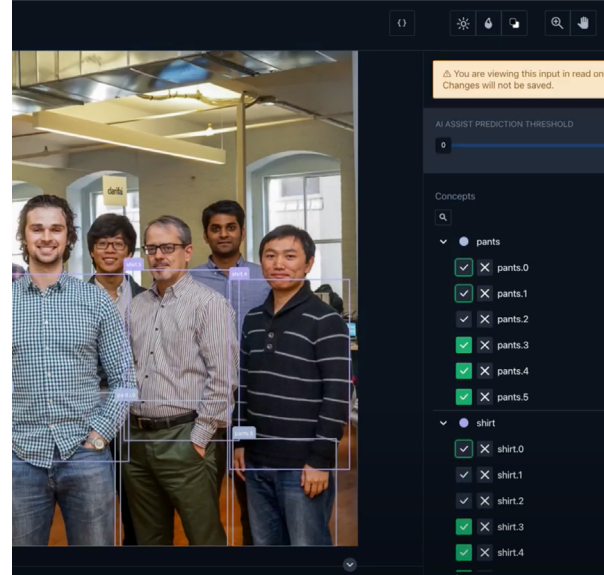




Clarifai Brings Visual Search to Retail

Connecting the online and offline shopping experiences with computer vision and AI



“There are fewer than 100,000 data scientists that are truly capable of building deep learning technology in the world today, and this isn’t enough to make AI accessible to everyone. Our goal is to empower the 50 million global developers to build AI—and nobody else is as focused on that as we are.”

Matt Zeiler, Founder and CEO, Clarifai

To retain customers and increase market share in today’s competitive environment, retailers must connect their in-store and online shopping experiences with omnichannel services for product search, purchase, and payment.

With **93 percent of online purchase decisions** driven by product images, digital stores need to deliver rich visual experiences, including visual search and visual product recommendations. Unfortunately, the complexity and time required for software to accurately label product attributes from images has been a barrier for many retailers seeking to enhance their online shopping experiences.

Clarifai Offers Enterprise-Grade Computer Vision

Clarifai is seeking to break down the barriers to visual search implementation. The company specializes in deep learning models used for understanding unstructured image, video, text, and audio data.

Clarifai offers an AI-powered platform for building image classification software that supports the full AI development lifecycle, from dataset preparation to model training and deployment. Clarifai’s solutions help both the public sector and enterprise customers solve complex use cases through object classification, detection, tracking, geolocation, visual search, and natural language processing.

Clarifai’s visual search also simplifies the management of digital assets, providing the ability to bulk remove millions of duplicate items based on visual similarity.

Collectively, the Clarifai research team boasts over 170,000 research citations, and the company has earned various awards for its achievements in artificial intelligence and computer vision. These include CogX Awards’ Best Innovation in Computer Vision, as well as market leader recognition in the **IDC MarketScape Computer Vision AI Software Platforms Report**.



Clarifai offers a leading platform for building AI-powered software to transform unstructured image, video, text, and audio data into intelligent products, automation, and insights.

Industries

- > Retail
- > E-commerce

Benefits

- > Reduces page bounce
- > Delivers more accurate search results
- > Expands cart size
- > Offers relevant alternative product recommendations
- > Quickly trains and deploys visual search models

By using NVIDIA Triton™ Inference Server to optimize models, Clarifai empowers its users to train models at scale, run models at any production volume, and handle difficult traffic patterns. The Clarifai platform can deploy in the cloud, on local data centers, and at the edge.

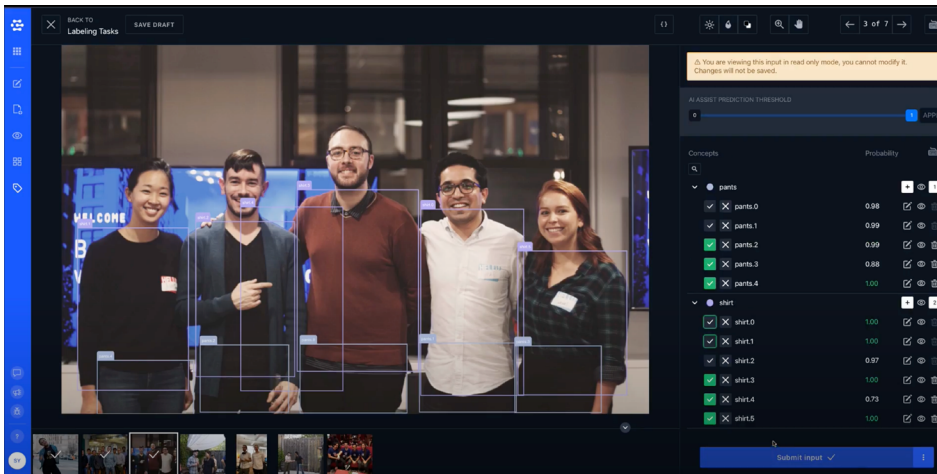


Figure 1: The Clarifai platform leverages AI powered by NVIDIA Triton to automatically and semi-automatically label unstructured images, video, and text data.

