



UAI
UNDERSTAND.AI

A dSPACE
COMPANY

AI-natives for More Automation

We Move Fast

We know the challenges you're facing in one of the most dynamic markets. We act fast and use the latest deep learning technology to get you ahead of the curve.

The Expert Team

4 years of worldwide AD/ADAS project experience, 50+ Associates with AI, Automotive & Cloud background from renowned institutions below.

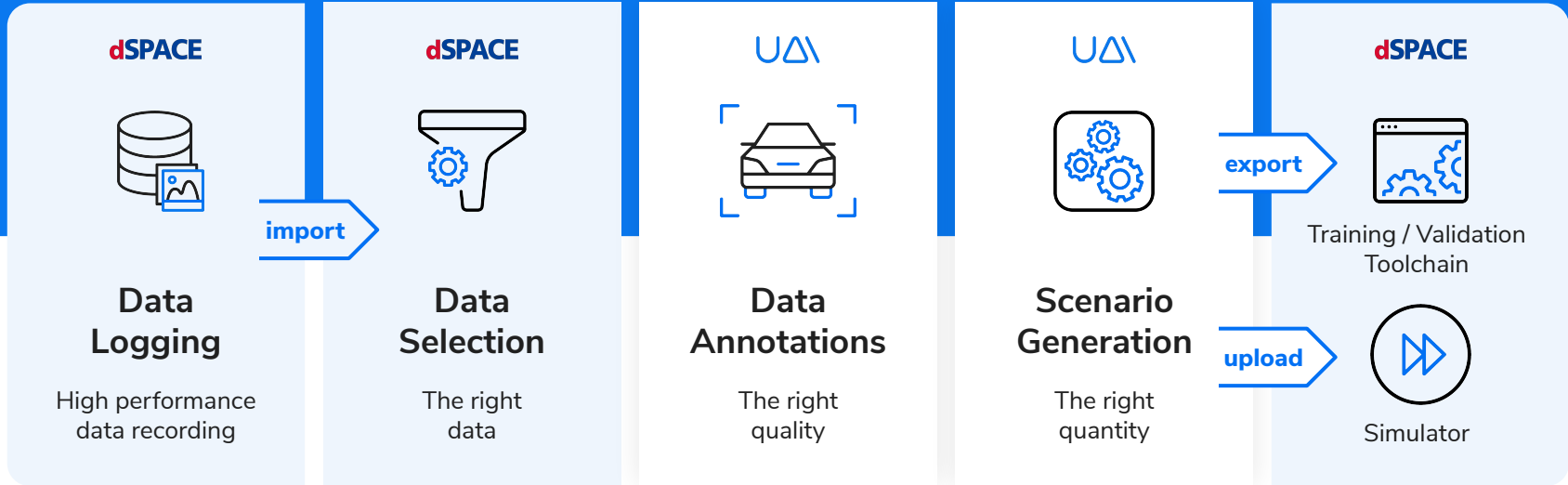
A dSPACE Company

To support you better wherever your business is, in July 2019 we've joined the dSPACE family. With united forces and strong global footprint, we earn your trust every single day.



Solution Suite for Data Driven Development

Entire suite to generate high quality training and validation data



Customer Storage
Customer Cloud

UAI Product Suite
AWS & Google Cloud
Platform

Customer Applications
Customer Cloud



Introducing the **automation engine for data annotation**.
Designed by AI-natives to cut costs and to accelerate the training
and validation of your assisted & autonomous driving technology.

Zero-Touch Annotation™ - zero errors, zero delays,
zero worries about your annotation budget.

We Automate Annotations

The **Automation Leap** in Data Labeling

With algorithmic annotations and automated workflows, the understand.ai **automation engine gives labelers superpowers**. Ramp-up your annotation **throughput** and achieve the **highest quality** for the **best price** with Zero-Touch Annotation™ technology.



We give you the flexibility to marry the precision of your data with any volume requirements, consistently. Our automation platform enables you to get the **right data** at the **right quality** and the **right quantity**.

Throughput

Are you facing exponential throughput challenges in your large-scale labeling projects?



Quality

Do you need high-quality annotations to properly train a self-driving algorithm?



