CES 2021 Trends & Insights

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Welcome

The Consumer Electronics Show has been an annual tradition since 1967, offering consumer brands large and small a chance to introduce new products and calibrate their market stance.

For the first time, CES was entirely remote. Nevertheless, as in prior years, our experts have sifted through each of the thousands of exhibitors to identify themes, tactics, and strategies that are client-relevant, innovation standouts, and which point the way to future developments.

We welcome you to explore our curated results in the following pages.

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THIS YEAR, THE SHOW ITSELF WAS THE HOTTEST THING IN TECH
Keith Soljacich, VP/Group Director, Technology, Digitas

From "IRL" to Online

Before the trucks and the booths and the tech rolled into the Las Vegas Convention Center 12 months ago, 2.9 million square feet of bare floor carried innate possibility. The sprawling sea of humanity consumed the goods at the world's largest technology show largely by walking and walking and walking.

Whether CES could pull it off was an open question until the last minute

Enter CES 2021. The pressure from the industry was palpable. Can CES stay accessible and relevant in a post-COVID world? The answer was a resounding yes. By partnering closely with Microsoft, and embedded key XR (Extended Reality) technology to power the show. This year we teleported ourselves to any keynote instantly. Every industry panel, front row seats. Every virtual booth, a personalized 1:1 connection. And if you were craving the party scene? Strap on a VR headset, customize your avatar, and step inside Dreamland XR to visit the hottest virtual club in AltSpace, in your pajamas. Such was the scene for CES 2021.

Expect more like this

No, in 2021 the hottest technology wasn't on the show floor, it was the show itself. This event, attended by thousands of people worldwide, will be remembered as the first large-scale virtual event of the post-pandemic modern era. Version 1.0 was not without its hiccups, but looking out to the years ahead, one can certainly see where the tech is going. While we may return to Vegas in 2022, the industry has been disrupted by XR and will never be the same.

Robots and Our Imagined Future
Greg Swan, Director of Digital + Social, Fallon

From self-driving cars to self-folding laundry, robots that do the dishes to ground drones that bring us tacos, there is one constant at CES each year — people love fantasizing about the coming future. Just look at the CES news coverage this year amidst one of the busiest global news cycles ever. There's always a place for robot news. Brands can borrow equity from emerging technology by building creative experiences that help consumers picture themselves in this future state. Every year we're delighted to find the next Rosie the Robot entry to the home automation suite and to see how brands use these prototypes to earn massive brand buzz.

THE BEST ROBOTS OF CES 2021

This year Samsung made waves with Bot Handy, a robot that can clean up messes, load the dishwasher, and move things around a house. Reachy is a robot you can control via VR via "VR teleoperation," similar to socially-distant surgery, except for whatever you want it to do — like take stuff out of the microwave, based on the video (if you have $17,000, of course). Joining the ranks of therapeutic robots comes Moflin, the fuzzy emotional support robot that uses sensors, accelerometers, and microphones to power algorithms that help it learn and grow, distinguish between different people, and "express its feelings." It's basically what consumers thought the Furby was in 1998 and is targeted at senior citizens or others who crave companionship.

PLANNING FOR 2021

Your brand may not be ready to go all-in on the next generation of technology via robot prototypes this year. However, you can leverage consumer engagement and press interest in A.I., IOT, VR, AR, and the rest of the alphabet soup for your brand today with small campaign pilots designed to drive buzz, articles and attention. Don't get paralyzed at needing your emerging tech idea to be perfect. Build something small and launch it as a test. You'll be surprised how much attention and traction a creative test with emerging technology can earn in 2021.

Medical & Wellness Trendlines at CES 2021

Gus Kaechelin, Digitas, VP Group Director, Technology

FOCUS ON THE ELDERLY

A distinct trend visible this year is Infirm or Elderly Wellness. Using technology like radar and radio frequency monitors in innovative ways, companies are offering unobtrusive, no-touch well-being monitoring for daily activity, falls, sleep patterns, emergencies, and more. With amazing granularity, this technology can even monitor respiration and heart rate without being seen and without contact. This is such a large opportunity space that AARP has an Innovation Lab dedicated to helping startups in the elderly wellness technology.

WHAT'S NEW IN WEARABLES

While Wearables For Fitness is nothing new, companies like Peloton have set a standard that many new up-and-comers are trying to emulate and cash in on. In this space, the Apple watch is the device du jour for connecting real activity to your virtual training and fitness classes. But other devices are making headway.

HOME HARDWARE + CLOUD = TAKE-OFF

As with fitness devices, medical devices are a mainstay at CES. What IS new (and more exciting this year) is the coming together of these Medical Devices with the Cloud and, most importantly, with AI. This potential has been "pending" for years now, more theoretical than practical. At last, these wearables and other new and innovative medical devices are becoming ubiquitous, and are now sending their data to the cloud for analysis by machine learning algorithms using big data to make diagnosis decisions and other health care recommendations. The results of these algorithms are going to physicians and patients faster, and via mobile devices more seamlessly as well. Nothing has shown this trend more clearly than the explosion in telemedicine and remote medical monitoring that has been necessitated by the global pandemic.

WHAT CES 2021 TELLS US – FIRST IMPRESSIONS

Bohb Blair, Starcom, Chief Experience Officer

THE SHIFTED JOURNEY

All brands are now pseudo “brand D2C.” Brand experience starts and drives more of the full journey, from early discovery through sale, product usage, through to loyalty. The retailer is increasingly used as a fulfillment partner.

IN-HOME VIRTUAL SCALING OF IRL (“In Real Life”)

COVID and Beyond. Necessity now, accessibility later. All services, experiences, and content being reconsidered for how a physical experience for a few can be connected to people in their homes. This may be mostly enabled by 5G connectivity; it also may follow the path of digitization funding. Brands can consider how they can expedite digitization of valuable experiences. Culture, Entertainment, Education, Health.

SENSORIAL AND HUMAN INTERFACES

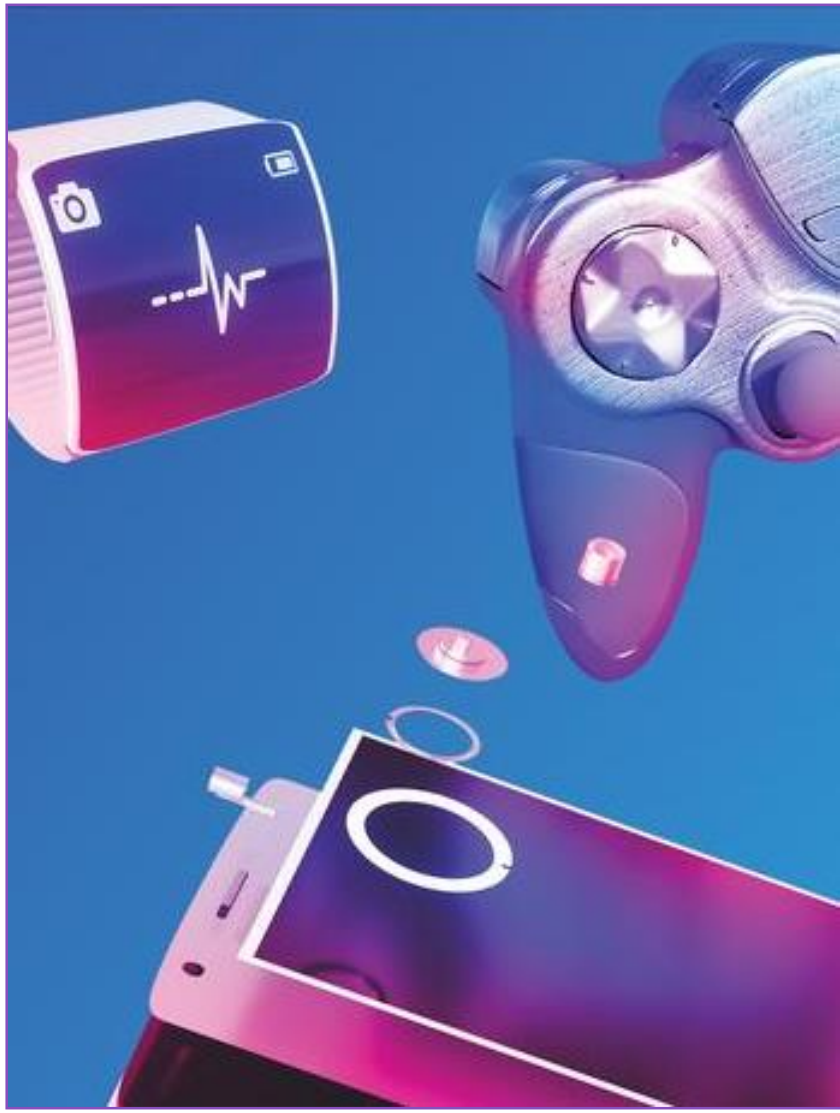
Gestures, signal reading, language processing and increasingly humanized AI assistants point to a more personal and emotive relationship with our devices. Will people welcome this, or find it invasive or uncomfortable? The UX and content moments are being created, prompting brands to decide whether/how to use this new array of activatable data.

