Graph Advantage is a recommender system developed to aid Costco wine buyers in determining which wines to sell at specific warehouses and at which price point. Our approach:

1. Leverages a combination of machine learning algorithms
2. Uses AllegroGraph—a graph database to discover patterns that are not readily apparent
3. Incorporates the buyers’ domain and business knowledge as an input
4. Is extensible so that Costco will be able to utilize the framework for other products

MACHINE LEARNING

- **K-Means**: Classifies warehouses into “clusters” based on categorical wine unit sales data
- **HDBSCAN**: An unsupervised machine learning algorithm detects possible outliers based on density of a dataset

TECHNOLOGY STACK

- **GRAPH DATABASE**
- **TEAM**
  - **PROJECT SUPERSTARS**
    - Conor Leeds, Jacob Lee
    - Mariah Arnold, James Barracca
    - Giang (Riley) Du
- **COSTCO REPRESENTATIVES**
  - Shrikant Palkar
  - Valerie Keller
  - Matthew Morris
- **FACULTY ADVISOR**
  - Dr. Roshanak Roshandel

PROJECT OVERVIEW

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PATTERN MATCHING

An example of Pattern Matching in AllegroGraph

Buyers can customize the recommendations based on the characteristics of the warehouse.
Example: If a warehouse has 90 Costco membership renewals per day, the buyers would be given an option to apply a filter so that only warehouses with similar renewal rates would be considered.

RECOMMENDATION

Goal: To make wine recommendations based on the best selling wines at similar warehouses

WEBAPP

An example of AllegroGraph