

Nitzan Mekel-Bobrov, eBay

Customer Interest Graph for Dynamic Real-Time Hyper-Personalisation



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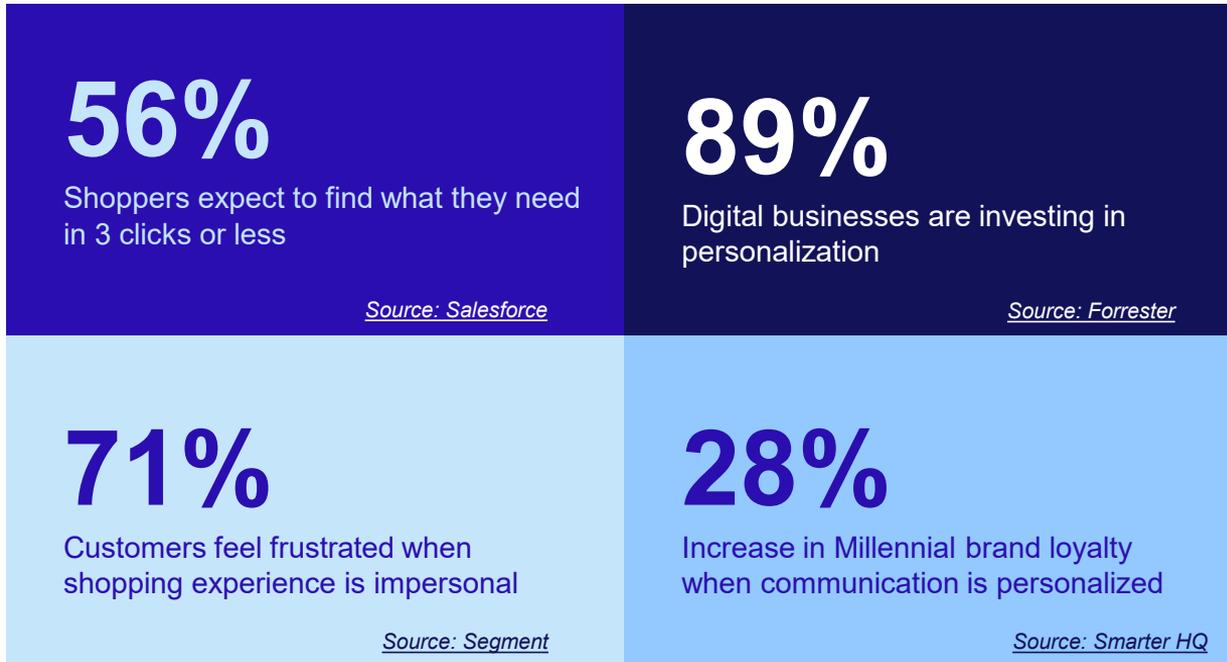
Nitzan Mekel-Bobrov, PhD
Chief AI Officer, eBay

