

Machine Learning Life-Cycle Tools and Technologies

AN IDC CONTINUOUS INTELLIGENCE SERVICE

IDC's *Machine Learning Life-Cycle Tools and Technologies* analyzes the tools, technologies, and platforms for building, training, tuning, running, and scaling the end-to-end life cycle for artificial intelligence and machine learning (AI/ML) solutions from experimentation to production. Across the themes of AI build, machine learning operations (MLOps), data labeling, and trustworthy AI, this research program analyzes ML data pipelines, ML data platforms, model build platforms, model pipelines and model monitoring. By providing actionable insights into buyer behavior, this research also helps vendors understand the end-user needs, gain competitive insights, and differentiate themselves in the market.

IDC's research indicates that while AI/ML adoption is on the rise, cost, lack of expertise, and the lack of life-cycle management tools are among the top 3 inhibitors to realizing AI and ML at scale.

Markets and Subjects Analyzed

- Data annotation and labeling services — training data platforms
- Data pipelines for AI/ML including bias assessment/remediation, feature extraction, and data reuse and drift
- Automated feature engineering and hyperparameter tuning
- Advanced machine learning (AML) build platforms
- Fairness, explainability, adversarial robustness, and transparency tools and algorithms
- Model orchestration — validation and pipelines
- Model deployment — scaling
- Model monitoring
- ML data and concept drift
- Dynamic retraining
- Model optimization
- Model monitoring
- Foundation model integration
- Synthetic data

Core Research

- Data Pipelines
- Machine Learning Operations (MLOps)
- Model Pipelines
- Model Monitoring Buyer Case Studies
- AutoML Software Market Analyses and Predictions
- AutoML Build and MLOps Software Forecasts and Vendor Market Shares
- End-User Surveys

In addition to the insight provided in this service, IDC may conduct research on specific topics or emerging market segments via research offerings that require additional IDC funding and client investment. To learn more about the analysts and published research, please visit: [Machine Learning Life-Cycle Tools and Technologies](#).

Key Questions Answered

1. What are the trends and opportunities for artificial intelligence and machine learning life-cycle management from experimentation to production technology offerings for vendors?
2. How does MLOps interweave with DevOps?
3. How do we create a model factory from core to edge to cloud and hybrid/multicloud deployments?
4. How are vendor offerings in the AI and ML life-cycle management markets differentiated?
5. What challenges do enterprises face in scaling the AI and ML life cycle?

Companies Analyzed

This service reviews the strategies, market positioning, and future direction of several providers in the artificial and intelligence machine learning life-cycle market, including:

AI.Reverie, Alegion Inc., AWS, Appen, Apple (Drive.ai), Chatterbox Labs, Cloudera, CloudFactory, Databricks, Dataiku, DataRobot, Domino Data Lab, dotData, Explorium.ai, Fiddler Labs, Google, H2O.ai, Hewlett Packard Enterprise (HPE), Hive, IBM, Informatica, LabelBox, Microsoft,

ModelOp, Oracle, Palantir, SAP, SAS, Snorkel, Tecnotree, TELUS International, Tonic, Uber (Mighty AI), and V7.