

Some time on the AI Workbench

Nicholas Wegman and Moez Ali

AI Product and Data
Science



Demand Intelligence: Optimizing Inventory Decisions for Retail

Forecast sales
with the most
accurate view of
demand



Forecast

Ensure product is
in the right location
for in-store and
online demand



Allocate

Meet current
demand based
recent consumer
trends



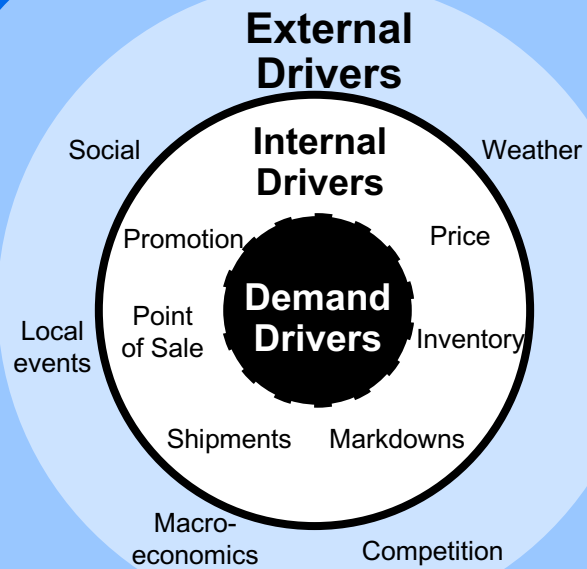
Replenish

Profitably
sell-through all
inventory by end
of season



Price

