director of business and technology at manufacturer Omron Healthcare. Integrating a blood-pressure monitor into a sleek watch that also

measures sleep and activity, Ray says, makes staying on top of cardiovascular health easy and provides a fuller picture of overall wellness. Customers and doctors clearly think it's worth the \$499 price tag: HeartGuide's first run sold out so quickly that Omron doubled its production capabilities to produce around 2,000 devices a month.

—Jamie Ducharme

During the creation of HeartGuide, Omron filed more than 80 new patents



TRANSPORTATION

AN EASIER E-SKATEBOARD

Walnut SPECTRA X

Smaller, lighter and more portable than e-scooters and e-bikes, electric skateboards are a compelling alternative for quickly getting around town. But they also have a higher learning curve: it's far easier to learn to ride a bike or scooter than go full Tony Hawk. Hong Kong-based mobility startup Walnut might have the answer in the SPECTRA X, a high-tech electric skateboard with a "3-D posture control system"—an AI algorithm that intelligently adapts to each rider and stabilizes the board, making it easier for first-timers to climb aboard with confidence. —Alex Fitzpatrick



EDUCATION

LEARN MUSIC VISUALLY

ROLI LUMI

ROLI has designed products intended for avid and skilled musicians, but with its latest product, LUMI, it is attempting to reach those aspiring to learn how to play. "We hope that LUMI basically closes the gap between people's love of music in general and their fear about playing it themselves," says Will MacNamara, head of communications at ROLI. The LUMI keyboard is small, and it lights up to allow users to learn



which keys to play. With an accompanying app, users can learn their favorite songs and work their way up to full music lessons. It has received more than \$2 million in Kickstarter funding and will be distributed to funders in November. By 2020, ROLI hopes to roll LUMI out to schools across the U.S. It will be available to the wider public for \$250 in January.

—Jasmine Aguilera

PARENTING

KEEPING KIDS CLOSE

B'zT

Several years ago, B'zT founder Kiyeon Nam had what she recalls as a terrifying experience: she briefly lost her then 3-year-old daughter in a mall. The incident spurred Nam to research child-tracking devices and then, finding the options lacking, to create one of her own. B'zT's tracking

devices—which won a 2019 Edison Award—are machine-washable and come embedded in kid-friendly T-shirts and patches, which start at \$19.99. Parents and teachers can use the company's free app to monitor the locations of kids wearing the devices. —E.P.

B'zT's app alerts users when a child wanders out of its roughly 100-ft. range



SUSTAINABILITY

REDUCING WASTE

TerraCycle Loop

Loop wants to help make major brands more sustainable. Launched in May by recycling company TerraCycle, the service sells brand-name products—including Clorox wipes, Häagen-Dazs ice cream and Febreze air freshener—in durable, reusable

packaging. Products range from \$4 to about \$60 and require refundable deposits for the containers. When they're finished with the product, customers return the packaging to Loop, where it's cleaned and refilled, and the cycle begins again. More than 80,000 people in the U.S. and France have signed up, with expansion to more countries planned soon. —Mahita Gajanan

THIS SPREAD: HEARTGUIDE, B'ZT; JOE LINGEMAN FOR TIME; LIGHT PHONE II: KIM BUBELLO FOR TIME; NEXT SPREAD: GILLETTE LABS HEATED RAZOR; JOE LINGEMAN FOR TIME

HEALTH CARE

ULTRASOUND TO GO

Butterfly iQ

Medical imaging is cumbersome and expensive. But Butterfly iQ has shrunk ultrasound technology to the size of a chip, letting medical professionals simply plug

the portable probe into their phone; peer at a patient's heart, lung or growing fetus; and even diagnose diseases. At \$1,999, plus a \$35 monthly software subscription, the FDA-approved device is now used in more than 20 countries—many where imaging is lacking. —Mandy Oaklander



CONSUMER ELECTRONICS

A PHONE, PLAIN AND SIMPLE

The Light Phone II

For those who think time spent staring at screens is doing more harm than good, the \$350 Light Phone II provides a smartphone stripped down to its essentials. The iPhone 4 look-alike can only call, text and set an alarm—no camera, email or social media, though features like a calculator and music playback are in development. "It's been incredible to hear user feedback that people are feeling more calm and content ... because they weren't scrolling through their smartphones," says co-founder Joe Hollier. —Patrick Lucas Austin