NICHE TO MAINSTREAM

Medical grade health trackers for athletics. High-end gaming chips in affordable laptops. 8K resolution in mass TVs. Automated design tools in app-based Adobe. The devices that were only used by the tip of the spear are accessible and positioned for mainstream. What are the behaviors currently employed by the most engaged people in your category – behaviors we can benefit from as they scale?

NEWEST HARDWARE

Screens roll and fold. Drones deliver and film. Trackers measure medical grade data for health and fun. Complexities of functionality are hidden behind intuitive design. Robots overpromise, but only vacuum. The path of hardware evolution continues. While many of these are still renderings and prototypes (the GM flying car looked less real than the Jetsons cartoon version), the overlap of innovation and adoption is where our interest lies.



A Clearer Vision for Smart Glasses
Greg Swan, Director of Digital + Social, Fallon

We're tracking a significant number of smart glasses-related patents filed from some of the biggest tech companies – Apple, Microsoft, Amazon, Snap, and Facebook – who are all working on new technology and innovation that will change how we think about wearables, hearables, and an A.I.-assisted lifestyle. At CES this year, there was once again a number of smart glasses exhibitors show where technologists are looking to balance utility, privacy, and fashion. Don't rush out to buy a pair just yet, but don't be surprised if the coming years offer more and more affordable options for glasses-enabled tech that looks pretty good and help get our faces out of our phones.

AUGMENTED REALITY, SCREENS, ALEXA, AND BEAMED DIRECT TO YOUR RETINA

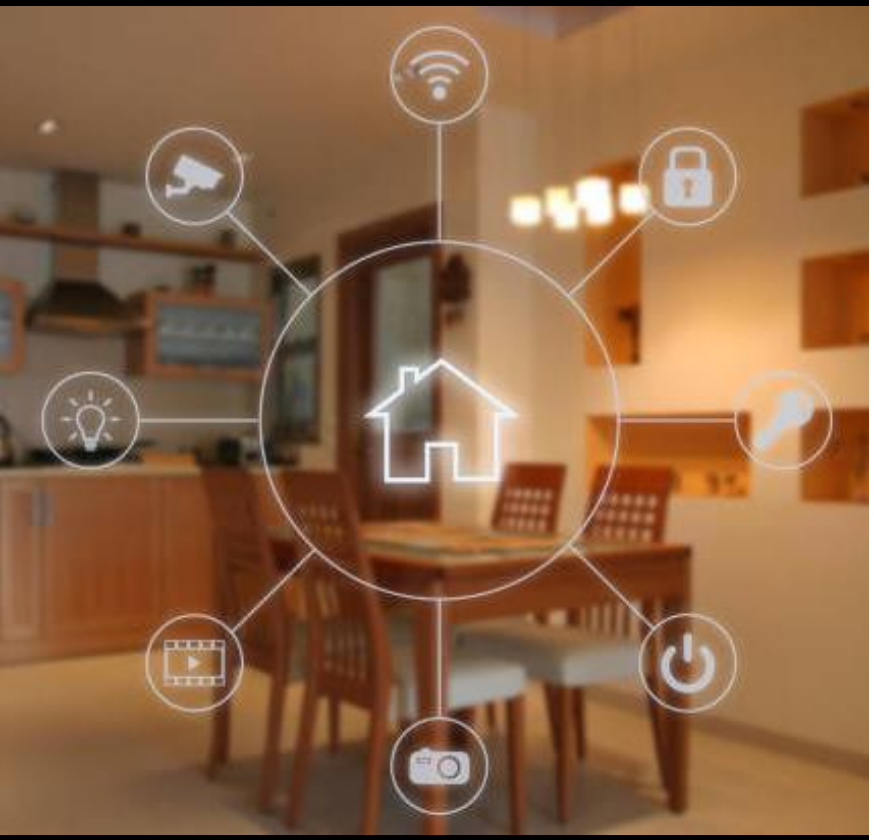
Lenovo's ThinkReality A3 AR smartglasses feature dual heads-up displays to display 3D/AR images and can also do room-scale tracking. The Vuzix MicroLED smart glasses have a heads-up display projector the size of a pencil eraser built right into the frame. The Voy glasses work as both reading glasses and distance glasses in one, as the lenses can be adjusted from +2.0 to -5.0 prescriptions. Bosch Smartglasses Light Drive uses a tiny microelectromechanical mirror array to direct a trio of lasers across a transparent holographic element embedded in the right lens, which then reflects the light into your right eye and paints an image directly onto your retina. Amazon's Echo Frames recently become the most affordable, effective, and consumer-facing look around the corner of where smart glasses trends are headed. And although they lack a screen or AR-display, they look good, and you can't tell they are "smart" unless you're told.

AFTERMARKET GLASSES TECH

Aftermarket smart glasses innovations are a more accessible, affordable option for consumers to trial adoption with their current glases, versus investing in an entirely new pair. JLab's new Jbuds Frames is a $50 accessory that adds detachable speakers to any pair of glasses. And ActiveLook provides a compact head-up display that can be embedded in normal glasses and powered by Bluetooth. Look for more aftermarket innovation in the coming years.

ON THE HORIZON

Facebook and Apple are both working on smart glasses prototypes that could launch in 2021. In the interim, brands should continue experimenting with augmented reality, mobile apps, and real-world utility of a digital lens on the physical world.



COVID-19's IMPACT
Andrew Klein, Spark Foundry, Director, Account Management

INNOVATION ACCELERATES UNDER PRESSURE

The Covid-19 Pandemic has accelerated innovation by years. The immediate and global need for protection and treatment for the virus, virtual and advanced digital communication, sanitation, working-from-home equipment, and the launch of 5G has all aligned to accelerate innovation. This has pushed companies, developers and engineers to create new innovative products and services across all industry verticals to solve immediate needs and challenges.

NOT EVERYTHING AT CES IS A GAME-CHANGER

Each CES, we gain foresight into what products, services and platforms consumers will be spending their time with. Each year, attendees hope for groundbreaking technology, the last of which was the emergence of Alexa and Google Assistant. This year we did not see the rise of a new breakthrough technology, but a re-prioritization of tech and services based on the current state of the world.

CENTERS OF ACTIVITY SHIFT AND SHUFFLE

Key trends this year clearly leaned into Covid-19 solutions and the impact of the corporate world now working from their new Home Offices. Home and Kitchen Appliances spiked as people are cooking and spending a majority of time at home. Consumers will look to upgrade their home routers to support the increased content and bandwidth consumption. New platforms and devices launched to connect and immerse consumers in sports, concerts and entertainment. Restaurants are going to lean into robotics and automation as dining room space becomes more vacant. Overall, the New Normal has already driven new products, new businesses, solutions and enormous opportunity for brands to push innovation.

This year, the CES experience itself was news, with its Microsoft-built conferencing platform featuring live “news announcers,” elaborate microsites, and the ability to chat directly with exhibitors. It was a major step forward in remote conferencing, at exponential scale.

In **FinTech**, blockchain buzzes, but continues to tread water in terms of real-world killer apps. The new trend of blockchain-backed COVID Vaccination Passports could help push the technology toward the mainstream.

In **Health & Wellness**, we saw growth of the use of AI to mine biometric data to generate personalized recommendations and to infer diagnoses, as well as tools to safely share this data with health-care providers.

For **CPG & retail**, AI and crowdsourcing sought to improve the customer experience by breaking out of traditional filter-based search structures. Instead, recommendations powered by machine learning and data-heavy profiling are the order of the day.

The **Entertainment** world is responding to the pandemic with rapid experimentation. Recreating communal, immersive experiences at home is key, with significant improvements in toolkits for creators and delivery systems for audiences that are adaptive to the constraints of COVID.

In **Hospitality**, we saw a clear theme of increasing automation and efficiency in the kitchen, whether at home or at scale.

In **Automotive**, manufacturers gave us bigger, bolder dashboard interfaces. Both electric vehicles and onboard AI continued to proliferate. We noted advances in materials science, as well as the spread of LIDAR technology well beyond its initial use case (self-driving cars).

KEY TAKEAWAYS

Financial Services

MOBILE, CONTACTLESS PAYMENTS RISE AS CONSUMERS LOOK TO REDUCE RISK

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Global Mobility Service

Global Mobility Service aims to fix credit-inequality issues by providing a lending solution that services the 1.7 billion people worldwide who are unable to purchase a vehicle to use for work.

GMS created an IoT device that is linked to lenders' payment systems and collects mobility data as a vehicle is in use. Through this technology, financial institutions can more confidently authorize auto loans, because time-on-road data is a sound indication of employment for people working as drivers. To further protect the lenders' investment, if a driver's payment is delayed, the IoT device will deactivate the engine until payment is made.

