



VSI
Labs



Case Study

VSI Labs & FLIR

VSI Labs is a leading technology researcher for companies that develop systems or components used in ADAS and automated driving applications. In December of 2018, [FLIR](#) began working with VSI as a partner on its Research Vehicle. The following year, FLIR sought the help of VSI to design and demonstrate a proof-of-concept **Automatic Emergency Braking (AEB) system** utilizing a FLIR thermal camera to **identify in-path humans** and **stop the vehicle** from a collision.

Project Background

There has been little research on the use of thermal imaging for AEB or pedestrian detection systems. Commercially available systems often rely on radar and visible-light cameras, which limits them in several common conditions.

Unlike traditional cameras, thermal cameras see heat instead of reflected light. This helps them perform well both in daylight and darkness, among other conditions. These features make thermal cameras an attractive complement to the visible-light cameras used in most AEB systems.

Developing & Testing an AEB Prototype

VSI engineers began by creating a control system to stop in response to incoming perception data. They collected radar and thermal camera data simultaneously, developing the code necessary for sensor fusion. The perception algorithms were tested and optimized, after which the AEB system was tested in static conditions.

The final step of development was to test the system in dynamic conditions, leading to the Euro NCAP testing at the American Center for Mobility (ACM) in December of 2019.

Over the two days of testing, VSI's prototype AEB system utilizing thermal camera and radar data **stopped 100% of the time in over 30 test runs, in both daytime and nighttime conditions.**



Conclusion

Overall the preliminary test results are very promising, and FLIR showcased the project at CES 2020, garnering a great deal of [press attention](#).

The work done for FLIR in this case study exemplifies the unique value of partnering with VSI. If you develop components or systems for ADAS or autonomous driving and would like to have your technology demonstrated in our vehicle, contact VSI at the information below.

Why Work with VSI?

- Leverage VSI's applied research expertise
- Get your component integrated into a fully functioning semi-autonomous vehicle
- Grow your brand's reach through VSI's marketing & events
- Demonstrate your technology to industry leaders and other stakeholders

Ready to Get Started? Contact Us:

952-215-1797
info@vsi-labs.com

7600 West 27th St., Suite B11
St. Louis Park, MN, 55426