AR & VR

BUILDING NEW WORLDS

Minecraft Earth

Like *Pokémon Go* before it, *Minecraft Earth* is an augmented reality game that sends players out into the real world to gather resources and interact with each other. Unlike *Pokémon Go*, *Minecraft Earth* lets players leave permanent digital structures they've

built on the platform for others to enjoy. Using only a smartphone, fans of the popular game can create whole worlds that hum alongside our own. An early-access version of *Minecraft Earth* launched in the U.S. in November.

—Matthew Gault



HEALTH CARE

STOPPING FOOD POISONING

PathSpot

To help stop the spread of food-borne illness, biomedical engineer Christine Schindler created PathSpot, which uses a light-based detection algorithm to scan hands for harmful contamination. Restaurant employees hold their hands beneath the scanner, which assesses whether they must be rescrubbed to eliminate pathogens like *E. coli*. Some Chopt and Pokeworks restaurants are among the 100 locations that have started using the product since it launched in May. —Jamie Ducharme

BEAUTY

A CLOSER SHAVE

GilletteLabs Heated Razor

The hot towels wrapped around your face during a classic straight-razor shave at a barbershop aren't just a relaxing ritual—they're a way to ensure the closest, most comfortable shave by softening facial hair and skin. Now, with GilletteLab's Heated Razor, the luxurious warmth of a hot shave is possible with every shave at home. The rechargeable razor, which costs \$200, features a stainless steel warming bar that sits beneath five blades to warm your face as you shave. Once the heat is turned on, users can switch between two different levels of heat that is evenly distributed throughout the shave thanks to four heat sensors, while Gillette's FlexDisc technology ensures that every facial contour and crevice is covered. With a fully waterproof design, the razor can also be used in the sink or shower.

—Cady Lang



The Heated Razor was first launched on Indiegogo—where it sold out in six days



ACCESSIBILITY

A SMARTER HEARING AID

Starkey Livio AI

Many people who could benefit from a hearing aid avoid it, fearing it signals infirmity. Starkey Hearing Technologies answers that fear with a device that does more than amplify sound and tone down background noise. Livio AI is embedded with sensors and artificial intelligence that allow it to stream music; verbally answer questions like a smart assistant; translate conversations into your language; detect falls (and alert loved ones); measure physical activity; and track how often you talk to other people during the day—useful for elderly users who can become isolated. Since launching in 2018, “it’s our best-selling product ever,” says Achin Bhowmik, chief technology officer at Starkey, who wears the device even though he doesn’t have hearing loss. “It’s better than normal hearing.” Livio AI is available from hearing professionals.

—Mandy Oaklander

TRANSPORTATION

AN EXTRA-POWERFUL ELECTRIC BICYCLE

VanMoof Electrified S2

It’s hard to give up the convenience of driving for more eco-friendly transport, but the high-tech S2 electric bicycle is designed to convert the way. “If we really want to convince people who take their cars, we need to give them an alternative that is worth considering,” says VanMoof chief of

product design and technology Job Stehmann. The S2 has pulled ahead of its field, with a top speed of 20 m.p.h. and a range of 37 miles on a full

charge (via wall plug). An LED display is built right into the frame, showing riders their speed and more. An antitheft system employs a high-pitched alarm and locking mechanism, which can be unlocked via smartphone app. And a turbo button sits ready to provide an extra boost of power to get up a hill or escape a tricky situation.

