SingleStore™

Case Study

RightSense

RightSense

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RightSense Uses SingleStore Vector Similarity Search on AWS to Ring Up AI-driven Actionable Insights for Retailers

About

RightSense.ai is an AI-powered analytics company specializing in the retail and convenience store sectors. It uses real-time and historical data to provide actionable insights, optimize operations, and drive sales.

Industry

Martech

Use case

AI   SEARCH   REAL-TIME ANALYTICS

Solutions

SingleStore Helios®

Overview

In today's hyper-competitive retail landscape, success hinges on more than just offering great products; it's about leveraging data to gain a competitive edge. Yet, according to some industry observers, fewer than 10% of businesses fully capitalize on the value of their data with existing solutions.

Based in Cupertino, CA, USA, RightSense.ai is focused on improving the data literacy of the workforce. RighSense.ai offers Automated Data Stories (e.g., analysis of customer segmentation, sales trends or inventory shortfalls) integrated with real-time chat powered by large language models (such as GPT-4) to deliver dynamic, actionable insights for an organization's specific KPIs. By automating the detection of outliers and anomalies, the company improves organizational data literacy and productivity, and enables informed decision-making while eliminating the limitations of traditional dashboards.

RightSense facilitates engaging and interactive discussions that are not merely based on KPIs but are in fact customized around role-specific and function-specific KPIs. This personalized approach not only elevates organizational productivity but also unlocks and significantly amplifies the value of an organization's data. By focusing on individualized, relevant KPIs, RightSense

"Retailers who formerly had to wait 1-2 days to understand what was happening with their operations can now get a finger on the pulse of their business in real time."

Sangam Sangameswara
Co-Founder and CEO, RightSense

ensures that teams do not simply collect data but use it strategically to drive measurable growth. RightSense transforms data lakes and other data repositories into "KPI lakes" via automated data pipelines, allowing users to upload and interact with their data through engaging dialogues.

For example, using historical and real-time transactional data, combined with relevant external data such as weather and foot traffic, RightSense delivers:

- Actionable insights (relevant, context-enriched KPIs) by combining traditional analytics dashboards with real-time, chat powered interactions
- Detection of outliers and anomalies in business operations
- Other actionable items specific to various roles across an organization

"Many organizations today are talking in general terms about becoming data-driven, and data-literate," said Sangam Sangameswara, Co-Founder and CEO, RightSense. "We back that up and make it a reality by helping our customers determine which data to focus on and act upon, in real time."

Transcending conventional reliance on visual representations and statistical charts found in reports and dashboards, RightSense offers interactive narratives that are rich in context, making them more memorable, compelling, and convincing. This not only fosters improved data literacy but also encourages participation across the organization, thereby boosting productivity. Such interactivity effectively amplifies the value derived from data, ensuring a better return on data assets.

Challenges and Goals

RightSense was founded on a mission to democratize data. The goal: to help entire teams, technical and business users alike, take advantage of the data their organizations already have, and combine it with third-party data, to drive real-time insights. In 2019 the team built an MVP, and wanted to expand into back-office applications like ERP. It was difficult, however, for users to access and act on their data. "We wanted to empower our customers with self-serve analytics," said Sangameswara, "but extracting meaningful insights from data was time-consuming and labor-intensive."

RightSense's current customer base is concentrated mainly in retail, which means it needs an agile data architecture to quickly add large networks of stores. RightSense originally was using a columnar architecture in AWS Redshift, and in the words of Sangameswara, "Performance was not at all acceptable." The team then tried MariaDB, a relational database with a rowstore/columnstore architecture, but found it challenging: "As you started adding more customers, stores, and users, you had to rework everything." RightSense could not effectively support its current data workloads, much less its 25% YoY forecast growth.

When Sangameswara and the team started building gen AI functionality into the product with open source technologies, they encountered issues such as the inability to add context, and limitations in the amount of data their customers could access.

RightSense needed to overcome these basic data challenges. It also wanted to equip its customers with credible, defensible conclusions. "Not only did we want to empower people to quickly obtain the right data when they need it," added Sangameswara. "We also wanted them to be able to answer the question: 'How did you arrive at your figures or conclusions?' It could not continue to be a black box, as they were accustomed to from other sources."

