



E-commerce Platform Engineering Analysis

GitHub Repository

Key Optimizations

- Database query optimization achieving 64.34% improvement in WAU queries
- Implementation of materialized CTEs reducing computational overhead
- Strategic index creation improving join operations performance by 46.75%
- Elasticsearch integration for efficient user behavior tracking

Retention Analysis Insights

- Critical user drop-off identified between weeks 3-4
- Strong initial engagement in weeks 0-3 suggesting effective onboarding
- Two-month cohort analysis revealing distinct retention patterns
- Recommendation for focused user experience improvement during transition period

User Segmentation Strategy

- AI-driven segmentation using Sentence-Transformers for user behavior analysis
- Five distinct user segments identified: Tech Enthusiast, Budget Conscious, Fashion Oriented, Luxury Seeker, Home Improvement
- Vector-based clustering enabling scalable user categorization
- Real-time segmentation updates through Elasticsearch integration

Technical Implementation

- PostgreSQL optimization with strategic indexing and materialized views
- Python data processing pipeline with automated cohort analysis
- Elasticsearch for search and behavioral tracking
- K-means clustering for dynamic user segmentation

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