—Alex Fitzpatrick



WELLNESS

SAFETY ON THE RUN

Nathan Sports’ SaferRun Ripcord Siren Personal Alarm

If you sometimes feel nervous while running by yourself outdoors, you’re not alone. The SaferRun Ripcord Siren Personal Alarm, coming to market in February 2020, was built to help you exercise with a greater sense of security. When you pull a tab, the thumb-size alarm emits a 125 db sound—as loud as an ambulance siren. Created by a female-led design team, the device is lightweight, easily fits in a small pocket and costs \$19.99. —Madeleine Carlisle



The razors can be set to a warm 110° F or a steamier 120° F





SUSTAINABILITY

RE-CREATING NATURE

ECONcrete

ECONcrete seeks to make the billions of humans living along the world's coastlines a little less disruptive to marine ecosystems by replacing intrusive concrete infrastructure, from sea walls to seafloor mats,

with products that blend in with their surroundings. Instead of building concrete blocks, ECONcrete uses a technique known as biomimicry, relying on the shapes, textures and size of natural systems to dictate how the company builds its products. "Nature does it better than we do," says Adi Neuman, head of design at ECONcrete.

—Justin Worland

FOOD & DRINK

A BETTER PLANT BURGER

The Impossible Burger 2.0

The classic veggie burger got an upgrade with the Impossible Burger 2.0, an alternative to ground beef that even chars and bleeds, despite being made entirely from plant-based proteins. Its makers have capitalized on public desire for a more sustainable burger this year, making headlines for partnering with Burger King and launching their plant-based meat at grocery chains on the East and West Coasts. The company plans to build on its product line by launching other meat alternatives, like faux chicken and fish. For now, though, "Our competition is only the cow," a company spokesperson says. —Jasmine Aguilera



TRANSPORTATION

AD DOLLARS FOR UBER DRIVERS

Firefly

Calling an Uber or Lyft at the end of a night out has become a default for many, but drivers for the popular ride-sharing services still often don't see much profit. Firefly is helping to change that by paying drivers an average of \$300 per month for placing geo-targeted, rotating digital advertising for brands such as HotelTonight on the roof of their car, like many taxis already do. The service claims to deliver more than 430 million ad impressions per month over its 40,000 sq. mi. of coverage, a noncontiguous expanse that includes New York and Los Angeles. The company, founded in a Stanford business school dorm by Kaan Gunay and Onur



Kardesler, says it reserves 10% of its ad space for social causes, local governments and nonprofits. One such campaign, which ran in L.A. and San Francisco, featured Smokey Bear and focused on fire prevention. Firefly is also working toward collecting city data using attachments like air-quality monitors on their units, and is considering international expansion next year.

—Emily Price

The sunglasses are available for \$199.95 in round or square styles



BOSE FRAMES: JOE LINGEMAN FOR TIME; OCULUS QUEST: JOE LINGEMAN FOR TIME



CONSUMER ELECTRONICS

LISTEN TO YOUR LENSES

Bose Frames

While your average pair of sunglasses focuses on protecting your eyes in style, Bose Frames add something extra to the formula: sound. Each temple holds a tiny audio system designed to be audible only to the wearer. That means no headphones are needed to enjoy music or a podcast on your commute. “Frames provide an open-ear personal listening experience that allows the wearer to enjoy content without closing themselves off to the world around them,” the company says. The sunglasses connect to your smartphone via Bluetooth so, if you choose, you can receive audio alerts and notifications from apps.

—Patrick Lucas Austin

Each pair can play up to 3.5 hours of streaming music on a single charge



PARENTING

A BETTER WAY TO CONNECT WITH KIDS

Caribu

Lots of services provide video calling: Apple’s FaceTime, Facebook’s WhatsApp, Microsoft’s Skype, Google’s Hangouts. But none of them caters to young children who can’t handle sitting through a long video chat with their relatives. “Kids feel like they are in the

Spanish Inquisition,” says Maxeme Tuchman, co-founder of Caribu, a Miami-based startup that aims to make video chat a better experience for both kids and adults. Caribu lets both parties share an activity on the screen, so they can see and talk to each other, as well as draw pictures, play games or read more than 1,000 books in eight languages together. The service costs \$7 a month but is free for military families.

