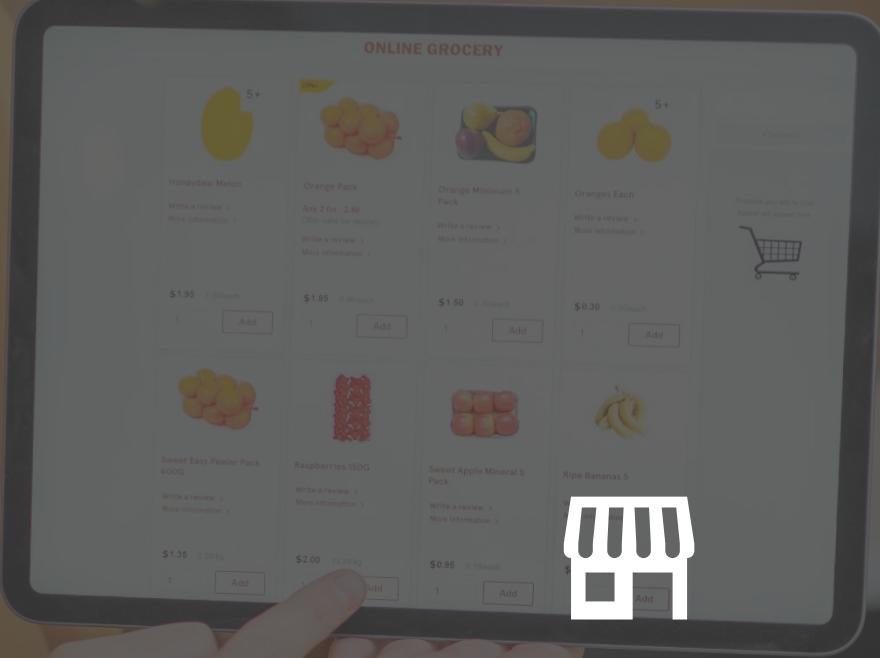




# Innovatics

Where Innovation Blends With Analytics

# E-commerce Search



# NLP Search Approach



## NLP Approach

User often type natural language to search on e-Commerce stores rather than trying broad search

For example,

“looking for washed trouser for men”  
“trouser in grey for women”

It is very essential to identify entities hidden in natural language to make search more relevant

Considering above examples, we can annotate all entities in above search query

Washed – Fabric Type  
Trouser – Clothing Type  
Men, Women – Ideal For  
Grey - Color

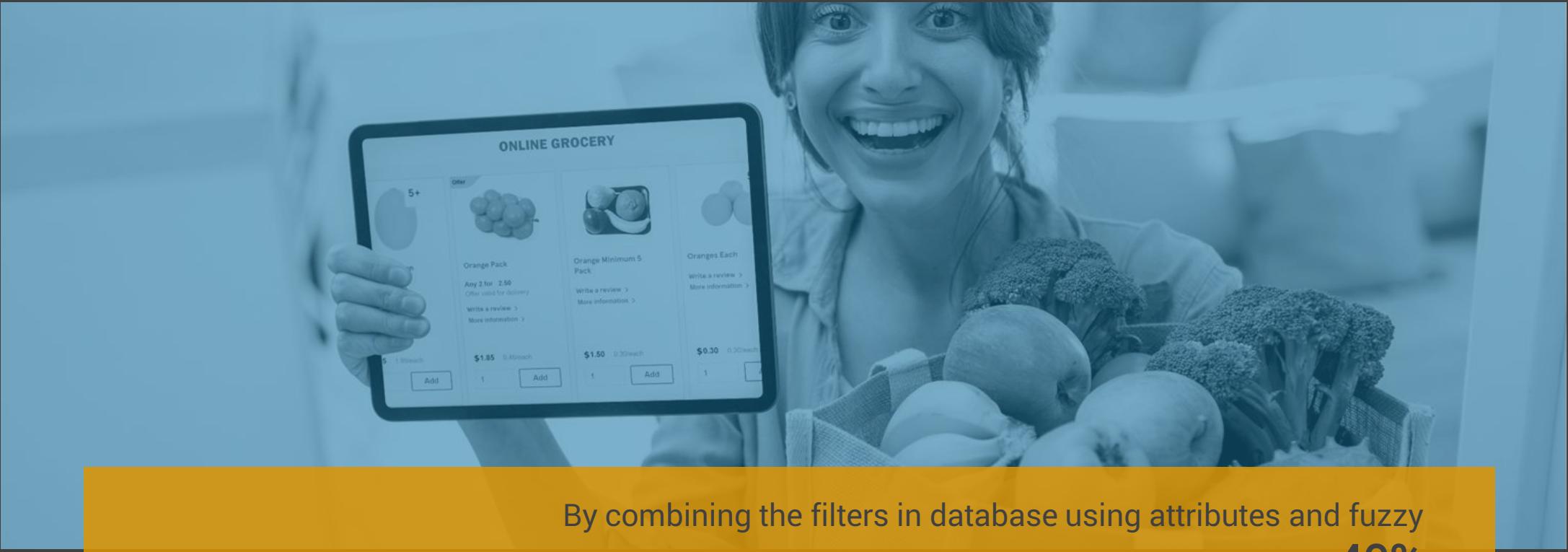
By Using advanced NLP  
NER (Named Entity  
Recognition) technique,  
we can extract entities  
out of the natural search  
queries