Laser-sharp on Your Quality and Throughput Target

Let's Talk About **Costs**

Getting a piece of assisted & autonomous driving technology on the road takes a lot of frames to be labeled. Even with the best tools and the best labelers, there is this much you can do before the costs go through the roof.

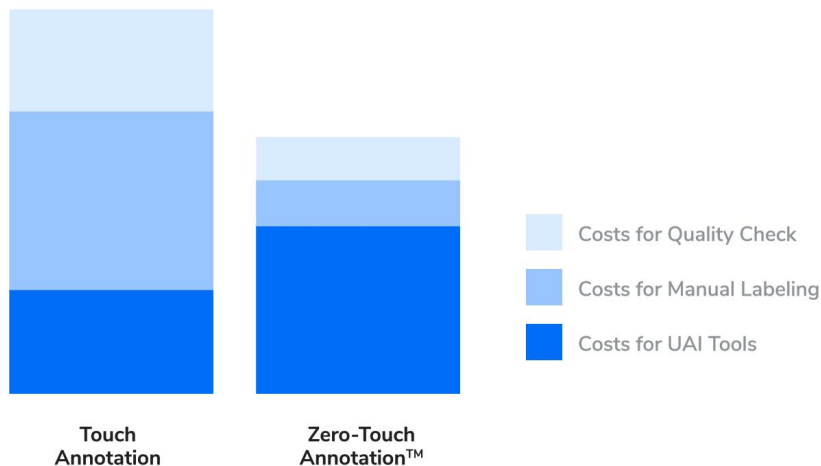
Thanks to the automation levels of **Zero-Touch Annotation™**, you'll be able to reduce the cost of manual work dramatically.



Zero-Touch Annotation™

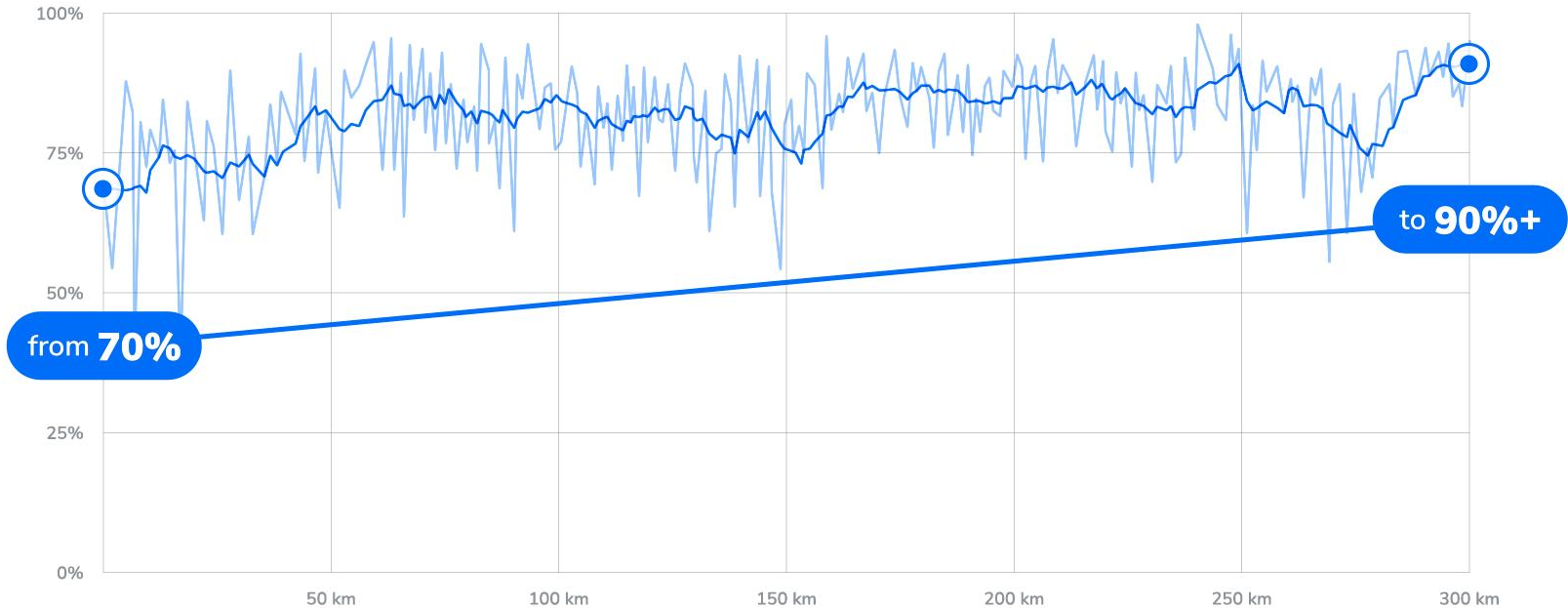
Thanks to state-of-the-art algorithmic annotations and automated workflows you can leave most of your frames untouched.