—Emily Barone

ENTERTAINMENT

TV OF THE FUTURE

LG 88-in. OLED 8K TV

4K televisions have finally gone mainstream, and prices are falling. But another big upgrade is just around the corner: 8K displays, like LG’s 88-in. model, are trickling out and promise even better picture quality for the big game or family movie night. LG’s display is the first 8K TV with OLED technology, which allows for a higher-contrast picture and a thinner display—the LG TV is a mere

1.96 in. thick. 8K-quality movies don’t yet exist, but LG’s display will “upscale” existing video until true 8K content becomes available. LG’s Tim Alessi says that, unlike other TVs, this model’s

resolution will even allow for comfortable viewing in tighter spaces. “You can get up super close to it, and you’ll still see a solid, clear, well-defined image,” he says. —Alex Fitzpatrick



SOCIAL GOOD

NO-WAIT MEDS

Pelebox smart lockers

Pelebox founder Neo Hutiri knows what it’s like to manage a long-term illness in South Africa. “My biggest challenge was not my [tuberculosis],” he says, “it was spending three hours [waiting in line at the clinic] just to collect my medication.” The Pelebox smart locker lets registered patients pick up prescriptions from kiosks around town with a onetime SMS code. So far, the lockers have delivered more than 10,000 prescriptions. Average wait time? Under a minute. —Aryn Baker



HEALTH CARE

LEARNING FROM MEDICAL MISTAKES

Surgical Safety Technologies OR Black Box

Being rolled into an operating room is scary enough, but even more so when you consider that of the 300 million surgeries performed worldwide each year,

up to 50 million will involve complications and up to 3 million will result in death. Enter the OR Black Box, developed by Toronto-based surgeon Teodor Grantcharov. Just as an airplane's black box records data throughout a flight to keep track of anything that goes wrong and improve overall safety, the OR version records audio, video, patient

vital signs, feedback from electronic surgical instruments and more. Hospitals can then analyze the data or use it as a teaching tool. The Black Box has been in operation in Europe since 2017 and will roll out in the U.S. next year. In a surgical theater that still relies on paper checklists, the Black Box is a huge step forward.

—Jeffrey Kluger

HEALTH CARE

HELPING HOSPITALS

Diligent Robotics Moxi

Between delivering lab samples, removing soiled linen bags and running routine errands, it's hard for nurses to make time for the most important task: interacting with their patients. This is what scientists at Diligent Robotics hoped to address when they built Moxi, a hospital robot. With an arm to reach, a gripper to pick up objects and a mobile base to move, Moxi is able to complete duties end to end independently without being asked, relieving nurses of non-patient-facing tasks that studies show they otherwise spend up to 30% of their shifts on. The company has just wrapped up yearlong trials at four hospitals in Texas and in October began its official market launch with its first full-time hospital partner in Dallas. Diligent Robotics CEO Andrea Thomaz plans to have Moxi in even more U.S. hospitals by the end of 2020. —Hillary Leung



Handheld touch controllers accurately translate gestures into game play



Positional audio lets you hear the experience sans headphones



AR & VR

USER-FRIENDLY VR

Oculus Quest

VR has been slow to catch on with the general public; it's expensive, and there's been a need for some tech knowledge and accoutrements to participate. The Quest might be the system that finally brings virtual reality into every home in America. Unlike older high-end VR setups, Oculus' newest device doesn't connect to a PC or require any external wires, and its VR-enabled controllers and built-in motion-tracking cameras allow you to safely move around a room and fully immerse yourself in games or experiential content. To set up the Quest, you just put on the headset, draw a virtual safety boundary in the room

you're using and jump into the action. Once inside, the possibilities are nearly limitless. You could find yourself in a boxing ring surrounded by a cheering crowd, pursuing a mission in the world of *Star Wars* or sword slashing to the music in *Beat Saber*. The experiences are so immersive that after taking off the headset, you might be stunned to realize you've been in the same room the whole time. A full set starts at \$399—less than other VR headsets at this level. Consumers are clearly on board: the Quest had a sold-out release in May, and in just the first two weeks, Oculus sold more than \$5 million of Quest apps and games. —Alejandro de la Garza