A woman with dark hair and a warm smile is looking at her smartphone. The phone screen displays a digital wallet interface with a blue and white design. It shows a card labeled 'Department store' with a value of '\$50'. Below the card, there's a placeholder for a card expiration date ('--/--/----') and the word 'EXPIRED'. The background is a soft-focus view of what appears to be a shopping mall or store interior.

We can apply  
Synonyms to the  
recognized entities to  
make search more  
meaningful

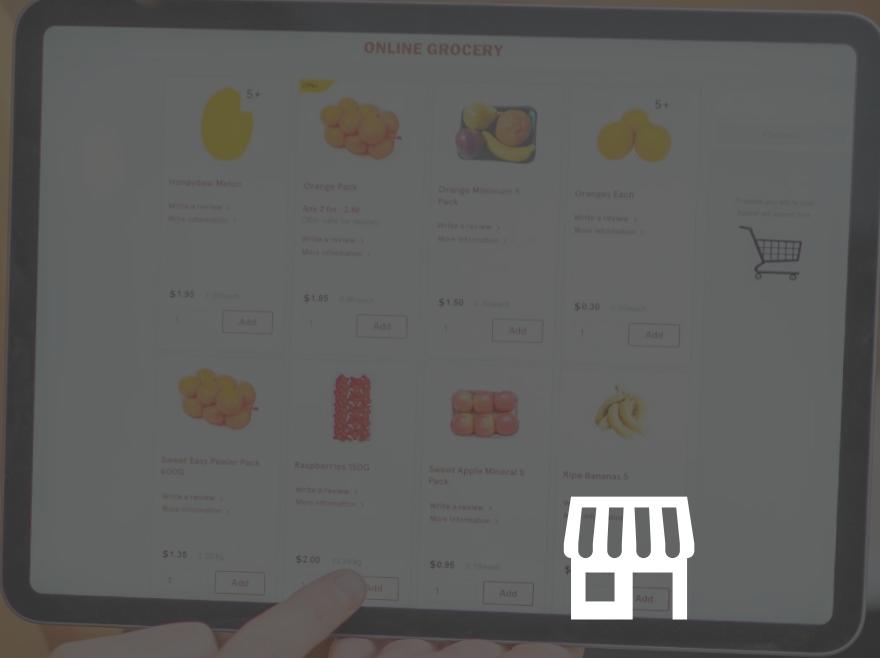
“We are not replacing elastic search but the solution we are trying to have is to do combined unique scoring of both NLP and Elastic Search to have combination of precision and relevance on large set of documents such as e-commerce product catalogue”



## Benefits You will get through this advanced NLP search

By combining the filters in database using attributes and fuzzy matching, we can improve the search results by at least **40%** compared to traditional approaches like Elastic Search and other search technologies

