Content by Lenovo + Intel

Accelerating the Next Generation of AI

UK-based Sunlight.io and US-based Pathr.ai are two companies participating in Lenovo's AI Innovators program, which is designed to scale up breakthroughs in artificial intelligence applications from the edge to the cloud. The companies help AI-powered computer vision improve customer service and pedestrian traffic flow, highlighting edge AI's potential to enhance the lives of millions.

At a big-box store in the UK, a customer hesitates in front of a locked case of noise-canceling headphones. The gear looks like just what she needs to help calm her nerves on her upcoming flight from a nearby regional airport. Unfortunately, the clock is ticking, and she doesn't have time to hunt down an employee to get help. Just as she's about to turn away, an associate approaches her and unlocks the case. The woman heads to the airport, headphones in hand, just minutes after entering the store.

And her experience just keeps getting better. The airport feels less crowded than when the woman last flew, there are plenty of agents at counters to help her check in, so she doesn't have to wait, and she's through the security line in record time. The woman's trip is off to a great start—unbeknownst to her, with the help of artificial intelligence working behind the scenes.

With an assist from AI, retailers are cutting wait times for their customers.

Scenarios similar to this fictional example are already beginning to play out at retail stores and transportation hubs around the world, thanks to a unique partnership between **Lenovo** and innovative software startups like **Sunlight.io** and **Pathr.ai™**.

Pathr.ai provides spatial intelligence software that gathers anonymous data from security cameras to give businesses insights into how people behave in physical spaces. “The feedback we’re getting is that operations are running more smoothly,” Pathr.ai CEO and founder George Shaw says of the company’s traffic analysis work with retailers. For one thing, Shaw adds, “The staff is much happier because they’re not getting whiplash being pulled in ten different directions.” That’s because AI tells them where to be at the right time to help customers—for example, at locked cases.

This revolutionary technology isn’t limited to retail. Sunlight.io’s computing platform running on Lenovo edge hardware powers software from their partner, WaitTime, to help planners at a regional airport in the UK. Planners using the system can see how travelers traverse the airport, where they get stuck, how they flow through security checkpoints, what check-in desks they prefer, and more. Armed with that data, “They’re optimizing the experience of getting through security, getting checked in, and getting to the gate,” says Julian Chesterfield, Sunlight.io's co-founder and CEO.

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— George Shaw | CEO and Founder of Pathr.ai

Sunlight.io and Pathr.ai are part of a community of software startups developing AI applications and infrastructure platforms at the edge and beyond. With the support of Lenovo’s new AI Innovators program—and Lenovo edge servers equipped with 3rd Gen Intel® Xeon® Scalable processors with built-in AI acceleration, these startups are improving lives without sacrificing privacy or performance.

Sunlight.io's computing platform is helping airport planners spot bottlenecks and minimize wait times.

AI Innovations at the Edge

After a decade or more of moving to the cloud to streamline and scale operations and improve customer experiences, businesses are now exploring a new frontier: the edge. That's why the combination of edge and cloud computing scores high on McKinsey & Company's **list** of the top 14 most significant technology trends of 2022. Also high on the list—at the very top for speed of innovation and amount of investment—is AI. It's no coincidence. The edge and AI go hand-in-hand.

The edge means business-and-industrial-scale computing taking place on-site and away from traditional, big-ticket data centers and cloud infrastructure. It's made possible by hardware and software advances that shrink the computational power of yesterday's mainframes into intelligent and affordable devices that are no bigger than shoeboxes.

Now, even the manager of a small retail store can command the power of artificial intelligence from their desk, on-site or off. "It is relatively heavy in terms of computing and is not something your average laptop can pull off," Shaw says of his company's advanced AI algorithms. "Some retailers have [dedicated server rooms], but then there are retailers running analytics on a computer under the manager's desk. We have to support both."

With Pathr.ai's dashboard, retailers can access analytics on their desktop and tablet and even get real-time alerts sent to their mobile phones.

Sunlight.io certifies servers from Lenovo to run its software-defined infrastructure and infrastructure manager, which are designed to bring cloud-like simplicity to deploying and running edge applications. "Enterprises are looking for data-center-class high availability and usability but something that can run on very small and efficient devices outside of the core data center," Chesterfield says. In other words, businesses need high performance computing that's always available and doesn't introduce unacceptable lag due to round trips to cloud resources. "These devices can't consume lots of power, they can't output a lot of heat, they have to be passively cooled by the air, and so on." He says the ThinkEdge family of products from Lenovo hits the mark.

Thanks to such advanced-yet-affordable and ruggedized hardware, innovative software from companies like Sunlight.io and Pathr.ai, and data from standard security cameras, operations managers everywhere can deploy responsive AI. They're using it to track and predict traffic flows, dispatch employees to provide help where and when needed, and generally improve the experience of shoppers, travelers, diners, and employees. Edge AI makes the necessary high-speed calculations in real-time while preserving privacy; data and images never leave the building.

"Enterprises are looking for data-center-class high availability and usability but something that can run on very small and efficient devices outside of the core data center."

— Julian Chesterfield | CEO and Co-Founder of Sunlight.io

"Most folks don't want video leaving the premises," Shaw says. That's especially true in Europe, where the GDPR privacy regulation provides strict privacy protections for consumers. "And that round trip to the cloud—even if you have a ton of bandwidth available—can take a lot of time."

Among the benefits that edge AI brings Sunlight.io's quick service restaurant clients and their customers, for example:

better service enabled by advanced computing that's easy for non-specialists to install and maintain. Ready access to such technology opens the door to many possibilities, according to Chesterfield. "We're seeing the use of technology to do more automation," he says. "So, things like robotic kitchen automation and natural language processing for automated ordering systems."