04-MAY-2023

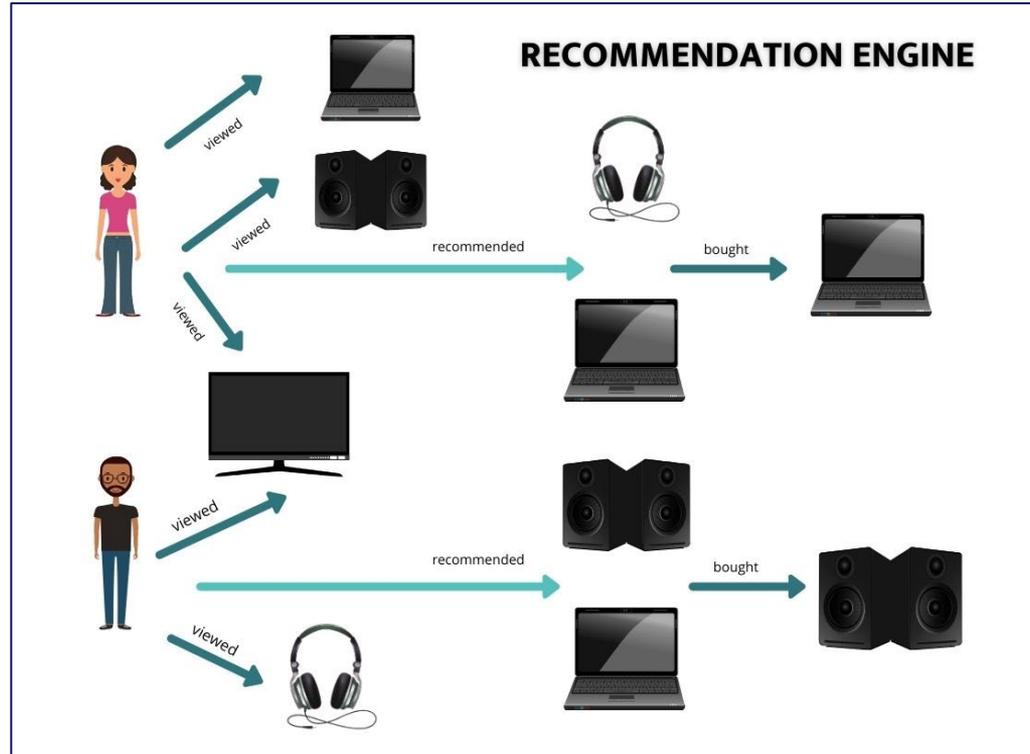
Agenda

- Problem Definition
- Interest Graphs
- E-commerce behavioural data
- Case-Study at eBay
- Future Musings

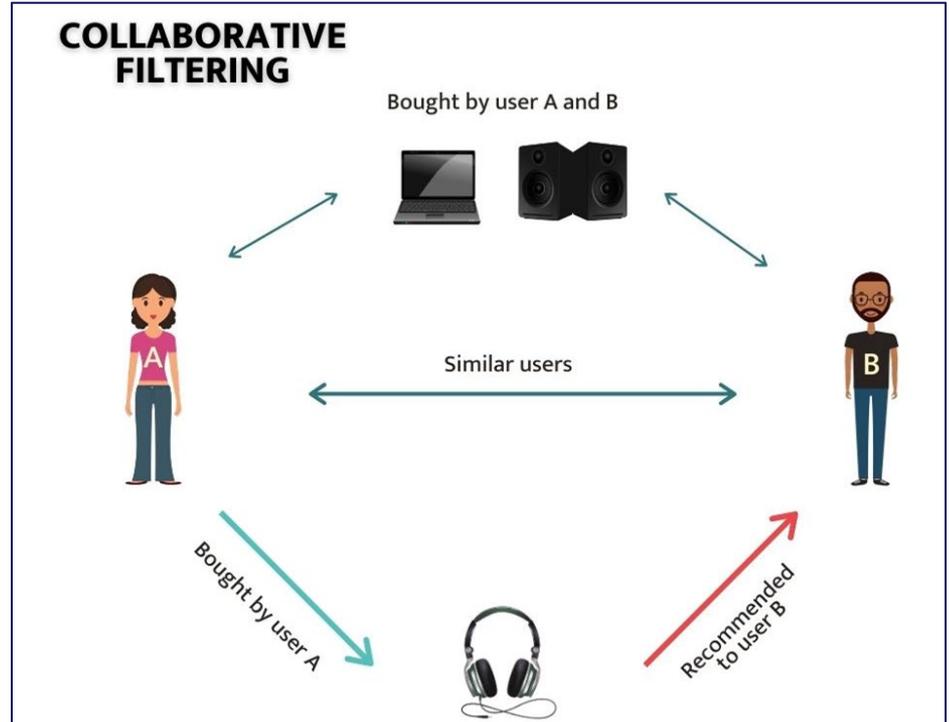
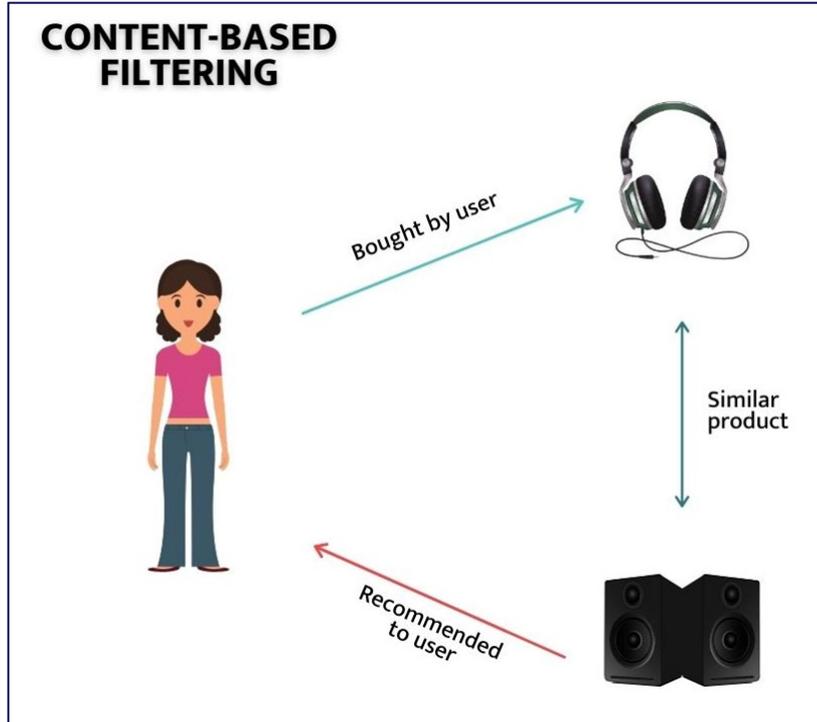
Personalisation has become a baseline expectation among e-commerce consumers