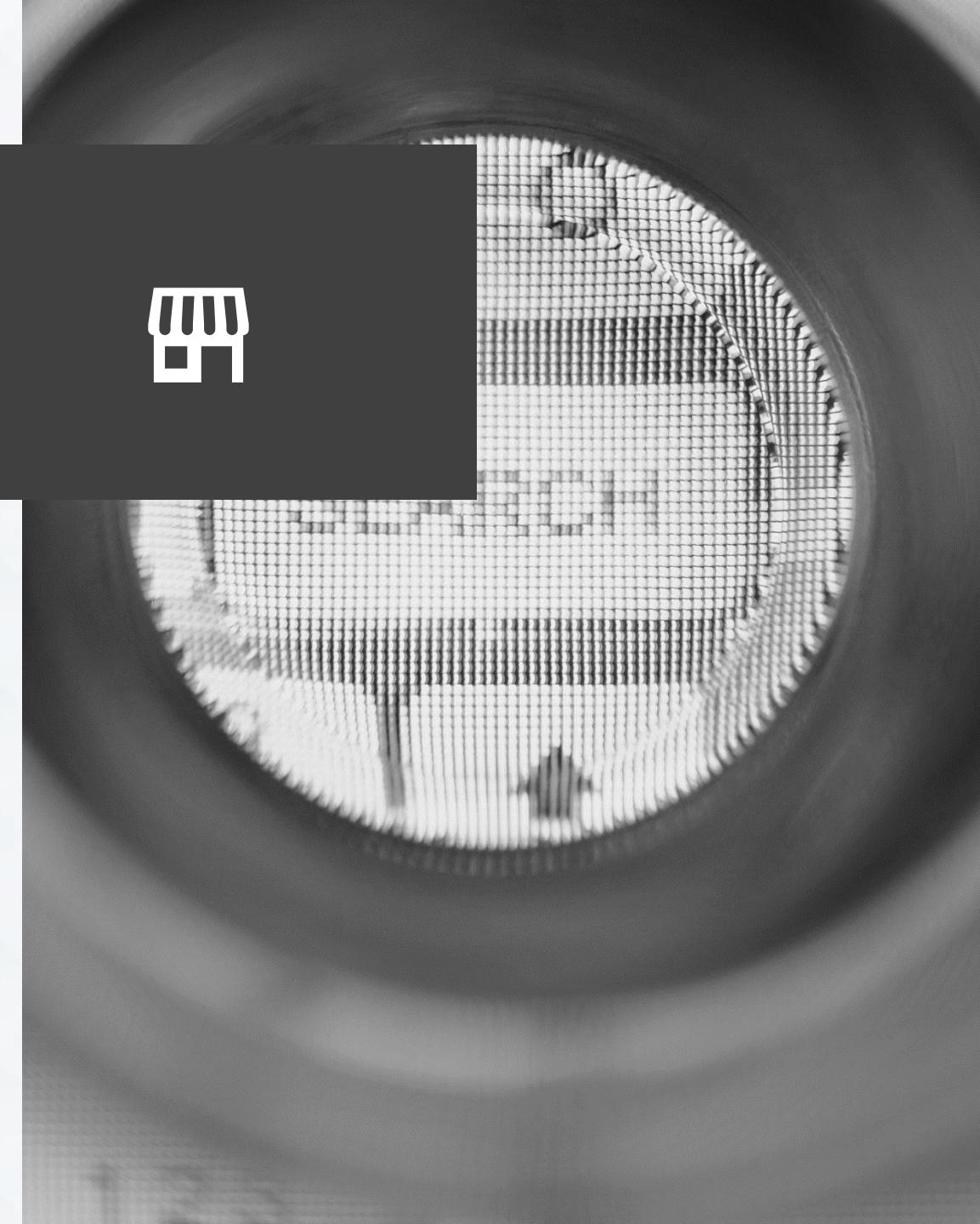
Smart AI workflow will also utilize historical search queries to improve results continuously