SUSTAINABILITY

TRACKING WATER POLLUTION

Draper/Sprout Microplastics-Sensing Autonomous Underwater Vehicle

Take a sample from almost any major body of water, and you're likely to find microplastics, or bits of plastic pollution less than 5 mm long. Many experts agree that microplastics are a cause for concern, as they may harm marine life or taint our fish and water supplies. But little is known about them beyond their prevalence—in an August report, the World Health Organization said getting more microplastics data is an "urgent concern." That's where the Microplastics-Sensing Autonomous Underwater Vehicle comes in. Designed jointly by Draper and Sprout working alongside the Environmental Protection Agency, the raylike drone is meant to swim around a body of water, collecting and analyzing samples for their microplastics content. Draper project lead Lou Kratchman says that data can be a jumping-off point for more advanced microplastics research. "We need something that's comparable to the world Air Quality Index," he says. "Kind of a global weather map that, in real time, we can look and see how the microplastics situation is changing." While the drone is still a concept, a simpler prototype is already being successfully used in Hawaii. —Alex Fitzpatrick



EXPERIMENTAL

A MORE FLEXIBLE PC

Lenovo ThinkPad X1 Foldable

Half laptop, half tablet, the Lenovo ThinkPad X1 Foldable flips—er, folds—what you know about laptops on its head. With a 13.3-in. 2K OLED display that is touch-sensitive and folds in half, the ThinkPad X1 Foldable can be held flat like a tablet, creased like a book on your commute or held like a traditional laptop when you need to get work done. The touchscreen spans the entire surface, though users can pull up or retract a virtual keyboard for typing, and the ThinkPad X1 Foldable can sit in a stand or dock for use with a physical keyboard and mouse. When folded, the device is the size of a 9-in. folio—more portable than most small laptops. A foldable screen may seem futuristic, but it's designed to be user-friendly while still functioning not like a tablet but like a full PC—Windows operating system and all. The ThinkPad X1 Foldable is set to be on the market in 2020.

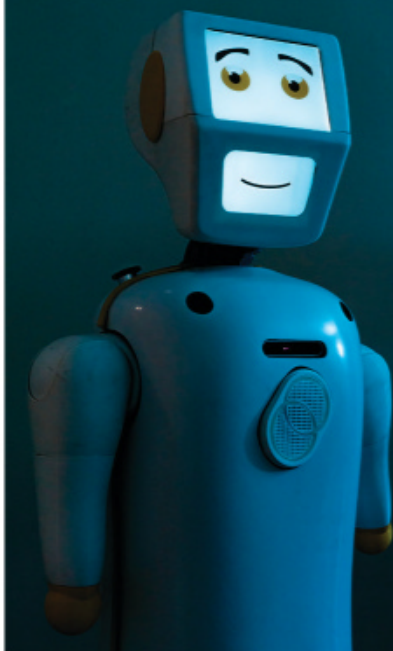
—Madeleine Carlisle

HEALTH CARE

CARING FOR THE ELDERLY

Stevie

People over 65 are the fastest-growing age group in much of the developed world, but the growth of the eldercare



workforce isn't keeping pace. The shortfall of paid care workers in the U.S. alone could exceed 150,000 by 2030, a gap that Dublin-based Akara Robotics believes AI can help fill. Akara's signature creation is Stevie, a socially assistive robot designed for care homes. The robot has a friendly face, and can be adapted to play games, make deliveries and facilitate video chats. During initial trials this year in a Washington, D.C., retirement community, researchers found that residents liked Stevie best when it was entertaining them with stories and being social. Those features are important to get right, says Conor McGinn, Stevie's lead engineer, as they are "the things that seem to affect people's quality of life." —Corinne Purtill



EXPERIMENTAL

CUTTING-EDGE DATA STORAGE

CATALOG DNA Data Writer

Our digital world is creating new data by the sextillion, and storing it is costly and takes up physical space. CATALOG took inspiration from the human body's efficient system for storing genetic information to create the DNA Data Writer, which prints data on blank, synthetic strands of DNA. The company recently printed and stored 16 gigabytes of the English text version of Wikipedia on DNA in about 12 hours—roughly 1,000 times faster than previously achieved rates. Commercial pilot testing is set for 2020. —Jason Cipriani

STYLE

A SLEEK TRAVEL ACCESSORY

Away the Backpack

Away's popular hard-sided suitcase that charges devices became a mainstay of stylish jet-setters and celebrities, and now the company is trying to do the same with the Backpack. Designed based on customer feedback, the sleek, water-resistant nylon backpack—which is available for \$195—has three pockets, as well as a number of well-placed nooks and crannies to hold all your stuff and keep it organized. A fourth separate back pocket can hold a 15-in. laptop and an adjustable side pocket can carry a water bottle. When you're ready to catch a flight, a sleeve on the back loops over a rolling suitcase handle for easy traveling.

