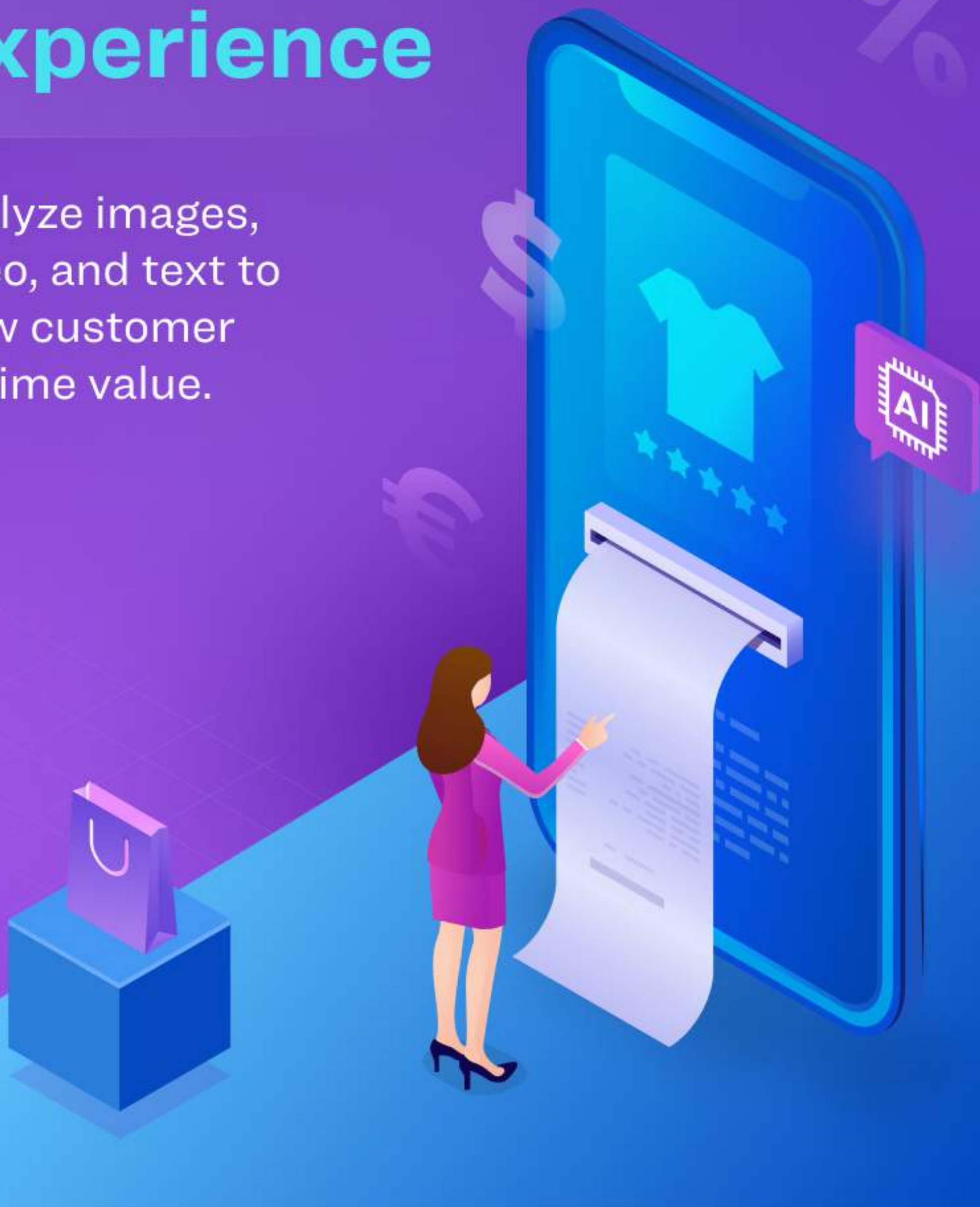
Leverage AI to Drive the E-Commerce Experience

clarifai

Analyze images, video, and text to grow customer lifetime value.



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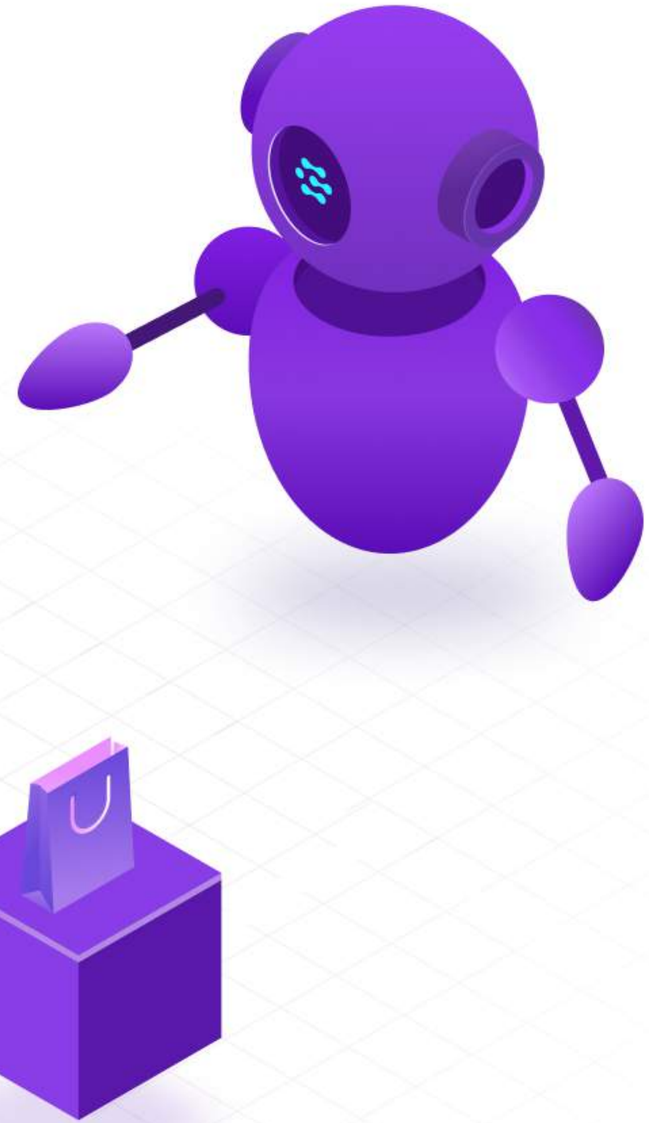


Introduction

Growth of online shopping is accelerating with no end in sight. AI retailers are using data to connect shoppers with products more effortlessly and deeper than before.