Technology requirements

RightSense serves a growing target market of companies, many of which have limited internal IT resources of their own. It provides a valuable service by putting leading-edge data capabilities at its customers' fingertips to give them instant insights that help everyone do their jobs better. Similarly, RightSense wanted a data platform that would free its team to focus not on data infrastructure maintenance and technical debt but on continually adding greater value to its RightSense core offerings.

So its core technology requirements in a new data platform included:

- Ability to run as a fully-managed service in the cloud
- GPT-driven Gen AI functionality
- Built-in vector database capabilities to avoid latency and complexity

Why SingleStore

The RightSense team chose SingleStore because it is a high-performance, scalable, distributed relational database and fully-managed cloud service that supports transactional, analytical, and vector workloads. It natively supports multiple data models including structured data, semi-structured data based on JSON, time series, full text, spatial, key value and vector data. With fast data ingestion from multiple sources and low-latency queries across all data, it offers unmatched real-time capabilities. SingleStore has included vector capabilities since 2017 and has dozens of customers using this functionality for semantic search, approximate nearest neighbor (ANN) searches, image recognition, and more.

Solution

RightSense's FUSION platform runs in SingleStore on AWS. Customers have their own KPI data lake in the RightSense Cloud and all data is isolated from other customers. If they have JSON, Excel, CSV or other source files, they can upload those directly. Inbound XML files are processed in Databricks, and SingleStore Pipelines perform millisecond ingest of the resulting Parquet files into SingleStore. SingleStore uses real-time Retrieval-Augmented Generation (RAG) on data from all sources to enrich the data with context. FUSION generates vector embeddings on uploaded data and stores them in SingleStore. FUSION uses SingleStore's vector similarity search using dot_product to perform semantic search. Automated Data Stories are automatically generated by the LLM based on KPIs and tailored by role, e.g., Store Manager, Regional Manager, In-Store Sales.
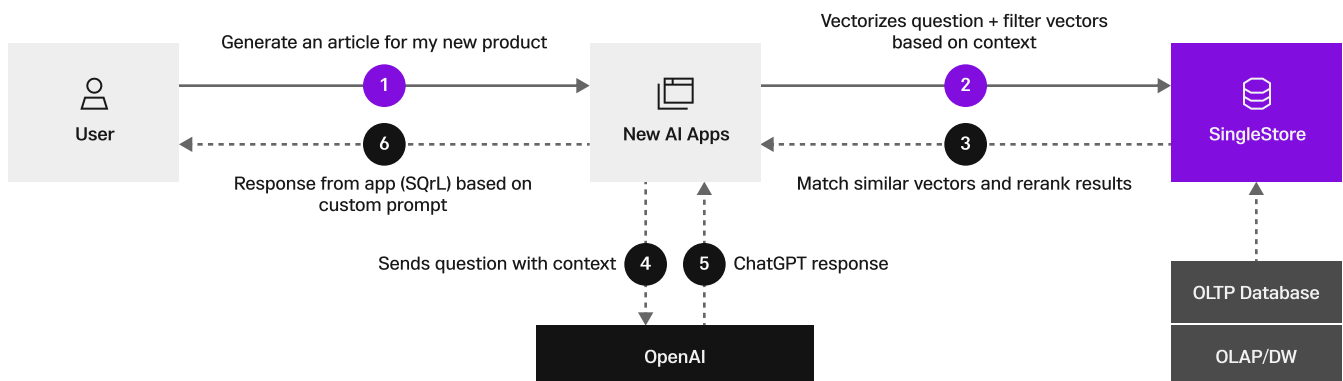
The right product backed by comprehensive support
The RightSense team cited excellent support from SingleStore Technical Support, and VP Worldwide Field Engineering Sarung Tripathi, with a number of things including performance optimization with proper indexing. That along with regular communications made for a smooth implementation process. Per Sangameswara, "LLM integration was seamless; there was no complex learning curve to use the SingleStore solution," and the team was able to easily create embeddings using custom functions in SingleStore.