—Emily Price

HEALTH CARE

AN EASIER EXAM

GE Pristina with Dueta

Many women avoid mammograms because they hate having their breasts pressed as doctors take images that can detect signs of cancer. GE Healthcare's Senog-

raphe Pristina with Dueta allows patients to control the compression themselves using a wireless remote. The result: the company's research shows that most women actually apply more pressure than a technician would, improving image quality. —Jamie Ducharme

BACKPACK: JOE LINGEMAN FOR TIME; STEVIE: GREG KAHN FOR TIME

The Backpack became Away's fastest-selling item of all time following its release



AR & VR

VIRTUAL SURGERY

Osso VR

Virtual reality can be extremely useful when it comes to training—for first-time drivers, pilots and even surgeons. The Osso VR software is designed to give doctors a virtual operating-room experience. “Even after four years of college, four years of medical school and five years of residency on average, 30% of graduates still cannot operate on their own,” says Dr. Justin Barad, co-founder and CEO of Osso VR. “That’s insane.” Osso VR is now being used in hospitals around the U.S., and soon surgeons in health centers in underdeveloped countries, such as Tanzania, Cambodia and Ethiopia, will also be able to learn from leading experts from around the world without having to leave their hospitals. —Alice Park



ENTERTAINMENT

INSTANT CLASSIC

IDAGIO

While most music-streaming services focus on popular music, IDAGIO’s mission is to make classical music just as accessible. “The complete set of classical music on your phone. That’s IDAGIO,” says communications director Birgit Gehring. The \$10-a-month service—the brainchild of music-industry veteran Till Janczukowicz—offers more than 2 million classical tracks, which can be sorted by composer, conductor and soloist. There’s also a free version with ads, and playlists for new listeners who are just getting acquainted with the genre. —E.P.



STYLE

THE WATCH YOU LOVE, SMARTER

Sony wena

As a student, Teppei Tsushima got strange looks when he wore his analog watch and smart watch on the same wrist at the same time. But he didn't want to sacrifice the look of the analog or the capabilities of the techie version. With Sony's wena watch strap, a smart band that can be fitted to any watch face,

Tsushima, wena's inventor and project manager, has found a way to "keep the beauty of the analog watch and the convenience of the smart watch" in one. Sony offers six watch-face styles to add to either the stainless steel wena wrist pro or black rubber wena wrist active, but customers can

also attach any watch face they prefer. A narrow display panel built into both wena band options lets users discreetly track calls and messages, fitness activity, e-payments and more. "You can check your notifications without anyone noticing," Tsushima says. Currently available only in Japan, Ireland and the U.K., where the bands start at £349. —Megan McCluskey



The device comes with six attachments to dry, curl, wave and straighten hair



AR & VR

BACK-SEAT GAMING

holoride

"We basically want to turn every vehicle into a moving theme park," says Nils Wollny, co-founder of virtual-reality startup holoride. The company, an Audi spin-off, has developed a virtual-reality app that reads vehicle data like accel-

eration and turning and incorporates it into a VR experience. If you're flying a virtual spaceship in your headset and the car turns left, the spaceship veers left as well. The founders say the feedback reduces motion sickness, while

allowing passengers to do anything from reading the news to saving the galaxy from the back seat. They plan to roll out holoride to ride-share services next year and have their software in car models starting in 2021. For now, holoride is committed to the theme-park image: in October, the company launched a Halloween experience at Universal Studios.