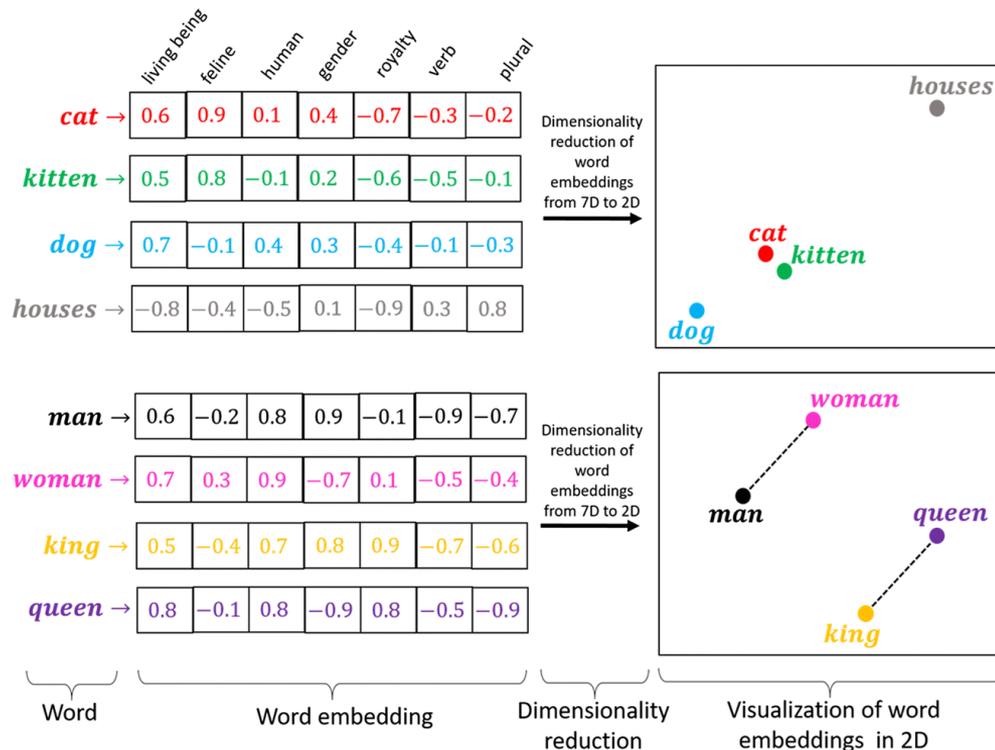
Personalisation in e-commerce typically follows the recommender system model



