

Powered by Dataloop: Standard Is Reinventing the Retail Industry With Checkout Free Stores



Standard's computer vision and AI-powered solution is the leading one that can be quickly and easily installed in retailers' existing stores.

About Standard

Standard is an artificial intelligence platform that enables autonomous checkout for brick & mortar retailers with a modern AI-powered computer vision platform. Standard stands for taking cashier-less checkouts to the masses, a win-win for both the consumer and the brick and mortar retailers. It empowers consumers to walk in, grab what they need, and leave without waiting in line or stopping to scan and pay. Available to any retailer, the solution improves the customer experience, and boosts profit margins.

It also helps small-size retailers to compete with larger chains and online offerings. They're all about transforming retail with an autonomous checkout experience. This solution is an option for everyone without the requirement of building a brand new store, instead, you use your existing store.

The Race to Checkout Free Stores

According to a study by [Forrester Research](#), the **biggest complaint grocery shoppers have is waiting in line to pay for their groceries**. If a store is too crowded, the lines are too long, shoppers aren't always prepared to wait, instead, they'll just leave the store. This leads to lost sales for retailers that have already initiated efforts to offer cashier-less stores, but none at the level of Standard.

Standard uses its own proprietary AI-powered technology. With no special shelving methods needed, Standard provides a cashier-less solution that is simple to implement. This is accomplished

by installing cameras in the ceiling, above the shelves, recording the items shoppers are placing into their shopping bags. The payment is done via Standard's app. **With machine vision and AI-powered technology Standard is the leading solution that can be quickly and easily installed in retailers' existing stores.** This represents a giant leap forward for retail tech and enables retailers to rapidly deliver an amazing new shopping experience to customers.



Is it really that simple?

The reason Standard is so exceptional is that they found a way to overcome numerous challenges. Let's take a look under the hood and see all the challenges that Standard endured in order to reach production in the retail space.

It's not as simple as it seems.

The biggest question is always how to translate the data collected from "the field" (the store) into production-level applications, in the smartest, and most efficient way.

The results need to be highly accurate and available in real-time in order to be trusted and adopted by consumers.

In addition to this, it's not just about taking stock of a line of products, because, in the retail industry, the stock is constantly changing. In fact, **approximately 30% of products on the shelves get replaced monthly**. And even those that remain, are frequently undergoing packaging alterations. For example, Pepsi packaging looks different during holidays and special offers.

However, the complications do not end here, the next technical difficulty stems from complexity in data labeling (i.e. labels and attributes, etc.) whereby you need to translate day-to-day human knowledge into a "language" that AI/ML models understand, use, and predict. For example, teaching a model to recognize the association between human shoppers and products and what they've picked up off the shelves. This seemingly mundane human task requires highly advanced object detection and tracking models for automation by AI.

On the operational side, **data accuracy is crucial for product success**. Meaning, matching the wrong product with a consumer could lead to billing too much or too little at the checkout stage. This means that the **data labeling process demands lots of QA and recurring human validation**.



It's all a juggling act

Standard works on lots of simultaneous projects, products, and use cases, often combining internal and external workforces that need to be managed concurrently. As the product diversity grows, the need for data, as well as data validation grows too, and with it, the need for scalable human data labeling workforces. Managing these multiple workforces, especially in times when most workers connect from remote locations, is a laborious task. Managing QA and annotations in parallel and each team or project has its own set of complexities.

Solution

With the help of Dataloop's **highly robust data management** system, Standard was able to **categorize and organize mass amounts of data** both programmatically and using our web app interface, during as well as after annotations. The organized data was managed using [Dataloop's SDK and dataset browser](#).

Dataloop's entire platform is accessible through their APIs and Python SDK. These let Standard integrate their ML models to automatically annotate their own raw data, thus turning the manual labeling process into a simple auditing task.

Practically speaking, what does this mean?

The data is filtered, sorted, and queried in addition to exported, uploaded, and then divided into 100s of folders and directories for sub-structures. Once this is complete, the data can then be located according to metadata such as store locations, aisles, shelves, cameras, etc.