—Alejandro de la Garza



BEAUTY

ONE-STEP GLAM

Dyson Airwrap Styler

“Dyson engineers always start with a problem,” says Sam Bernard, global director of the company’s personal-care division. In this case, the

problem was the irreparable hair damage caused by curling irons and other hot styling tools. Dyson’s solution? Use its prowess in air technology to create a single tool, the \$549.99 Airwrap, that dries and styles hair at once, no twisting or heating required.

The Airwrap uses the powerful Dyson digital motor V9 to “vacuum” sections of hair, and low heat to create waves or curls. “Before the Airwrap, consumers just accepted that in order to create the style they wanted, they would need to damage their hair with extreme heat,” Bernard says. “Since the introduction of our products, they have a choice in the matter.” —Cady Lang



Intelligent heat control measures temperature more than 40 times a second

The Airwrap uses a continuous flow of air to curl without extreme heat

CONSUMER ELECTRONICS

SUPERIOR LISTENING

Apple AirPods Pro

What sets Apple’s new \$249 AirPods Pro apart from your average headphones? Aside from its pocket-friendly wireless charging case, the in-ear, truly wireless earbuds boast advanced noise-managing capabilities, clever design choices and thoughtful software features. A companion app that helps you find the right size silicone tips makes securely fitting the sweat-resistant earbuds easy, and classic in-ear headphone issues like clogged ears are gone because of the vented design. Stellar active noise cancellation silences the world around you—but you can choose to maintain environmental awareness by turning on “transparency mode.” Although you can’t plug a headphone splitter into an iPhone anymore, you can use your AirPods Pro (or a second pair of AirPods) to share audio with a friend when paired with any iOS 13 device. All this adds up to an unparalleled experience when it comes to truly wireless earbuds.

—Patrick Lucas Austin





HOME

AN UPDATED WASTE BIN

simplehuman Sensor Can with voice and motion control

There's something freeing about controlling objects with your voice. When you say, "Open can," simplehuman's Sensor Can with voice and motion control opens, then slowly closes a few seconds later. Sensor Can was updated in early 2019, with improved voice recognition, thanks to a new three-microphone array. You can also tell Sensor Can to stay open, or when to close. And if you'd rather stay quiet and wave your hand to prompt the lid to open, well, Sensor Can responds to that too. simplehuman views its products as "the opposite of disposable," says founder and CEO Frank Yang, and Sensor Can was tested for 300,000 open and close cycles to confirm its durability. The 58-liter model is available for \$200.

—Jason Cipriani

WELLNESS

A SMARTER NIGHT-LIGHT

Casper Glow

Technology often works to disrupt sleep, but Casper's new app-linked Glow bedroom light is designed to get out of the way and let you rest. The first gadget from the company known for its mail-order

mattresses, Glow has a warm LED light that activates when you flip it over, then gradually dims as you wind down. In the morning, Glow slowly activates

at your predetermined time to gently wake you. A twisting motion adjusts brightness, while a shake produces a soft, downward-facing light, perfect for grabbing water in the middle of the night—no looking at your phone necessary. "We were trying to design for these larger gestures, which are easier to do in the dark or easier to do when you're sleepy," says Jeff Chapin, Casper's chief product officer. And sleepy users evidently appreciate the intuitive design decisions; following Glow's launch in January, the first batch sold out in less than three weeks.

—Alejandro de la Garza

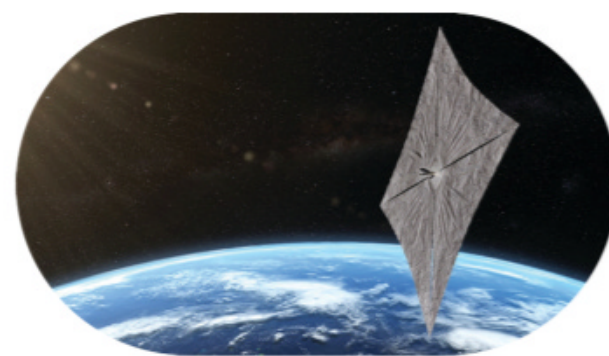
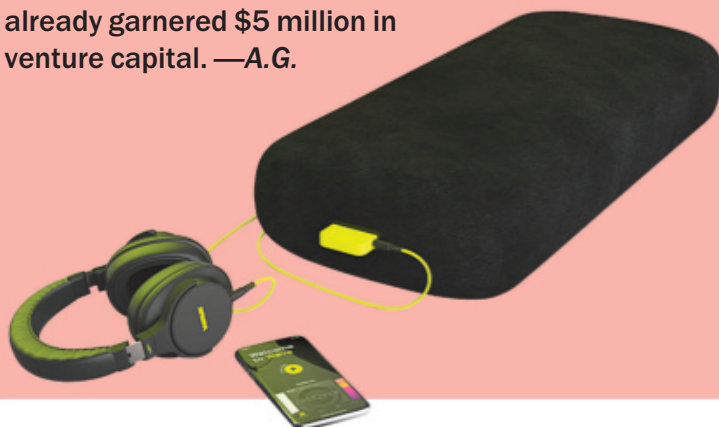