Leverage More Demand Drivers to Sharpen Demand Intelligence



Advanced Demand Signals

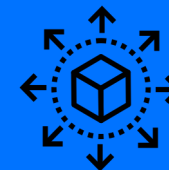
Demand Intelligence



Optimal Inventory Decision-Making



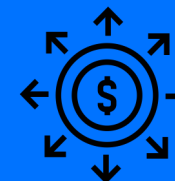
The right quantity



The right allocation



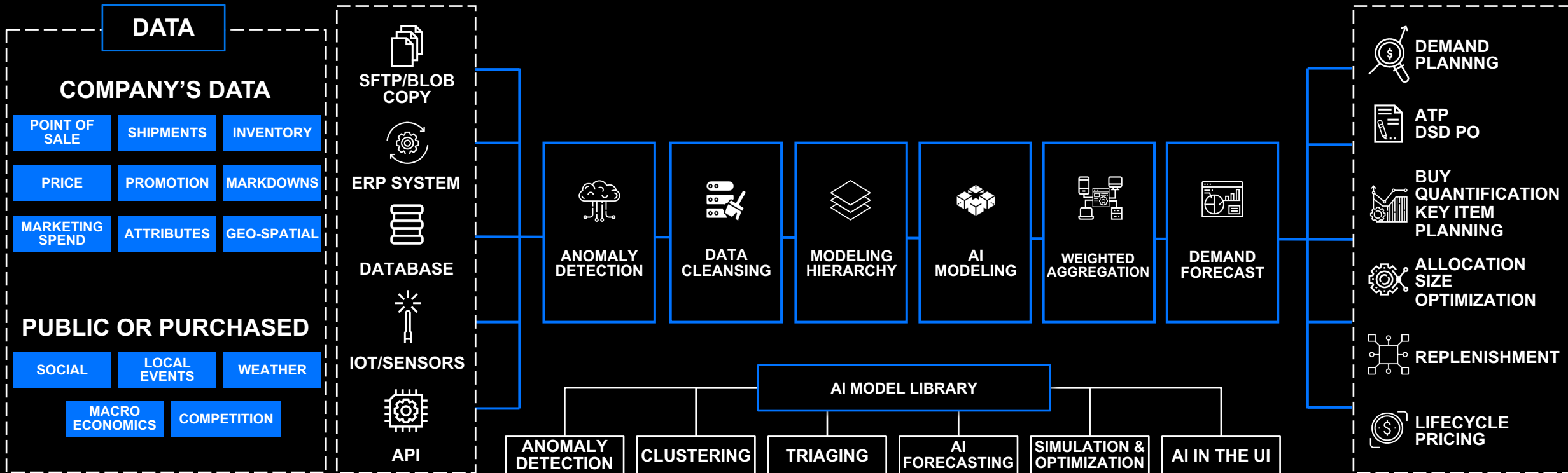
The right product mix



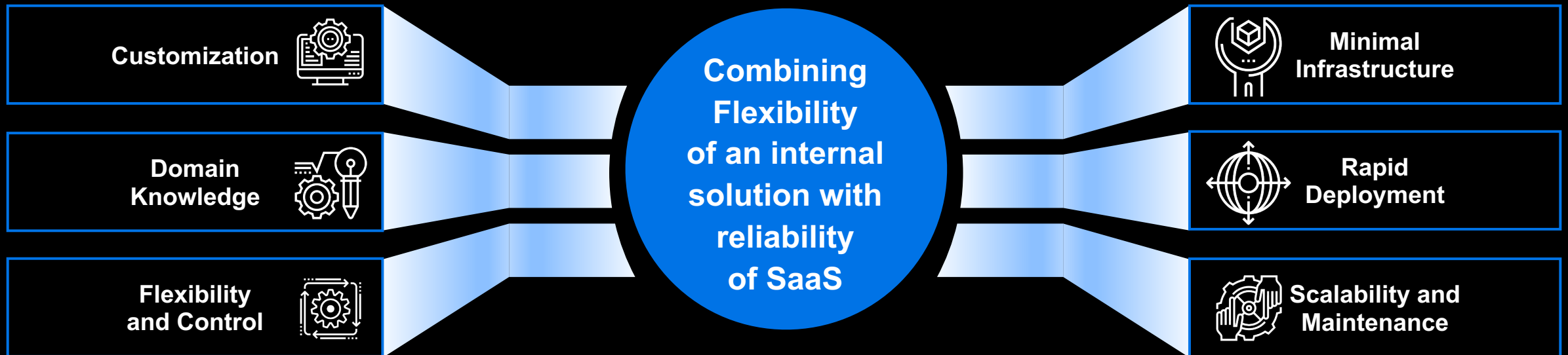
The right price

Demand Intelligence Platform

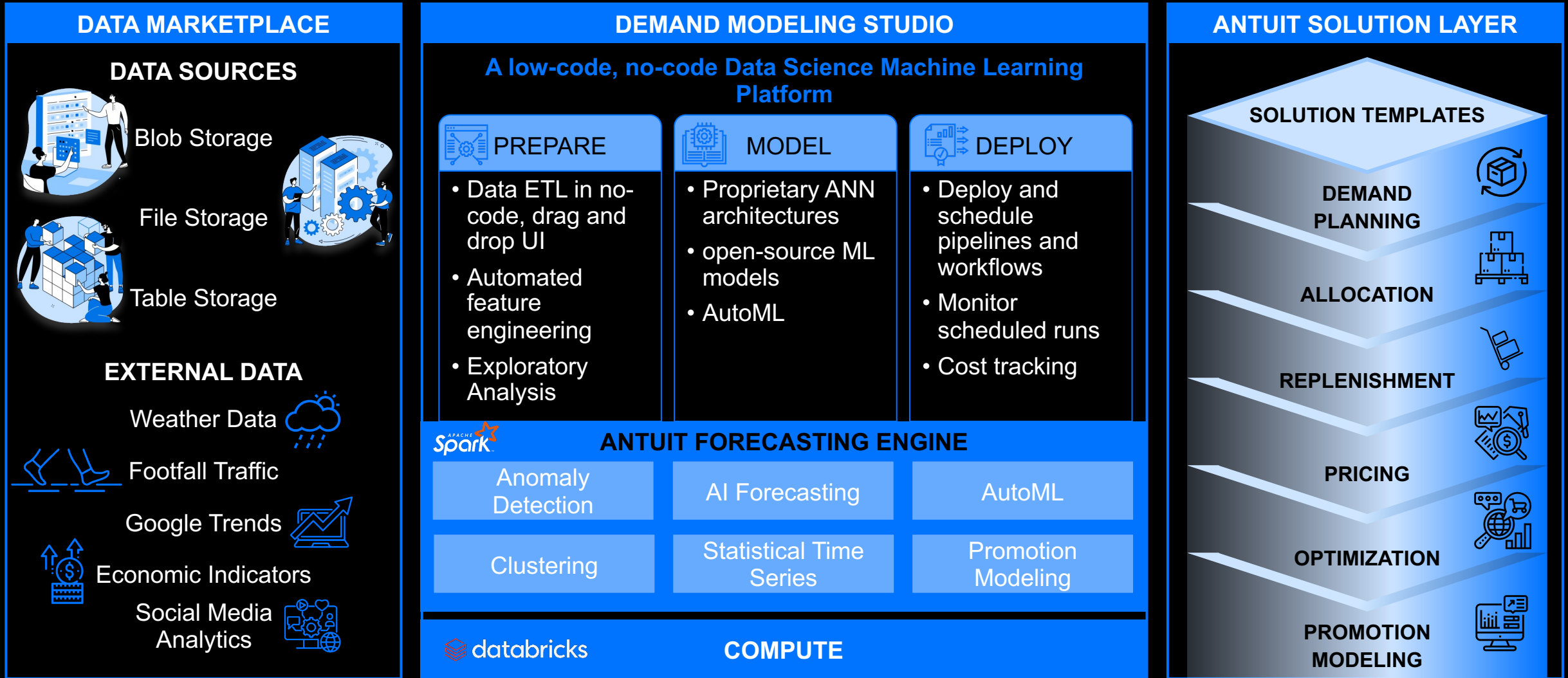
DATA SOURCES



