

3 Ways Engineers Tackle ADAS Development Challenges



1 Overview

2 Reducing algorithm development and design cycles

3 Developing control algorithms and creating vision systems

4 Testing and verifying your perception systems

 Watch video series

 Learn more

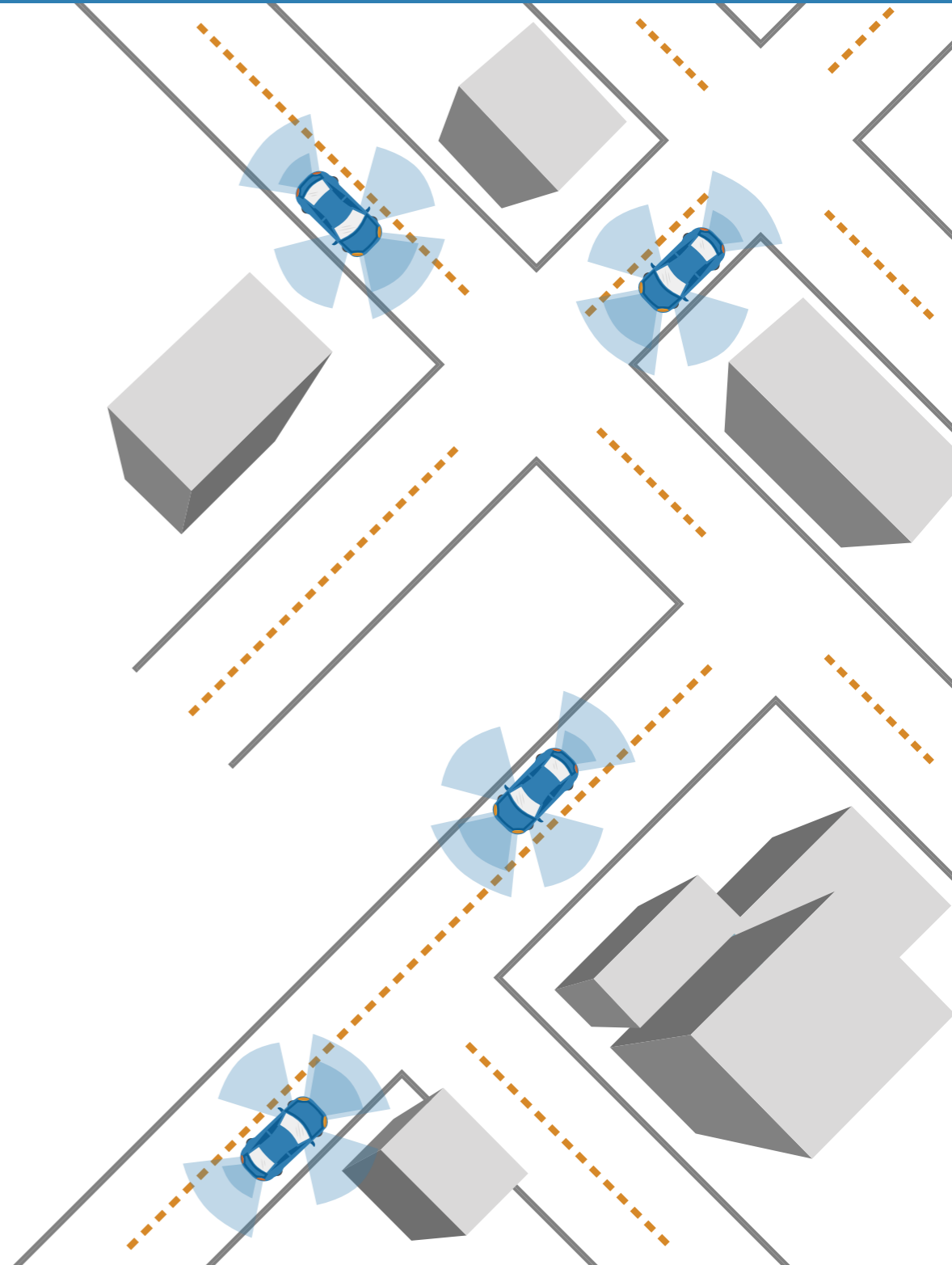
1 Overview

Autonomous vehicles are quickly emerging as the next phase in automotive technology; automated cars allow for enhanced mobility for all users, they offer a safer and more comfortable driving experience, and they could provide a means for drastically changing the public transportation sector.

