Group 16

Dynamic Banner Conversion for A/B Testing

Think you got the best marketing strategy for your business? Think again!

Brandon Park

Vivian Ho

Xinbo Wang

Sricharan Sridhar

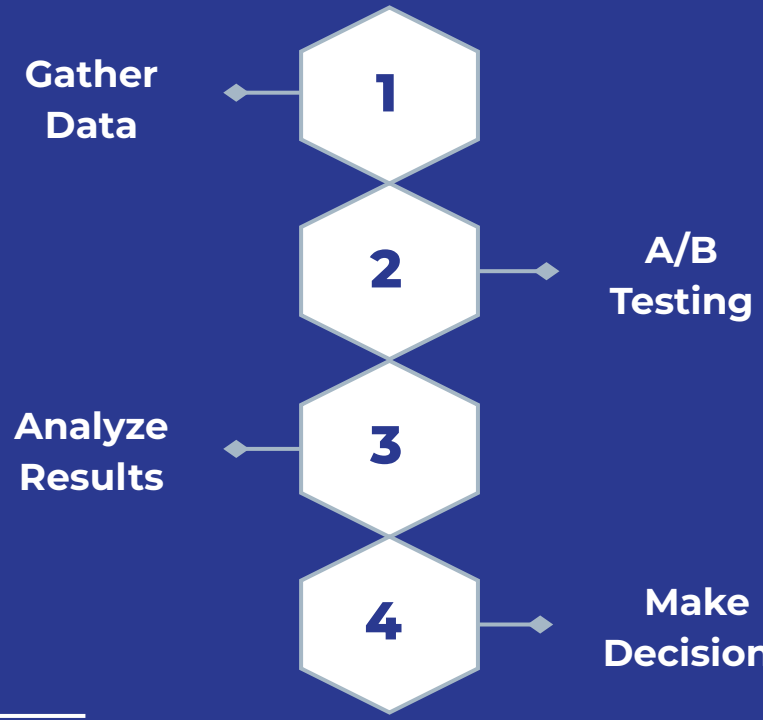
Phuong Tran

What is A/B Testing?

A/B testing is a way to find out how Product A is doing compared to Product B

Lost Opportunities
Fail to update the 'best strategy' on a regular basis

Traditional A/B Test



Problem Statement

Introduce new architecture to address the 'lost opportunity' in traditional A/B testing workflow

Optimize the display of product ad banners for a retailer using the new architecture