Combining the benefits of internal data science team with a SaaS Platform

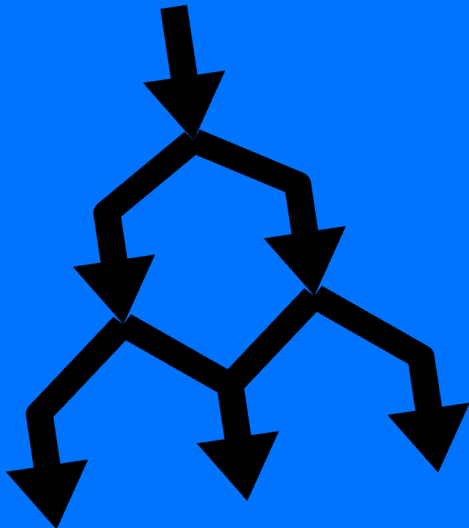


A low-code, no-code Data Science Machine Learning Platform for Forecasting

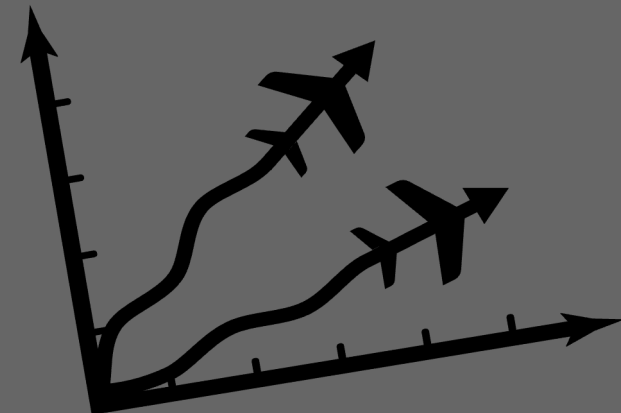


How do we forecast: AI is the enabler to predict, shape and fulfill demand

Decompose demand and
Identify driver lifts



Forecast base demand
and overlay drivers



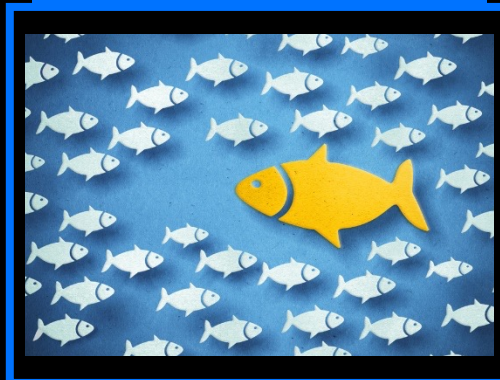
Decompose demand and Identify driver lifts

Augmented
new product
*introduction...