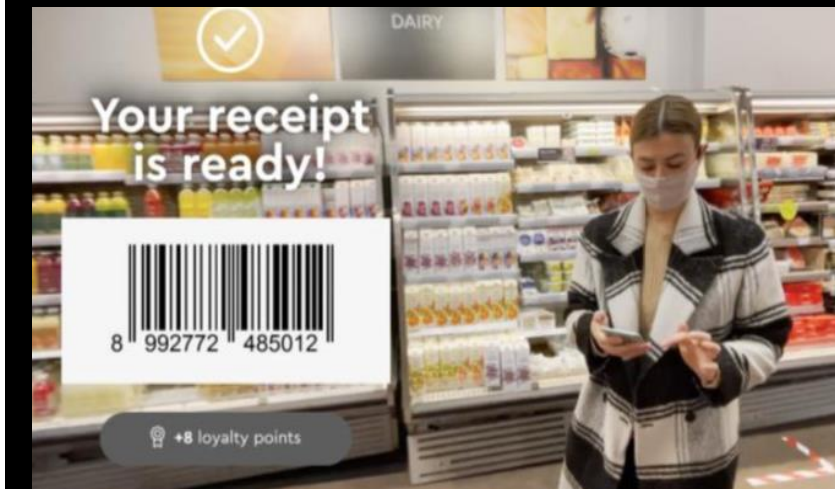
By using alternative data to undergird loan assessments, new financial opportunities become available both for low-income individuals and financial institutions.

LiveArea

Texas start-up LiveArea has created a new mobile, app-free payment method to make shopping in-store feel like a VIP experience, currently in use by Kiehl's, Adidas, Marc Jacobs, and others. Think: Amazon Go, democratized.

By integrating with a brand's existing website, users simply scan an item's barcode, and the product lands in their mobile (and physical) cart. After all items have been scanned, the user pays via mobile check-out, and is given a code to scan at the store's check-out counter for a paper receipt.

This in-store yet online shopping experience opens the possibility for all check-out experiences existing in one familiar interface (the customer's phone). For financial institutions, this points to the next iteration of contactless payments on the horizon.



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Cryptocurrency: Still Niche

The Blockchain space continues to be always-on-the-verge, but still struggles for mass adoption. Visibly successful, robust use-cases in the wild remain few and far between.

b-cube.ai is a marketplace of ai-driven crypto trading bots allowing traders to maximize their profits as if on autopilot.

ARCULUS is a cryptocurrency digital wallet using cold storage, meaning a platform that's disconnected from the internet for added security. Multifactor authentication incudes a pin, biometrics, and card key.

MySardines is a new take on cryptocurrency, with asset-based coins backed by cans of vintage sardines, a valuable commodity.

Other Financial Services Exhibitors of Note...

Even in a socially-distanced and virtual setting, the array of financial companies in attendance didn't disappoint.

A few other financial categories represented this year including crowdsourcing as a means of consumer investment (StartEngine has raised over $250M), AI-enabled fraud detection for lending applications and claim requests (DeepScore), and improved bot-enabled customer service with a Q&A platform that reads sentiment (42MARU).

While these exhibitors may not be the shiniest objects at CES, they round out the best of the FinTech arena.

Health & Wellness

CONTACT-FREE SENSORS TO MONITOR BODIES IN SPACE AND REMOTE BIOMETRIC DATA-SHARING PLATFORMS ON THE RISE

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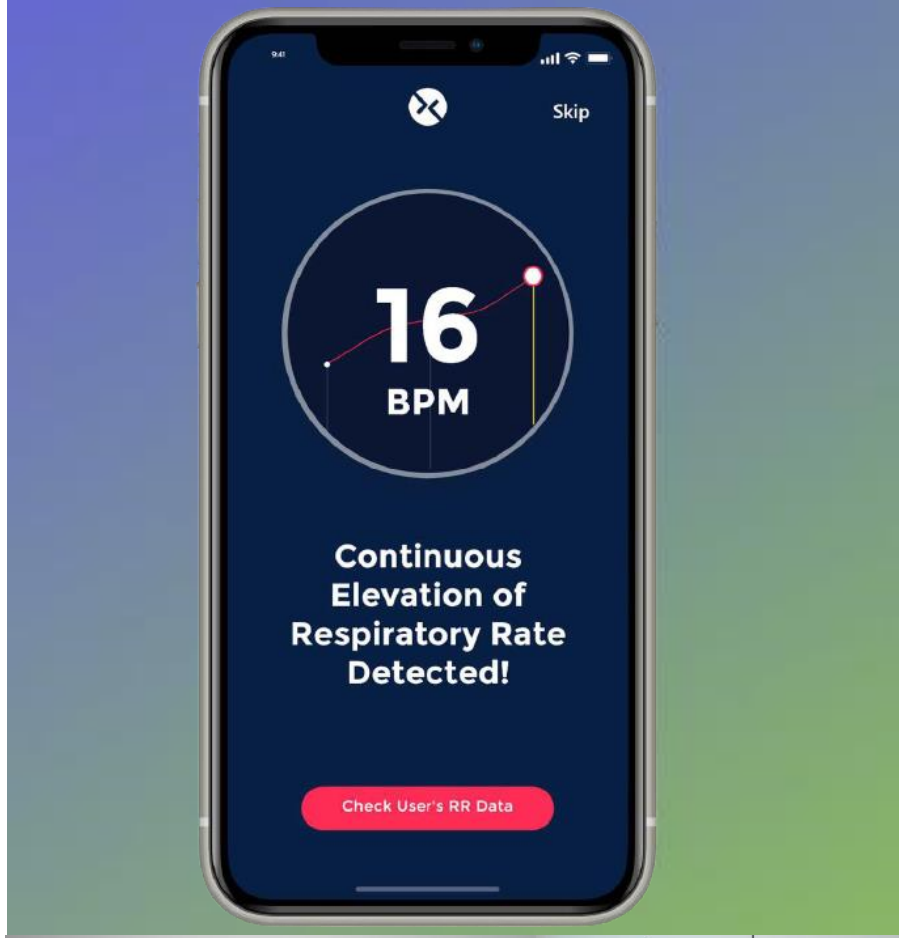
Xandar Kardian Inc.

Xandar Kardian uses radar technology to monitor the environment and the people within it. The goal is to collect data on the presence of individuals, their number, and their well-being. The technology is intriguingly granular. The Xandar radar is so accurate that it can not only determine the occupancy of a room, but also measure the heart rate and breathing patterns of each individual occupant in a non-invasive way.

By not using listening devices or cameras, this technology can unobtrusively monitor seniors for well-being, detect falls, and notify of emergencies, all while maintaining the anonymity of the subjects if desired.



BioIntellisense

BioIntelliSense offers a Remote Patient Monitoring (RPM) platform with multi-parameter vital signs, biometrics, symptomatic events, and an effortless patient experience via its FDA-cleared BioSticker™ and BioButton™ devices, providing clinicians high resolution data trending and analytics tools to deliver medical grade care into the home.

The medical-grade disposable wearable continuously measures temperature, heart rate and respiratory rate at rest with clinical accuracy. Advanced data services analyze statistical changes that may indicate the signs and symptoms of an early COVID-19 infection.

BioButton vital sign measurements, combined with daily health screening results, algorithmically generate a ‘Cleared’ or ‘Not Cleared’ status prior to entry at work, school, event or travel.

Zibrio, Inc.

Zibrio Pro is a smart scale with a twist. It also evaluates the user's balance and stability and, along with its companion Balance Coach App, provides insights into the user's balance ability as well as a personalized wellness plan based on the resulting data. In addition, the Zibrio Pro can monitor users for potential congestive heart failure by watching for specific weight-gain patterns.

The Zibrio Pro assesses the user's stability by recording micro-patterns of stance while standing on the scale. This data is then analyzed by A.I. algorithms based on 7 different balance studies and over 3000 human balance tests to derive a balance score and a fall probability score.

Using the Balance Coach App along with the proposed wellness strategies, the user's balance and fall probability scores are tracked over time to improve autonomy and confidence.

Zibrio is a partner with the AARP Innovation Lab.

Medications, Supplements, and Staying Healthy

The Israeli smart packaging company, IMPACX, tracks product usage for drug adherence and replenishment. Users can “connect the cap to the app via Bluetooth, all saved in cloud”.

Digital COVID health pass, designed by IBM, helps users share their verifiable health information without exposing any of the underlying data used to generate it.

ALGOCARE is a South Korea-based customized nutritional supplements system that enables consumers to micro-manage their personalized nutrition. It works by blending fine quantities of ingredients with each dispensation, adjusted to address the user’s specific health needs at that moment.