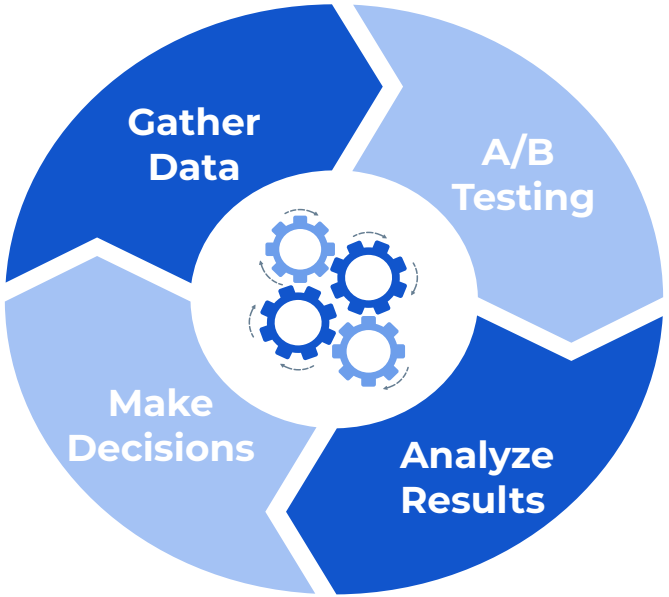
Dynamic A/B Testing

Gather Data

Randomized the users to A/B groups

Make Decisions

Based on the result, adjust weights for A/B group and adjust experiment setting



