



Ariella Nelson

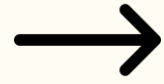


Maya Nesen

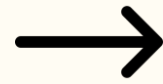
Problem Statement

Currently, Macy's has:

1. No method to quickly identify similar products
2. No way to see what specific product attributes drive sales



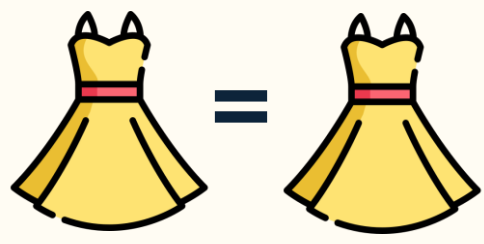
Sub-optimal
Assortment
Planning



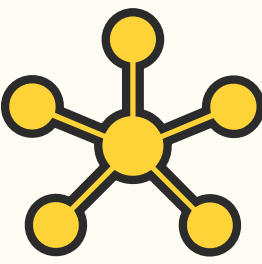
Approx. **5%** of last year's inventory remained unsold

Approx. **\$200M loss** estimated from liquidating last year's inventory

Our Solution



Build a tool to quickly identify similar products



Build a knowledge graph to surface attributes tied to sales



Empower smarter pricing and assortment decisions

Data

4K Dresses
(in our sample)

368 Distinct
Attribute Values

306M Items
Purchased
(in the last year)



Text
Descriptions



Attributes
(Fabric, Style...)



