

# Lidar on rise to power future smart cities, autonomous cars

BY DALVIN BROWN  
The Washington Post

Mobility analysts, urban planners and AI companies bill widespread lidar as a building block for future urban societies, where autonomous vehicles, smart homes and infrastructure work together to create “smart” cities.

Lidar, short for light detection and ranging, is a sensing method that enables devices to glean what an object is based on its shape. In theory, when deployed on traffic lights, in parking lots and on enough vehicles, the technology could help contextualize what’s happening outside so cities can better manage energy and security. It could also manage traffic congestion.

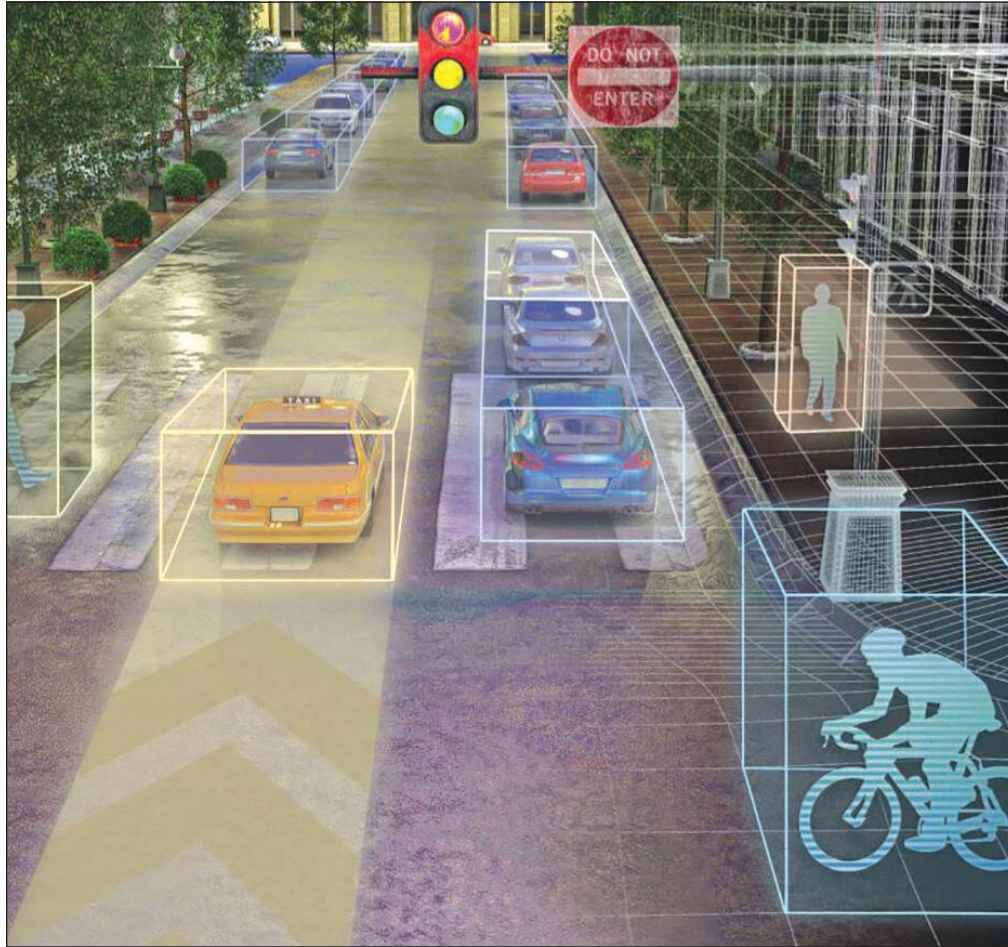
The tech has been around since at least the 1970s. However, it was considered too expensive and complicated for companies in a broad range of industries to utilize. That is until now, according to Han-Bin Lee, founder of South Korea-based Seoul Robotics, a computer vision company.

Prices have come down so much that the tech is found in the latest model iPhones. It’s how robot vacuums see what’s around your home. It’s at the center of several thought-provoking product announcements to come out of this year’s CES, a large, global tech conference that took place this week.

Seoul Robotics launched Discovery, a software and hardware service to interpret light and radar data for factories, retailers, automakers and more. Other companies announced lidar applications for autonomous consumer cars and robotaxis, with Intel’s Mobileye that passenger vehicles will be self-driving by 2025.

The technology has its limitations, particularly on cars. It produces lower resolution images than cameras and tends to cost more. However, lidar represents a growing market and is projected to triple to almost \$3 billion by 2025. Forward-thinking tech companies at CES say they’re hoping to take advantage of it. Here are some of the most innovative lidar products and ideas.

Seoul Robotics says it wanted to take the siloed industry of lidar software and expand it to the masses. Essentially, the software company developed what it calls an easy-to-use “plug-and-play” lidar system that allows a wide range of organizations to benefit from 3-D sensors.



Seoul Robotics launched a new product to equip urban cities with 3-D vision.

Seoul Robotics via The Washington Post

For instance, retail stores could use it to understand where people are moving and whether patrons are social distancing. Cities could use it on highway offramps to detect vehicles going the wrong way.

Its offering is meant to analyze and interpret 3-D data from most available lidar products. It was built to unlock “autonomy through infrastructure,” Lee said.

Seoul Robotics already has a few big-name partnerships under its belt, including BMW and Mercedes-Benz. It also partnered with the lidar company Velodyne on office monitoring tech for Qualcomm. Seoul Robotics’ software has been installed in parking lots to help automate cars. BMW used it to move driverless vehicles via wireless Internet connections.