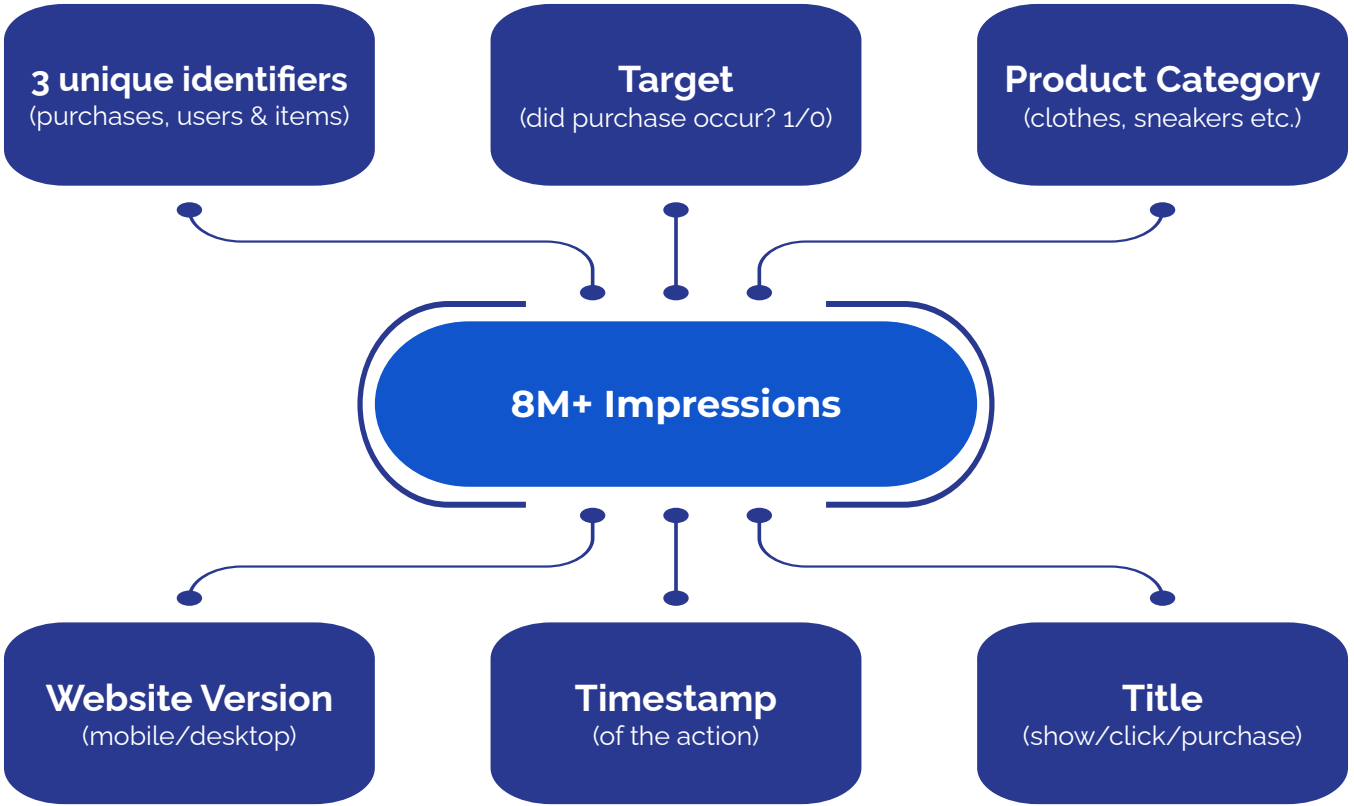
A/B Testing

Conduct statistical testing on the key metrics

Analyze Results

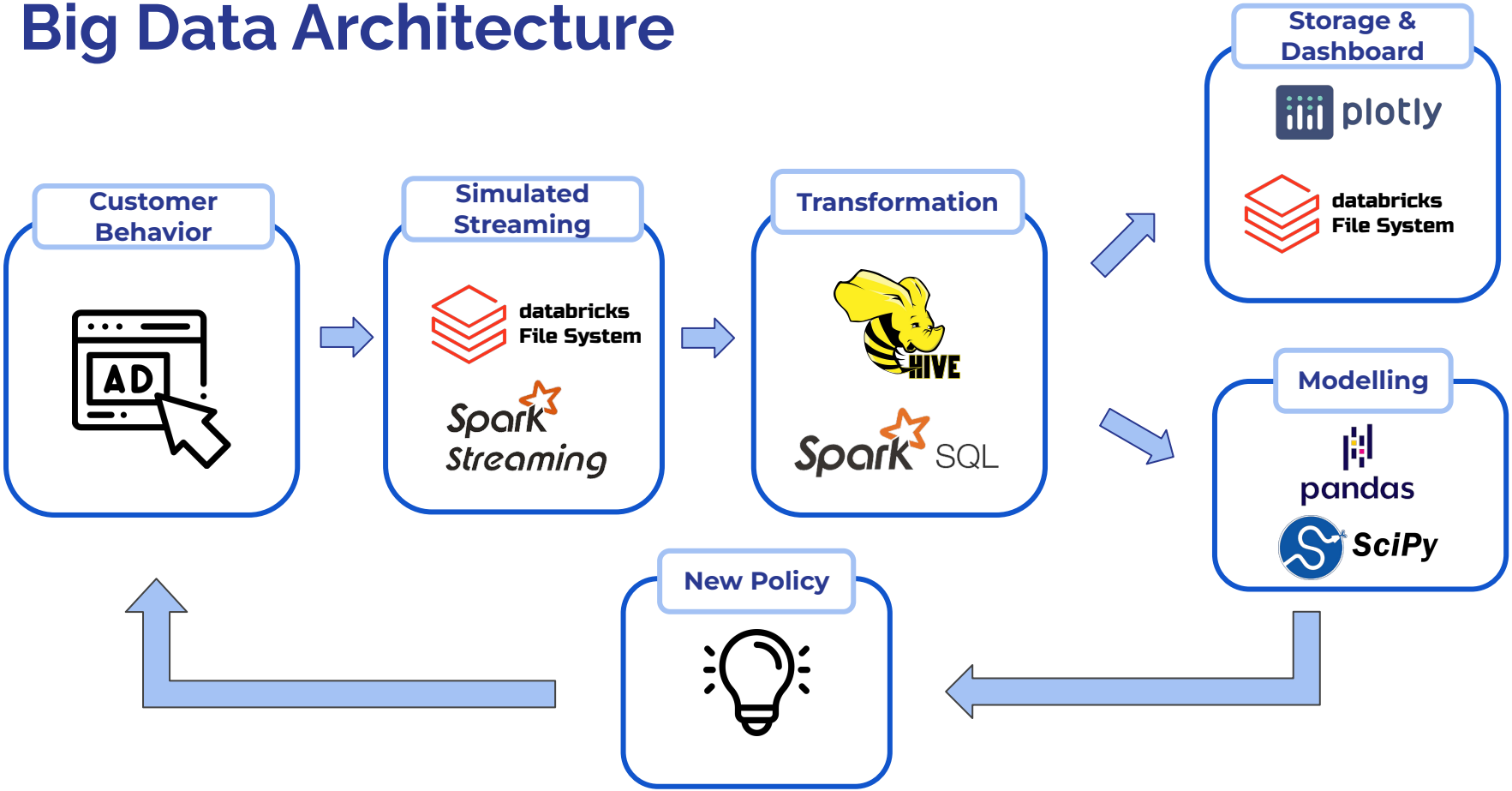
Automatically review the testing result and determine which is better