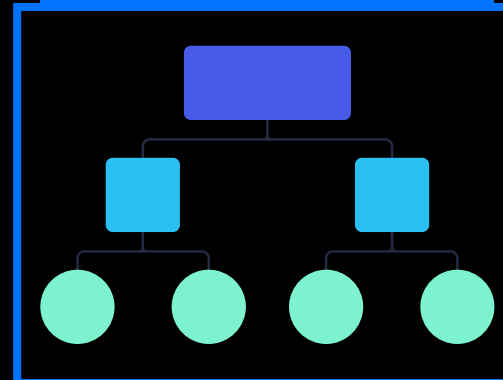
*New entities ramp-up
curves and history*

Automated data
anomaly
detection –
events and
promotions



*Events and outliers
tagged and imputed*

Feature
extraction &
Analytical
hierarchy



*Data attributes to
explain the demand*

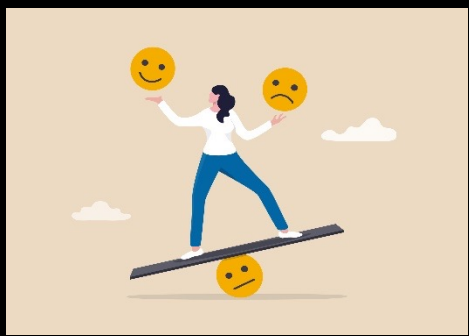
Extracting
demand drivers
impact
(elasticities)



