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AIMMO
Press Kit

(2020)

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I. Introducing AIMMO Co., Ltd

1. Overview

AIMMO, Innovation in Labeling Data for Accessibility, Agility, and Accuracy

Founded in South Korea, 2016, AIMMO is a fast-growing AI data labeling solution provider for AIMMO Enterprise and Workforce service. AIMMO Enterprise is a web-based platform for managing self-service data labeling projects, but AIMMO's Annotation Workforce Service is a turnkey solution equipped with skilled labeler team. AIMMO has established robust computer vision annotation capabilities including, but not limited to, sensor fusion, and 3D point cloud.

AIMMO is a compound word of 'AI' and 'Ammunition,' meaning that accurately labeled training data can function as ammunition for machine learning and artificial intelligence. Founders of AIMMO are a group of engineers and developers from leading tech corporates – Google, Naver, Kakao, and Daum. AIMMO has developed own labeling tools and solutions for various tech domains since 2016. AIMMO provides efficient data annotation by planning a project considering the AI model's purpose and data characteristics.

AIMMO conducted data labeling of more than 100 million cumulative instances with large Korean corporations and public institutions – Kakao, Naver, SKT, SSG, Hyundai Motors, AICT(Advanced Institue of Convergence Technology) and many AI tech startups. AIMMO's experience in labeling 3D point cloud data with LiDAR sensors has received recognition in AI industry which ranges from autonomous driving, image recognition, to smart surveillance.

Company Name	AIMMO Co.,Ltd.
Establishment Date	March 17, 2016
CEO	Seungtaek Oh
Business	Supply AI training data annotation/labeling services and platform
Number of Employees	54 regular employees (developers and engineers of over 60%)
Location	Elentec Building 9F, Pangyoro 228 17, Bundang-gu, Seongnam-si, Gyeonggi Province, South Korea
Website	aimmo.co.kr

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2. History

2016. 3	Established BlueWhale Co., Ltd.
2016. 4	Registered as a venture company
2016. 6	Registered an affiliated research center
2017. 11	Developed commerce user analysis solution, “Bluescope”
2018. 5	Developed machine learning data platform, “AIMMO” CBT
2018. 10	Launched AIMMO
2019. 5	Processed media situation recognition datasets for SK Telecom
2019. 5	Selected as an AI data supplier by Korea Data Agency
2019. 5	Signed MOU with Gyeonggi Autonomous Driving Center to create an ecosystem
2019. 7	Processed training data for AI Identification system of Incheon Airport
2019. 9	Changed company name to AIMMO Co.,Ltd.
2019. 1 ~ 2020.12	Annotation project of over 100 million instances in autonomous driving, smart surveillance, media contents, OCR, etc.
2020. 8	Launched AIMMO Enterprise, we-based data labeling collaboration platform

3. CEO’s Message

“AIMMO contributes to the new digital industrial paradigm by supporting AI technology.”

CEO
Seungtaek Oh

[Education]
Bachelor of Public Administration
Hanyang University, South Korea

[Professional Career]
- Head of E-biz department at CJ Cheil Jedang Corp.
- Head of E-Commerce department at Daum Communication Corp.
- Internet system & database planning at KT Corp.

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II. AIMMO's Business

1. Business Model

AIMMO contains three pillars of business emphases: AIMMO GTaaS, AIMMO Enterprise, and AIMMO Crowd.

1) AIMMO GTaaS(Ground Truth as a Service) is a quality-guaranteed labeling service to provide a turnkey solution service from task stage planning to quality inspection. AIMMO's seasoned project managers supervise project workflow and assign skilled labelers on best-fit tasks based on their task history. AIMMO's data scientist team provides customized support to develop AI-assisted labeling tools to maximize efficiency.

AIMMO has lead labeling projects including numerous unstructured data in various AI tech domains.

Mobility	Media Contents	Security
Autonomous driving specialized service Fixed/moving objects in image/video/LiDAR data	AI media specialized service Classification and meaning analysis of videos and voices for AI searching service	Smart Surveillance Behavioral analysis for face recognition and abnormal behavior detection

2) AIMMO Enterprise (Cloud) is a web-based data labeling collaboration platform to allow multiple users to label massive data together. Besides advanced labeling tools embedded, the platform provides various useful functions for managing projects and labelers.

