



Rapidly Develop Computer Vision Models for AI-Powered Solutions with Intel® Geti™ Software

Empower teams to train AI models fast using Intel Geti software, then scale AI deployments with the Intel® Tiber™ Edge Platform

Key takeaways

- Teams can build custom vision models at scale with existing resources, using less data and reducing development tasks.
- Data scientists, domain experts, developers, and AI professionals can effectively work together in the same computer vision AI model development interface.
- Intel Geti software works with most AI frameworks and exports trained computer vision AI that can run on existing or new devices—everywhere from edge to cloud.
- REST APIs and the software development kit (SDK) allow users to integrate Intel Geti software into their value chain, enabling direct data input and trained model deployment.

Challenge: Building custom vision AI models is resource and time intensive

Developing AI is a complex, multistep process requiring vast amounts of data and laborious data labeling, model training, and optimization. Traditional approaches rely entirely on data scientists and AI developers—who are often already at capacity—and don't allow for the possibility of domain expert collaboration that integrates critical knowledge into the model.

Solution: Intel® Geti™ software

Designed for cross-team functionality, Intel Geti software streamlines AI computer vision development by enabling domain experts and data scientists to collaborate in model training. Leading-edge data labeling tools simplify annotation workflows and help reduce the data needed to train an AI model in combination with active learning technology. The solution provides a direct path for deploying models with optimized performance on Intel® hardware, and once a model is created, the Intel® Tiber™ Edge Platform empowers organizations to build, deploy, and run AI at scale.

How to build vision models more efficiently with Intel Geti software

Intel Geti software uses active learning, where human experts become teachers who stay involved as the machine trains the AI. Active learning makes labeling data and retraining neural network models faster and less labor intensive.

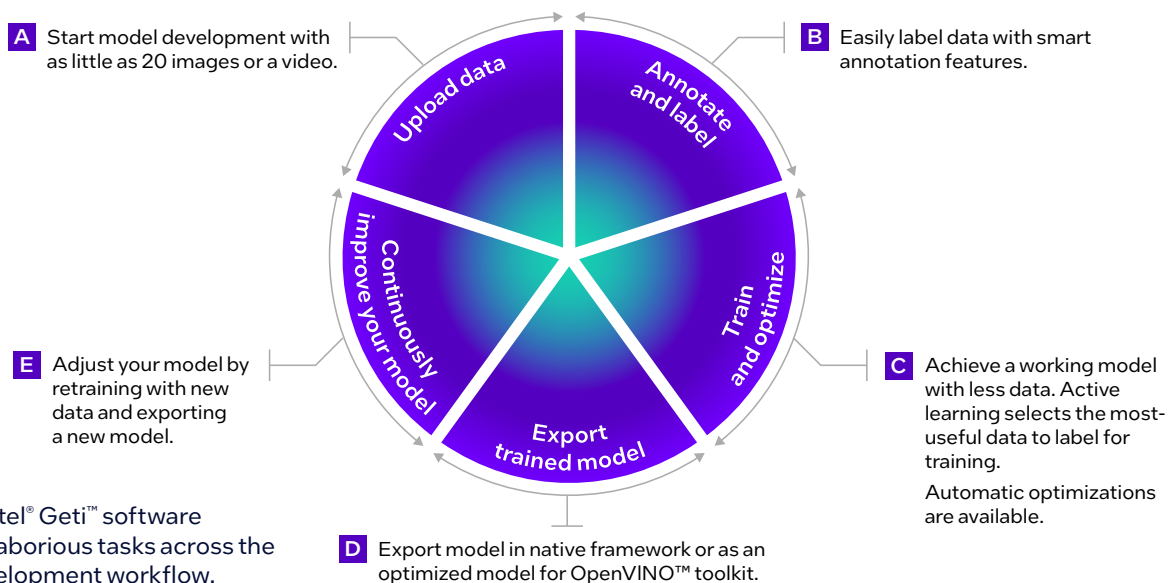


Figure 1. Intel® Geti™ software simplifies laborious tasks across the model development workflow.

The Intel Geti software workflow:

1. Start by uploading a dataset of 20 to 30 images.
2. After a round of training, the platform chooses the best candidates for additional training. Continue to select and label what you want the platform to find.
3. The model begins retraining and making predictions. Accept or correct predictions and label more data to continually improve accuracy.
4. Optimize and export the model for deployment.
5. To retrain: Upload new images, add them to the dataset, continue training, and export an updated model.

Work with a collaborative, intuitive, time-saving interface

Domain experts and data scientists can collaboratively label data and view training results in near-real time. Intel Geti software offers state-of-the-art data-labeling capabilities to remove backgrounds, autodetect similar objects, and segment shapes. It simplifies batch processing, image analysis, and data labeling through a simple, intuitive interface.

Overcoming data challenges

The active learning functionality in Intel Geti software selects the most-informative data samples to achieve working models with less data, which is especially useful where vast amounts of data is not readily available.