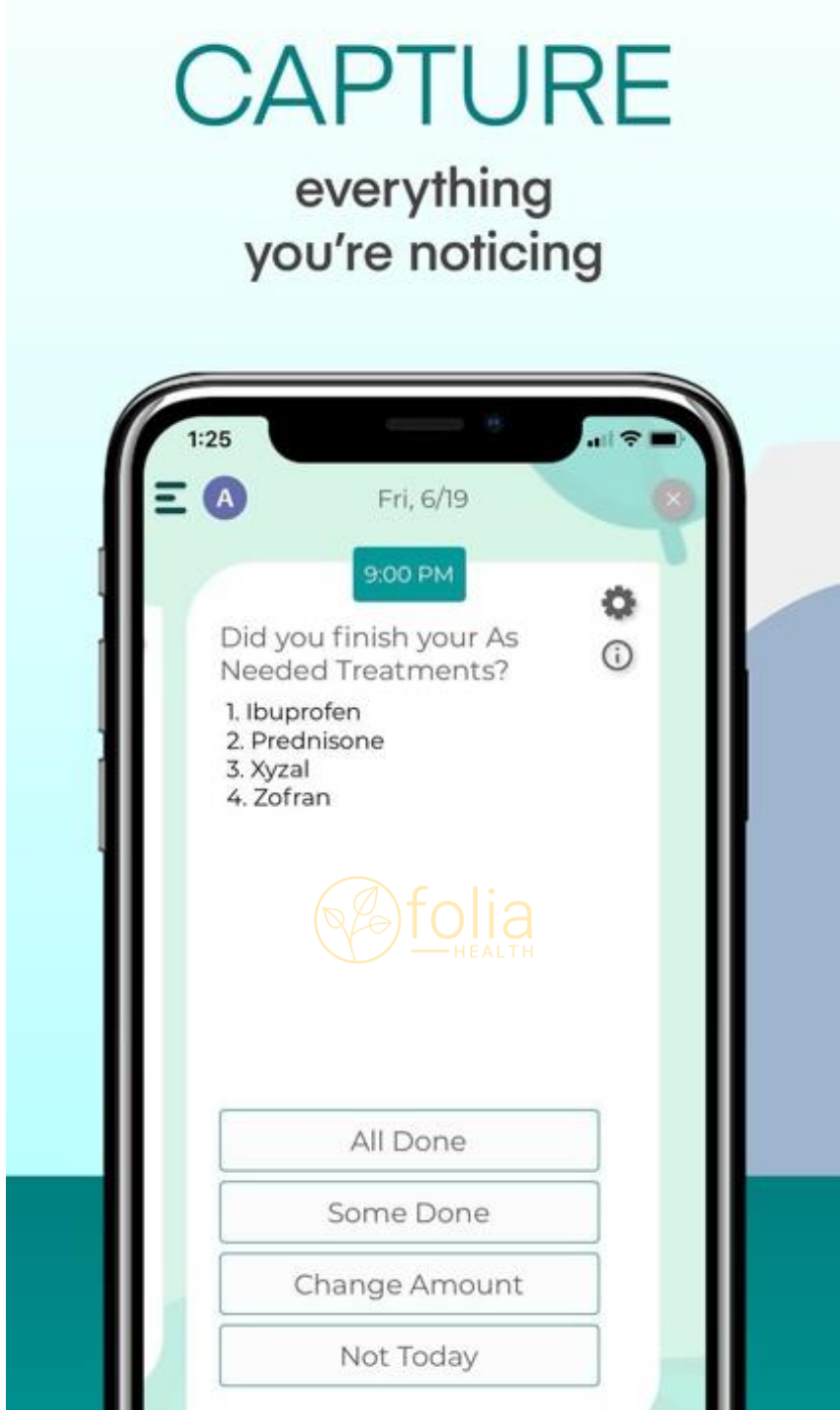
Another South Korea-based company, Caremile, created a walk-through thermal body scanner and fever detection system, integrated with an automated full-body disinfectant spray.

Riwi extracts unique, continuous sentiment data from finance, international security, and humanitarian sectors, including from within closed societies. It’s able to reach communities in which 60% of the population have never answered a survey before. Their innovation is to plant survey questions across the thousands of unclaimed domains on the Internet. They’ve interviewed than 1.6 billion individuals to date, across 80+ languages, in 229 countries.

Digital and Mental Well-being

Users can register for Folia through their medication's manufacturer invite code, and then interact with a daily health monitoring regimen. A data profile begins to take shape, benefitting both the user and other patients with similar diagnoses. Over time, the data forms into graphs, revealing actionable insights.

Bodyguard protects individuals, families and businesses from online toxic content, cyberbullying, and hate speech. It functions as a moveable intermediary layer for a wide variety of social media and related platforms. The app deploys AI to tackle the difficult challenge of identifying negative content when the context is ambiguous, and helps users focus on positive interactions while being shielded from the negative ones.



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CPG & Retail

AI ACCELERATES WITH CUSTOMER EXPERIENCE IN MIND; AS COMMERCE EVOLVES, RETAIL LOOKS TO CONNECT THE PHYSICAL AND VIRTUAL

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NEON

NEON, the “artificial human” startup from Samsung that stole the show at last year’s CES, is back. This year, the company is announcing its first two steps towards commercialization: NEON WorkForce provides B2B and B2C interfaces and services; while NEON Content Creation offers new ways to script interactions.

NEON’s Artificial Humans are computationally generated virtual beings that look and behave like real people. Currently being tested in the wild under very limited conditions, NEON aims to bring a friendly face and voice to the cumbersome chatbots of the past.

Artificial Humans follow a growing trend of personalized, contactless services. They can help consumers with customer service issues across physical and digital channels. At CES 2021, NEON announced an online signup form for brands to become early partners of the two new product launches.

Despite appearing at two CES events in a row, there’s still a sense that NEON is overpromising on its present capabilities. Regardless, we see these visual interfaces as the next step in the evolution of virtual assistants such as Alexa and Google Home.

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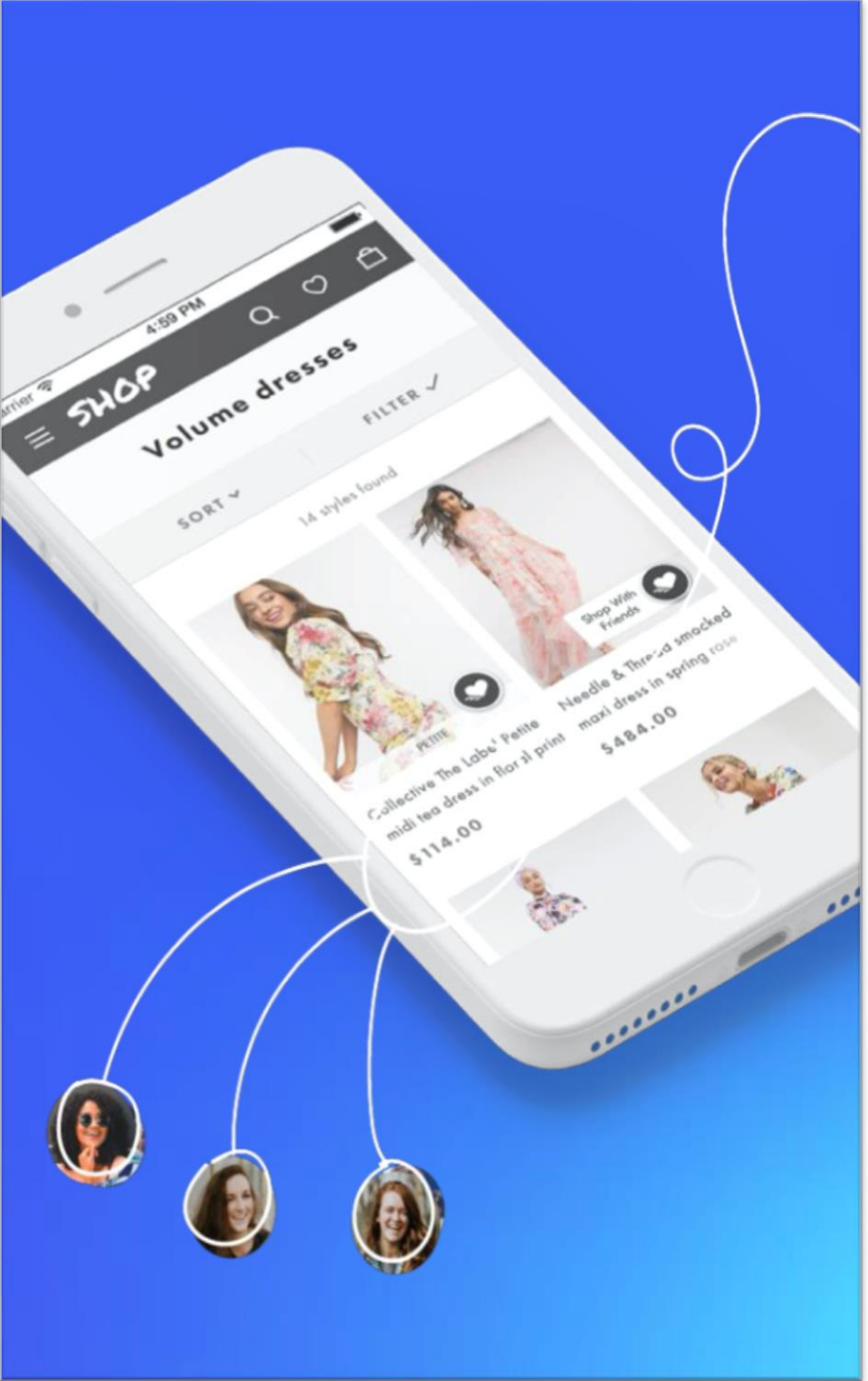

Gamitee

Social gaming platform Gamitee aims to provide ways for ecommerce merchants to connect their consumers with peers during the shopping experience. Most purchase decisions are not made in a vacuum. When shopping for a dress, you may want to get your friend's opinion before checking out. Usually, this involves leaving the shopping environment.