Smarter searches, personalized shopping experiences, curated product recommendations, augmented SKU metadata, clear customer sentiment: **AI is helping companies increase loyalty, boost profits, and maximize customer lifetime value.**

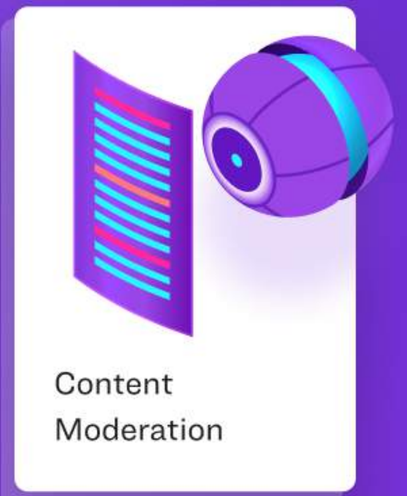
This e-book highlights AI E-commerce use cases that can be used to generate new ideas to support growth initiatives. The world's best retailers use Clarifai to help shoppers hone in on what they want. **Clarifai's deep learning platform helps companies see media, read text, and hear audio.**

Common use case categories

- Automated metadata generation
- Visual similarity search
- Product and service recommendations
- Snap and search

Language Understanding

- Text categorization
- Sentiment analysis
- Smart chatbots
- Multi modal models



Content Moderation

- Image & video moderation
- Text moderation

Powerful market trends are accelerating digital transformation

AI capabilities are now critical to driving E-Commerce growth

The COVID-19 pandemic brought a new generation of customers online. While the larger share of sales still occurs inside brick-and-mortar stores, e-commerce is growing at a greater rate. **Online sales are projected to grow 14.8% year over year,** compared to brick-and-mortar growth of 1.9%.[1] Adobe estimates that online sales in April and May of 2020 were a staggering $52 billion above online sales in April and May of 2019. [2]

We have shifted to a hyper-personalized shopping experience

87% of shoppers expect a personalized, consistent experience across channels that is intuitive, quick, convenient and optimized across every touch point. [3]

Omnichannel retail is increasing competition

There is no brick-and-mortar or e-commerce retail. There are just consumers who want convenience and effortless experiences at all times.

Brick and mortar retailers have turned to AI to create seamless shopping experiences that create a competitive edge over online-only retailers. Omnichannel shoppers have larger shopping baskets and exhibit more brand loyalty.

73%

of all shoppers move across multiple channels as digital drives a seamless retail experience in 2020 and beyond.

15%

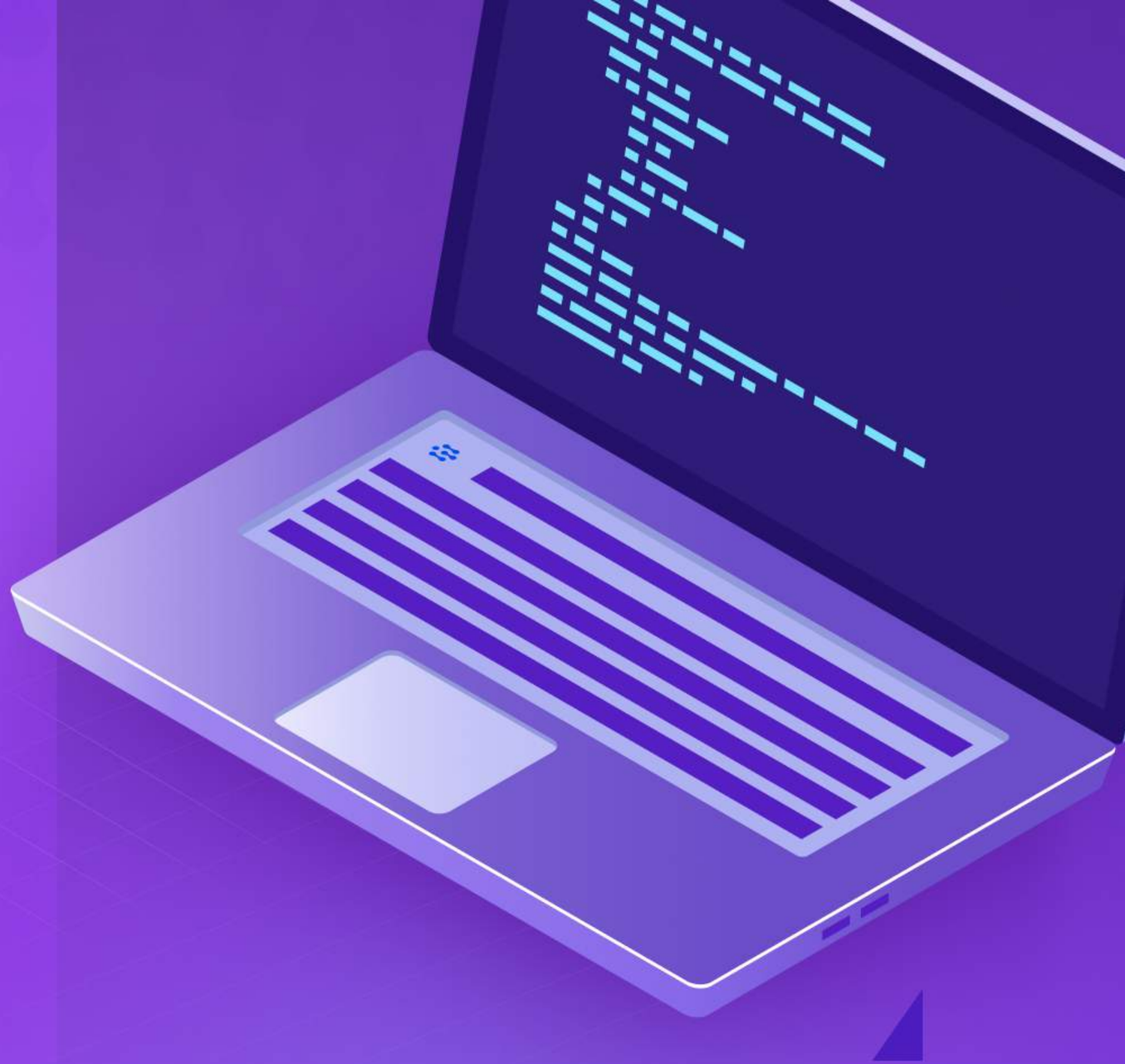
Omnichannel personalization increases customer revenue by 5% — 15%. [4]

Revolutionizing E-commerce with computer vision and NLP

Reduce time to AI use case creation by utilizing the industry's dominant deep learning platform

> **Deep learning platforms are the next generation of AI platforms, and they are rising in popularity.** Deep learning gives companies the ability to sense, comprehend, learn, and act with human-like levels of intelligence. Using deep learning, companies can interpret unstructured data from visual and textual content.

- **Computer vision**
  Online retailers use computer vision to extract visual and textual characteristics from images and videos, and thus detect and classify objects, sentiments, and behavior.
- **Natural language processing (NLP)**
  NLP helps retailers hone a better buyer understanding from the terms and phrases they use to communicate via search, reviews and communications.