Zero-Touch Annotation™ - zero errors, zero delays, zero worries about your data annotation budget.



Automation impacts everything
and we are ahead of the game

Ever Improving Automation Rates



(given a data distribution with on average 43 objects / scan, US traffic with 20% highway, 80% city)

The Leader in Automation



Competitive Pricing

through state-of-the-art algorithmic annotations and automated workflows



Faster Delivery

through customized workflows and real-time visualization of throughput bottlenecks



Highest Quality

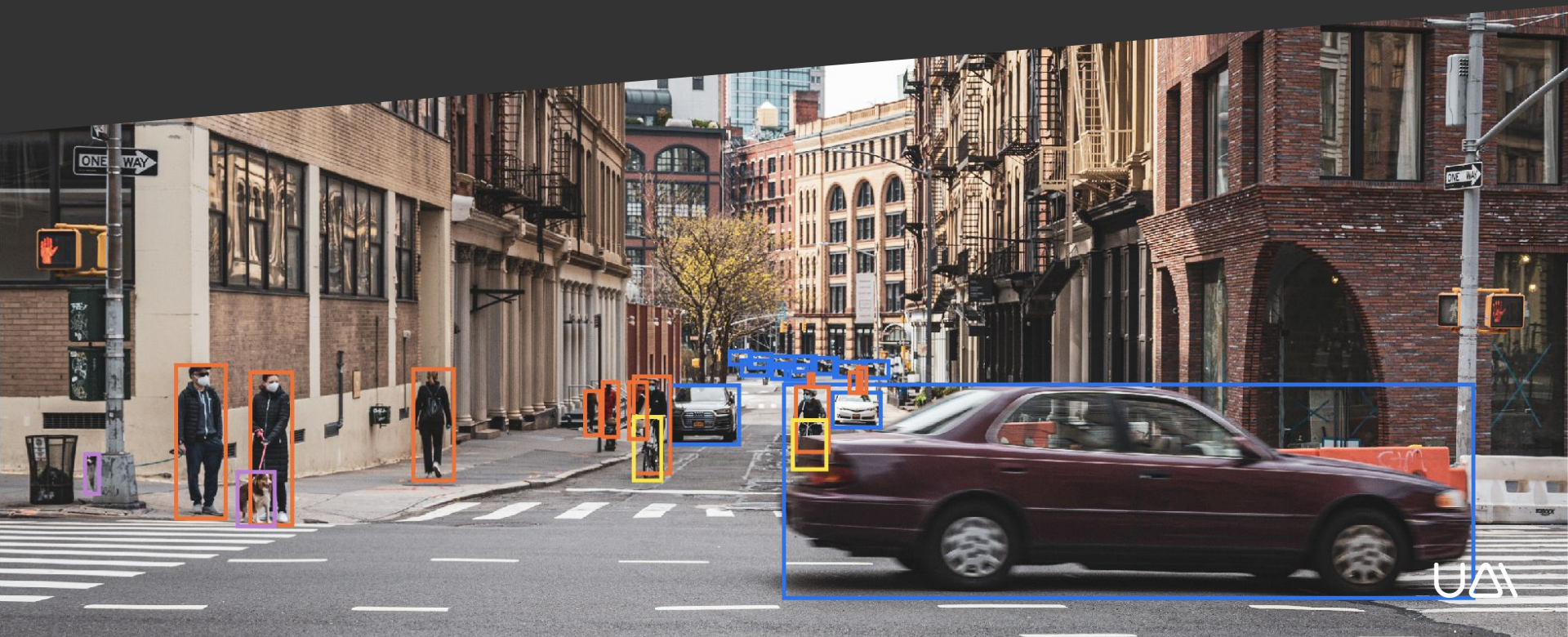
through automated algorithmic quality assurance for highest consistency, coverage and precision

UAI Annotator

The Automation Engine's Annotation Tool

2D & 3D Bounding Boxes, Semantic Segmentation, Polylines

Camera image and LiDAR frame annotation for all classes and attributes.
Adjusted to your exact requirements.