*Event and
promotions impact*

Forecast base demand and overlay promotions

Arriving at
optimal level
to forecast



*Right-level to forecast
(dynamic aggregation)*

Selecting models
& parameters
to maximize
accuracy



*Accurate base demand
forecast at the optimal
level*

Disaggregation
to the
consumption
level
leveraging ML



*Accurate base demand
forecast at
consumption level**

Overlay driver
impact to build
final forecast

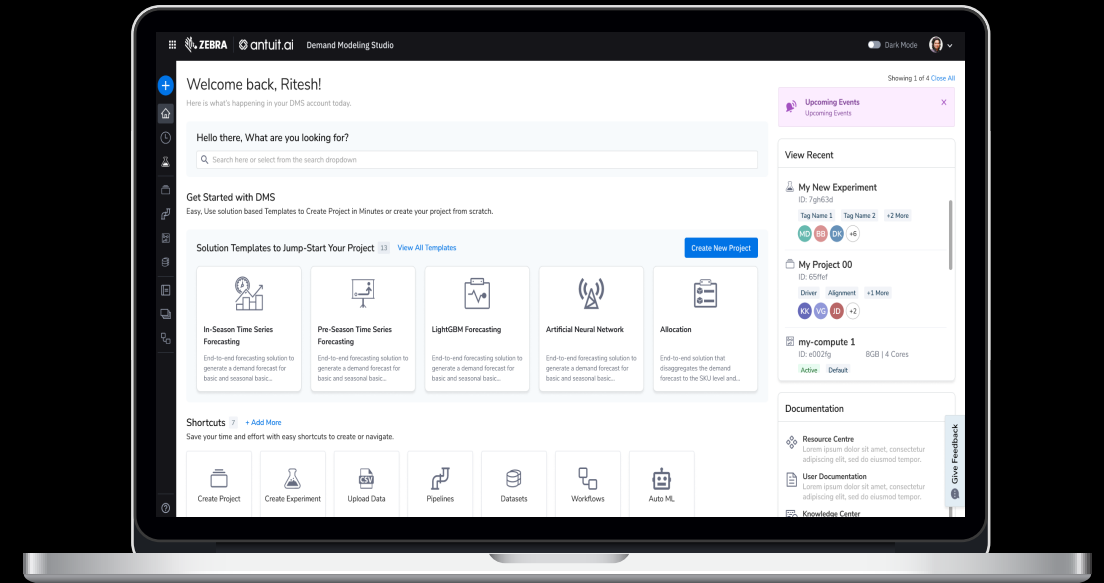


*Final driver-based
forecast*

Zebra DevCon 2023



Demand Modeling Studio 3.0



ZEBRA antuit.ai Demand Modeling Studio My Project / My New Experiment PG NL Share Dark Mode my-compute1 8 GB | 4 Cores

Transformers Properties Artifact Variables Save As Comments Run Deploy Pipeline Not Yet Deployed

Search

Expand All | Collapse All

- Input/Output
 - Load Dataset
 - Group Model Split
 - Load Dataframe
 - Load Model
 - Store Split Datasets
- Dataframe Manipulation
- Feature Extraction
- Anomaly Detection
- Aggregation/Disaggregation
- Time-Series Models
- Machine Learning Models
- Promotion Models

Insert Code

Drag items here

To create your experiment, drag and drop datasets and modules here

Give Feedback



Drag and Drop Canvas

😊 Easy to configure

🏠 100+ built-in transformers

(Zebra Theme)-DMS Design 3.0 Version 2

Share prototype Options

my-compute1 8 GB | 4 Cores

Not Yet Deployed

Transformers

Search

Expand All | Collapse All

Input/Output

- Load Dataset
- Group Model Split
- Load Dataframe
- Load Model
- Store Split Datasets

Dataframe Manipulation

Feature Extraction

Anomaly Detection

Aggregation/Disaggregation

Time-Series Models

Machine Learning Models

Promotion Models

PH_US_Sales_42 ✓ 09/27/2022 01:00PM 30 Min

PH_US_CAL 09/27/2022 08:00AM 45 Min

Join Tables

Type Casting

Filter Dataframe

Properties Output Documentation

Description

Filtering the rows of the input dataframe based on the values of its columns

Filter Column *

Please Select

Filter Operator *

Please Select

Filter Value *

String

String *

Restart

Give Feedback



Interactive Experimentation Easy to Debug Exploratory Data Analysis



Welcome back, Ritesh!

Here is what's happening in your DMS account today.

Hello there, What are you looking for?

Search here or select from the search dropdown

Get Started with DMS

Easy, Use solution based Templates to Create Project in Minutes or create your project from scratch.

Solution Templates to Jump-Start Your Project 13 View All Templates

Create New Project

- In-Season Time Series Forecasting**
End-to-end forecasting solution to generate a demand forecast for basic and seasonal basic...
- Pre-Season Time Series Forecasting**
End-to-end forecasting solution to generate a demand forecast for basic and seasonal basic...
- LightGBM Forecasting**
End-to-end forecasting solution to generate a demand forecast for basic and seasonal basic...
- Artificial Neural Network**
End-to-end forecasting solution to generate a demand forecast for basic and seasonal basic...
- Allocation**
End-to-end solution that disaggregates the demand forecast to the SKU level and...

Shortcuts 7 + Add More

Save your time and effort with easy shortcuts to create or navigate.

-
-
-
-
-
-

Showing 1 of 4 Close All

Upcoming Events
Upcoming Events

View Recent

- My New Experiment**
ID: 7gh63d
Tag Name 1 Tag Name 2 +2 More
MD BB DK +6
- My Project 00**
ID: 65ffef
Driver Alignment +1 More
KK VG JD +2
- my-compute 1**
ID: e002fg 8GB | 4 Cores
Active Default

Documentation

- Resource Centre**
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor.
- User Documentation**
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor.