Data Description

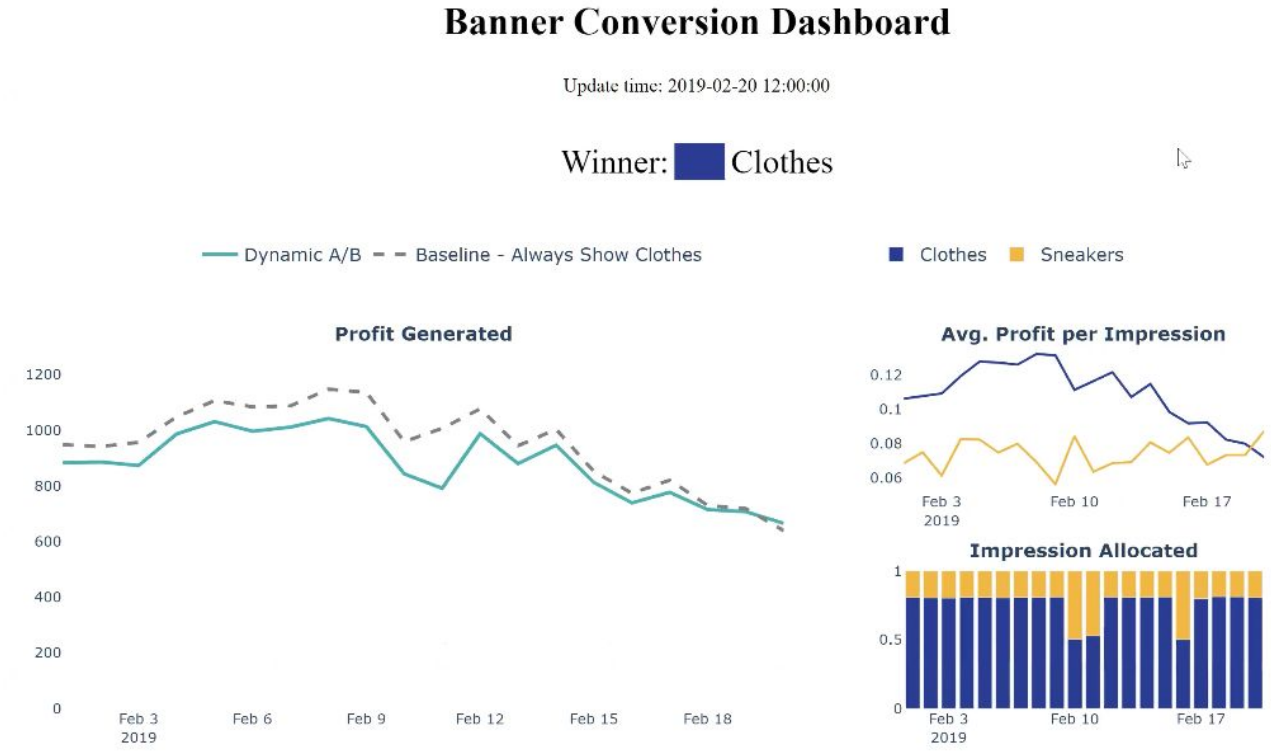


Source of data: https://www.kaggle.com/datasets/podsyp/how-to-do-product-analytics

Big Data Architecture



Streaming Dashboard Demo



How is this better?

Traditional Approach

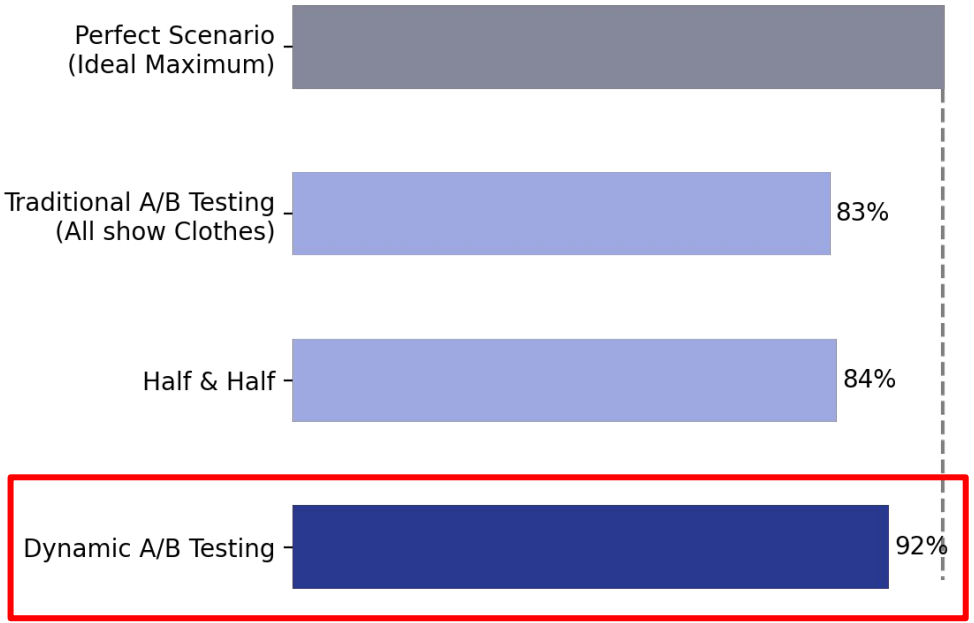
- Review the experiment each time to manually set up the next experiment
- Opportunity and time costs are incurred due to not updating
- Easy to implement

