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ZENDAR | NXP SEMICONDUCTORS

Breaking the Radar Ceiling: Coherent Fusion Enhances ADAS Capability

NXP® Semiconductors and Zendar developed a Distributed Aperture Radar solution, a radar system that uses multiple sensors operated coherently to achieve higher resolution and accuracy.

THE CHALLENGE

For safe, reliable driving automation on the highway, vehicles need higher resolution and longer range than what automotive sensors provide today. Radar offers the longest range of available sensors but with limited resolution. Resolution is constrained by the aperture of the radar sensor. Though it is possible to place a large sensor on a vehicle to obtain a large aperture, it is not practical. The conventional approach for improving radar resolution is to increase the number of antenna channels. Each channel, however, adds cost, increased size and hardware complexity. Zendar and NXP began working together to develop an alternate approach, one that would drastically improve resolution at a lower cost.

THE SOLUTION

In a Distributed Aperture Radar (DAR) system, multiple radar units are placed on a vehicle, synchronized, and operated coherently as a single unit. This enables large apertures to be created using simple medium-range radar sensors in a flexible system. Due to the larger aperture, angular resolution of 0.15° in azimuth and smaller than 1° in elevation is achieved. NXP has laid the foundation for networked radar architecture with its innovative semiconductor solutions. Running on a central or zonal processor, Zendar's software enables the coherent fusion of the radar front-ends in real-time. The collaboration has produced a cost effective, software-defined high-resolution radar solution that improves ADAS capability significantly.

THE OUTCOME

Together, Zendar and NXP have created an automotive radar system that outperforms other high-resolution radars. DAR is unique in its ability to attain large apertures with small, inexpensive sensors, opening a new realm of possibility for radar in the automotive industry where sensor size is a design constraint. This system enables high resolution and accuracy using simple, medium-range radar front-ends as building blocks. These standard sensors are typically produced in high volume, consequently are very cost-efficient. For the next stage, Zendar is working with leading OEMs and Tier-1s to rigorously test the new technology and adapt the system for upcoming vehicle designs.

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ZENDAR

WEBSITE
zendar.io

FOUNDED
2017

HEADQUARTERS
Wangen i.A., Germany

NO. OF EMPLOYEES
50+

ABOUT STARTUP AUTOBAHN

STARTUP AUTOBAHN powered by Plug and Play is an open innovation platform that provides an interface between innovative tech companies and industry-leading corporations. The basis of the program is the partnership that develops between startups and the corporate business units. The two entities hold an equal footing from the get-go: together they evaluate the potential for a joint venture, move forward to pilot the technology, and work to achieve the ultimate goal – a successful production-ready implementation. Designed with the intention to exceed startup acceleration, STARTUP AUTOBAHN powered by Plug and Play moderates a community for collaboration with a focus on implementable results. Over the years, the platform has successfully cultivated over 400 projects with more than 300 startups since its founding in 2016.

ZENDAR.

Zendar increases radar resolution for enhanced ADAS performance.

Zendar's technology improves the range and resolutions of radars in ADAS systems by enabling large radar apertures with small, mainstream hardware components.

ACKNOWLEDGEMENTS

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