AIMMO Enterprise (On-Premise) can be installed in the customer's system if it is difficult to export data to the outside for security reasons.

3) AIMMO Crowd (https://crowd.aimmo.co.kr/) is a platform to allow people to quickly become an Aimmer by learning how to label data, joining actual projects, and gaining compensation. Fully-trained Aimmers are responsible for labeling a massive amount of datasets for various AI projects.

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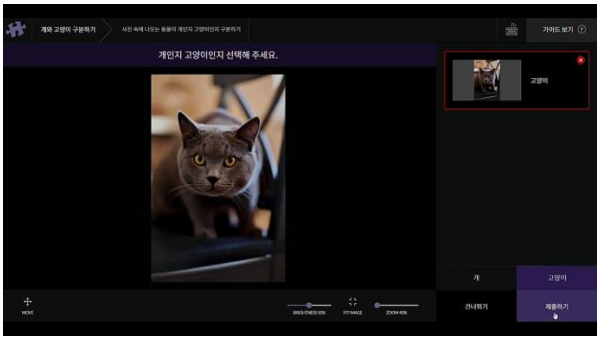
2. Technology & Service

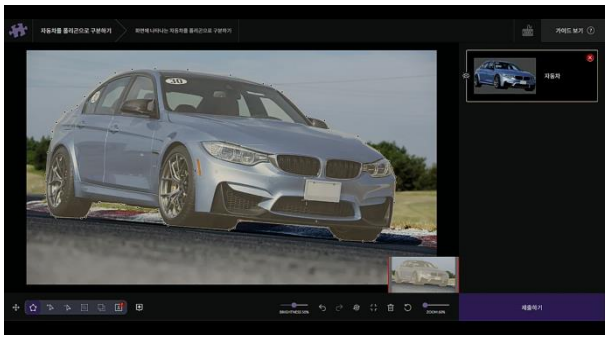
AIMMO supports a variety of labeling tools optimized for each annotation type.

1) Image & video annotation

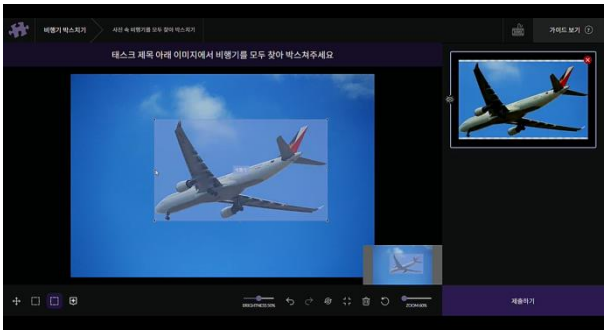
Image classification and labeling tools using bounding boxes, polygon, landmark key-pointing, skeletons, etc.



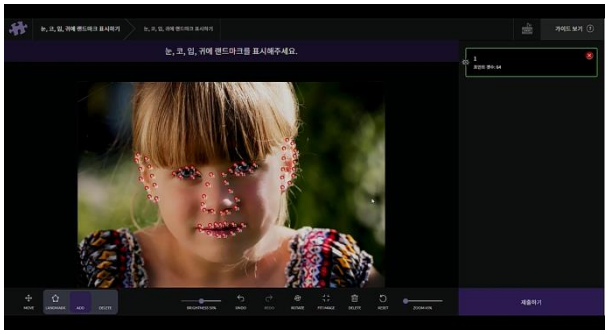
Classification by image



Polygon outlining



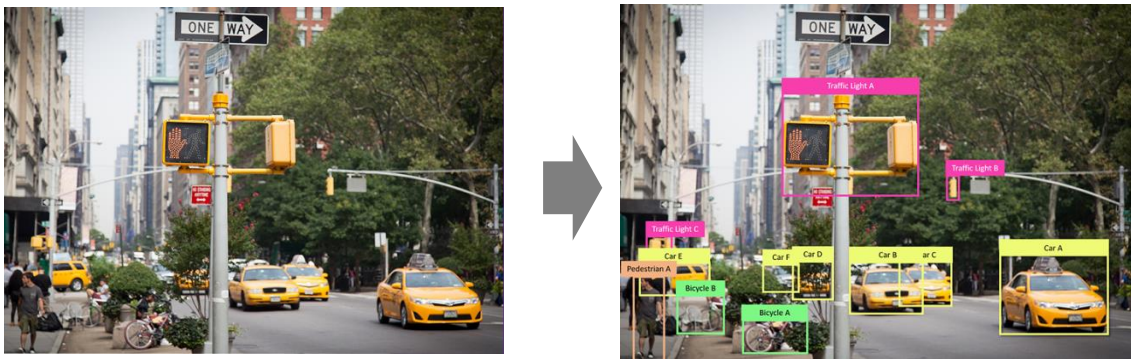
Bounding box labeling



Landmark keypointing

[Object Detection]