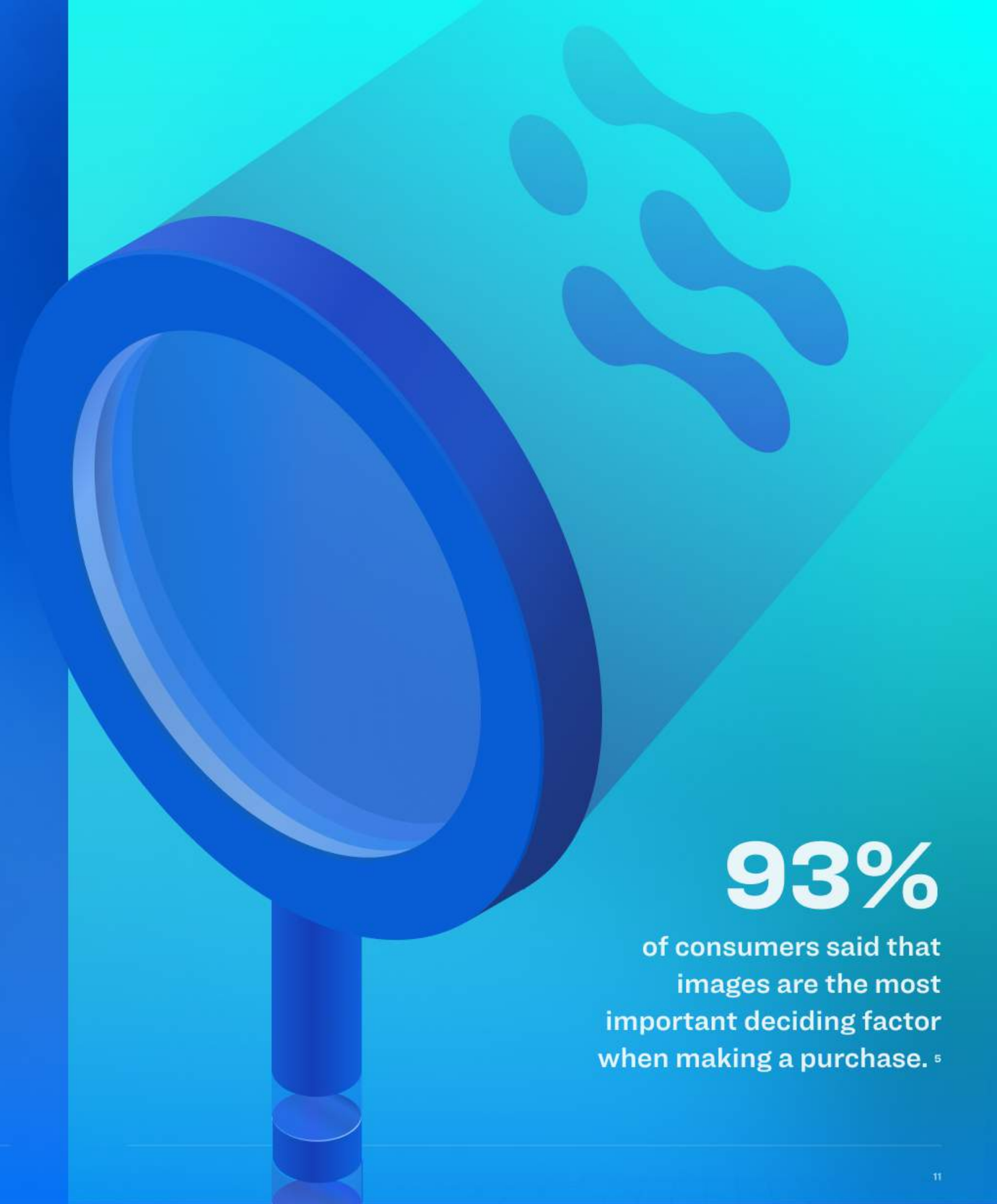
Clarifai provides an end-to-end deep learning platform for computer vision and NLP. It provides pre-trained models and automated machine learning to index products faster, serve deeper search results; power product recommendations; and moderate content while **reducing manual efforts** and errors **up to 95%.**

Use Case

Search and discovery powered by computer vision

Online retailers are using computer vision to turn data into sales. At the heart of this is search and discovery. Search and discovery provides the ability to determine what visual content customers are interested in, so retailers can then recommend similar or related products that shoppers may also have an interest in buying.

- Automated metadata generation
- Visual similarity search
- Product and service recommendations
- Snap and search



93%

of consumers said that images are the most important deciding factor when making a purchase. [5]

Search and Discovery

Improving product category search results with richer auto-generated metadata

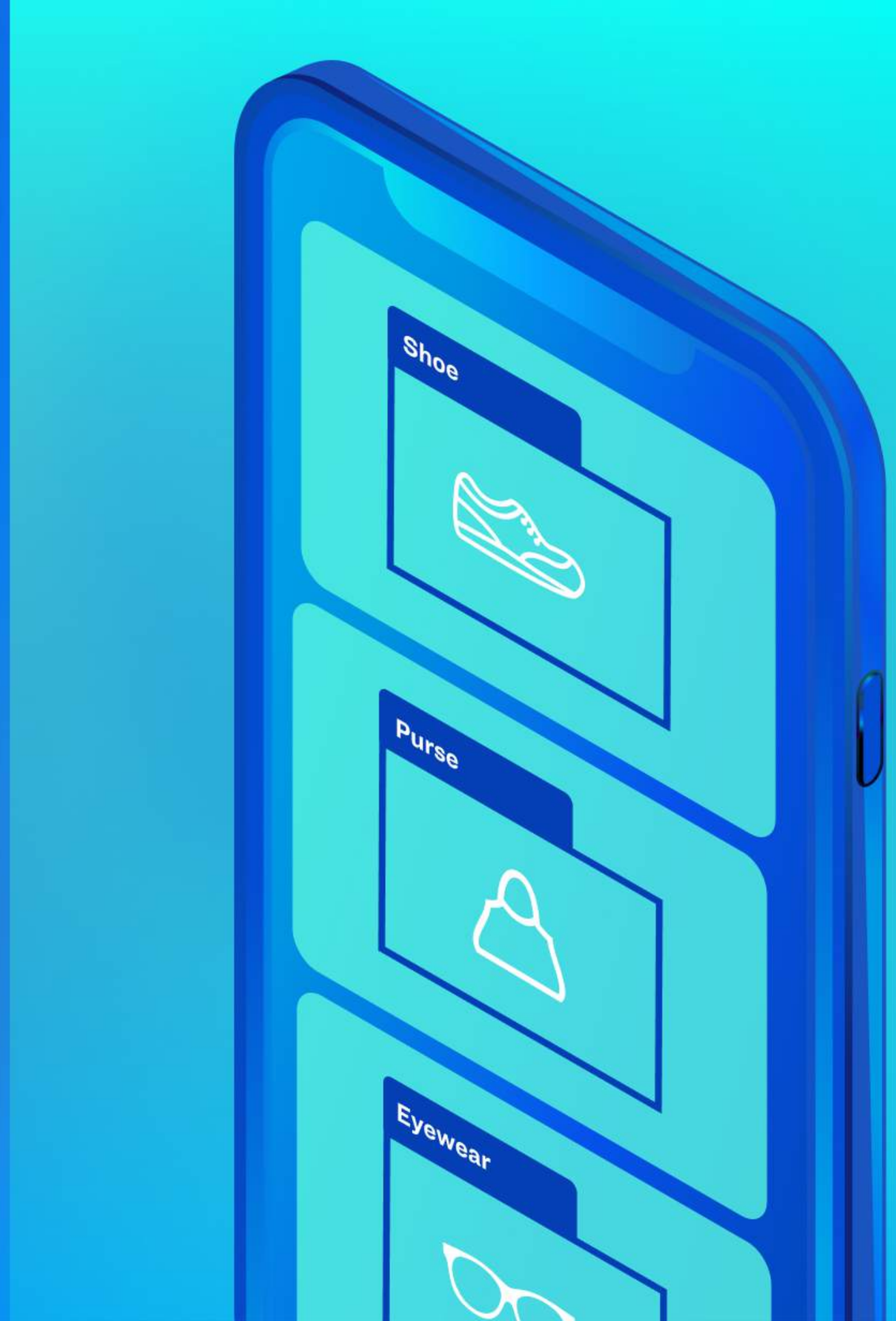
Automated metadata generation is essential to E-Commerce

If search results delivered to customers are not relevant, you lose customers. Online retailers use automated metadata tagging to assign deeper keywords that identify individual products faster and more accurately than the human eye ever could. Automated metadata generation improves and standardizes category labeling enabling better, personalized search results.