Gamitee provides a plugin that allows the retailer to enable that conversation to take place in the context of their platform. Users can now share, plan, discuss and shop or book together. Ideally, this improves the user experience while increasing revenue. Social shopping results in faster decisions, higher social validation, and a stronger commitment to purchase.

Gamitee taps into the growing trends of conversational commerce and group social interactions. The product is designed to integrate with standard online retailing platforms.

Traverz

The Swiss company provides an AI-driven conversational recommendation layer for e-commerce platforms. Traverz replaces the traditional website search filter with “fuzzy preferences” and learning from feedback and usage. This supports the consumer from initial awareness and discovery, through to narrowing the search and making a confident purchase, improving platform conversion and loyalty.

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Samsung Refrigerators: Bespoke Family Hub

The Samsung Bespoke Family Hub features a large app-enabled touchscreen that covers everything from meal planning, to the ability to see what's in the fridge, to integration with Google Assistant and Amazon Alexa. It's the latter feature where the partnerships come to life. Using a combination of computer vision, eCommerce integration, and a little machine learning, the food products in your fridge can be "seen" and verified with your online shopping list and purchases. Analyze a bit of usage and consumption, and the system can predict when it's time to purchase.

Food brands may want to partner to be sure their products can be "computer seen" and automatically reordered, added into recipes, as well as give and get data that is the result of usage.

The product's flow of user data, and the ownership of that data, holds implications for big-box grocery retailers and others.

Mudra Band

Wearables are now well-established tech. But what if a CPG or Retailer could take shopper intent and predict upcoming purchase needs? The technology behind the Mudra Band might seem esoteric and unsexy: sensors capture neural electrical impulses in the wrist and map them onto specific movements like a swipe or a tap. Yes, this allows you to operate your devices without touching, which in the age of COVID is crucial. But it's the fact that these neural signals are now being captured and turned into data that is most compelling for marketers. It's another milestone in neural signaling of intent.

The Mudra Band is further noteworthy for its tight integration with the Apple Watch.

Telcoms & Entertainment

LIVE ENTERTAINMENT GOES VIRTUAL AS WE ENTER THE AGE OF ‘INSPERIENCE’

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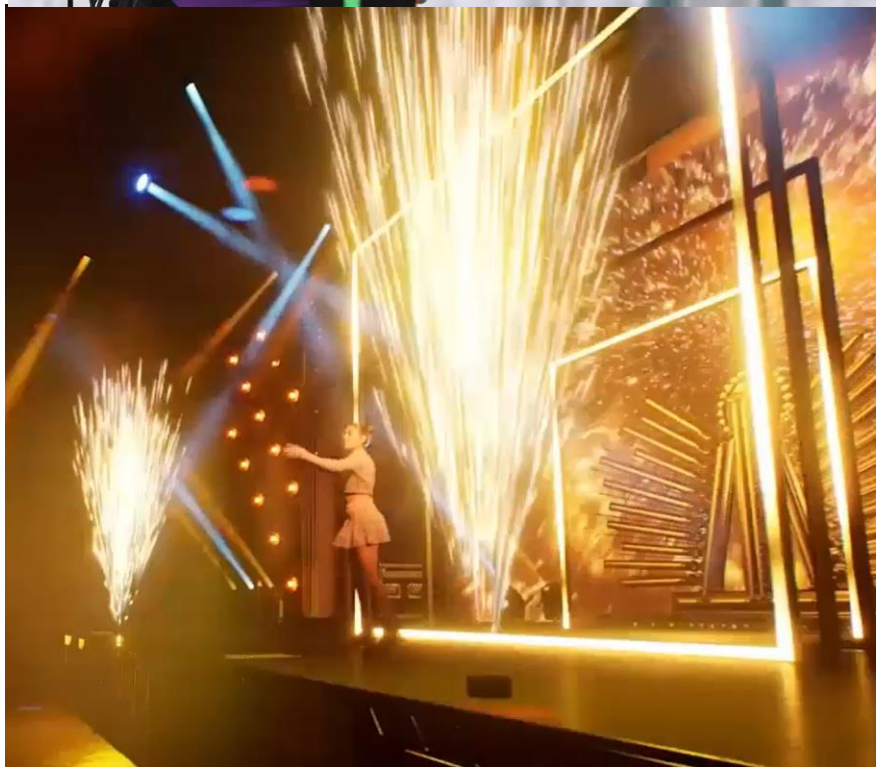
Sony Immersive Reality Concert Experience

Sony's CES 2021 Keynote featured a unique concert performance utilizing their Immersive Reality Concert Platform. Leveraging a combination of MoCAP Suits, Volumetric and 3D Animations, Sony proved their technology can help performance artists continue to engage with their fans through captivating next-gen concert experiences.

As COVID restrictions have decimated the live concert experience, Sony's Immersive Reality concerts will allow both artists and consumers to reconnect in new formats not possible on real physical stages. The platform uniquely allows the artist to perform with digital enhancements that will wow audiences and open opportunities for brands to natively integrate.



Crew in a Box

As Tom Cruise recently reminded us, following the COVID guidelines while working on a movie set can be complicated. Much of Hollywood has stalled due to these logistical challenges, but brands and individuals still need to produce content.

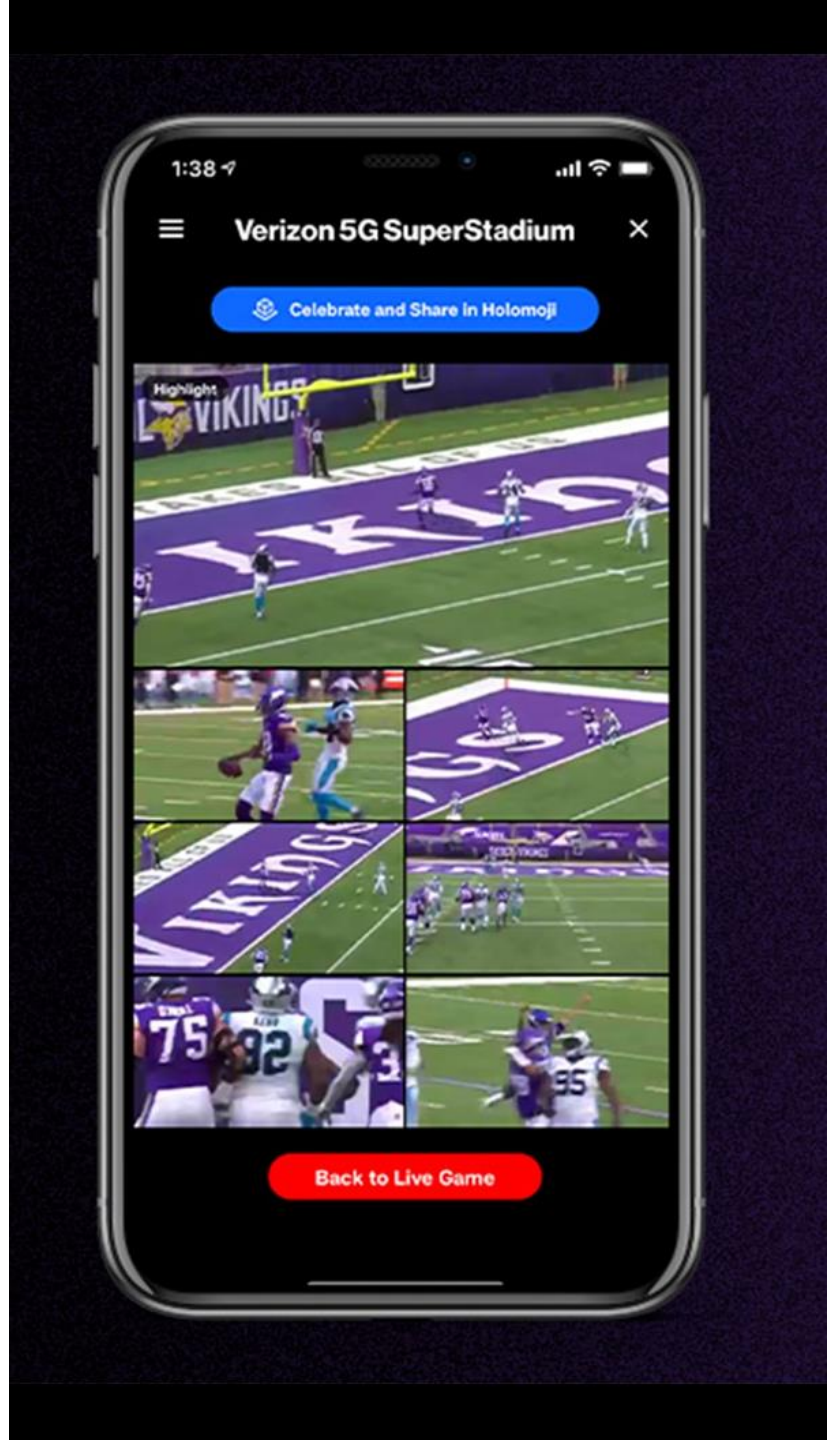
Crew in a Box is the award-winning, professional-quality, plug-and-play, remote video production solution. This military-grade box houses top-of-the-line lighting equipment, cameras and teleprompters. It can be rented or bought and used for a variety of purposes, from interviews to commercials to roundtable discussions that would normally require an entire crew to facilitate.