Big Box Retailer Boosts Revenue by 12 Percent With Visual Search

With Clarifai's help, a large U.S. retailer introduced visual search on their mobile application to keep pace with an app launched by a competitor. With visual search, shoppers gained the ability to search for products using images, increasing the likelihood that they would find what they were looking for and make a purchase.

By combining computer vision with visual search, Clarifai has helped the retailer integrate its online and offline shopping experiences to connect customers with exactly what they're looking for in seconds.

The goal of the project was to provide accurate mobile app product recommendations. This is technically challenging, because product catalog images don't always look like the images shoppers take on their phones.

To overcome this hurdle, Clarifai designed and delivered an end-to-end platform with cascading visual search that merges image classification with visual similarity search.

The result is a "snap and search" shopping experience. Customers simply take a picture of the product they're interested in, and Clarifai's visual similarity search returns the matching item in the retailer's catalog.

With visual search capabilities deployed across the entire product catalog, the retailer's online shopping experienced significant improvements including:

- > 30 percent more accurate search results
- > 20 percent more relevant product recommendations
- > 12 percent increase in revenue through improved conversion rates

With active learning pipelines, models continually learn from real customer data and improve the visual search experience each day.

The recommendation engine is also helping the retailer reduce bounce rate and expand cart size by suggesting alternative products at the right time.

AI Results

- > 100X faster data labeling
- > 30 percent more accurate visual search results
- > 10X the number of available models

Retail Results

- > 20 percent improvement in relevant search results
- > 12 percent increase in revenue

NVIDIA Hardware Used

- > NVIDIA DGX™ V100
- > NVIDIA-Certified Systems™

NVIDIA Software Used

- > NVIDIA® TensorRT™
- > NVIDIA® CUDA®
- > NVIDIA CUDA-X™
- > NVIDIA Triton Inference Server

Powered by NVIDIA Metropolis

NVIDIA GPUs, the NVIDIA Metropolis software stack, and NVIDIA-Certified Systems provide the substantial processing power required for Clarifai's multi-layered artificial neural networks.

Model training and inference running on NVIDIA-Certified Systems help Clarifai achieve sustainable competitive differentiation with accurate custom models that learn from real-world data.

NVIDIA Triton handles version control for TensorFlow and Pytorch, enabling teams to deploy, run, and scale trained AI models. With inference requests to Triton powering automatic and semi-automatic image labeling, Clarifai achieved **100X faster data labeling**. Clarifai was able to deploy multiple models per GPU node, offering **10X the number of models** on its platform without increasing costs.

With NVIDIA compute, Clarifai helps customers efficiently monetize unstructured data by delivering state-of-the-art image classification, object detection, visual search, and more.

Using Clarifai's visual search capabilities, retailers deliver more accurate, personalized online shopping experiences to increase sales and carve out a competitive advantage.

Powered by NVIDIA METROPOLIS

AI Application Framework for Smart Sensors

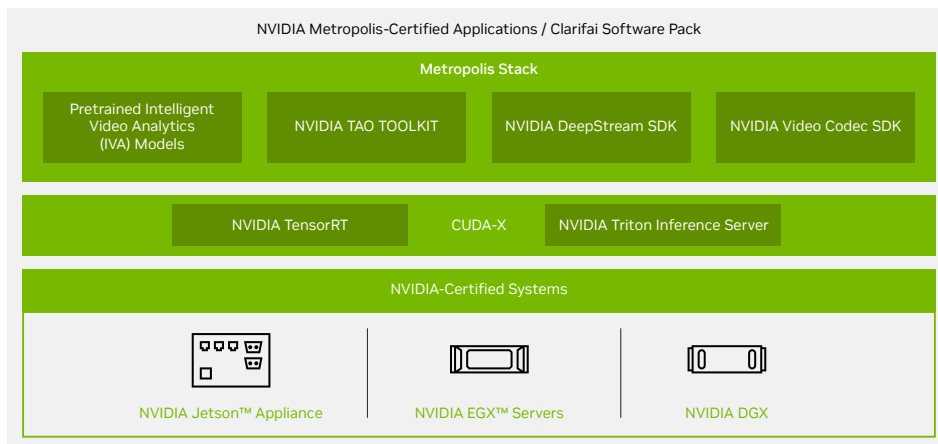


Figure 2: NVIDIA GPUs, the NVIDIA Metropolis software stack, and NVIDIA-Certified Systems provide the processing power to help Clarifai train, label, and deploy state-of-the-art image classification models, object detection models, visual search models, and more.

Ready to Get Started?

To learn more about Clarifai's visual search solution, visit www.clarifai.com/use-cases/visual-search

To learn more about how NVIDIA is powering a new era of smarter retail, visit www.nvidia.com/retail