This offers online retailers with large product catalogs the ability to classify and segregate product details into searchable terms to make it faster for shoppers to find what they want.

Automated labeling increases the speed and accuracy of keyword tagging by 100x. It also makes it possible to scale to large projects in an optimized way. With active learning you can then make product category prediction applications even "smarter". Models improve over time: they learn from experience, and can even spot and correct mislabeled products.

Better metadata will improve product "findability", help shoppers make purchase decisions more quickly, reduce bounce rates, and increase cart size.



Search and Discovery

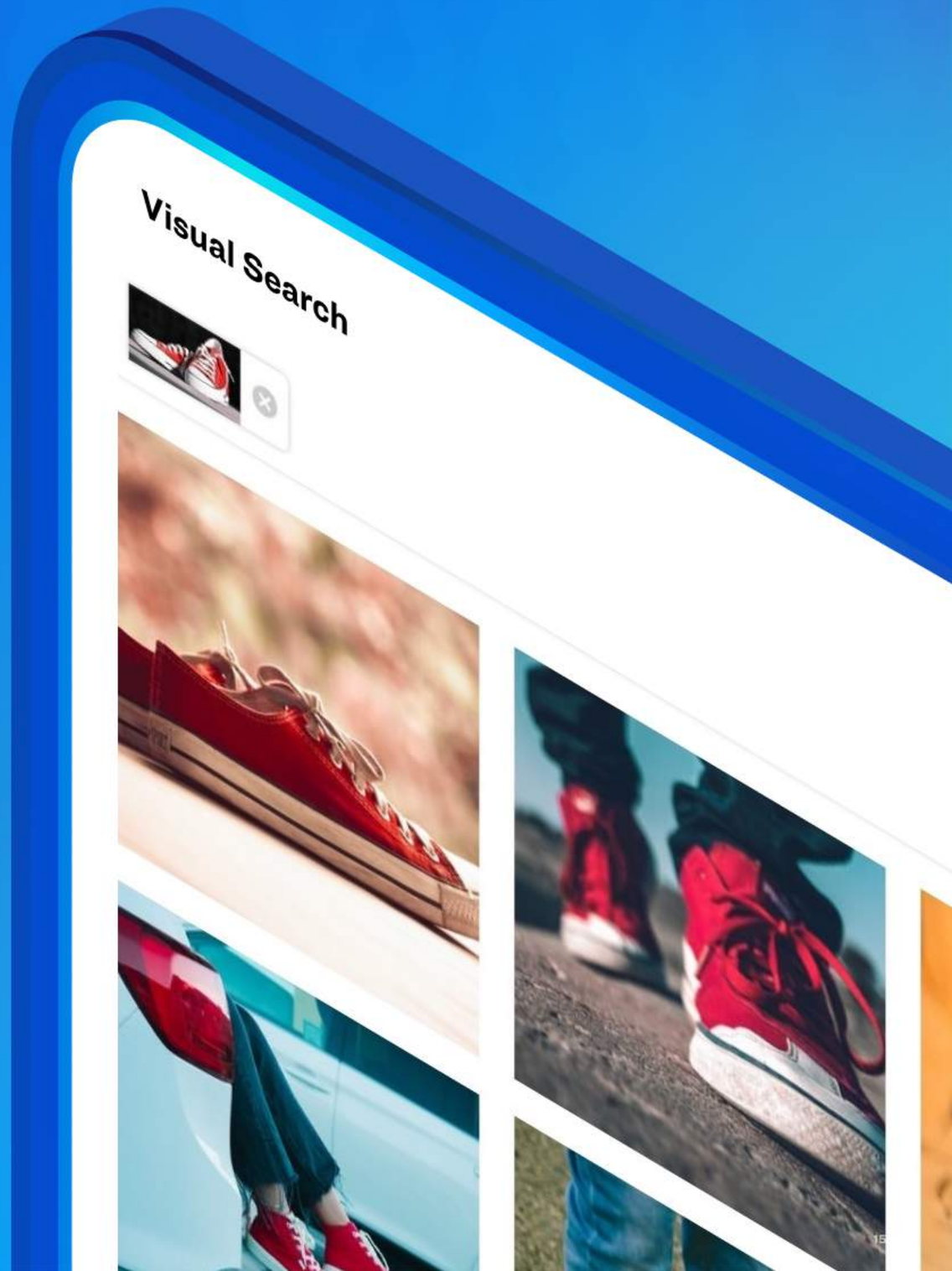
Visual similarity search

When words are not enough

> Visual search allows a customer to drop a similar product into a search box and find products visually similar to that image. The shopping experience is made easier because shoppers don't have to think about the right keyword phrase to search on or sift through thousands of "almost-there" search engine results.

> Pictures offer a universal language. Visual search connects the shopping experience by removing the guesswork ... what they see is what they get.

> Object detection recognizes dozens of features from a product's image and compares them with similar items in the product catalog. Customers have an easier time finding products and are one step closer to making a purchase, which translates into faster conversions. Studies show that **consumers who use visual search reach the checkout process 2x quicker than text-based search.** [8]



Search and Discovery

Product and service recommendations

Leveraging your image, video, and text data to power personalized experiences

AI models have become the backbone of product searches and recommendations. They offer a competitive edge for retailers. Using computer vision, retailers can leverage their search results to show more relevant products to increase conversions. For example showing “more items like this” or “related products.” Searches can provide consumers with complementary products whether by category, size, color, shape, fabric, or even brand.

Increasing conversions with similar product recommendations

What if a product is out of stock? Before a shopper abandons their cart, retailers can offer them alternative products and services with similar attributes. Retailers, like Wayfair and Overstock, have done this very well. Showing more of visually similar items to help increase upselling opportunities, build brand loyalty, and drive higher basket values.

Product recommendations constitute up to 31% of online shopping sales. These numbers make the combination of computer vision and AI in retail a real win-win.[7]

west elm

Search and Discovery

Snap and search

When images are the fastest way to find the exact product

Sometimes shoppers love a style, but they don't know how to describe it in a keyword search.

Snap and search allows retailers to connect customers to exactly what they are looking for by using a photo taken from their mobile phone, matching the photo to a retailer's product catalog, and helping the customer order matched products on the spot.

Similarly, companies can use computer vision to identify styles in the consumers' social media to items that are visually similar in their inventory. For example, a customer can connect their Pinterest board to a retailers' website and be shown multiple items that correspond to their favorite pins.

Case Study

Snap and find it

In this age of instant gratification, consumers expect to be able to purchase on the go. However, thanks to widespread adoption, mobile apps are no longer differentiators for retailers. It's all about improving the customer experience.

A major $70 billion retailer wanted to do just that by helping connect customers with precisely what they were looking for at the moment of inspiration. With over 2 million products with 8 million images across 20-30 categories and over 5,000 taxonomies, there was a problem helping customers search and find what they were looking for based on words alone and the way they thought of things.

The retailer turned to Clarifai to help them offer their customers the ability to use Snap and Search to find products quicker.

Customers were able to take pictures of items they liked both inside the store and out, so they could find what they were looking for or similar products faster and more easily.

The retailer chose Clarfiai because of its all-in-one AI lifecycle platform which went beyond visual search. It offered a full solution that could solve multiple use cases that they wanted to deploy in the future. This was a deciding factor for them. A full solution avoided them having to use a third party system integrator, and they were able to deploy on-premise.