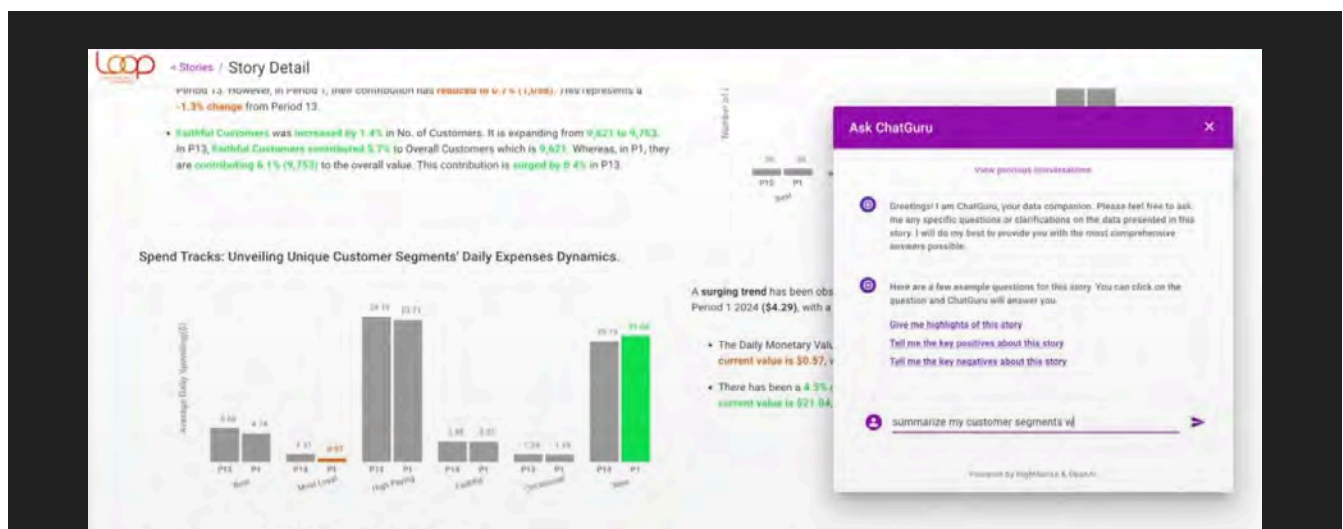*How RightSense customers use FUSION*
RightSense uses ChatGPT 4 and OpenAI APIs to present users with two flexible modes to access the data they need in real time with its FUSION product:

FUSION Dashboards present curated data in snackable summaries
Users can quickly scan snackable summaries FUSION has auto-created from streaming data based on the user's role-based, function-specific KPIs and quickly drill down into the details.
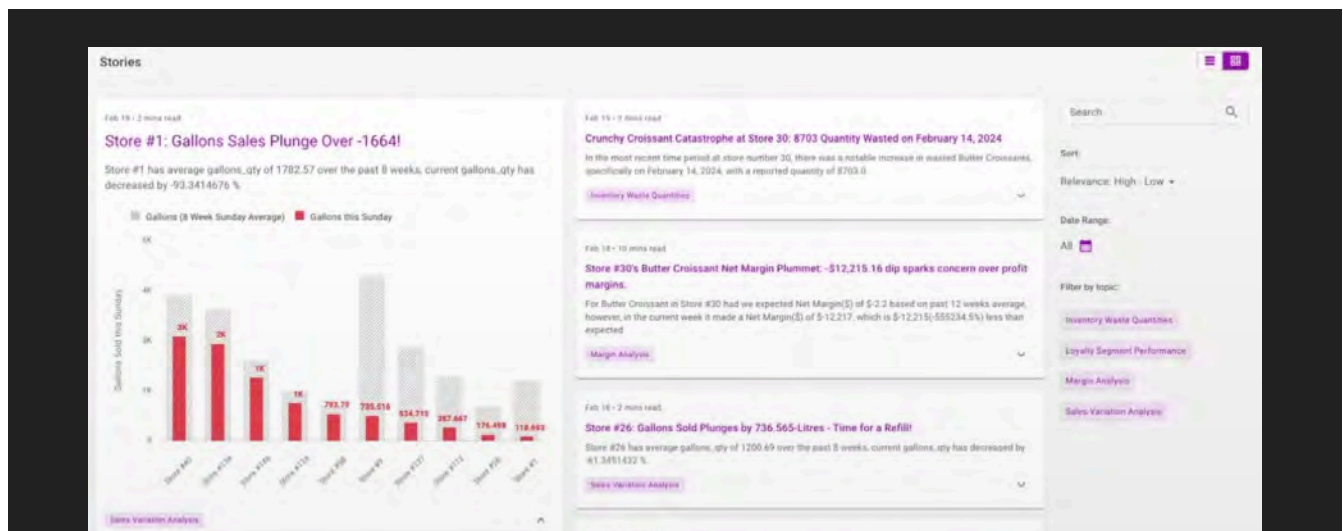

The system will present information such as analytics by product, or financials and budget data. As users navigate, the RightSense ChatGuru pops up to answer questions and offer guidance.