This type of innovation empowers brands and individuals to continue producing high quality content in a decentralized format. Until studios can reopen safely, Crew in a Box may be the simplest and most cost-effective way to fulfill one's content calendar.

Verizon SuperStadium 5G Experience

The Verizon SuperStadium 5G Experience will bring unprecedented connectivity to fans in the stadium by leveraging the increased speeds and low-latency of the 5G connection on their phones.

Fans in the stands will now be able to watch the game from up to 7 camera angles, receive lightning-fast instant replays and Augmented Reality overlays to show player stats and celebrations in real-time.



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Panasonic Partners with Illuminarium

Entertainment company Illuminarium has partnered with Panasonic to create an experiential entertainment experience.

Utilizing floor-to-ceiling LED screens and 4K projectors, Illuminarium venues will entertain guests by immersing them completely in the story. These communal experiences are designed to be shared and enjoyed once the pandemic has subsided. Wild: The World's First Virtual Safari will open in Atlanta in mid-2021 and will showcase exotic animals in their natural habitats.

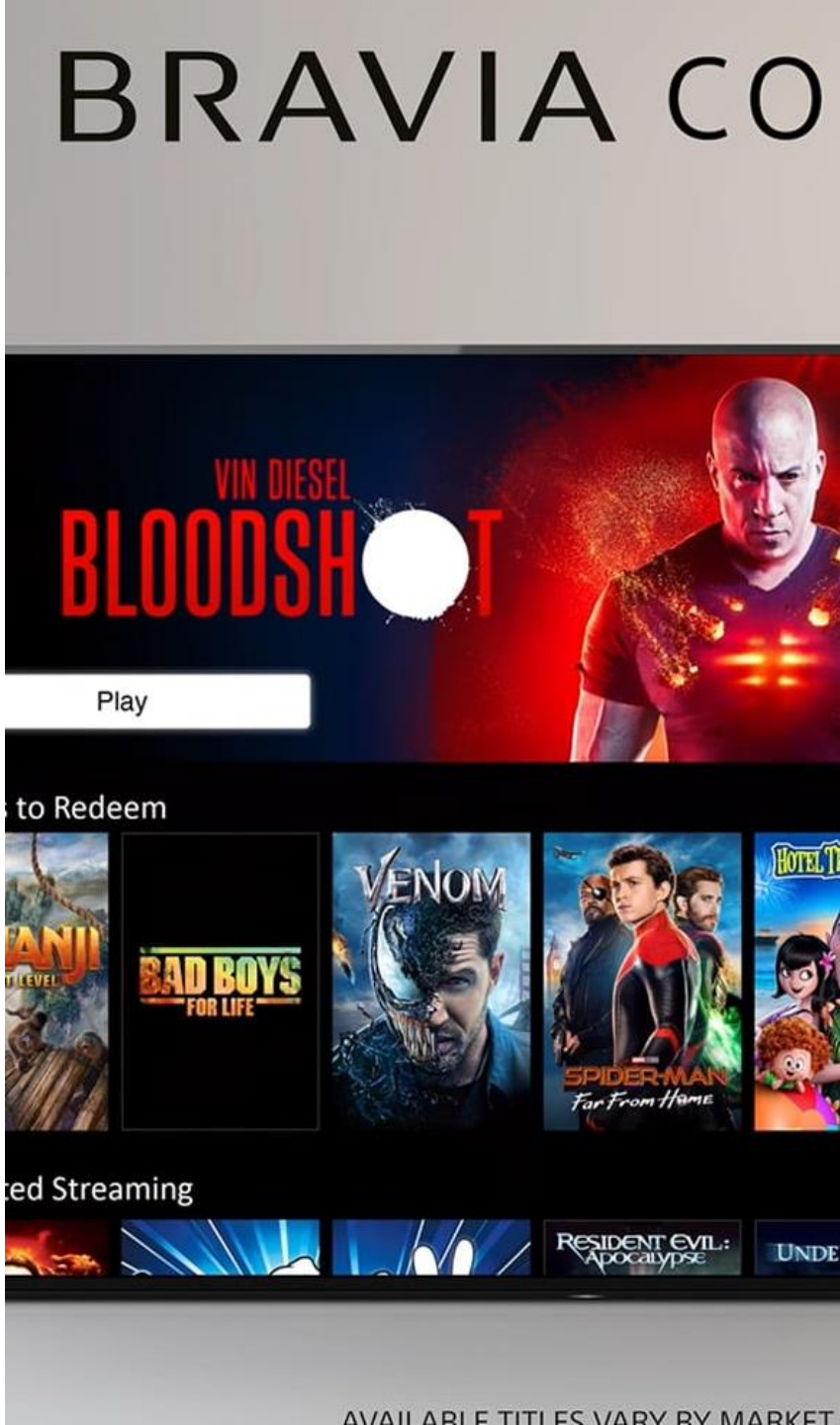
While movie theaters may largely succumb to the at-home viewing revolution, places like the Illuminarium sit at the precipice of the next-generation of location-based entertainment.

Sony AI Optimized TV

Modern TVs have always come with a variety of additional features hidden in the depths of the TV menu or behind the "Advanced Settings" button. Consumers who explore those features rarely fully understand what to do with them. This year, Sony has unveiled a new AI powered TV that automatically adapts and optimizes the graphics using their new Bravia XR Chip.

The Bravia XR experience leverages years of research that has taught the AI to optimize the image, video and audio based on contextual and environmental cues. The technology automatically enhances contrast, brightness, and upscales to 3D immersive audio based on what is happening within sections of the video screen. Sony Bravia users will also be able to access the unique Bravia Core library of optimized titles that provide an IMAX-like 8K experience at home.

As the return to the cinema still seems far away, consumers will likely invest more heavily in systems and devices that replicate the movie experience at home.



Hospitality @ Home & Away

SMART HOME APPLIANCES BEGIN TO FILL GAPS PREVIOUSLY THE DOMAIN OF RESTAURANTS

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Automated Fully Robotic Kitchen

In the era of COVID, the concept of the automated kitchen has become more appealing to hotels and restaurants for several reasons. First, by automating kitchen staff, there is a reduction in frontline workers placed in harm's way. There is also a need to find new ways to reduce overhead, and to improve efficiency to survive. An investment in robotic kitchens can address both problems.

Moley Robotics promoted its beautifully designed, serpentine robotic arm, which navigates a kitchen with surprising grace. The company claims "it cooks with the skill and flair of a master chef."

The RoboEatz automated kitchen boasts the ability to cook over 1,000+ hot and cold dishes with up to 80 ingredients and serve a meal in roughly 30 seconds. The AI-powered system also reduces food waste by monitoring food expiration dates, updating prices on perishable meals to sell them before the food goes bad and ordering supplies only when necessary.

As QSRs review budgets, and appliance manufacturers revisit their long-term strategies, robotics just may be right for them.

Automated Meal Prep

The air fryer and instant pot are a thing of the past with automated meal prep solutions. Most people have spent more time in the kitchen over the last year and have become accustomed to a home-cooked meal. However, the time will come again when everyone's lives get busier.

iWondercook was introduced at CES as Foodstar's first smart home appliance. It's a one-stop-shop to make dinner “smarter, not harder”. Using an integrated cooking platform, users have fresh, prepped ingredients with all the spices delivered to their home ready to cook with the fully automated robotic chef.

Julia is the flagship product from Nymble that uses exclusive technology to automatically cook the perfect meal consistently. Unlike iWondercook, Julia requires users to source, chop, and load ingredients from a selected recipe.

Takumi, powered by Yo-Kai Express, expands beyond cooking meals on autopilot with the ability to make beverages and sterilize utensils.

BlueBeard Studio Co. Ltd. + Heatbox: The Self-Heating Lunchbox

For many, being ensconced at home this last year has led to new hobbies. Some play puzzles, others cross stitch, but a common fascination has been food. The pandemic, for better or worse, has created a whole new batch of foodies. As many have learned, the key to a perfect meal often comes down to temperature. Two products at CES, which have raised large amounts of money on the crowdfunding site Kickstarter, have solved that problem with both the newest technology and eye-catching design.