As a result of implementing visual search, they were able to get both categories and products right in search results and performed up to **3x better than their internal visual** search capabilities. Their time to accuracy improved exponentially.

Case Study

West Elm uses Visual Search to make Pinterest pins shop-able

West Elm's Pinterest Style Finder, powered by Clarifai's AI technology makes product discovery a breeze. The application analyzes a customer's inspiration boards on Pinterest to recommend shoppable West Elm items.

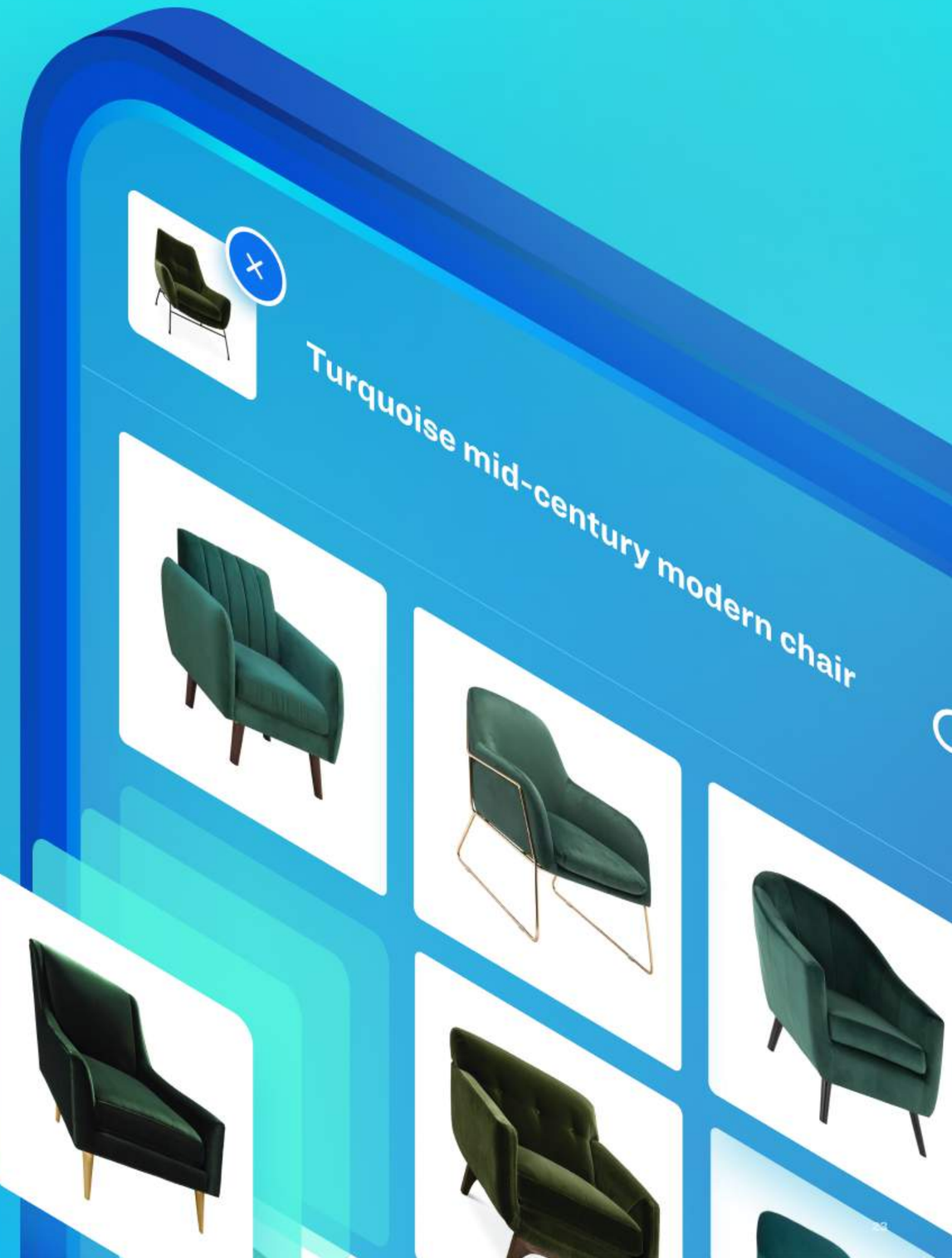
By creatively implementing snap and search, West Elm was able to build a visual search mobile app to allow customers to snap pictures of their product furnishings. Then shoppers can match Pinterest pins to the retailers product catalog to make the pins shoppable.

Results

This connection between users stylistic preferences and products **increased basket size and average visitor revenue by 20% to 30%**

20-30%

Increase in basket size and average visitor revenue



Use Case

Language Understanding using Natural Language Processing

- Text categorization
- Sentiment analysis
- Smart chatbots

Language Understanding

Using NLP to tap into consumer demand

Natural language processing (NLP) is a type of machine learning that can discern the meaning and intent behind written text or spoken words. Text classification is an NLP technique that allows machines to understand and then categorize text into organized groups.

The algorithms allow machines to automatically analyze text and assign predefined tags or categories to it based on its contents. Customer services departments on E-commerce sites use text classification to build use cases to support product categorization, sentiment analysis and even chatbots and conversational interfaces.

