

HERE Data Annotation Service and Dell Technologies

Data Annotation paves the way for faster development of Artificial Intelligence algorithms for ADAS/AD

HERE Data Annotation is a service to enable machine learning using high-quality data to train an algorithm or machine learning model to predict the desired outcome.

Products and services that incorporate machine learning cannot exist without training data. From virtual assistants to medical-grade diagnostic algorithms, from face recognition to autonomous driving every AI-based system requires its creators to spend substantial time and effort on gathering the right kind of data and labeling it appropriately. At the core of the AI revolution lies the need for large training datasets, often unique to businesses, a need data annotation services address.

Data annotation is used to make the objects recognizable and understandable for machine learning models. Computers can't process visual information the way human brains do: A computer needs to be told what it's interpreting and provided context to make decisions. Data annotation makes those connections.

Data annotation itself is a laborious and time-consuming process. Data scientists spend a significant portion of their time preparing data. Part of that is spent fixing or discarding anomalous/non-standard pieces of data and making sure measurements are accurate. These are vital tasks -- algorithms rely heavily on understanding patterns in order to make decisions, and faulty data can translate into biases and poor predictions by AI.



HERE has been a leader in the data annotation industry by providing this service to its customers for more than 6 years. HERE stands out with the customer-centric, flexible and scalable approach which is also available in partnership relationships. With this service, customers can utilize HERE's subject matter expertise to solve their business problems.

HERE Data Annotation Solution benefits

- HERE Data Annotation generates 99% or higher object accuracy
- Agile partnership & flexibility basis customer needs
- Able to scale up small engagements with high capacity of trained annotators
- Predictable and transparent cost structure
- Subject matter expertise in data annotation and location intelligence
- GDPR compliant process for data security and 3rd party auditing for Quality Control

Dell Technologies Benefits

- Automotive thought leader providing Automotive-specific products and solutions including the Dell Autonomous Drive Ecosystem
- Proven ADAS storage solutions leader with ~ 70% of leading Tier-1 ADAS suppliers using PowerScale Storage today.
- High performance CPU and GPU-compute solutions for AI/ML/DL
- World-wide support and services tailored to meet needs ranging from start-ups to global enterprises

HERE Data Annotation Service – to help you throughout the ML process

HERE Data Annotation Service can be applied to many different types of data assets, from images and video, and from 3D Point Cloud (also known as LIDAR) to text and speech processing. Essentially any information that can be used as the basis of AI training data will benefit from the annotation process.

Data annotation activities

Industry Requirements and HERE's offering



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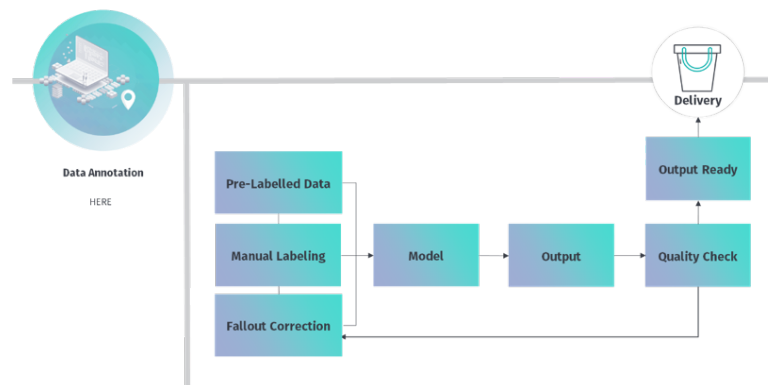


Solution Details

- **Object Annotation:** The raw images contain objects like road signs, traffic lights, or moving objects - like people. To train both their recognition and decision-making algorithms, we take their raw data and deliver it back with bounding boxes and labels that accurately categorize and identify those objects. These enriched images are then used to “teach” autonomous systems how to recognize the objects, and how to decide on the appropriate response.
- **Semantic Segmentation:** Semantic segmentation or pixel wise annotation, where every pixel in the image is assigned to a class. These classes could be pedestrian, car, bus, road, sidewalk, etc., and each pixel carry a semantic meaning.
- **LIDAR Annotation:** An active laser sensor system illuminates the car’s surroundings, creating what are known as point clouds. We transform those images into 3-D annotations. This lidar data is annotated to provide accurate georeferenced coordinates that are used to replicate the reality of a car’s surroundings, creating the AI that makes the technology safer and more reliable. This makes it possible for our customers to build better learning systems, and ultimately, safer autonomous vehicles.

Service Architecture

How do we provide our service



The HERE Data Annotation Service allows engineers, data analysts, consultants, project managers and others to develop or improve ML, AI systems by detecting, identifying, classifying features to convert them into highly accuracy datasets by processing customer owned data, HERE-owned data or third party/open-source data:

- via partnership approaches, support on specifications, with agility and flexibility to provide tailor-made solutions
- that can be provided for all regions, subject to input data.

Dell Technologies and HERE – Reducing costs and time for data annotation

Data mapping involves mapping an image coming from the camera or lidar to a real map. Once sensor data from test vehicles has been ingested, engineering teams will prepare the data by trimming, decoding, enriching (labeling or ground truth generation), processing and adding metadata such as weather and traffic conditions. Data labeling by a human is expensive and time consuming, so data must go through an AI-driven curation and extraction process to reduce the amount of time that humans need to spend drawing boxes and labeling anything interesting in the scenario. HERE is a recognized leader in the industry for this kind of data annotation, specifically for its data mapping services.

HERE is part of the [Dell Autonomous Drive ecosystem](#) - a comprehensive, open toolchain for ADAS/AD development that extends from edge-to-core-to-cloud, providing a roadmap of stable solutions that bring together leading-edge infrastructure, deep industry expertise, comprehensive services and specialized software from an extensive ecosystem of automotive partners.

Architected from the ground up for development of autonomous technologies, this ecosystem relies on Dell EMC PowerEdge GPU/CPU servers, Dell EMC PowerScale NAS Storage and multi-cloud connectivity. And with approximately 70% of Tier-1 ADAS suppliers relying on PowerScale for their sensor data storage today, the combination of PowerScale, PowerEdge and HERE assures our customers quality results in the shortest time.

About Dell Technologies

Dell Technologies helps automotive companies pursue new data-driven business opportunities in the software-defined era with future-proof infrastructure built on massively scalable, high performance storage systems, intelligent servers, access to your choice of public cloud services, a streaming data platform, and a well-vetted ecosystem of software partners. We can support both traditional workflows and data-intensive, emerging AI workflows. Dell Technologies solutions offer simplified data management and predictable performance all at the massive scale required for ADAS and AD development and testing. Learn more about [Dell Technologies storage solutions for Automotive Applications](#).

About HERE Technologies

HERE Technologies is a location data and technology platform company. We empower our customers to achieve better outcomes – from helping a city manage its infrastructure or a business optimize its assets to guiding drivers to their destination safely.

At HERE we take it upon ourselves to be the change we wish to see. We create solutions that fuel innovation, provide opportunity and foster inclusion to improve people's lives. If you are inspired by an open world and driven to create positive change, join us. [Learn more about us](#). [Watch Video](#).



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