AIMMO provides bounding box and polygon labeling tools to mark and classify objects in an image. The tools are designed to minimize human errors of labelers and improve labeling speed. For sequential data, AIMMO's semi-automatic labeling tools can reduce repetitive labeling work. Also, a massive amount of labeled data can be screened by AI-assisted inspecting tools.



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[Semantic Segmentation]

Semantic segmentation is a labeling tool to mark the area of objects by pixel and classify them. AIMMO's segmentation tools are designed for better usability and accuracy.

[Object Tracking]

The object tracking tool identifies the same objects in numerous sequential images or videos. AIMMO's tool can also recognize the objects when they reappear after disappearing from previous images. This semi-automatic tool enables faster and easier annotation of driving data.

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2) Sound annotation

[Speech to Text]

STT tool is to process the voices into text by transcribing them. It is used to create training data for AI-based speech recognition.

[Classification]

The sound classification tool is used for annotating each sound section whether it is human or animal, what animal, what country's language, and what meaning it contains.

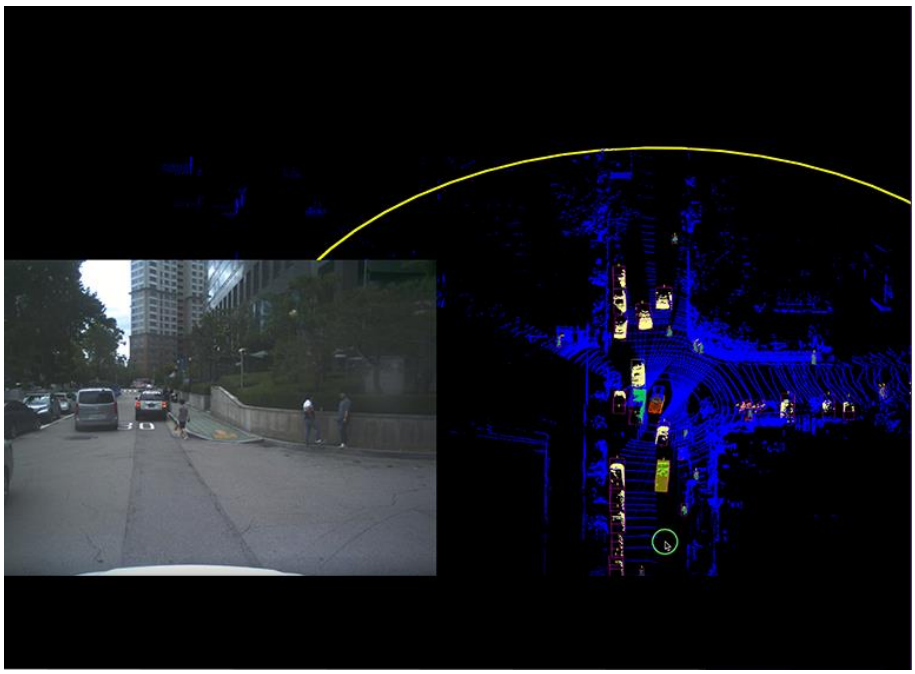
3) Sensor fusion data annotation for autonomous driving

AIMMO provides annotation of integrated data acquired by cameras, LADAR, and LiDAR on an autonomous driving car. AIMMO's tool can label moving objects – cars, pedestrians, and fixed objects –lanes, traffic signs, circumstances in both 2D and 3D data.

[Sensor Fusion Data Annotation Case]

A sensor fusion-type annotation tool is used to annotate the size, position, and direction of objects by referring to the 2D Camera Image for 360-degree point cloud data collected by LiDAR. AIMMO's tool is receiving favorable reviews from many autonomous driving companies for making it possible to label the sensor fusion data on a web browser conveniently.