FUSION determines user intent and understands that core calculations like Profit Margin require synergizing multiple KPIs to provide actionable insights.

FUSION Open Search answers specific user questions
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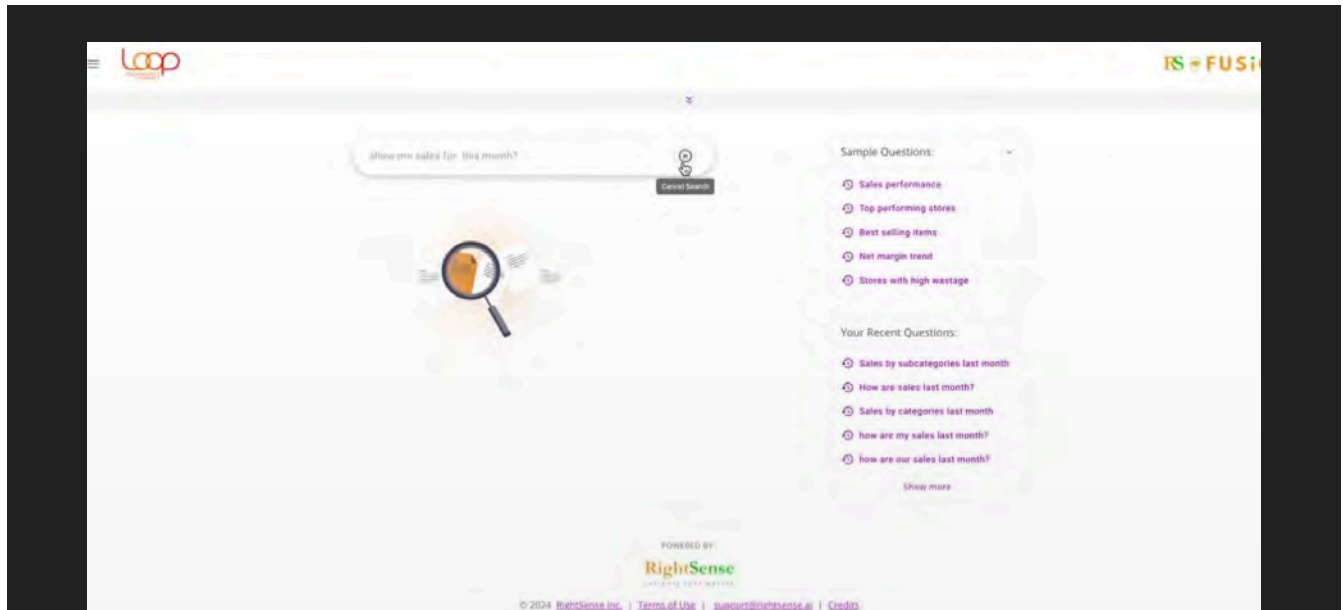
FUSION can quickly build various chart types to isolate data points such as forecast vs actual results. It also nimbly answers more granular follow-up questions such as, "How did my categories do last month?" and forecasting queries such as, "What will my Top 30 In-Store Categories be next month?"
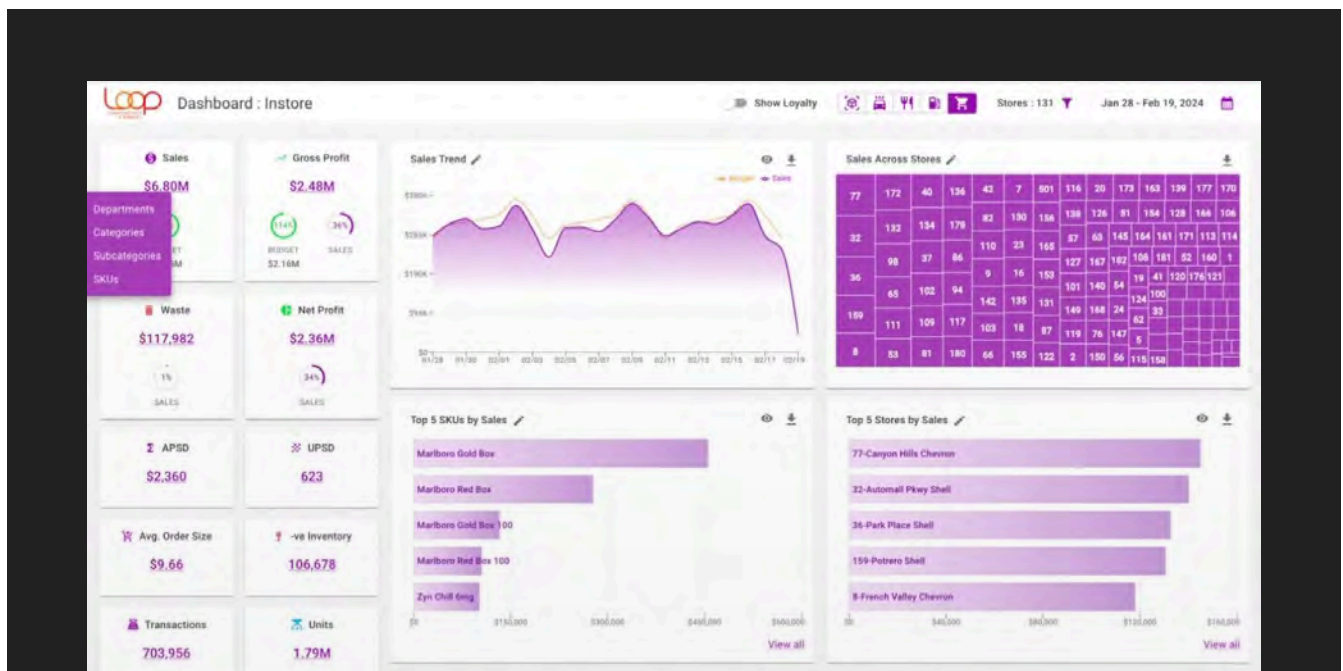
A core element of AI is continual evolution through machine learning, and one of the many ways FUSION embodies this is by elevating user search results to top-level questions at the product level to offer better insights faster over time. Users can instantly share results via email or text.