# Elastic Search Approach

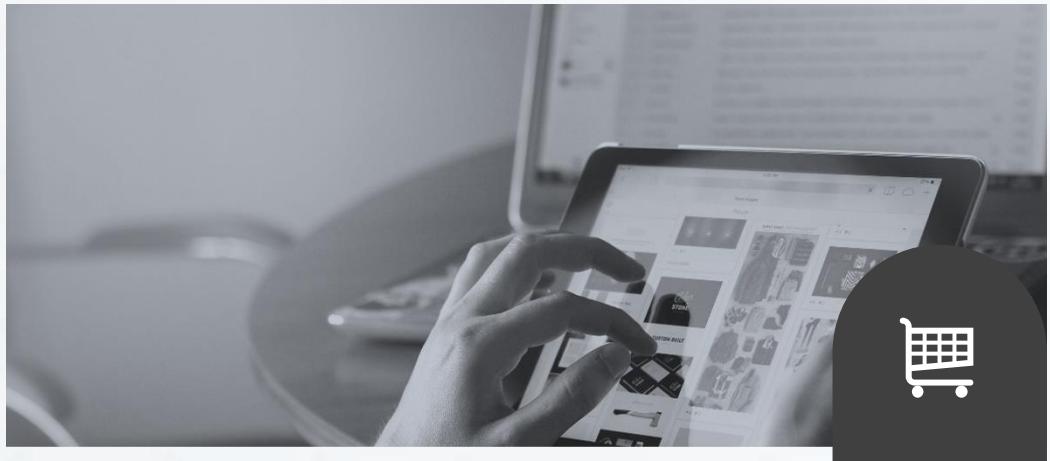
# Elastic Search Approach

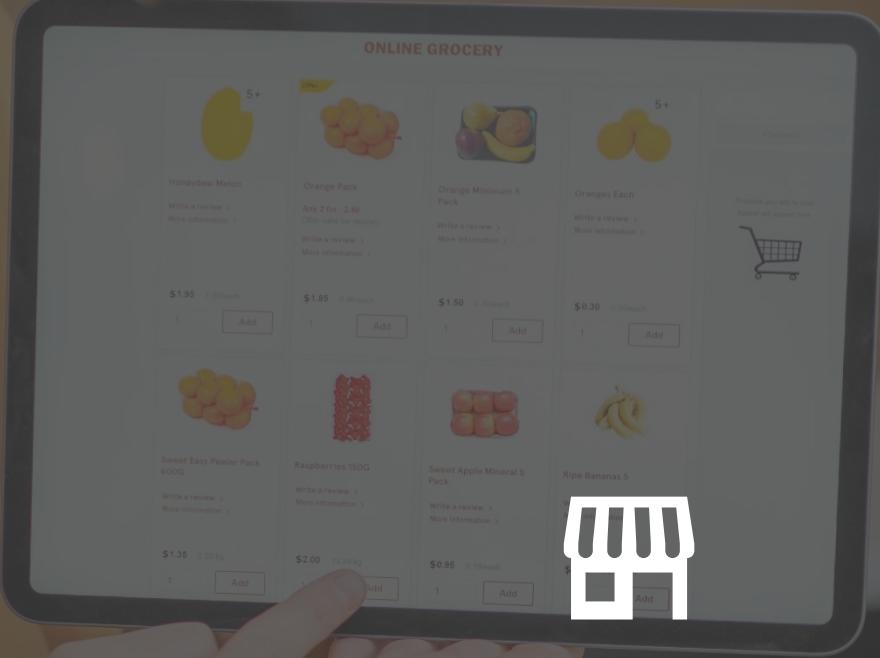
- Elastic Search is distributed and analytical engine specially designed for search mechanism
- Document orientation so best suited for ecommerce product catalogue where data is not that structured compared to flat tables
- Automatically index the documents and we can combine general search and attribute specific queries to the database
- Create indexes on individual product attributes



# Benefits of Elastic Search

- Faster Retrieval compare to other search mechanism
- Horizontal scalability
- Schema Free
- API Support