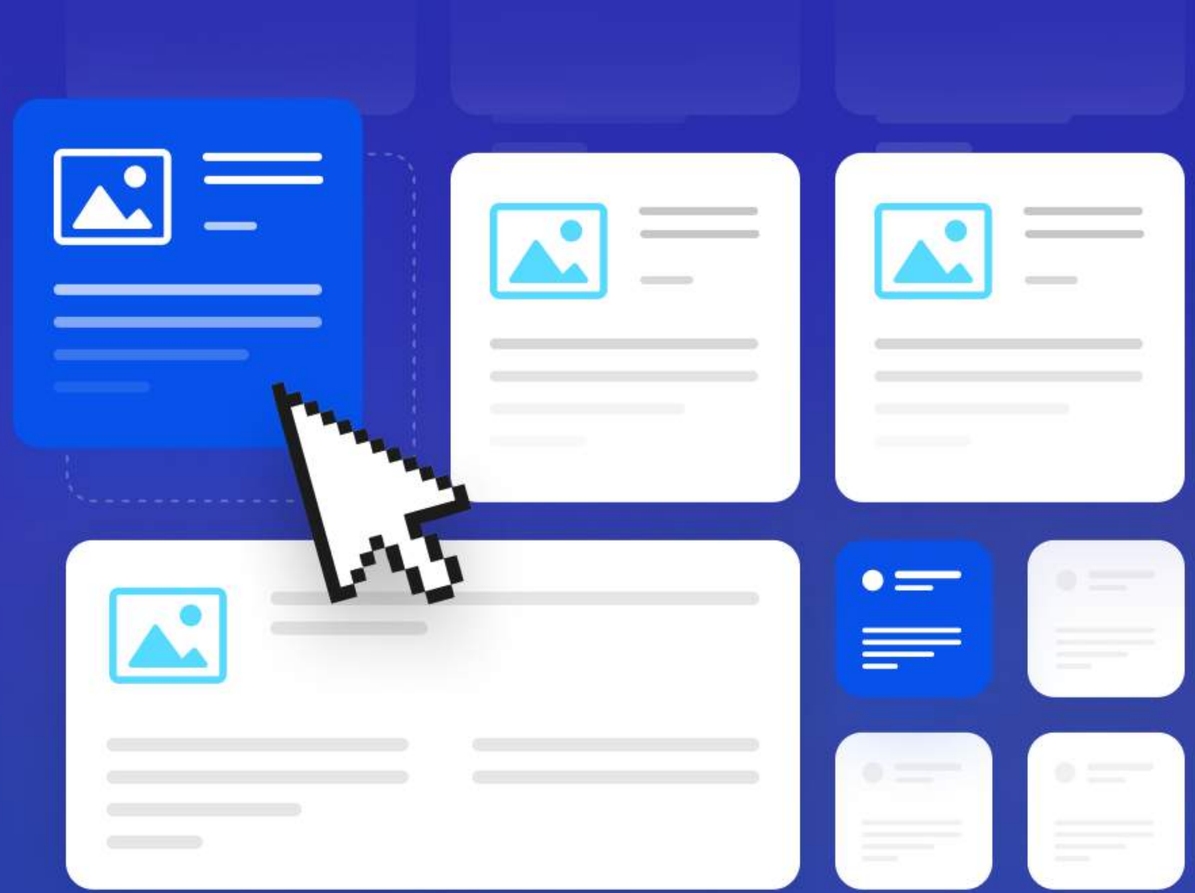
Language Understanding

Text categorization

Making it easy for your shoppers to find what they want

Retailers thrive on offering a wide variety of products and services. However, a growing product portfolio can make it difficult to categorize products and time-consuming, if done manually.

Text classification makes it easier for retailers to categorize their products online with minimal effort. **AI categorizes products automatically into predefined topics** and **automates the process as new products and categories are added.** It makes free-text searches faster and provides a better user experience by highlighting top categories upfront. Large e-commerce retailers, like Amazon and Best Buy, who continually add thousands of new products to their catalog weekly, use AI to automate the category labeling process.



Clarifai helped a leading retailer **reduce category labeling time by 86% — from days to hours.**

Using Clarifai's platform, they used automated data labeling to train and build custom text categorization models that predicted the right categories for millions of existing products. The retailer then was able to add tens of thousands of new products to website categories with confidence.

With richer metadata, the retailer **improved catalog searches across 40 million items.**

Language Understanding

Sentiment analysis

Uncovering customer beliefs and opinions

Consumers often voice their opinions of brands, products, and services through a variety of different channels: email, social, websites, chatbots, and more. It's vital for companies to pay attention to what is being said as well as the sentiment behind those comments. NLP text classification can not only recognize the intent of text data, but also identify customer sentiment. Often times, it's used to identify social influencers who are engaging with brands.

Since user **feedback is quantifiable**, sentiment analysis can be structured in a way that allows retailers to gain maximum insight from what customers are saying. This helps gauge brand and product health and provide marketing direction.

Language Understanding

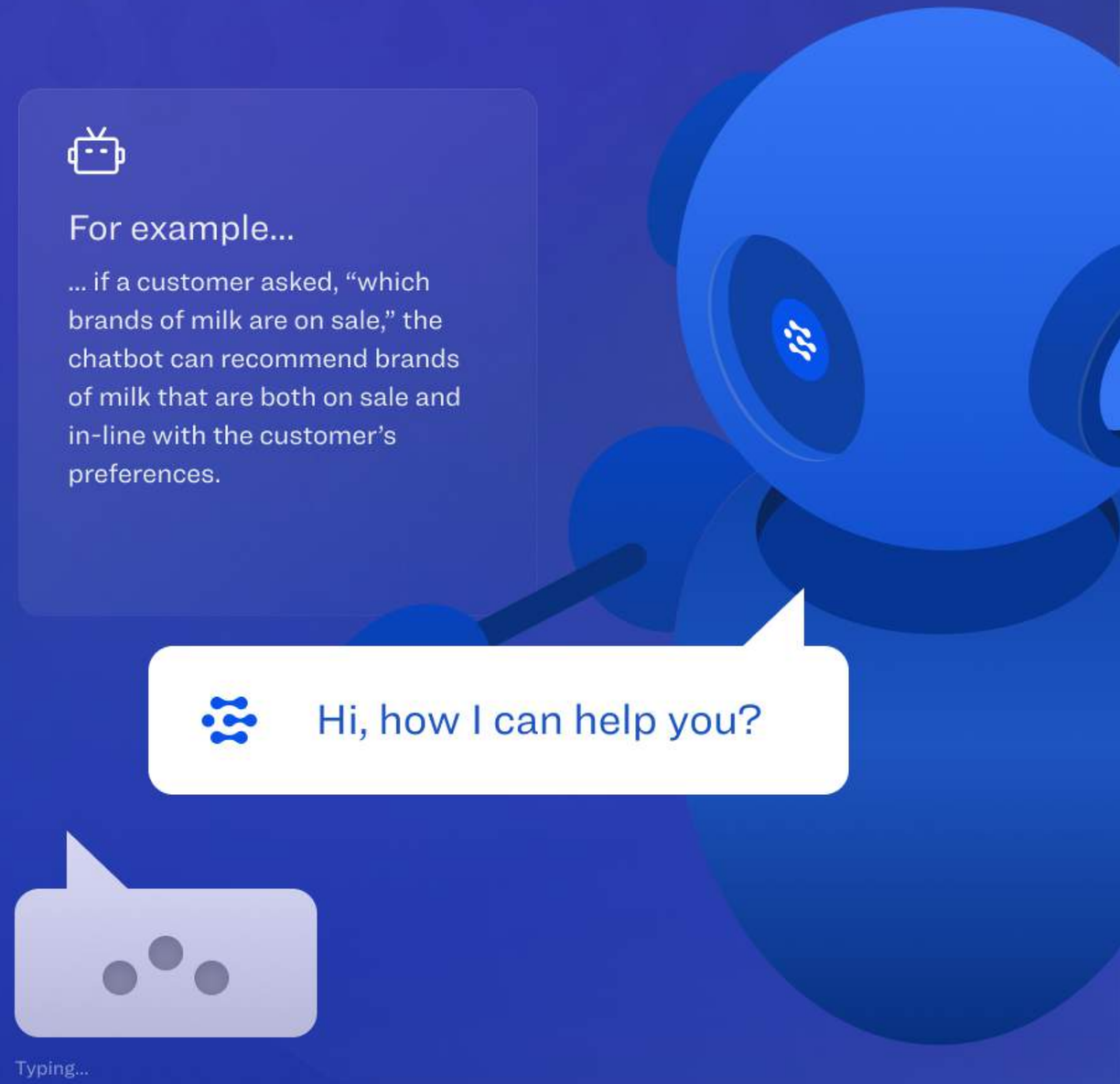
Smart reply and smart recipient chatbot models

Driving conversational commerce

NLP text classification drives conversational chatbots. Chatbots recognize the intent of text data and can generate appropriate responses and route them with minimal human intervention. By using Clarifai, **retailers can improve chatbot efficiency** by interpreting, understanding, and categorizing text and routing it to the appropriate customer service representative for faster handling.

For example...

... if a customer asked, “which brands of milk are on sale,” the chatbot can recommend brands of milk that are both on sale and in-line with the customer’s preferences.