Outcomes

Before RightSense, retailers depending on other systems were forced to wait for days to get a reading on their business and compounded their losses in organizational opportunity cost with internal teams asking each other for answers. "With RightSense, powered by SingleStore on AWS, retailers who formerly had to wait 1-2 days to understand what was happening with their operations can now get a finger on the pulse of their business in real time," said Sangameswara. Calculating this conservatively, from a single day to real time, yields more than an 86,000x performance improvement. Other benefits RightSense is now able to deliver to its customers include:

A 15-20% increase in average return on campaign spend
By getting the answers they need in real time, RightSense customers can measure things like the effectiveness of promotional campaigns faster, resulting in far better return on investment (ROI): a 15-20% increase in their average return on campaign spend.

Massive TCO savings: an equivalent of 1-2 FTE
RightSense enables organizations to be data-aware without having to invest in specialized IT skills and resources, which saves the equivalent of 1-2 full-time employees per customer.

Benefits accruing to RightSense as a result of choosing SingleStore on AWS include:

One database for vector data and real-time analytics also reduces RightSense's TCO
SingleStore has helped RightSense reduce its own TCO by reducing the number of databases required to develop and support real-time generative AI applications to one. With SingleStore, RightSense gets native vector storage and real-time analytics in a single data platform. Another source of savings: "ETL costs are zeroed out with SingleStore," added Sangameswara. "With others such as Micron, the cost is fairly high."

Meeting SLAs today and poised for future growth
RightSense has now lowered the risk of failing to meet customer SLAs. It can now confidently serve large customers knowing it does not face data size limitations. With SingleStore, RightSense can seamlessly scale to support current and future customer data volumes.

Future

Today a typical RightSense customer may have a retail network with 85 stores, or 130 stores. Every new customer RightSense signs means significant growth in both revenue and data requirements. The company is forecasting near-term YoY growth of 25%.

New initiatives where SingleStore can play a role include RightSense FUSION Product Groupings, currently in development. Product Groupings will actively monitor and measure inventory optimization and provide real-time analytics on revenue and ways to recapture lost productivity.