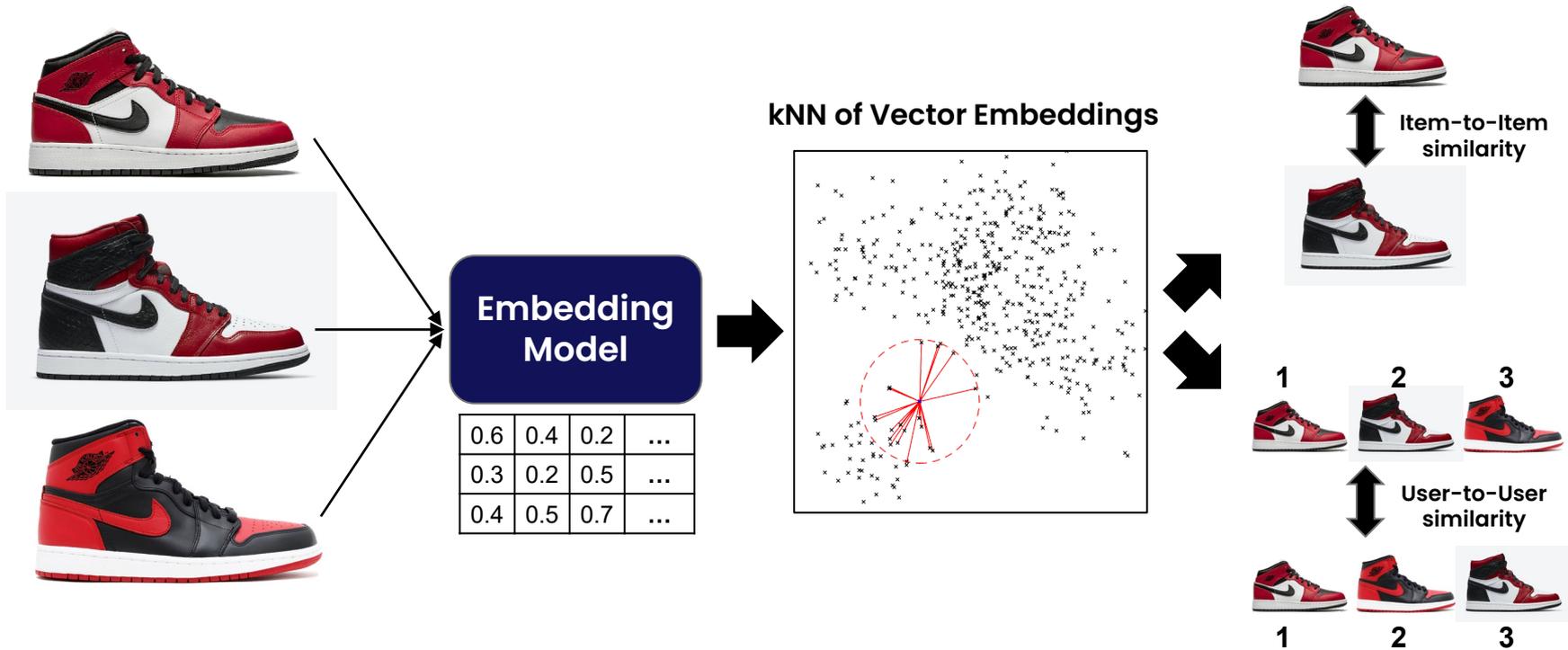
Personalisation in e-commerce typically follows the recommender system model



Deep learning can massively improve personalized recommendations using the same paradigm



Deep learning can massively improve personalized recommendations using the same paradigm



This paradigm, however, keeps us in our own POV, not the consumer's, especially at the discovery stage

New Registry Design Services Tips & Ideas Stores eCatalog Recommendations Furniture Guides

FURNITURE OUTDOOR BEDDING BATH RUGS & WINDOWS LIGHTING PILLOWS & DECOR TABLETOP GIFTS

UP TO 30% OFF SELECT OUTDOOR SOFAS & CHAIRS

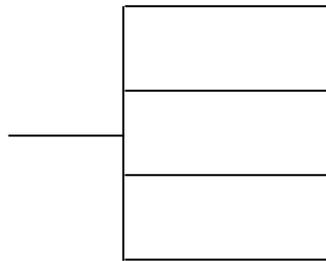
- OUTDOOR FURNITURE BY TYPE
 - All Furniture
 - Lounge Furniture
 - Dining Furniture
 - Accent Tables
 - Furniture Cushions & Covers
 - Patio Umbrellas
- OUTDOOR FURNITURE BY MATERIAL
 - Wicker Furniture
 - Wood Furniture
 - Teak Furniture
 - Metal Furniture
 - Mixed Material Furniture
- OUTDOOR ENTERTAINING
 - Dinnerware
 - Drinkware
- OUTDOOR ACCESSORIES
 - Outdoor Pillows
 - Outdoor Rugs & Doormats
 - Outdoor Lighting
 - Lanterns & String Lights
 - Planters & Gardening
 - Wreathes, Garlands & Plants
 - Front Door Decor
 - Pool Storage
 - Outdoor Drapes & Hardware
- OUTDOOR FURNITURE COLLECTIONS
 - Belmont
 - Georgia
 - Campbell
 - Chatham
 - Torrey
 - View All Collections
- FEATURED
 - Outdoor Best Sellers
 - New Outdoor
 - The Eco Shop
 - Sunbrella®
- GREAT VALUES
 - Outdoor Furniture Sale
 - Clearance