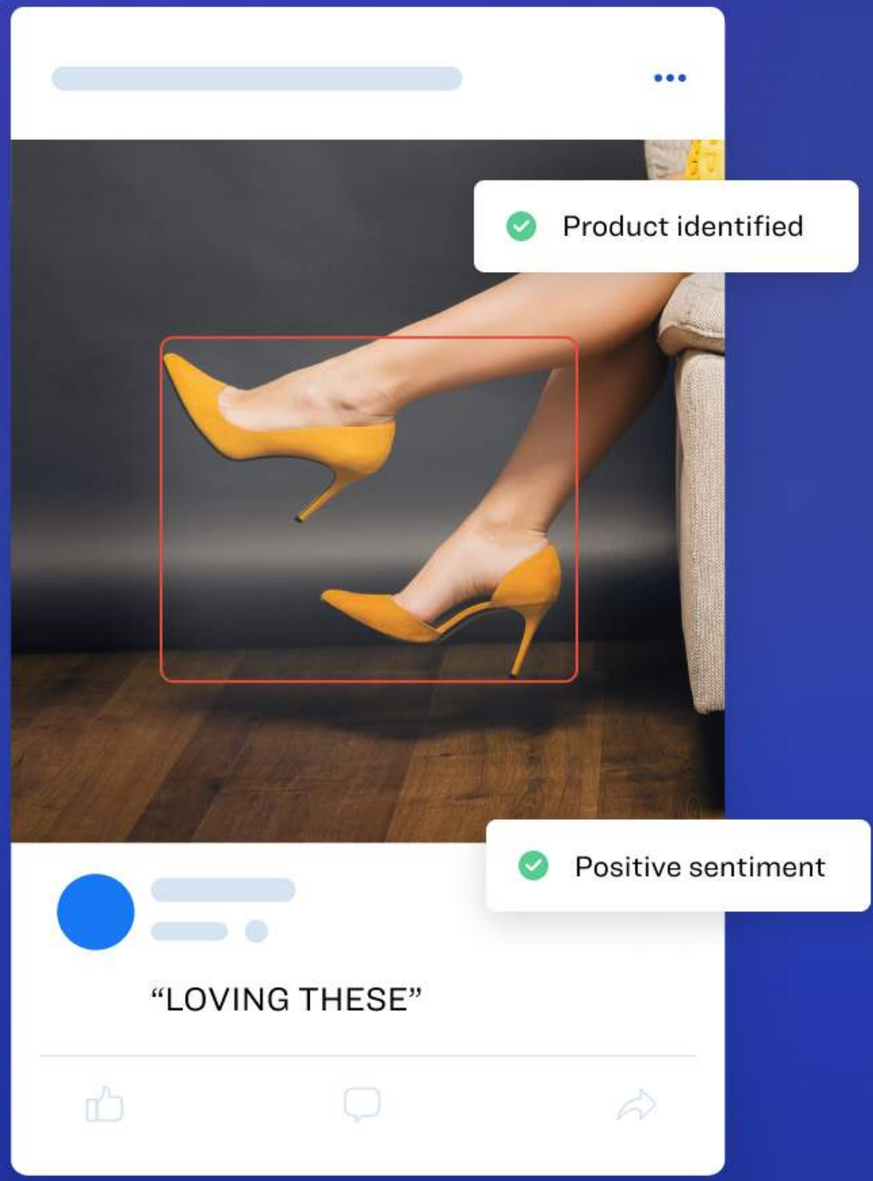
Using multi modal models for sentiment analysis

Combining textual and visual insights

A multimodal model combines multiple AI data sources into a single modeling approach. It allows retailers to combine insights from unstructured text, images, videos, and textual scenes. Combining computer vision and NLP for sentiment analysis, similarities and cross-variances can be found to develop patterns and gain a better understanding of shopper sentiment.

For example, humans can review social media content to gauge customer sentiment and complaint characteristics, but this is a very manual process. Rather than reviewing results individually, AI can be used to automate the process to extract more precise insights from both text and images.

By using a multi modal approach, retailers can look at the sentiment in images as well as text and combine the insights to gain a more complete view into the shopper's feelings and emotions about the brand and products. Retailers can then make the necessary product and brand adjustments to change perceptions and elevate their customer experience.



Use Case

Content Moderation using Computer Vision and NLP

Content moderation

Protecting brands and communities

Simply put, content moderation is the practice of screening and approving image and text content based on specific guidelines to guarantee its appropriateness for the end-user. From articles and videos to photos and audio clips, user generated content is continuing to increase at a breakneck pace—Instagram users alone post almost 50,000 times per minute! Moderation is therefore essential to prevent unsuitable content from slipping through the cracks, protecting both your business and your users.

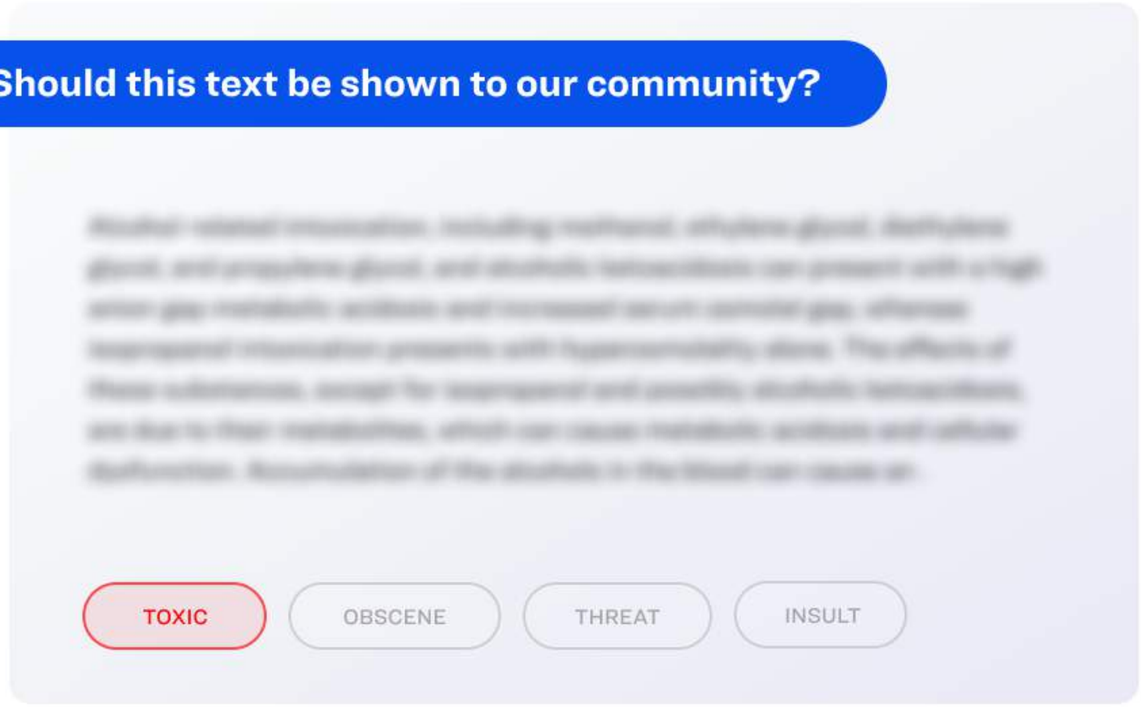
AI can review user generated image and text content on a large scale and across multiple channels in real-time to find inappropriate content faster. This can typically **reduce manual work by 90%** and **reduce the time to post user generated content by 98%.**

70%

of all consumers look at user generated content reviews or ratings before making a purchasing decision." [8]

AI moderation models can complete tasks 20x faster, over manually handled moderation.

Sometimes moderation is more about ensuring the content is up to the standards expected by the brand. This might mean anything from blocking images that are pixelate or low-quality to finding and removing watermarks, guaranteeing backgrounds and identifying misused symbols. To scale this process, Clarifai's AI technology can be used to moderate and curate images appropriately.