Heatbox is a self-heating lunchbox. It is rechargeable, smart, and uses steam to reheat your meals. Although fewer people are taking lunches to work, this simple and sleek container can help healthy foodies pack their gourmet creations when they are allowed back in the office.

iTemp offers smart mugs and bowls that will heat your food and drink to the desired temperatures. No more lukewarm coffee or room temperature chicken noodle soup. With an intuitive interface, these Hygge-enhancing appliances will provide those trapped at home an easy way to enjoy their creations exactly how they want them.

NUVI

This AI food scanner detects the types and the amount of food on your plate within 0.5 seconds. It provides an eco-cafeteria solution, streamlining restaurant operations, and measuring personal intake information.

The product works by using image recognition to scan food trays with expected, repeatable modular layouts, making it best suited for school and company cafeterias, nursing homes, hotels, and other communal eating scenarios.

Automated Home Gardening

Rise Gardens makes a connected, indoor hydroponic gardening system that comes with everything needed to grow a wide variety of vegetables, herbs and microgreens at home, indoors, year-round. The garden comes in three sizes which allow you to grow 12 to 36 plants per indoor garden.

Gardyn invented a fully automated indoor vertical produce growing system. Complete with an AI-based assistant that takes care of the growing for you, integrated lighting and elegant design, it sustainably provides pure produce 365 days a year.

Automotive & Transportation

HARDWARE, MATERIAL SCIENCE, AI, AND THE CLOUD ALL ADVANCE TOGETHER

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Size Matters in Car HMIs (Human Machine Interfaces)

Much like the TV size wars that have dominated CES over the past years, we are beginning to see a trend of larger and smarter in-car screens premiere at CES. With this year's virtual event, It made sense for manufacturers to focus on their technology and software rather than the physical concept cars that have dominated CES over the past few years.

Mercedes was considered the main auto winner of CES this year according to this small panel and the general tech press. They showed off their massive 56-inch 'Hyperscreen' display which will debut in the electric sedan in late 2021. The mammoth, pillar-to-pillar touchscreen is the centerpiece of the automaker's second generation MBUX infotainment system that eschews physical buttons in favor of a completely digital (and voice-controlled) in-car user experience and uses AI to surface information that used to be buried in the menu sub screens on a single plane of information.

The only news from BMW that was covered with any conviction from the tech press was the Digital Key announcement of using UWB (ultra-wide band) that both Apple and Samsung have been pushing auto manufactures to adopt.

Bosch, a well-established CES auto components exhibitor continued to demonstrate their 2020 award winning 3D HMI without giving many public updates. We expect this to be a talking point in future CES shows.

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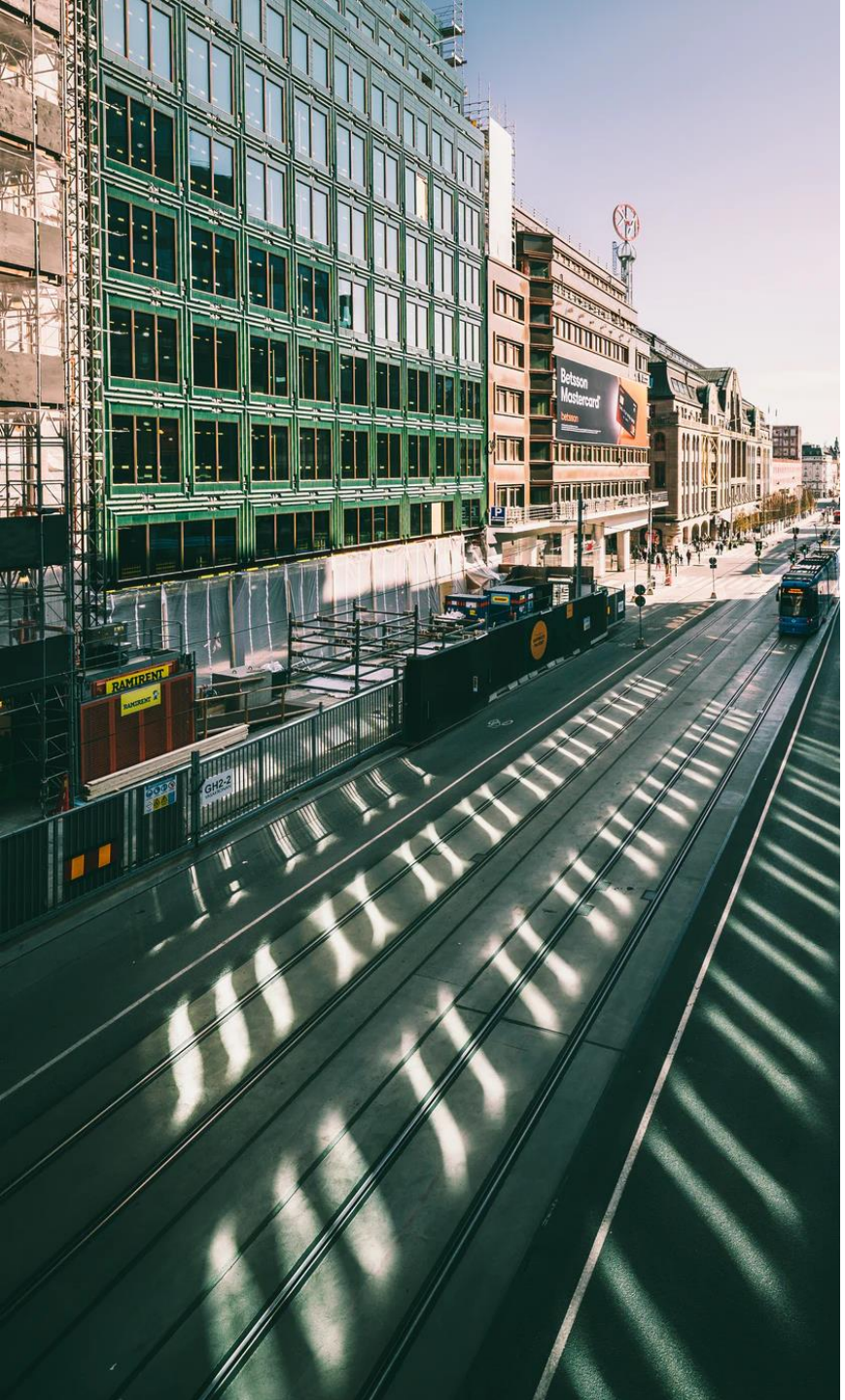


Prediction and Prevention

As cars collect more data, we can draw more impactful conclusions using AI and computer vision. The new frontier of predictive insights will move outside of the individual car to encompass everything surrounding the car—weather, atmospheric conditions, pedestrian collisions, and more.

Waterview's WeatherCAM uses off-the-shelf HD cameras and a software layer to determine in-depth weather conditions like intensity, duration and settling, temperature fluctuations, and visibility. This technology gathers meaningful insights from raw video footage that can be shared with vehicles, smart cities, public health and public safety programs.

EyeNet's collision-prevention software provides a new look at urban micro-interactions in and outside of cars. Their platform uses existing cellular infrastructures and calculates location and collision likelihood up to 10 times/second based on variables including velocity and acceleration. Boasting a near-zero false alarm rate, this AI technology will make city streets safer.

Drive Sweden has created a suite of programs for the future city. Its traffic control towers suggest a future in which a central command center can monitor all autonomous vehicles and take control of them in the event of an accident or other emergency. Though this feels a bit "Big Brother", it suggests how road safety can be managed in an autonomous world.

Sustainability and Emissions

General Motors boldly committed to zero emissions, eco-friendly changes to materials and manufacturing, and an all-electric product line. They unveiled new electric vehicles, including the cost-friendly Chevy Bolt, more-luxurious Cadillacs and Hummers, and an autonomous eVTOL to fly short distances. Their new distribution business, BrightDrop, is partnering with FedEx, electrifying delivery end-to-end and featuring new EP1 inventory movement carts and EV600 delivery trucks.

Sono Motors has reinvented mobility with an electric vehicle that charges using 248 solar cells throughout the car's external body. Though we don't see this as a model that large auto manufacturers will adopt, it demonstrates a novel approach to integrating an existing technology to make a meaningful impact.

Bosch announced new AI and cloud offerings aimed at reducing environmental impact. A cloud-based energy platform that reduces consumption and increases efficiency is already used in 100+ locations. On city streets, Bosch's AIoT platform helps eliminate traffic congestion to reduce consumption and emissions. The platform also keeps a pulse on battery status to slow down cell aging, reduce wear and tear, and lengthen replacement cycles.