“So basically, this infrastructure takes over the vehicle. And thousands of vehicles can be automated with just a few sensors,” Lee said.

Intel’s Mobileye said at the trade show that it developed a strategy for making highly automated cars safe enough to use on roads across the globe by 2025.

The company, a leading player in automotive technology, plans to leverage crowd-

sourced mapping, a camera-based computer vision system and a lidar suite to achieve its goal.

MobileEye, which Intel snapped up in 2017, has been testing its mapping technology in Munich and plans to use cameras built into production vehicles to map the world. The company claims to have already mapped nearly 621 million miles, setting a foundation for autonomous cars to follow.

Pending regulatory approval, Mobileye will expand its fleet of autonomous test vehicles to New York City by the end of the year, the company says.

Its project relies on two independent computer vision systems to ensure that vehicles are safer in self-driving mode than if a human were controlling the car. One is a camera-based system that is advanced enough to power the car autonomously, and the other is a lidar and radar-based system that’s strong enough to do the same thing.

The two approaches are fused along with the 3-D maps allowing “safety-critical performance that is at least three orders of magnitude safer than humans,” according to Mobileye. Pending regulatory approval, Mobileye will expand its fleet of autonomous test vehicles to New York City by the

end of the year.

The Munich-based start-up Blickfeld showed two new lidar sensors for cars meant to hit the market in three to four years. The 3-D sensors, dubbed Vision Mini and Vision Plus, are designed to produce a surround-view “that is crucial for automated urban traffic as well as robotic vehicles,” according to the company.

The Mini is small, roughly five centimeters long and is meant to detect closer range objects around a vehicle. It’s customizable to fit within a vehicle’s design scheme, according to the company. The larger Vision Plus can pick up things 650 feet in front of and behind cars with self-driving features. Together, they’re designed to enable cars to handle more than one automated task at a time.

A combination of six sensors are needed for 360-degree views, unlocking level four autonomous capabilities, says Florian Petit, founder of Blickfeld. The company is working with production partners to meet what it sees as a rapidly increasing demand.

“We saw that there’s a huge gap between the cars produced to be autonomous eventually and the number of lidars produced,” Petit said.

## Store experiments with automated pickup kiosks

BY ALEXIA ELEJALDE-RUIZ  
Chicago Tribune

A Jewel-Osco store in Chicago is the first grocery in the nation to pilot an automated pickup kiosk, one of numerous investments grocers are making to prepare for a future of more online shopping.

The kiosk, located in the store parking lot, is meant to offer a convenient and contact-free option for online shoppers to collect their groceries. Shoppers are asked to select a two-hour pickup window, and when they arrive they scan a code and their items are delivered robotically, according to the company.

Employees shop the store to fill customers’ orders and put them into the kiosk for pickup. The kiosk, made by Estonia-based Cleveron, has a refrigerated and deep freeze zone so ice cream can be picked up at the same console as bananas.

Jewel-Osco parent Albertsons plans to install a second kiosk at a Safeway in the San Francisco Bay Area but has not announced plans for a wider rollout.

“We are supercharging our digital and omnichannel offerings to serve customers however they want, whenever they want,” Chris Rupp, executive vice president and chief customer and digital officer at Albertsons, said in a news release.

Albertsons, the third-largest grocery chain in the U.S., has been testing various ways to streamline pickup and delivery as e-commerce becomes a bigger part of its business, driven in part by the pandemic as people avoided going out in public. Digital sales grew 225% during the third quarter ended Dec. 5, compared with the same period the year before, according to company earnings released last week.

The company, headquartered in Boise, Idaho, recently announced it will transition to third-party delivery in some markets, including Chicago, where its Jewel-Osco brand is the Chicago area’s largest grocery chain by store count, and California. The announcement came shortly after California voters approved Proposition 22, which exempts gig economy companies like DoorDash from a state labor law that would have forced them to employ drivers and pay for health care, unemployment insurance and other benefits.

Jewel-Osco, which until now has used a combination of in-house drivers and DoorDash for delivery, said that next month it will stop using its own fleet and transition entirely to third-party providers to “help us create a more efficient operation and compete more effectively in the growing home delivery market.”

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### ANNIVERSARY

#### Jim and Peg Slothower

Jim and Peg Slothower celebrated their 50th wedding anniversary Saturday but have deferred a formal celebration until after the pandemic.

The couple was married Jan. 23, 1971, at the Evans Chapel on the University of Denver campus in Colorado. They met on a blind date while attending college in Portland. They have two children, Matt, of Redmond, and Scott, of Billings, Montana; eight grandchildren.

Mr. Slothower is a native Oregonian. He is a veteran, having served as a Russian translator in the USAF Security Service. Mr. Slothower practiced law in Bend for over 40 years before retiring in 2017. He has served as a director on the boards of many nonprofits, most recently on the Interfaith Network of Central Oregon. He enjoys cycling,



Submitted photo

#### Peg and Jim Slothower

hiking, camping, gardening, leatherworking, traveling and spending time with his grandchildren.

Mrs. Slothower grew up in Colorado and moved to Oregon to attend Lewis & Clark College. She was employed by the Educational Services District for many years as a

speech-language pathologist/augmentative communication specialist before retiring in 2017. She shares a love of the outdoors, especially skiing, camping and hiking. Both she and her husband are actively involved in the Baha’i Faith.

They have lived in Central Oregon for 43 years.

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