World-class 3D Annotation Tooling

Covering all your needs of fast, qualitative and reliable labeling of 3D Bounding Boxes / Cuboids for LiDAR, through a highly automated tool! Each feature is designed supporting your teams to reach labeling excellence. The 3D annotation tool is a perfect fit for your training and validation projects of any size.

The screenshot displays a 3D LiDAR annotation tool interface. The main view shows a 3D point cloud with several 3D bounding boxes (cuboids) overlaid on it. The interface includes a top toolbar with navigation and editing tools, a left sidebar with a camera view, and a right sidebar with metadata and controls.

Top Toolbar: Navigation and editing tools including back, forward, home, zoom, pan, rotate, and delete.

Left Sidebar: Camera view labeled "left".

Right Sidebar: Metadata and controls for the selected annotation.

Annotations on this frame (37 of 4810):
d4772d17-d623-47b0-827e-70b6b2f1c9

Annotation Metadata:

x: -6.58	width: 1.85	yaw: -91.63
y: -0.48	height: 1.39	pitch: 0
z: 14.16	length: 4.75	roll: 0

Distance to scanner: 5.9

Actions: Copy, Delete, Edit, View, and Refresh.

Copy Annotation ID

Temporal Id: a4a0b886-d3bc-427f-97f2-f...

Class: Vehicle

Powerful Workflow Management

Always be ahead of the quality and throughput requirements of your labeling project. With our customizable task management system you can track progress, identify bottlenecks and assign priorities to tasks to ensure a timely delivery.

The dashboard is titled "Management" and shows a workflow named "weathermaker-production". It features a "Tasks (8)" section with a button for "ACTIONS ON 8 TASKS". Below this is a table of tasks with columns for Clip name, Step, Priority, Status, and Actions. The tasks are as follows:

Clip name	Step	Priority	Status	Actions
city-weathermaker (A5)	Annotate Step	1000	Done	⌵
city-weathermaker (A5)	Check Step	500	Ready	⌵
city-weathermaker (A1)	Check Step	500	Ready	⌵
city-weathermaker (A4)	Annotate Step	500	Ready	⌵
city-weathermaker (A3)	Annotate Step	500	In Progress	⌵
city-weathermaker (A2)	Annotate Step	500	In Progress	⌵
city-weathermaker (A1)	Annotate Step	500	Done	⌵
city-weathermaker (weathermaker)	Split Step	500	Done	⌵

At the bottom of the table, it shows "Rows per page: 10" and "1-8 of 8". To the right of the table is a configuration panel for the "SPLIT STEP", "ANNOTATE STEP", and "CHECK STEP". Each step configuration shows the number of classifications and other requirements. The "SPLIT STEP" has 5 classifications and 1 active classification. The "ANNOTATE STEP" has 5 classifications and 1 capability required. The "CHECK STEP" has 5 classifications, 1 capability required, and 1 exit rule. The "UAI" logo is visible in the bottom right corner.

Comprehensive Dashboards

Keeping track of your labelers' performance is crucial to hold deadlines and deliver annotation projects in time. The dashboards support your delivery team on a daily basis through comprehensive statistics of your annotation tasks and give you insights when scaling up your labeling force is required.