2D road image data (Left) / LiDAR point cloud data on AIMMO's platform



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III. AI & Data Annotation Industry

3. Growth Plan

AIMMO is currently based in Greater Seoul (the Gyeonggi Autonomous Driving Center). One of AIMMO's projects includes working with automotive industry partners for autonomous driving (e.g., Hyundai Motors). AIMMO's adventure for global partnership keeps continuing by presenting the services at CES 2020, Las Vegas. AIMMO is expanding to serving AI-leading partners in the global market from Tokyo to Silicon Valley.

1. AI & Training Data

The spread of devices with Internet of Things and sensors has provided unprecedented opportunities for collecting data. Labeling data is the first step for AI. AI model learns from a large amount of various data. More data labeling and training is required for developing an advanced AI model. If an AI trains about nine times more ground truth data, its inference accuracy may increase up to 18%.[1]

2. Global AI-related Market Forecast

1) Global AI Market Outlook

The global artificial intelligence market size was valued at USD 39.9 billion in 2019 and is expected to grow at a compound annual growth rate (CAGR) of 42.2% from 2020 to 2027. The continuous research and innovation directed by the tech giants are driving the adoption of advanced technologies in industry verticals, such as automotive, healthcare, retail, finance, and manufacturing.[2]

2) Global AI Training Data Market Outlook

The Data annotation tools industry is expected to have significant growth throughout the forecast period owing to a combination of numerous factors such as increasing adoption of

[1] Source: Park, Y., Yun, I. D., & Kang, S. H. (2019). Preprocessing Method for Performance Enhancement in CNN-Based STEMI Detection From 12-Lead ECG. IEEE Access, 7, 99964-99977.

[2] Source: Artificial Intelligence Market Size, Share & Trends Analysis Report By Solution (Hardware, Software, Services), By Technology (Deep Learning, Machine Learning), By End Use, By Region, And Segment Forecasts, 2020 - 2027

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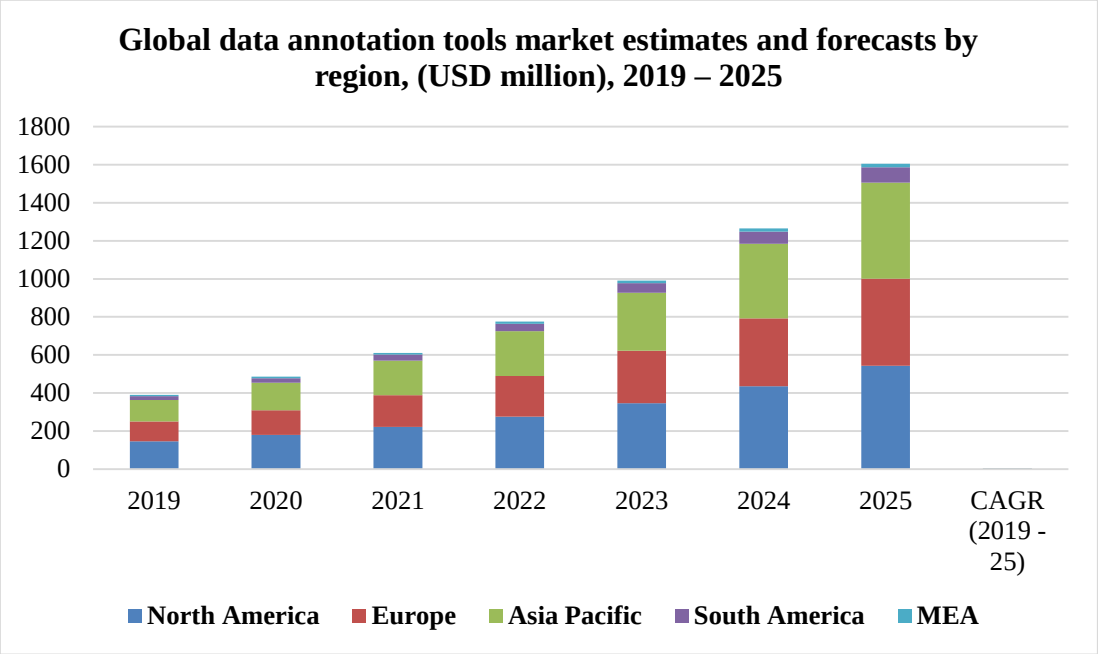
image, video and audio annotations in different end use sectors and rising developments in machine learning algorithms.[3]