The widespread use of automated cars will change the world by making it a safer and more accessible place.

Computer vision is one of the main fields driving this innovation. The term refers to using video for object detection, classification, and tracking in order to understand a real-world scene. Engineers use computer vision technology to help create the advanced driver assistance systems (ADAS) found within autonomous vehicles.

How do engineers developing these systems overcome complex challenges such as long development cycles, system and algorithm creation, and testing and verification?



2 Reducing algorithm development and design cycles

MATLAB, along with computer vision technology, can help you address the challenges inherent in developing ADAS.

Using MATLAB, you can reduce development and design time by:

- Interactively labeling training images
- Using implementations of standard object detection and recognition techniques
- Using a few short commands to import and manage large sets of images

See for Yourself

- 💡 [Example: Train a Cascade Object Detector](#)
- ▶ [Accelerating Vision Algorithm Development \(2:23\)](#)

“MATLAB reduces our tool development efforts, accelerates our simulations, and allows reliable, repeatable, and accurate parameter optimizations.”

– Continental



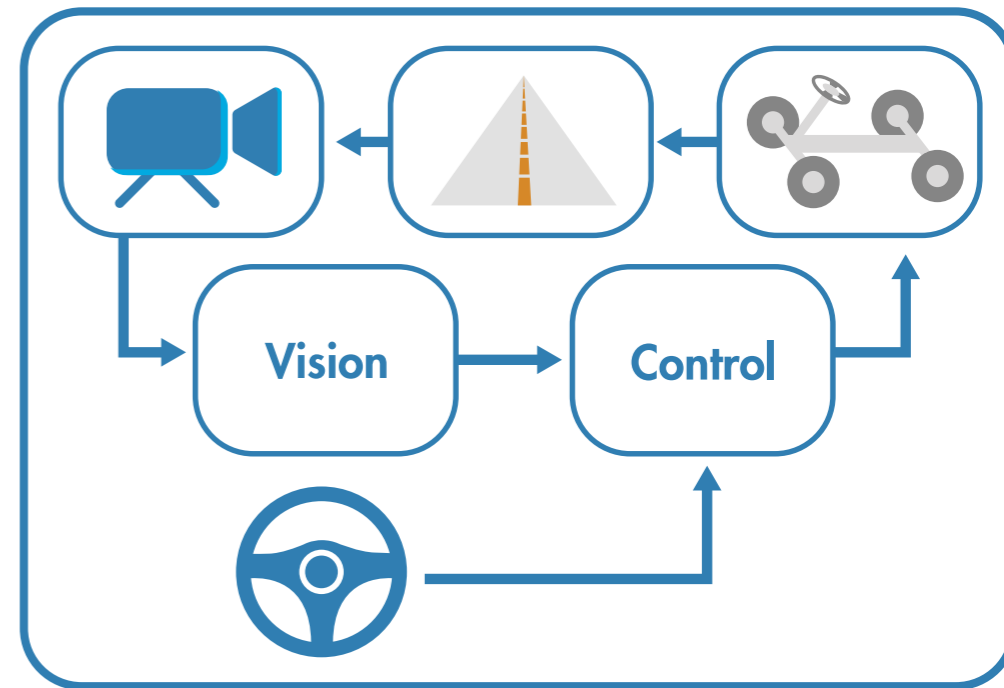
3 Creating vision systems and developing control algorithms

Controls engineers can create vision systems as inputs to controls algorithms for ADAS and automated driving systems, without years of computer vision experience and knowledge.

MATLAB offers comprehensive documentation to help you learn about vision algorithms, and examples that can be easily modified to create your own vision system.

See for Yourself

- 💡 Example: Traffic Warning Sign Recognition
- ▶ Creating Vision Systems for Controls Development (2:48)



4 Testing and verifying your perception systems

Comprehensively test and verify the perception systems that are used in ADAS or automated driving systems.

MATLAB can help you:

- Label your data with ground truth
- Resimulate the data and compare results with ground truth
- Scale the systems to process millions of miles of data

See for Yourself

[▶ Testing and Verifying Perception Systems \(2:17\)](#)

“Our speed is increased by separating the job into parallel tasks and distributing them over the network with the help of MATLAB.”

– Scania