Autonomy Hits the Water

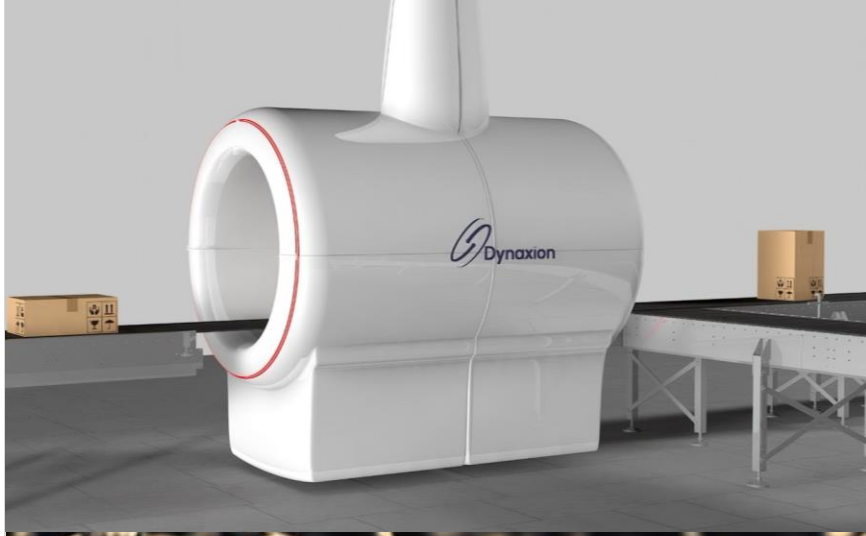
At CES 2021, autonomy is starting to come to the high seas. Autonomous ships pose a totally different set of challenges than vehicles (travel conditions are vastly different, there are fewer nearby objects to relate to, the travel surface isn't stable). So, while autonomous vehicle tools like LiDar will be less-immediately effective, we can now envision an ocean full of autonomous cargo ships.

The Mayflower Autonomous Ship—powered by a combination of AI, Cloud, and edge technologies—will sail from Plymouth, England, to Plymouth, MA, in spring 2021. While clearly a proof of concept and a bit of a publicity stunt, the technology platform proved by this journey could form a foundation for future autonomous ships.

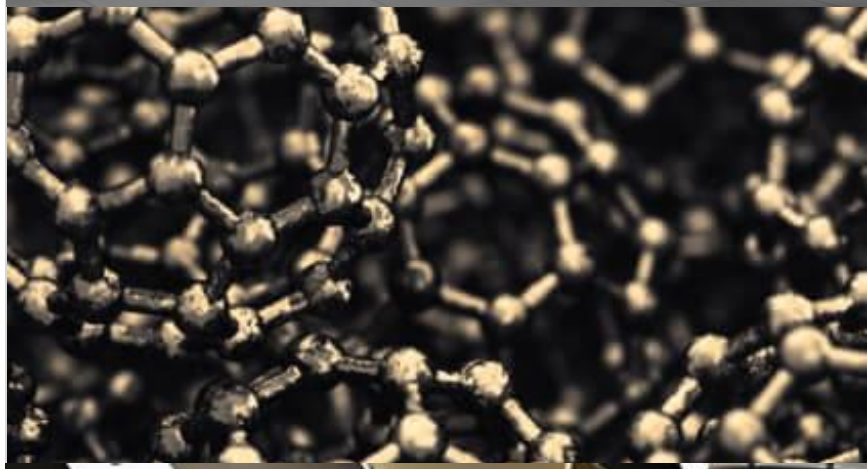
Cars have featured parking assist technology for years. Volvo Penta's Assisted Docking system brings that convenience to boats. By reducing the human factor in an already-challenging task, this technology reduces damage to ships and docks, improves docking speed (especially for challenging maneuvers), and increases efficiency.

Dumb Materials Become Smart

Increasing miniaturization, advances in materials science, and the movement towards sensors that can be embedded virtually anywhere means that formerly "dumb" materials and products are becoming significantly smarter. These advances will unlock more energy-efficient materials, better real-time decision making, and cooler consumer products.

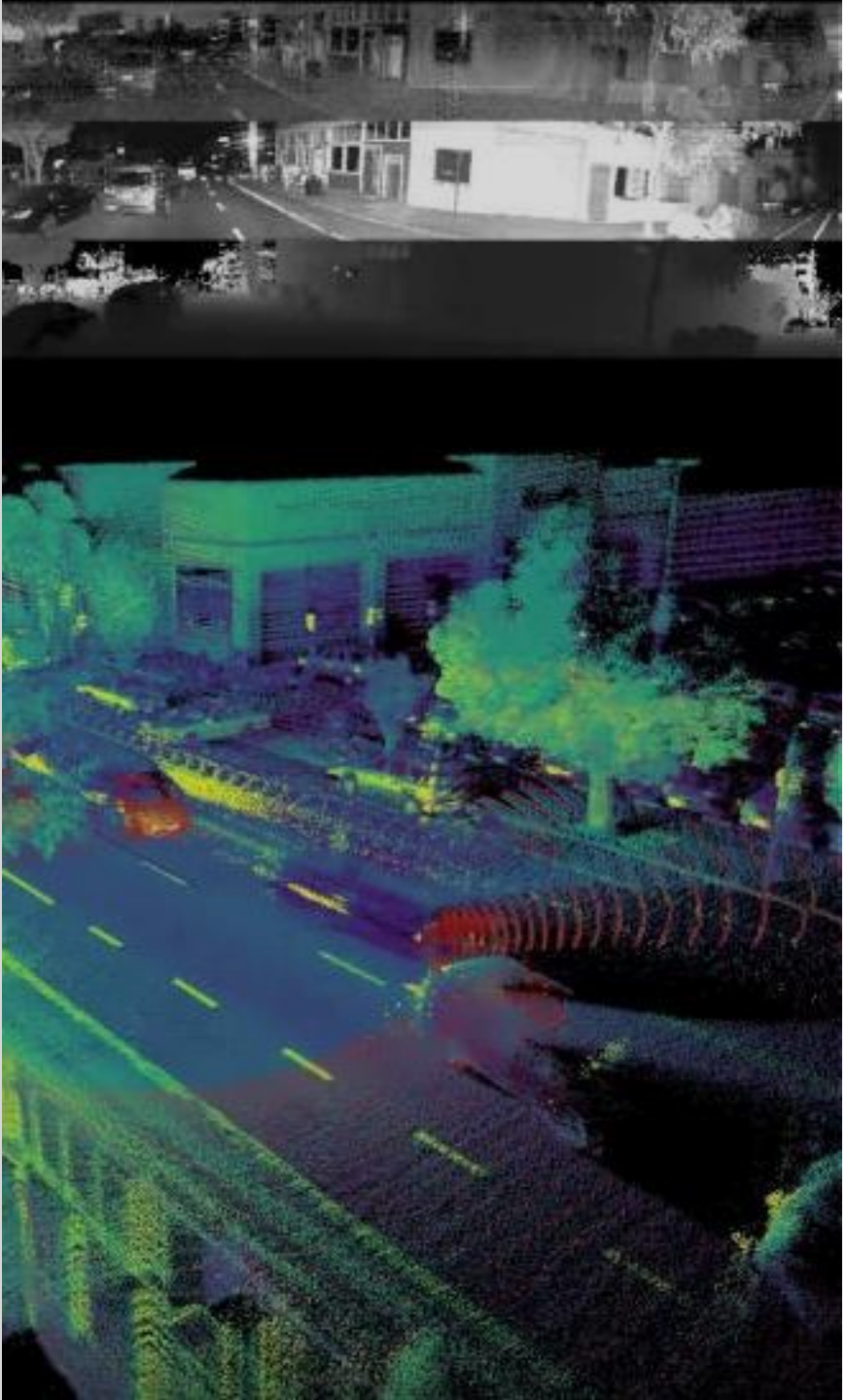


Replacing x-ray-based baggage and package security scanners, Dynaxion combines atomic-level materials detection and AI for increased speed, accuracy, and security. Dynaxion's scanner is sensitive enough to discern the difference between milk powder and cocaine from inside a bag or box without human intervention.



The eyrise Dynamic Liquid Crystal Windows can shift glass from clear to opaque to tinted. Adding this material to windshields and airplane windows, combined with automated sun detection, could reduce heat passing through, improve energy efficiency, and increase comfort.

The long-established tire maker, Continental, is transforming the vehicle tire into a smart sensor with its Electronic-Tire Information Systems (eTIS). More than just a tire pressure sensor, the eTIS can detect key road-condition and road-safety information and pass that data to the car's chassis for performance adjustments: from car to car as a network of smart vehicles, or back to a fleet management infrastructure.



LiDAR Moves Out of Cars

While LiDAR was a foundational technology for autonomous vehicles, CES 2021 marks its transition out of vehicles and into any vertical that can benefit from an accurate understanding of the physical world. While these applications aren't necessarily world-changing, the more our products understand the physical world, the more sophisticated technology will become.

Lux Lab uses LiDAR for consumer applications including touch-free shower controls and a posture detection and correction system. While neither product is likely to end up in every home, they give a sense of the breadth of applications LiDAR can support.

In-store consumer tracking has traditionally required Bluetooth devices or pressure sensors in floormats, with varying levels of adoption and utility. With Seoul Robotics' SENSR, those relatively blunt instruments are replaced with high-fidelity LiDAR to support customer service and theft prevention.

As drones become an increasingly large part of last-mile delivery and industrial operations, preventing damage and maximizing efficiency are key. Metroweather's LiDAR-based Doppler system detects localized weather conditions and wind patterns to help plot the safest flight routes for drone fleets.

Thank You

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