CONSUMER ELECTRONICS

FINDING PEACE, WITH BEATS

WAVE

Meditation is gaining popularity in America, but many still don't see the appeal of a trend that seems so, well, dull. That's where WAVE comes in. It's a subscription-based app and vibrating pillow (\$199 for the kit) that create a more stimulating guided-meditation experience. Users slip on the included headphones, lean back on the pillow and crank the volume on one of WAVE's original electronic-music meditation albums. Feeling the musical vibrations while working through a mindfulness exercise "creates this multisensory experience that's unlike anything else," says Mason Levey, WAVE's co-founder and CEO. The founders have already garnered \$5 million in venture capital. —A.G.



EXPERIMENTAL

SAILING ON SUNLIGHT

LightSail 2

A major challenge of spaceflight is the weight of fuel, which dramatically increases costs. The LightSail 2 satellite, launched in June, may have proved how to lighten the load. It's currently flying free using only light as fuel. When photons from sunlight hit

its silvery sail, they impart a small force that increases velocity without the need for an engine or thruster. On July 31, LightSail successfully accelerated enough to raise its orbit by 1.25 miles—not much, but a critical proof of concept.

—Jeffrey Kluger

PREVIOUS SPREAD: DYSON AIRWRAP STYLER: JOE LINGEMAN FOR TIME. THIS SPREAD: CASPER GLOW: JOE LINGEMAN FOR TIME

AR & VR

ADVANCING VIRTUAL REALITY

HTC VIVE Pro Eye

At first glance, HTC's VIVE Pro Eye looks like just another high-end virtual-reality headset, much like the ones from game developer Valve or Facebook's Oculus subsidiary. It's not the most user-friendly option—it requires a PC and isn't wireless. But put it on, and you'll see how the headset (which costs \$1,599) is pushing the boundaries of technology. Its advanced eye-tracking feature follows your gaze so accurately, it can be used to navigate and control devices by people with physical disabilities who can't use hand controllers, and it automatically increases the resolution of whatever you're looking at using software that mimics the way your eyes actually focus. More immersive features cater to businesses and professionals who want to incorporate VR into their testing, training or manufacturing workflow. It conjures a future where all job training could happen in a headset.

—Patrick Lucas Austin



CONSUMER ELECTRONICS

A ROBOT THAT ROLLS

Temi

Will personal robots be the next home-technology revolution? The makers of Temi think so. Its robot includes a touchscreen, voice controls and 16 different sensors that allow it to autonomously navigate around objects and people, as well as AI that enables it to learn the layout of your house and travel to any room you tell it to—as long as it doesn't need to open doors or get up any stairs. While Temi (which costs \$1,999) can also play music, take photos, play games and answer questions, the robot's engineers say its most important mission is to help people stay connected. "I knew that the telecom value would bring happiness and reduce loneliness," says Yossi Wolf, Temi's founder and CEO. Employing voice and facial recognition, the robot can follow you with a video call even if there are other people around, and knows that "Call Dad" means your dad, not your partner's. Launched in June, Temi has already shipped hundreds of its robots across the U.S.

—Alejandro de la Garza



Temi's autonomous face tracking lets its screen tilt to meet your gaze during calls

The robot is about 3 ft. tall and can travel up to 1 m/sec.