How to translate human activity into actions:

What do you do with all this collected data? How do you translate human activity into actions? With the support of the Dataloop team, Standard was able to streamline their methodology and take the technical method of performing annotations and translate this human activity into actions or objects that were then fed and trained to build a deep learning model. This is how you can detect that a person picked up something, and how they picked it up. Being able to capture what is happening in the store and how to translate it into purchasing and customer behavior is where the magic happens.



State of the Art Annotation Studio and QA:

With the help of AI-assisted applications, QA, and quality control applications, Standard experienced their workforce performance improving significantly. These applications were embedded into the annotation process in order to ensure that the quality and accuracy of the work was monitored while the work was taking place.

With Dataloop, Standard managed to annotate at scale efficiently.



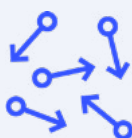
Data Bug Reporting Tool

With Dataloop's data bug tool, the team at Standard was able to create a dialogue in real-time between the annotation workforce, data management, and data science teams within Standard. This allowed for real-time data QA, and live actionable insights, both across different functions within Standard and between Standard's internal teams and external data annotation providers.

Every customer has different needs = diversity of tooling for a diversity of use cases and applications.



Standard needs to support product detection on shelves and in stores → [Dataloop provides detection tooling \(bounding boxes, polygons, etc\).](#)



Standard needs to detect and track consumer movement within the store → [Dataloop provides object tracking in videos and object ID in images to identify consumer identity - simply & efficiently.](#)



Standard needs to define consumer behavior → [Dataloop has pose detection and parenting features to associate consumer and product ownership.](#)

How else was Standard able to customize their experience?

Standard was able to customize the annotation tooling in order to match their specific needs which included:

- ✓ Developing new features for posture detection and tracking.
- ✓ New features for a data labeling recipe definition and change the annotation interface in order to match annotation tasks.

They were also able to manage access and permission setting per project/team for the task and data management features. The Standard team felt that managing this access was “as easy as a walk in the park”. **But the biggest bonus was enabling multiple global teams to work simultaneously and remotely on a vast number of projects - in real-time!** Dataloop’s workforce management feature establishes and operates fully transparent annotation workflows.

When working with millions of data items, logical and comprehensive workflows are crucial for data labeling processes in order to hit these key goals:

1. **Real-time communication:** Providing feedback and task updates to annotators during the labeling process can prevent recurring mistakes and save significant resources.
2. **Productivity visibility:** Instant workflow transparency, particularly of productivity and accuracy stats, help managers improve data labeling processes in real-time.
3. **Smarter data architecture:** Manually managing data via folders quickly becomes messy, creating unnecessary item duplication. Orderly data access and architecture are critical for ML development.

Dataloop helped with the implementation process which was done seamlessly and easily. **Standard used the task management features and Dataloop’s annotation studio in order to build out use cases such as:**

- ◆ Shelf monitoring (missing products, misplaced products)
- ◆ Customer pose detection (detection & tracking of customer activity in the store)
- ◆ Customer gestures in relation to their behavior



With Dataloop's advanced automation abilities, data management platform, and real-time human feedback, **Standard's execution became very simple and helped expedite their time-to-market.**



Conclusion

Standard teamed up with Dataloop and faced head-on a market full of companies pushing to be the leaders in a world of autonomous checkouts. **With Dataloop's robust Data Management tool, their state-of-the-art Annotation Studio, and industry-leading technical/customer support, Standard became the first startup to open a fully cashier-less store in San Francisco.** In addition, they have quickly managed to scale their business and have partnered with Fortune 500 companies like Circle K, tapping into 15,000 locations and becoming true industry leaders!

Standard is now able to expand and scale their business into new stores in a very short period of time. Something that is super important in this market.



"We love working with Dataloop; their data management platform allows us to simultaneously ensure multiple projects are labeled, tasked and QA'd regardless of where our workforce is based."

Virginia Puccio, Head of Data Operations at Standard