Global data annotation tools market, 2014-2025 (USD million)

Market Size	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	CARG (2019-24)
Revenue	135.4	165.5	205.6	258.3	316.2	390.1	486.1	611.0	775.4	991.0	1,264.5	1,605.9	26.6%

Source: Key Data Annotation Blogs, Machine Learning Journals, ACM, IEEE, White Papers, Press Releases, and Grand View Research

The global data processing tool market is estimated around $390 million in 2019 and is expected to grow to about $1,605 million in 2025. The annual growth rate from 2019 to 2025 reached 26.6% worldwide.



Source: Source: Key Data Annotation Blogs, Machine Learning Journals, ACM, IEEE, White Papers, Press Releases, and Grand View Research

Asia Pacific region is expected to witness highest growth rate over the forecast period. The market for Asia Pacific region was valued at USD 91.0 million in 2018 and is expected to reach USD 505.5 million by 2025, growing at a CAGR of 28.2% from 2019 to 2025.

[3] Source: Grand View Research, Data Annotation Tools Market Analysis 2019

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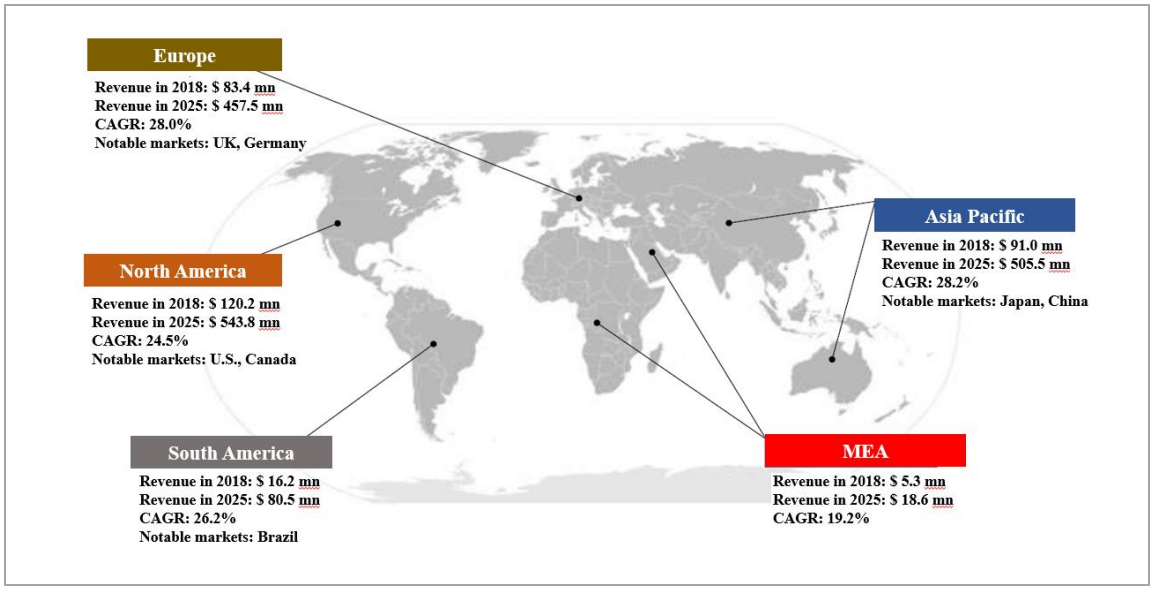
Regional marketplace: Key takeaways