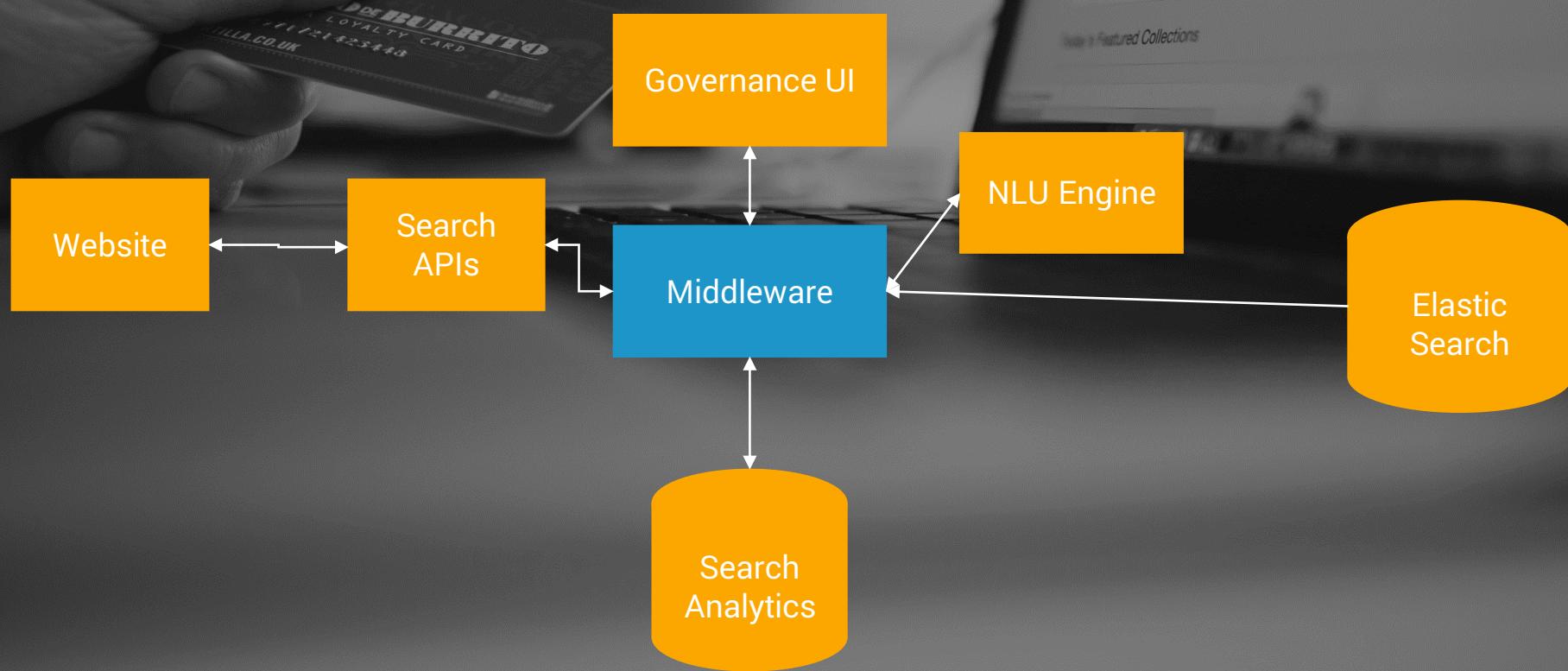
# Our Combined Approach

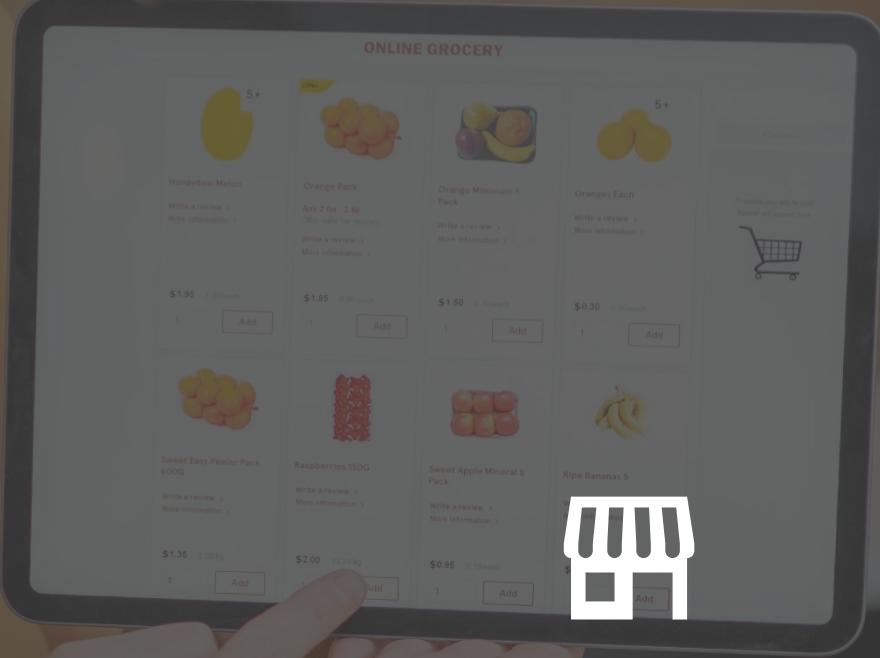


## Combined Approach

- Using search queries directly with general search on descriptions and titles in elastic search
- Using NLP approach we will apply multi facet search on different attributes based on entities
- Combine ranking of above two with smart weights calibrated over the time
- Store and annotate historical search terms and results for continuous model training

# Architecture





# Overall Benefits and Additional Functionalities



# Overall Benefits and Additional Functionalities

- Higher precise and relevant search results
- Product Feed updates thru API/ UI
- Search ID allocation for each search so we can map IDs to web analytics to measure effectiveness of search terms in Conversations/ Conversion Rates
- UI for annotation of search terms to improve machine learning NER
- REST API for endless integrations



## Overall Benefits and Additional Functionalities

### Search Term Analytics

- Insights on seasonality of terms
- Frequency of search terms
- Most searched entities reports (Not Search Term)
- Provided user\_id, we can map user attributes to search terms to know more about customers

# Thank You!

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