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Velodyne LiDAR, the inventor: 'We aren't a one-trick pony'

By Cromwell Schubarth
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Velodyne LiDAR Inc. has been in the race to develop laser-based sensors for autonomous vehicles since CEO David Hall and his brother, Bruce, entered a driverless car competition in 2005 that was sponsored by the Defense Advanced Research Projects Agency.

They didn't win that year. But the knowledge they gained helped them produce an early automotive lidar system that they sold to five of the six teams that finished a follow-up race in 2007.

Hall has since grown his Velodyne team to more than 500 employees at three Bay Area locations: the original Morgan Hill headquarters where his 26-year-old audio equipment business — Velodyne Acoustics — is located; a 400-person "megafactory" and headquarters in San Jose; and an R&D lab in Alameda where Hall works on new inventions.

The company has raised about $150 million from investors who include Ford Motor Co. and Baidu who value it at an estimated $2 billion.

"David's invention was the seed of lidar for vehicles and he has never finished inventing," said his wife, Marta Thoma Hall. She is one of two presidents at Velodyne LiDAR. "We aren't standing still. We aren't a one-trick pony. We are always innovating. We design for mass production and we are actually shipping."

Despite the head start and growing customer list, Velodyne's place in the evolving automotive lidar market in the future isn't assured, according to Gartner analyst Brady Wang.

That's because it is only one of between 70 and 100 companies developing the technology today, including some major automotive original equipment makers. Also, the type of lidar it developed — an array of dozens of lasers spinning inside a roof-mounted device — is expensive and easy to damage.

Many new lidar developers are focused on less expensive "solid state" sensors. The downside to those is that they don't give the 360-degree view of a spinning sensor, so more of them are required to see all around a vehicle.

"Spinning lidar is only recommended for research purposes and niche purpose but not for consumer vehicles," Wang told the Business Journal.

David Hall, however, said the biggest obstacle Velodyne faces in getting his company's lidar on vehicles isn't the devices or cost, which will come down with mass production.

The biggest challenge will be "maturing the software stack that takes the lidar data and makes good use of it," is what Hall says is needed. "It will take three more years to affect this."

Hall said he isn't worried by the large number of competitors that have entered the field, either. He figures that in about three years there will only be three independent companies doing automotive lidar.

"But I don't know who the other two are," he quipped.

Marta Hall adds, “Some competitors have copied us and they will have legal problems because of that. Others are still in the lab and haven’t been proven out. Our lidar is hardened and tested.”

Velodyne LiDAR says it is working with about 50 companies that are using its devices for vehicles. It has about 250 more customers who are working on other uses for the technology.

Lidar for vehicles is the company's main source of revenue but David Hall said that is likely to change in the future.

"Augmented reality and security will soon rival automotive and eventually supplant it," he said.