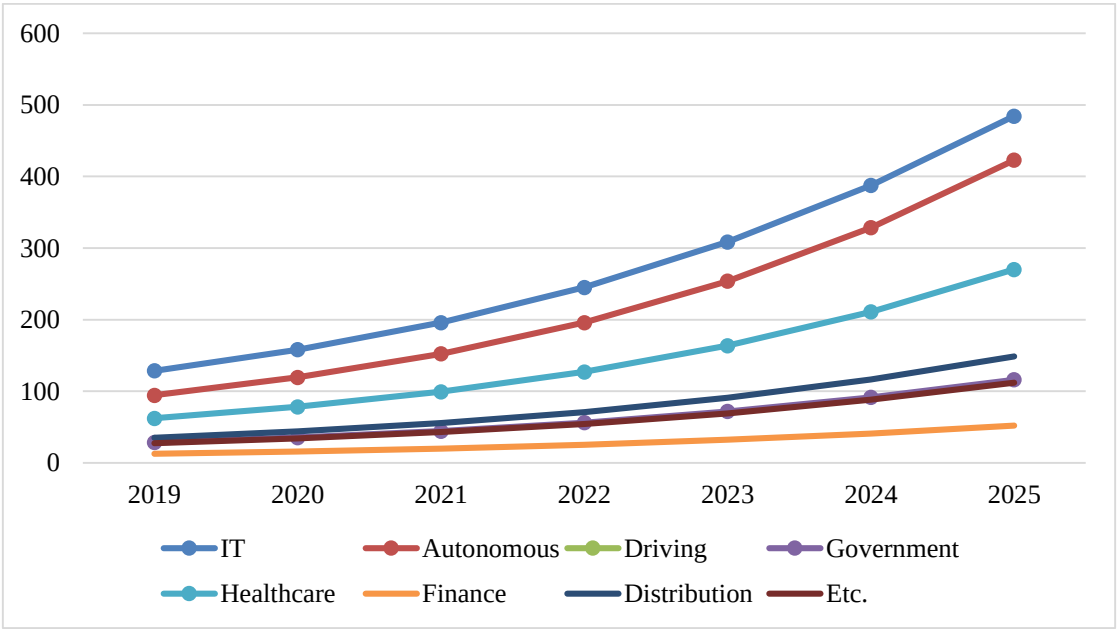


Source: Key Data Annotation Blogs, Machine Learning Journals, ACM, IEEE, White Papers, Press Releases, and Grand View Research

3) AI Training Data Market Outlook, by Industry

Data processing tools are expected to be used in various industries (e.g., IT, autonomous driving, healthcare, financial services, and logistics). IT is shown to be the largest in market size, but autonomous driving is expected to show the highest annual growth rate.

Global data annotation tools market estimates and forecasts, by verticals, (USD million), 2014 -2025



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Tech domains	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	CAGR
IT	47.7	57.6	70.6	87.6	105.8	128.8	158.3	196.1	245.2	308.6	387.6	484.3	24.7%
Autonomous Driving	30.6	37.9	47.8	60.9	75.5	94.5	119.5	152.3	195.9	253.9	328.5	422.9	28.4%
Government	9.9	12.1	15.1.	18.9	23.1	28.5	35.4	44.5	56.3	71.9	91.6	116.1	26.4%
Healthcare	20.7	25.6	32.0	40.6	50.1	62.4	78.4	99.4	127.2	163.9	211.0	270.2	27.7%
Finance	4.7	5.6	7.0	8.7	10.6	13.0	16.1	20.1	25.4	32.4	41.1	52.0	26.0%
Distribution	12.1	14.8	18.5	23.3	28.6	35.3	44.2	55.7	71.0	91.0	116.5	148.5	27.0%
Etc.	9.8	11.9	14.7	18.4	22.4	27.6	34.3	43.0	54.4	69.3	88.3	111.9	26.3%
Total	135.4	165.5	205.6	258.3	316.2	390.1	486.1	611.0	775.4	991.0	1,264	1,605	26.6%

Source: Key Data Annotation Blogs, Machine Learning Journals, ACM, IEEE, White Papers, Press Releases, and Grand View Research

4) AI Training Data Market Outlook, by Type

Manual annotation type is expected to account for over 70% of the total annotation, but semi-supervised and automatic annotation based on AI are expected to grow continuously at a CAGR of 29.6% 39.3%, from 2019 to 2025.

Global data annotation tools market estimates and forecasts, by annotation type, (USD million), 2014 -2025

Annotation Type	2019	2020	2021	2022	2023	2024	2025	CAGR (2019-25)
Manual	319.4	395.3	493.4	621.4	787.8	996.7	1,253.20	25.6%
Semi-supervised	63.9	81.6	105	136.5	178.6	233.3	303.2	29.6%
Automatic	6.8	9.2	12.6	17.5	24.6	34.5	49.5	39.30%
Total	390.1	486.1	611	775.4	991	1,264.50	1,605.90	26.60%

Source: Key Data Annotation Blogs, Machine Learning Journals, ACM, IEEE, White Papers, Press Releases, and Grand View Research

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