

# A California-Based Autonomous Vehicle Tech Company Boosts Safety with Precise Traffic Signal Annotations

**Accurate and Consistent Annotations to Improve Traffic Signal Recognition Module and Scale Autonomous Vehicle Deployment**

## The Client

Established in 2016 in Silicon Valley, the client is a global leader in autonomous mobility. They focus on the large-scale commercialization of autonomous mobility technologies and services. The company leverages its vehicle-agnostic virtual driver platform to integrate proprietary software, hardware, and services to build a scalable and sustainable transportation ecosystem.

## The Challenge

The client wanted to improve the performance of perception models in the autonomous driving system, while scaling its operations. To achieve this, it required accurate, consistent, and high-quality annotations of traffic signals at scale within the defined timelines to build safe and reliable autonomous driving systems.

- **Difficulty in Precise Labeling of Traffic Signals:** The current model lacked precision and misinterpreted traffic signals, affecting vehicle safety and real-time decision-making. The client required pixel-level accuracy to improve the perception model's traffic light recognition capabilities.
- **Complexity in Annotating Urban Scenes:** The dataset included diverse and complex urban environments with varied road signals, occluded objects, and irregular lighting conditions. These complexities made it challenging to maintain annotation quality.
- **Balancing Speed, Scale, and Timelines:** The client required huge amounts of image data to be annotated within strict timelines to ensure rapid development and testing cycles. Balancing speed with precision without missing timelines posed a significant challenge.
- **Maintaining Annotation Quality and Consistency:** The annotations were erroneous and lacked consistency, leading to quality degradation. This lapse in QA compromised the reliability of machine learning models, potentially impact road safety and decision-making.
- **Lack of a Reliable Annotation Partner:** The existing workflows lacked the flexibility and scalability to accommodate evolving project requirements. The client required a trustworthy partner to achieve high-quality annotations and rapidly scale the operations.



Inaccurate annotation of traffic elements



Lack of expertise to label complex urban scenarios



High data volumes for annotation within tight timelines



Limited scalability to accommodate evolving project needs

## **The Solution**

Damco assembled a specialized team on demand, leveraged the right-fit 2D bounding box tool, and implemented a robust QA process to deliver consistent, accurate, and production-ready annotated datasets. This improved the perception model outcomes and accelerated the client's training-validation cycle.

### **Delivery of Pilot Project for Alignment and Validation**

- Damco's team delivered a sample batch to align on accuracy expectations, validate annotation guidelines, and refine instructions based on client feedback.
- This helped build confidence of the client and provided a roadmap for edge cases and complex scenarios.

### **Deployment of a Dedicated Annotation Team**

- A specialized team skilled in autonomous driving annotation was assembled on demand.
- This enabled scalable operations without compromising on precision, quality, or timelines.

### **Implementation of the Right Annotation Tool**

- The team leveraged the right-fit 2D bounding box annotation tool with advanced capabilities, such as shortcut keys, zoom, and auto-suggestions to enhance speed and accuracy.
- This enabled the team to optimize the process and deliver the project before the stipulated timeline.

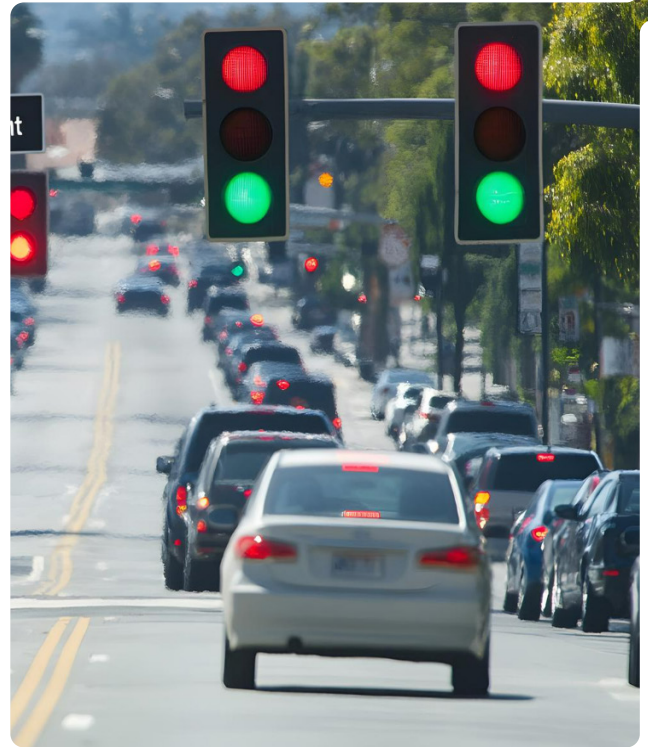
### **Implementation of Annotation Protocols and Feedback Loop**

- The team used pre-defined guidelines to accurately annotate traffic elements and diverse urban scenarios while reviewers ensured consistency across batches.
- The team incorporated client feedback in real-time to ensure their evolving needs were addressed instantly.

## The Benefits

The collaboration delivered measurable improvements in the traffic signal perception system's performance, efficiency, and operational scalability for the client.

- Enabled better real-world performance of the traffic signal recognition module, which improved the road safety and decision-making capabilities of its virtual-driver software.
- Achieved 98% annotation accuracy which greatly improved the client's perception system's ability to detect traffic lights precisely.
- A 40% faster delivery of the project than industry benchmarks to enable quicker training and validation cycles through production-ready annotated data.
- 100% compliance with client-defined annotation specifications, including edge cases and complex urban scenarios.
- Deployed an agile, scalable team structure to meet increasing data annotation requirements without compromising output quality.



## Accelerate Your AI and ML Model Training and Development Cycles with High-Quality Data Annotations

[Connect with Our Data Annotation Team](#)

## About Damco

Damco Solutions is a trusted technology and digital transformation partner for businesses around the globe. We engineer software products, create new digital experiences, modernize applications and automate business processes for greater agility and business growth. With 27+ years of leadership in software engineering and digital solutions, our mission has remain constant - complete client success.

Contact us for more information on Damco's Offerings.

☎ +1 609 632 0350

✉ [info@damcogroup.com](mailto:info@damcogroup.com)

🌐 <https://www.damcogroup.com/>