Number of Boxes per Day

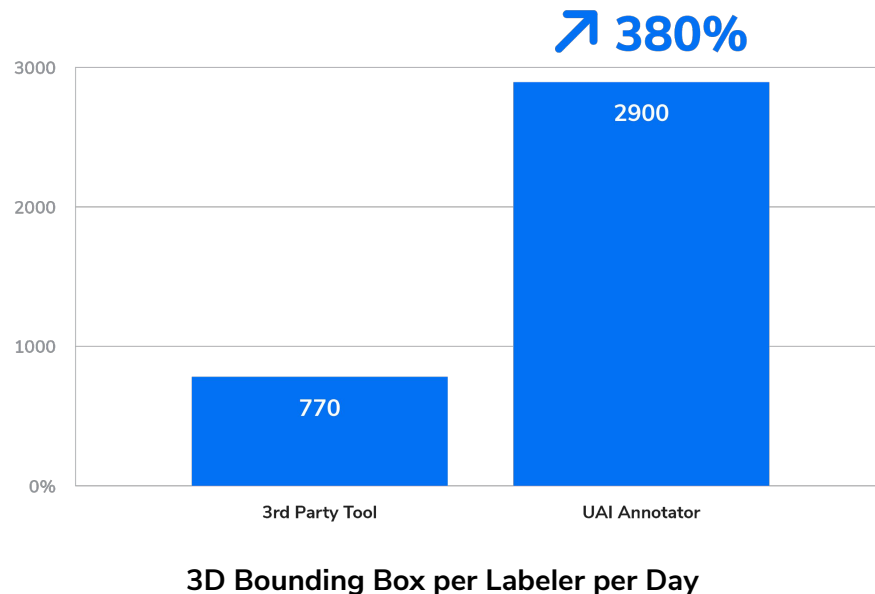
Number of Boxes per day is a theoretical measure based on Time per Delivered Annotation calculated on an 8 hour work day.



3.8x increase in throughput | An Automation Engine Success Story

Engineering service provider switched from a 3rd party tooling to UAI automation engine in an annotation project with a large German OEM to improve throughput to meet deadlines.

Throughput increased by **380%** through automation and tool features. 100% of the data has been shifted from 3rd party tool to UAI Annotator.



Let's Drill it Down to Details | A Project Example

REC ●

1 km at 45 km/h
(LiDAR & Camera)



80 sec of data
with 10 FPS



800 frames with
15 objects/frame



12,000 labeling-
relevant objects

198 hrs —



Total annotation
project duration **without**
UAI Automation Engine



— 33 hrs

Total annotation
project duration **with**
UAI Automation Engine



“understand.ai is not only software,
you also get a **dedicated team that is knowledgeable** and confident to exchange
competencies and creative
solution-oriented approaches, **which definitely enriched our work**”

Dr. Peter Schlicht

Project Manager AI-Technologies for automated driving



“Data annotation can be difficult and expensive without a dependable partner, who’s easy to onboard with your needs. The willingness of understand.ai to take customer feedback and apply it quickly to the business and **the flexibility of their tools for cost and throughput growth helped us to get us where we wanted.**”

Darryl Keaton II
Founder and President



UAI Professional Services

The Automation Engine's Premium Offer



Labeling as a Service

- **Project Delivery**
From the set-up to overall project ownership, we have your project covered.
- **Quality Assurance**
Involve a dedicated in-house Quality Assurance Team.
- **Premium Support**
Custom import/ export integration, extensive training programs, sensor calibration improvements, leave all the details up to us.
- **Custom Functionality**
Whatever your project requirement, we can customize our tools to fit your needs.
- **Consulting**
Make use of our extensive project experience for workflow and specifications optimization.

Find out more on understand.ai/services



Service Excellence to Complement a World-Class Automation Engine



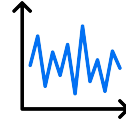
We Move
Fast



Automotive
Expertise



Quality
is our DNA



Planning
Flexibility



Global
Footprint

“understand.ai responded very quickly and were able to provide **high-quality annotations** within **the same day**, for an **appropriate price**. I would definitely recommend understand.ai to researchers in a similar position.”

