Key Problem:
For each Unilever marketing campaign,
- Who are the best shoppers to market a particular Unilever product to?
- How to personalize marketing content based on shopper segments?
- When is the best time to engage shoppers for a refill?

Key Modeling Requirements:
1. Interpretability: model insights will need to be explainable and transparent to inform future marketing efforts.
2. Real-life Implication: incorporate false positive cost and false negative cost into the binary classification problem.
3. Ranked-ordered Scoring: optimize marketing ROI under restrained marketing budgets.

Approach: ensemble of 6 gradient boosted trees (GBT) of different hyperparameters

DATASET
- Demographics (26): Location, Gender, Income, Household Info
- Item Feature (66): Price, Category, Time Introduced, Brand, Size
- Transaction History (35): Date, Promotion Used, Item Purchased
- Features Engineered (61): RFMV, Re-order Characteristics, Segments

DATASET
- Key Problem:
  - Shopper demographics, transaction history, and item features?

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IMPACT

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