Because Edge AI makes the necessary high-speed calculations in real-time, data and images don't have to leave the building.

AI Innovators: Building the Future of Edge Computing

Both Shaw and Chesterfield credit the Lenovo AI Innovators program with helping them expand their offerings worldwide.

The program shepherds AI-focused independent software vendors (ISVs) through three program levels: *Explore, Deploy, and Scale* to help advance new AI technologies. The program gives ISVs access to Lenovo AI expertise and AI-ready infrastructure, helping them serve more customers, and helping Lenovo align its hardware engineering with software performance. Program participants say Lenovo expertise and infrastructure can make major difference in helping them deliver the best solutions to new markets.

According to AI Innovators program lead, Nicholas Borsotto, *Explore* partners have exciting technology in hand that still hasn't reached a large customer base. The program gives those innovators access to Lenovo infrastructure experts as mentors to create reference architectures and proofs of concept that have the potential to scale to larger deployments and reach broader markets.

The *Deploy* program level helps AI Innovators with well-developed technology to scale up. "We provide access to our AI labs in Raleigh, Stuttgart, Beijing, and Taipei," Borsotto says. The goal is to find the most efficient ways for these partners to reach the next level. "We spend a lot of effort in the first mile—all the pre-testing, documentation—and the last mile, including deployment and supply chain."

Operations managers can deploy responsive AI to dispatch employees to help customers and improve the retail experience, particularly at big box stores and shopping centers.

Borsotto describes the *Scale* level as an enhanced version of the *Deploy* level. The *Scale* level sharpens the supply chain focus of the *Deploy* level to help partners scale across global regions. "Maybe they want to look at specific regional agreements—for example, they want to break into the Asia-Pacific region," Borsotto explains.

By now, both Pathr.ai and Sunlight.io have built strong businesses with solid product offerings. But initially, it was touch and go for retail-focused Pathr.ai; Shaw founded the company in 2019, just before the pandemic shuttered retail stores all over the world. "We managed to stay afloat through 2020," Shaw says. And today, "We are really hitting our stride, really starting to grow."

Just as Borsotto and other Lenovo leaders behind the program intended, AI Innovators is helping early-stage companies like Pathr.ai and Sunlight.io thrive, with benefits accruing not just to them but also to Lenovo and its customers. "We want to be a significant player enabling AI solutions for the future," Borsotto says. "And that doesn't necessarily mean just creating our own algorithms but being a fundamental part of bringing AI to our customers and their customers."

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— Nicholas Borsotto | AI Innovators Program Lead

To help the best ideas bubble to the surface without a lot of red tape, joining the AI Innovators program is a relatively informal process. "So far, we have issued no calls for applications,"

Borsotto says. Instead, he says ISVs can find their way into consideration through a recommendation from someone at Lenovo, an ISV already in the program, or by directing personal inquiries to Borsotto and his team members. “I also do a lot of direct outreach to companies that are of interest for Lenovo,” Borsotto says. It’s all in the service of building an AI-powered future that benefits people around the globe.

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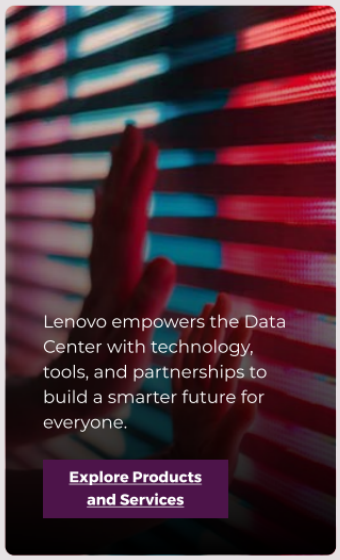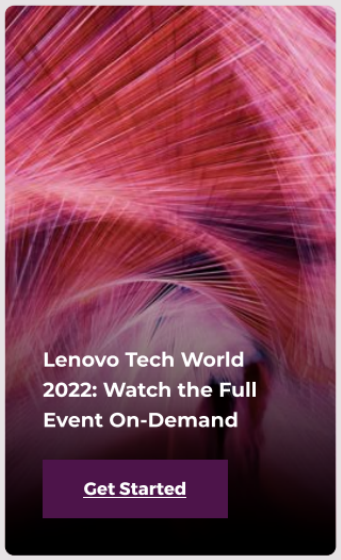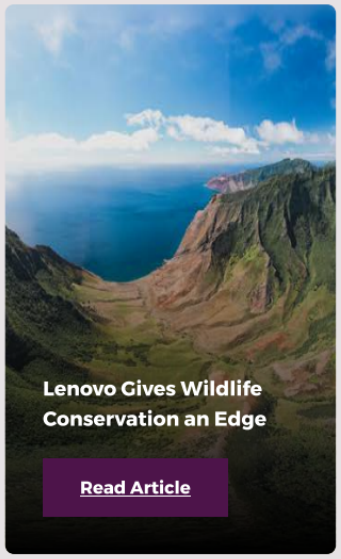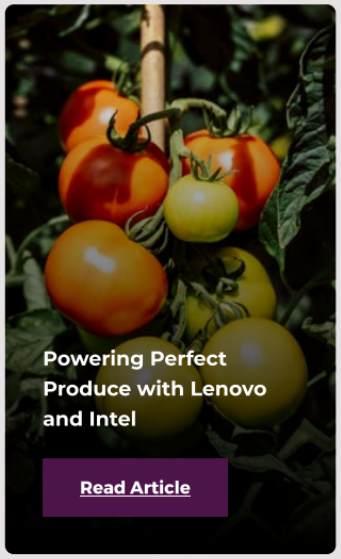
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