Prof. Veronika Cheplygina



BOSCH

*“**Highly accurate annotation** is an **indispensable** prerequisite for supervised machine learning. We rely on the labeling service and tools from understand.ai.”*

Dr. Florian Faion

Research Scientist LiDAR Perception



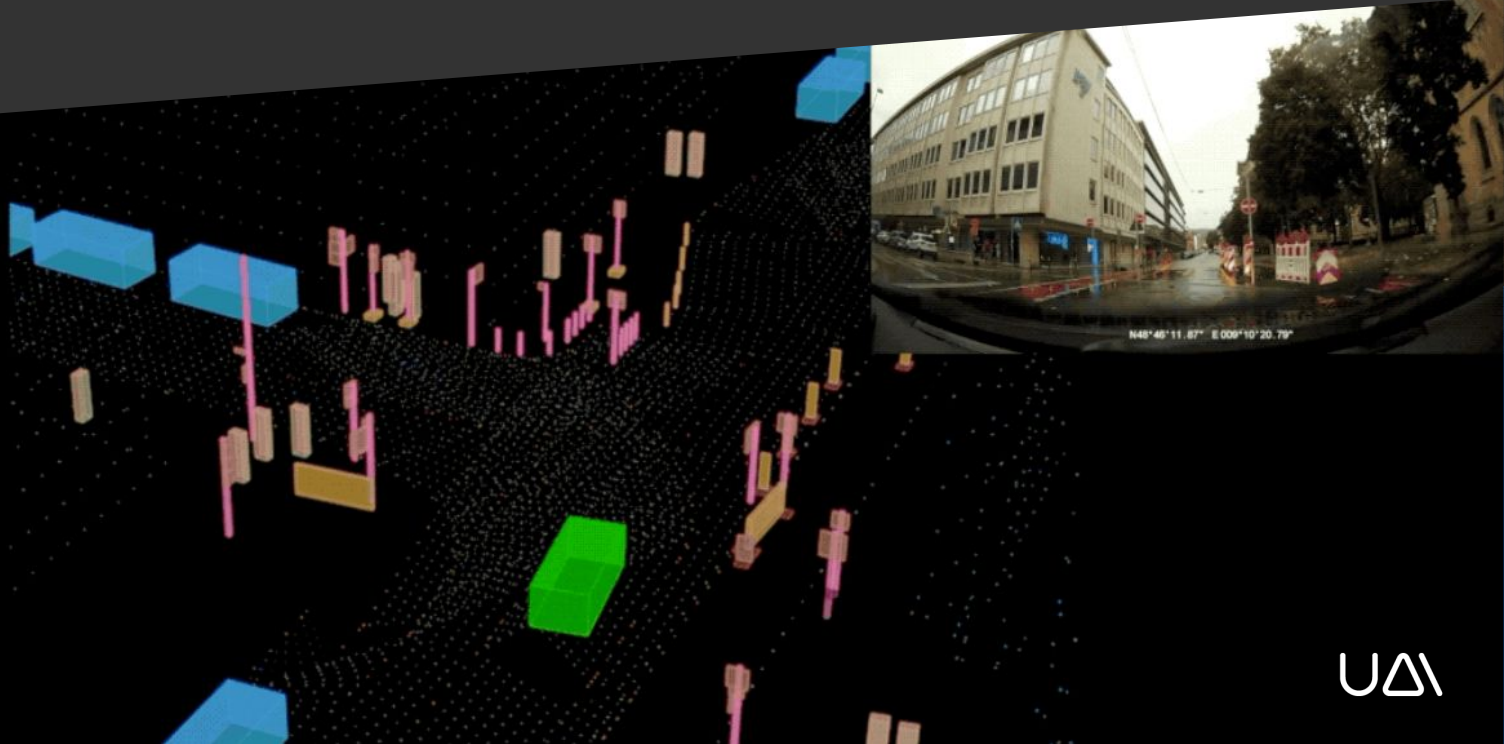
“EnBW Barriersystems appreciates the **high quality of image annotations** by understand.ai - the personal communication, **fast response** and fit of **individual user needs** combined with **fair pricing is just outstanding!**”

Lars Ehlkes

Machine Learning Engineer

Scenario Generation

Simulatable scenarios depicted from the real world.
Test and validate your autonomous driving functions.