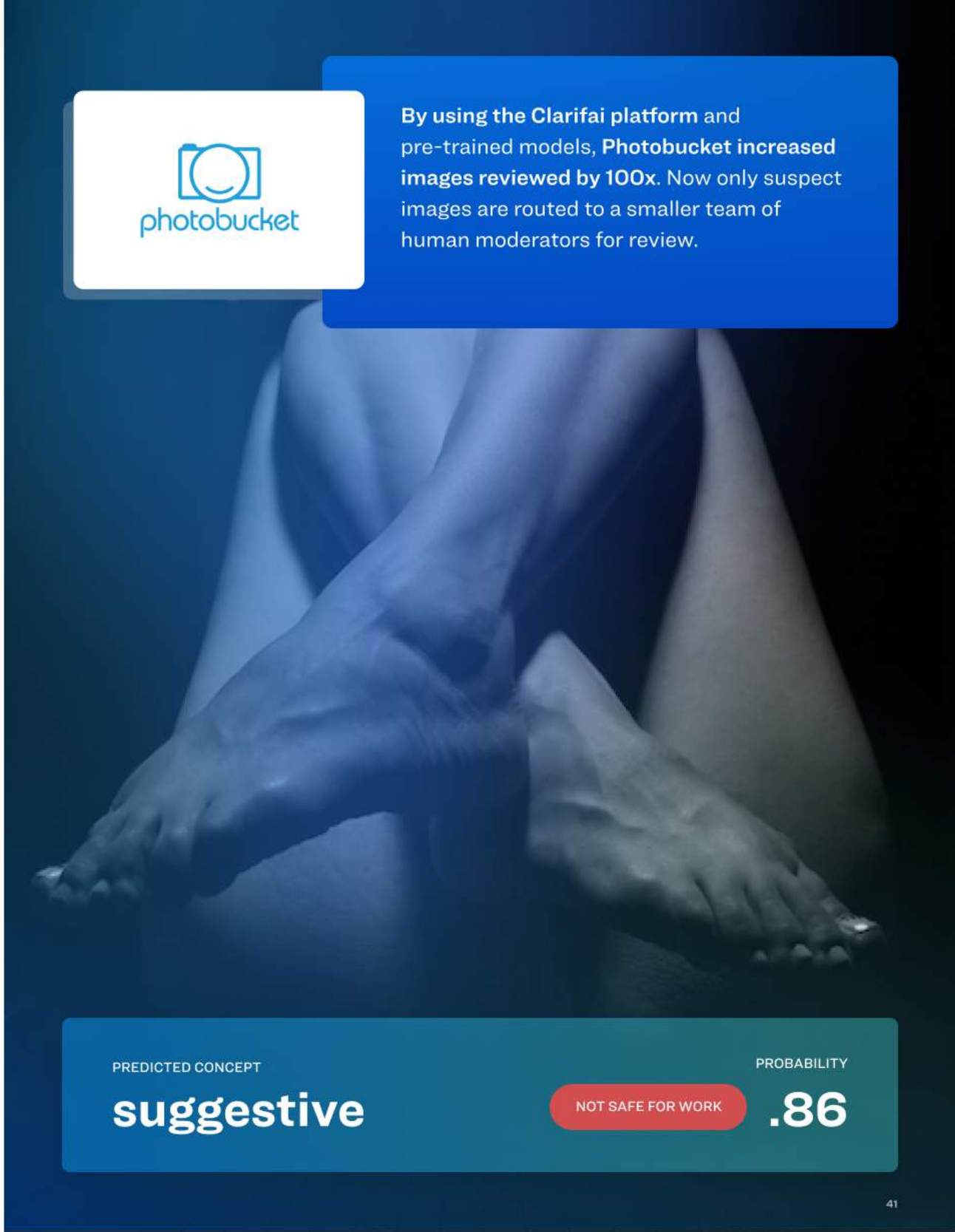
Case Study

Photobucket

Photobucket is **one of the world's most popular online image** and **video hosting communities.** It hosts over 15 billion user generated images, adding two million more uploads every day. **The company relies on content moderation to uncover illegal and inappropriate content uploads.** With a massive amount of content continually flowing in, it became impossible for the company's team of human moderators to catch every image that went against Photobucket's terms of service.

Before turning to Clarifai for computer vision-powered moderation, Photobucket could only manually review randomly selected images **from 1% of the millions of daily uploads.** Not only was Photobucket potentially missing 99% of unwanted content uploaded to their site, but also their team of human moderators eventually became overwhelmed which resulted in diminished productivity.

To catch more unwanted content, Photobucket chose the Clarifai platform to automatically moderate offensive content as it is uploaded to the Photobucket site.



Your industry-leading platform for the complete AI Lifecycle

Clarifai offers a single end-to-end, scalable **AI platform for deep learning** that transforms unstructured images, video and text into structured data, significantly faster and more accurately than humans would be able to do on their own. The platform is easy to deploy and can extend across your entire organization. **It's easy to use**. It is built for any level user—technical or non-technical. It offers pre-trained models to reduce data collection and speed development of highly accurate models.

How the Clarifai platform works

Clarifai works with input data in the form of video, images, and text. We make it easy to label or annotate your data, so you can train custom AI models. Your annotated data is indexed, so it can power search. These search results can also be used in training your **own custom AI models.** Your model is then powered by **best-in-class algorithms.** There are a number of options for deploying your model, including our popular cloud-hosted API, on-premise, and edge deployment options. Once deployed, you can use these models to power predictions. These predictions can actually be fed back to the system to make your model smarter through active learning.

The Final Word

We often get the question: why us over the others? The answer is simple: **our software and platform are highly rated by leading analysts.** Our products are fast and powerful, and our **time to accuracy is best in class.** We provide expert customer service and our team is here to help you succeed!

We don't lock you into a cloud provider. Our fabric is **deployable anywhere** and is cloud agnostic. We allow you to install our software in your data center, private cloud, or we can build an air-gapped or edge solution for you.

We have the best team of Ph.D.'s in the business. We have over 140,000 citations in the computer vision and NLP fields.

We are the only private company recognized by Forrester as a leader in line with companies such as Google and Microsoft. **We don't compete with you, we co-create with you!**

You can start small. Our pricing allows you to use parts of the platform as needed. This eliminates shelfware and allows you to grow into the rest of the platform at your own pace.

You get the benefit of working with an account executive team that is accessible. We align an executive with your team to ensure you're getting the value you need from your investment, we do what it takes to meet your needs.

We offer a complete AI lifecycle platform for handling unstructured data, including: **image, video, text, audio.** The platform is designed with **easy to use** UIs and APIs to support data scientists, developers and non-technical users.

About Clarifai

Clarifai is the leading independent provider of deep learning AI for unstructured data. Headquartered in NYC, the company was founded in 2013 by Matt Zeiler, Ph.D. after winning the top 5 places at ImageNet with the goal of delivering state-of-the-art AI technologies to enterprises and organizations around the world. Clarifai offers the most powerful platform for the end-to-end AI lifecycle, UIs that unleash deep learning for every skill set, and the best solutions to important use cases. The company has raised $40M from Union Square Ventures, Menlo Ventures, Lux Capital, NVIDIA, Google Ventures, and Qualcomm.

Clarifai continues to grow with 100+ employees at its headquarters in New York City, and offices in San Francisco, Washington, DC, and Tallinn, Estonia.

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