Product
Colors



Inventory



Product
Images



Website
Text

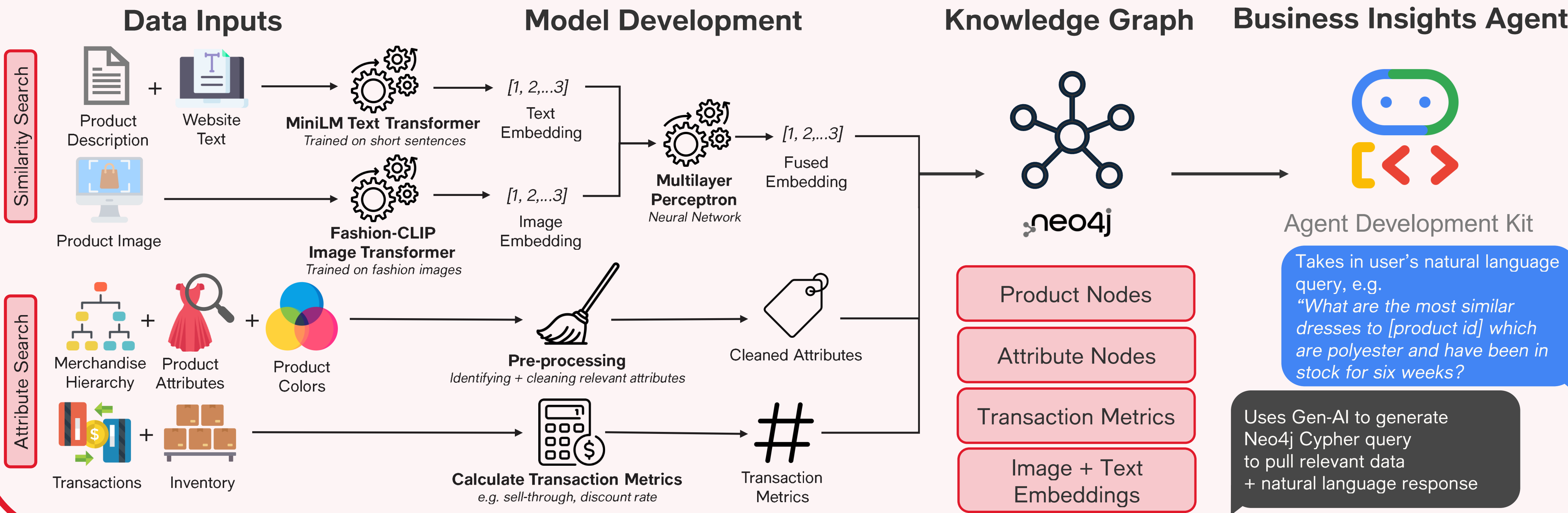


Merchandise
Hierarchy



Transactions

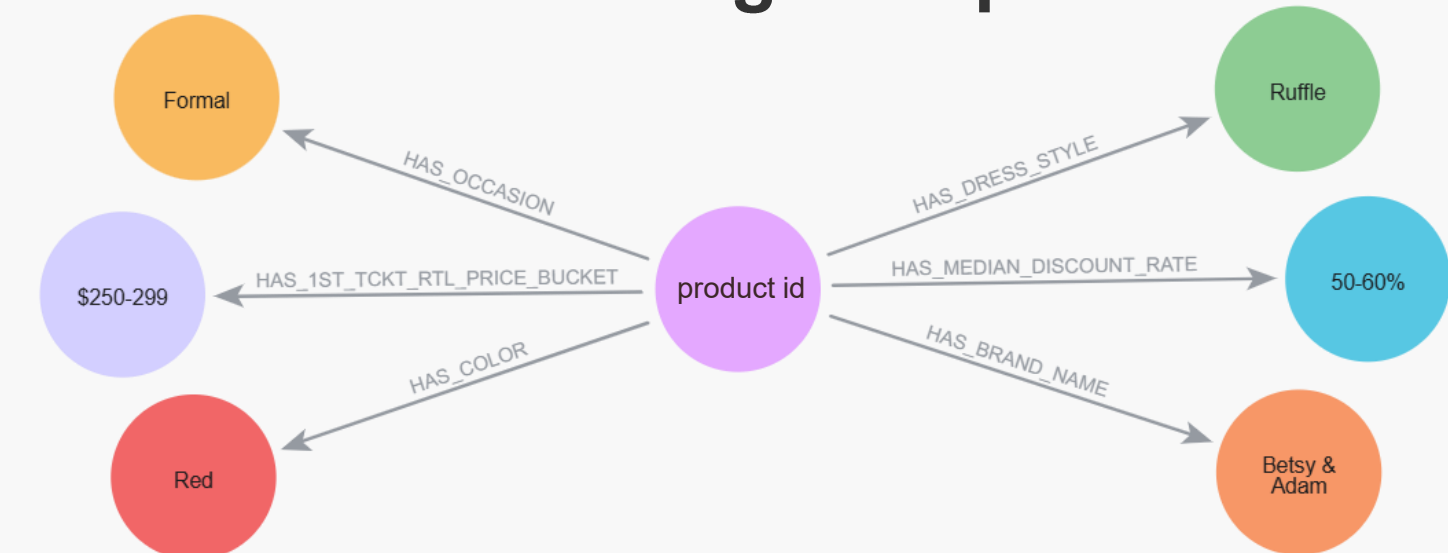
Methodology



Results

Bottom dresses have poor sell-through & lower price → Drop from assortment

Knowledge Graph



4.4K

product + attribute nodes

100K

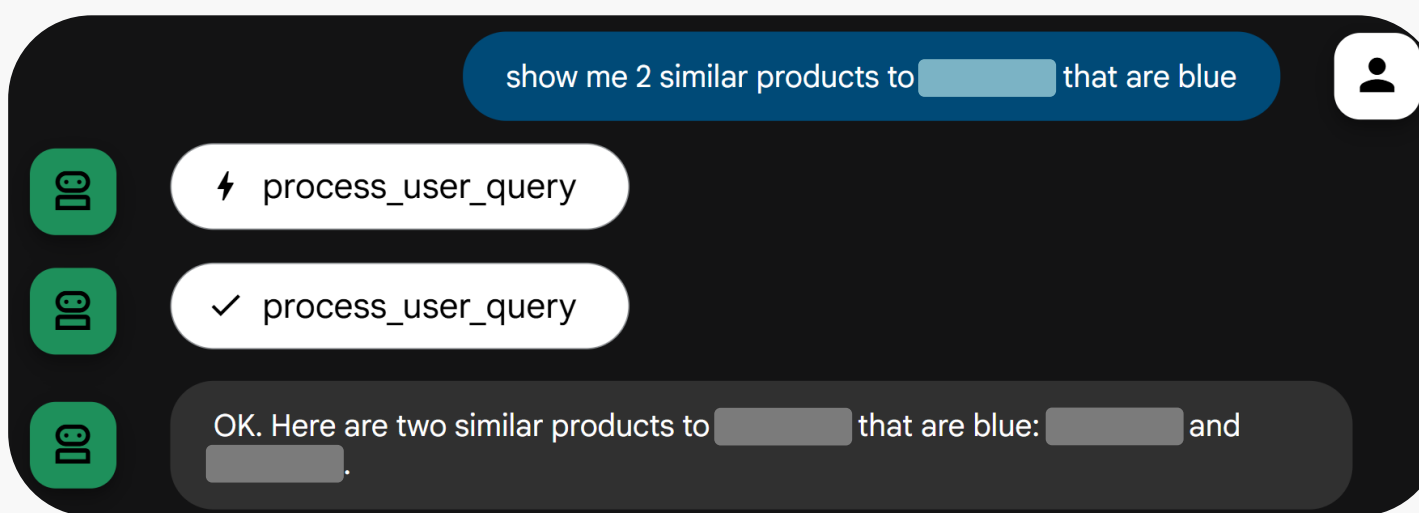
relational edges

- ★ Easily find and visualize product-attribute relationships
- ★ Vector embeddings + graph attributes create refined similarity sets
- ★ Similarity sets + transaction metric attributes can be used to adjust the assortment plan

Assortment Decisions



Business Insights Agent



Retrieves relevant products and attributes from knowledge graph



Generates business insight summaries from query results



15 - 30 seconds to answer



Concept proven

Our chatbot will allow non-technical merchants and assortment planners to use our knowledge graph in decision-making

Expected Number of Users

100-200 across 3+ teams

Business Impact

Multiple
Use Cases



Providing Similarity Set Interpretability

Identify what attributes unite or divide a set of similar products



Find High Performing Product Features

Identify attributes that are correlated with strong sales



Compare Similar Products' Performance

Quick comparison of similar products across sales metrics

Once the graph is expanded to more products and location granularity, it's expected to increase net sales by

↑\$2.2M

Our model will be integrated into Macy's Hyper Local Assortment Planning Agent, expected to generate

↑\$5-10M