From Real World to Simulation

Bringing the complexity of reality into simulation

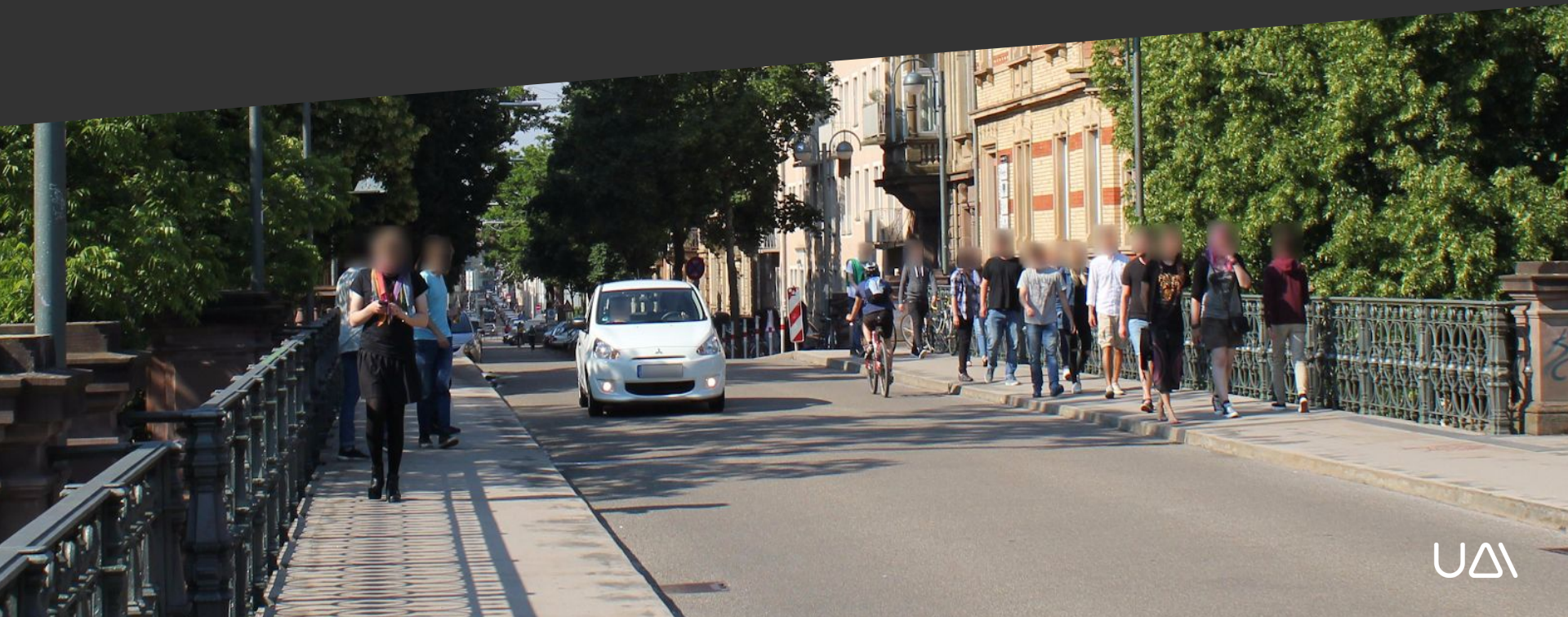


UAI Anonymizer

The Automation Engine's Anonymization Tool

UAI Anonymizer

Anonymizes +99% of all identifiable faces and license plates.
GDPR, APPI, CSL, CCPA compliant by design.



Class Leading Anonymization

Highest Accuracy

Anonymizes faces and license plates with an accuracy of +99%* within most geographies.

Based on Neural Networks

Trained on millions of images of faces and license plates world-wide, including edge cases like truncation and occlusion!

High Throughput

Anonymization of up to 30 Frames per Second possible on appropriate hardware!

Flexible Deployment Options

UAI Anonymizer

AS A SERVICE

- Seamless integration with labeling tools
- Lightning fast
- Automatic updates
- Maintenance free
- Superior support
- Flexible payment plans
- **Superior detection rates**

UAI Anonymizer

ON PREMISE

- Runs on your own machines
- Can access your internally hosted data directly
- Lightning fast
- Fixed update cadence
- Flexible payment plans
- **Superior detection rates**

Interested in finding out more?

Let us help you to make the best out of your data!

Philipp Renner Technical Sales Manager
philipp.renner@understand.ai