Give Feedback

Import dataset from multiple sources (File Storage, Blob Storage, RDBMS, Delta Tables*)

The screenshot displays the 'Deploy Pipeline' dialog in the Demand Modeling Studio. The dialog is centered over a workflow canvas. The workflow includes two data loading steps: 'PH_US_Sales_42' (completed at 01:00PM on 09/27/2022) and 'PH_US_CAL' (completed at 08:00AM on 09/27/2022). The 'Deploy Pipeline' dialog contains the following information:

- Pipeline ID:** ae92b5
- Pipeline Name:** Pipeline 1
- Version:** 2
- Tag:** Tag Name 1, Tag Name 2, + Add Tag
- Description:** This pipeline ingests data from multiple sources and performs data transformations to prepare stage for modeling.
- Worker Type:** Standard_DS3_v2 (56 GB | 16 Cores)
- Workers:** 8
- Driver Type:** Same as worker
- Options:**
 - Enable autoscaling:
 - Spot instances:
 - Terminate after: 60 minutes of inactivity
- Schedule:**
 - Every: Day
 - Start Time: 10:00 AM
 - Time Zone: (GMT -6:00) Central Time (US & ...)
- Notify me status report by email:**

Buttons for 'Cancel' and 'Deploy' are located at the bottom of the dialog.

Easy to Monitor

Easy to Deploy

One-click deployment

ZEBRA antuit.ai Demand Modeling Studio My Project / My New Experiment PG NL Share Dark Mode

Transformers: Load Dataset, Group Model Split, Load Dataframe, Load Model, Store Split Datasets, Dataframe Manipulation, Feature Extraction, Anomaly Detection, Aggregation/Disaggregation, Time-Series Models, Machine Learning Models, Promotion Models, Insert Code

Lineage

Data Lineage Details

```

    graph LR
      Discount_type[Discount type] --> Experiment_trial_1[Experiment_trial_1]
      Promo_details[Promo details] --> Experiment_trial_1
      Sales_master[Sales master] --> Experiment_trial_1
      Calendar[Calendar] --> Experiment_trial_1
      Calendar --> MD_Analysis[MD Analysis]
      Val_history[Val-history] --> My_New_Experiment[My New Experiment]
      MD_Analysis --> My_New_Experiment
      Experiment_trial_1 --> FC_pipeline[FC_pipeline]
      My_New_Experiment --> MD_pipeline[MD_pipeline]
      My_New_Experiment --> Daily_Run[Daily Run]
      FC_pipeline --> Daily_Run
  
```

Close



Track Lineage Easily

Reproducibility

Performance Optimization

ZEBRA antuit.ai Demand Modeling Studio My Project / My New Experiment PG NL Share Dark Mode

Transformers: Load Dataset, Group Model Split, Load Dataframe, Load Model, Store Split Datasets, Dataframe Manipulation, Feature Extraction, Anomaly Detection, Aggregation/Disaggregation, Time-Series Models, Machine Learning Models

PH_US_Sales_42 (09/27/2022 01:00PM 30 Min) → Join Tables → Type Casting → Filter Dataframe

PH_US_CAL (09/27/2022 08:00AM 45 Min) → Join Tables

Filter Dataframe Properties: Description: Filtering the rows of the input dataframe based on the values of its columns. Filter Column: Please Select. Filter Operator: Please Select. Filter Value: String.

Not Yet Deployed

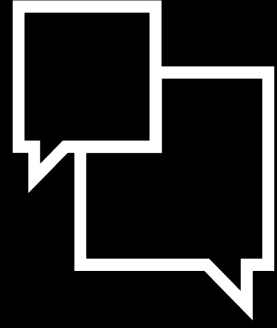
Feedback



Work Collaboratively

Access Control

Private and Team projects



Questions

Thank You

ZEBRA and the stylized Zebra head are trademarks of Zebra Technologies Corp., registered in many jurisdictions worldwide. All other trademarks are the property of their respective owners.
©2023 Zebra Technologies Corp. and/or its affiliates. All rights reserved.