Our Approach

- Constantly review the experiment to automatically adjust configuration settings
- Create interactive dashboard to visualize the results (CTR, ROI)
- Scalable to accommodate many parallel experiments

How is this better?

With dynamic A/B testing, we get 92% of revenue out of the best case



Limitations & Future Scope

1. **Updates are not real-time**

   Big datasets take time to ingest and conduct A/B testing
   Future Scope: Use real-time streaming to better capture the optimal switch time

2. **Sensitive to outliers**

   Policy changes are based only on the current time-frame
   Future Scope: Include data of recent past to capture ‘trends’

3. **Similar product performance**

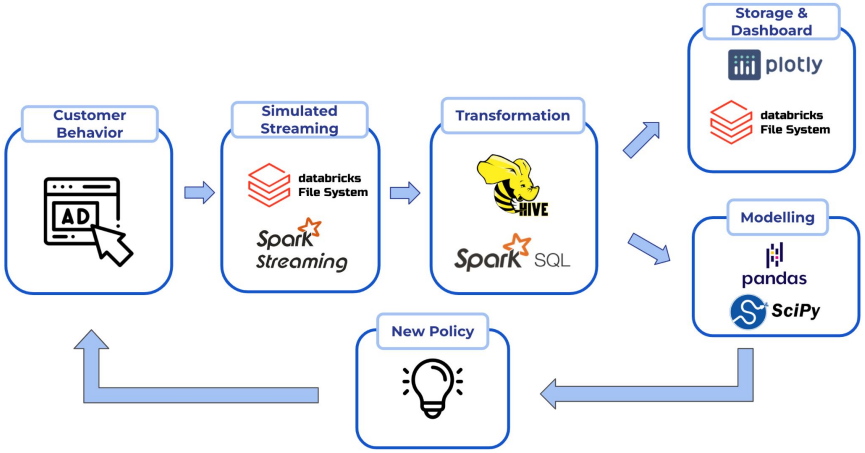
   If both products perform equally well, there won’t be any dynamic updates
   Future Scope: This stability can be used for innovative experiments

4. **Tool Limitations**

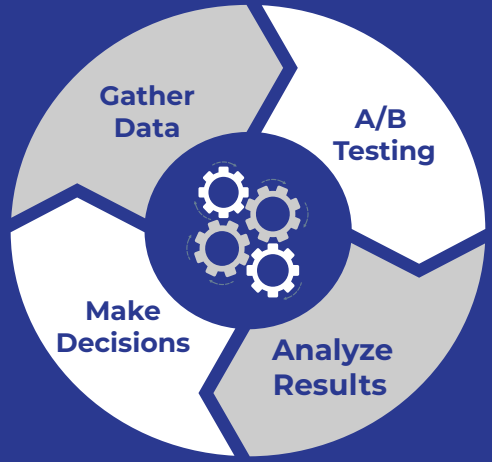
   Community edition tools were used to build this proof-of-concept
   Future Scope: Use licensed unrestricted software for real-time analysis

Summary

Created a scalable cloud-based big data architecture for dynamic A/B testing



Improved RoI by ~9% by dynamically changing product ad banners shows to users



Thank you!