Export inference packages for practically any hardware

Intel Geti software exports production-ready deep learning models in several formats, including open source PyTorch and ONNX frameworks and intermediate representation (IR files) for OpenVINO™ toolkit to run on Intel® CPUs, GPUs, and VPUs. The OpenVINO toolkit is an open source AI toolkit that makes it easier to write once, deploy anywhere. Models can be automatically optimized with OpenVINO for powerful performance on virtually any system with Intel® hardware.

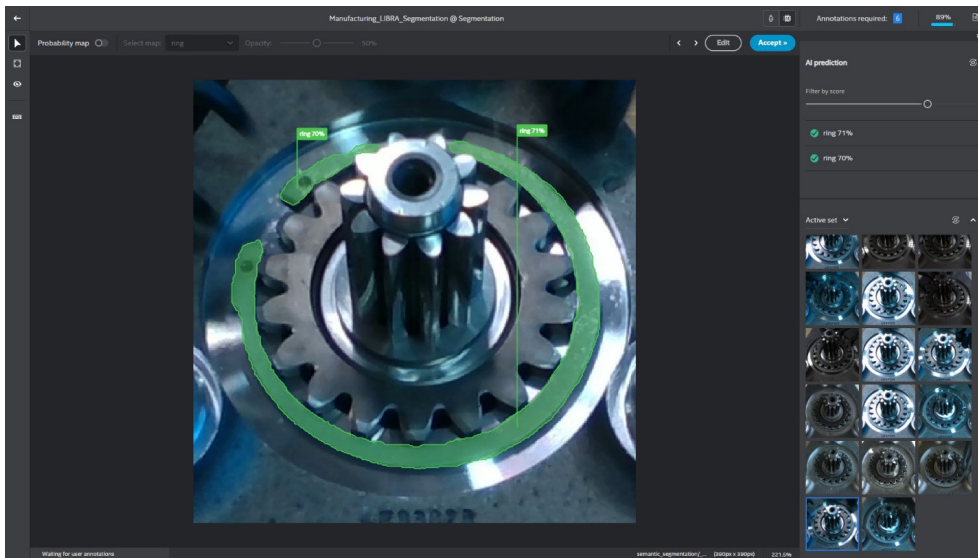


Figure 2. Intel® Geti™ software uses active learning and smart annotations to simplify labeling and accelerate AI training.

Intel Geti software use cases

The software retrains convolutional neural network models for key computer vision tasks, including:

- Axis-aligned as well as rotated object detection
- Semantic as well as instance segmentation, including counting
- Single-label, multilabel, and hierarchical classification
- Anomaly classification, detection, and segmentation

Intel Geti software also supports task chaining to combine multiple tasks (e.g., detection and classification) for more-granular model development to build smart multistep applications.

The software enables building custom AI vision models for any industry, which can be deployed with the OpenVINO toolkit or integrated into the pipeline with REST APIs and the SDK. Here are just a few examples:

Manufacturing

Autonomous assembly, defect detection, process monitoring, and safety

Smart cities

Traffic management and monitoring and smart buildings

Retail

Inventory management, loss prevention, and touchless checkout

Video safety

Task-specific video analytics and safety gear detection

Healthcare

Medical imaging diagnostics, lab analysis, and clinical research

Intel Geti software technical details

Supported deep learning models

Computer Vision Task	Task Types	Model Architecture Supported
Image classification	Single label, multilabel, hierarchical	LinearHead x (MobileNetV3, EfficientNet-B0), Data-efficient Image Transformer
Object detection	—	ATSS + MobileNetV2, SSD + MobileNetV2, YOLOX + CSPDarkNet
Instance segmentation	Counting, rotated object detection	MaskRCNN x (ResNet 50, EfficientNetV2, Swin Transformer)
Semantic segmentation	—	Lite-HRNet, SegNeXt
Anomaly-based tasks	Classification, detection, segmentation	STFPM, PADIM

Supported tasks

- Object detection, classification, segmentation
- Anomaly classification, detection, and segmentation
- Task chaining for building models with multiple analytical steps

Supported AI frameworks

- TensorFlow (where available)
- PyTorch

Supported deep learning formats

- Native TensorFlow (where available)
- PyTorch
- OpenVINO toolkit IR files (.xml and .bin) for Intel hardware
- ONNX

Integrations

An SDK enables you to use REST APIs for exporting datasets, annotations, and models directly into downstream processes.

SDK and API functionality:

1. Computer vision task creation from datasets on disk
2. Project downloading (images, videos, configuration, annotations, predictions, and models)
3. Deploying a project for local inference with the OpenVINO toolkit

Additionally, with microservices like Model Registry and Edge Video Analytics Microservice (EVAM) within the Intel Tiber Edge Platform, models trained with Intel Geti software and optimized for the OpenVINO toolkit can be deployed at scale in production environments.

Get started with Intel Geti software on the [Intel Tiber Edge Platform](#) today!



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