UP TO 20% OFF SELECT OUTDOOR FURNITURE

[SHOP NOW](#)

This paradigm, however, keeps us in our own POV, not the consumer's, especially at the discovery stage



Apparel > Men's > Footwear

Apparel > Men's > Athletic Wear

Collectibles > Clothing > Footwear

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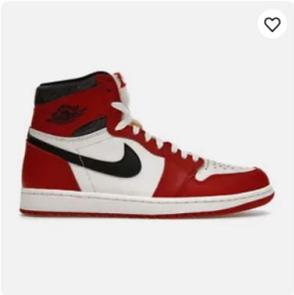
This paradigm, however, keeps us in our own POV, not the consumer's, especially at the discovery stage

Search

jordan 1 red and white sneakers All Categories

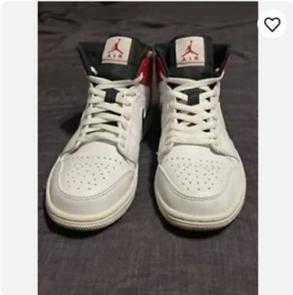
[All Listings](#) [Accepts Offers](#) [Auction](#) [Buy It Now](#) [Condition](#) [Shipping](#) [Local](#)

11,000+ results for **jordan 1 red and w...** [Save this search](#)



NEW Jordan 1 Retro High OG Chicago Men's 10.5 (Lost and Found) Red White... Brand New · Jordan

\$559.99
Buy It Now
+\$14.95 shipping
[Authenticity Guarantee](#)



Jordan 1 mid White, Black, Gym red. Pre-Owned · Jordan

\$150.00
or Best Offer
+\$14.95 shipping
[Authenticity Guarantee](#)



Nike Air Jordan 1 Mid Banned Black Red White 554724-074 Mens and GS New Brand New

\$99.99 to \$219.99
Buy It Now
+\$14.95 shipping
[Authenticity Guarantee](#)

Discovery



NEW Jordan 1 Retro High OG Chicago Men's 10.5 (Lost and Found) Red White 2022

Condition: New with box
Quantity: 1 Last One / 1 sold

Price: **US \$559.99**
[\\$50.54 for 12 months with PayPal Credit*](#)

[Buy It Now](#)
[Add to cart](#)
[Add to Watchlist](#)

People want this: 58 people are watching this.

Fast and reliable. Ships from United States.

Shipping: US \$14.95 Includes tracking with eBay shipping. [See details](#)
Located in: Brooklyn, New York, United States

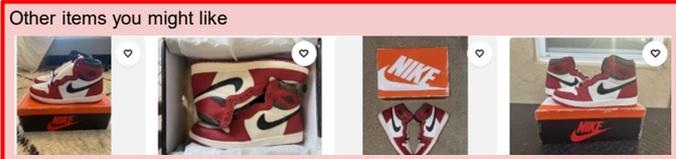
Delivery: Estimated between **Mon, May 8** and **Fri, May 12** to 10577
Includes shipping to and from the authenticator

Returns: This item is **final sale** and cannot be returned. [See details](#)

Payments: [PayPal](#) [ePay](#) [VISA](#) [MasterCard](#) [Discover](#) [Apple Pay](#)

PayPal CREDIT
*\$50.54 for 12 months. Minimum purchase required. [See terms and apply now](#)
Earn up to 6x points when you use your eBay Mastercard! [Learn more](#)

Other items you might like



This challenge with traditional recommenders shows up in many different contexts of item personalisation

- Upper funnel browsing
- Cross-selling
- Cross-channel personalisation
- Personalised feeds
- Complementary recommendations
- **HYPER-PERSONALISATION**

Use Case: Customer interest detection for creating a hyper-personalised upper funnel browsing experience



Customer problem statement

- “Let me be **inspired** with products I never thought exist”.
- “Let me shop my **values** and **interest**”.
- “Show me **diverse, fun** recommendations”.
- 70% of Gen Z’s - **discovery** is the best part of shopping.

Use Case: Customer interest detection for creating a hyper-personalised upper funnel browsing experience

These three listings fall under three different ebay categories:

Athletic shoes

Nike LeBron 2 Maccabi Men's
Basketball Shoes White/Gold



Trading Card Singles

2019 Panini Mosaic LeBron
James #8 PSA 10 GEM MINT



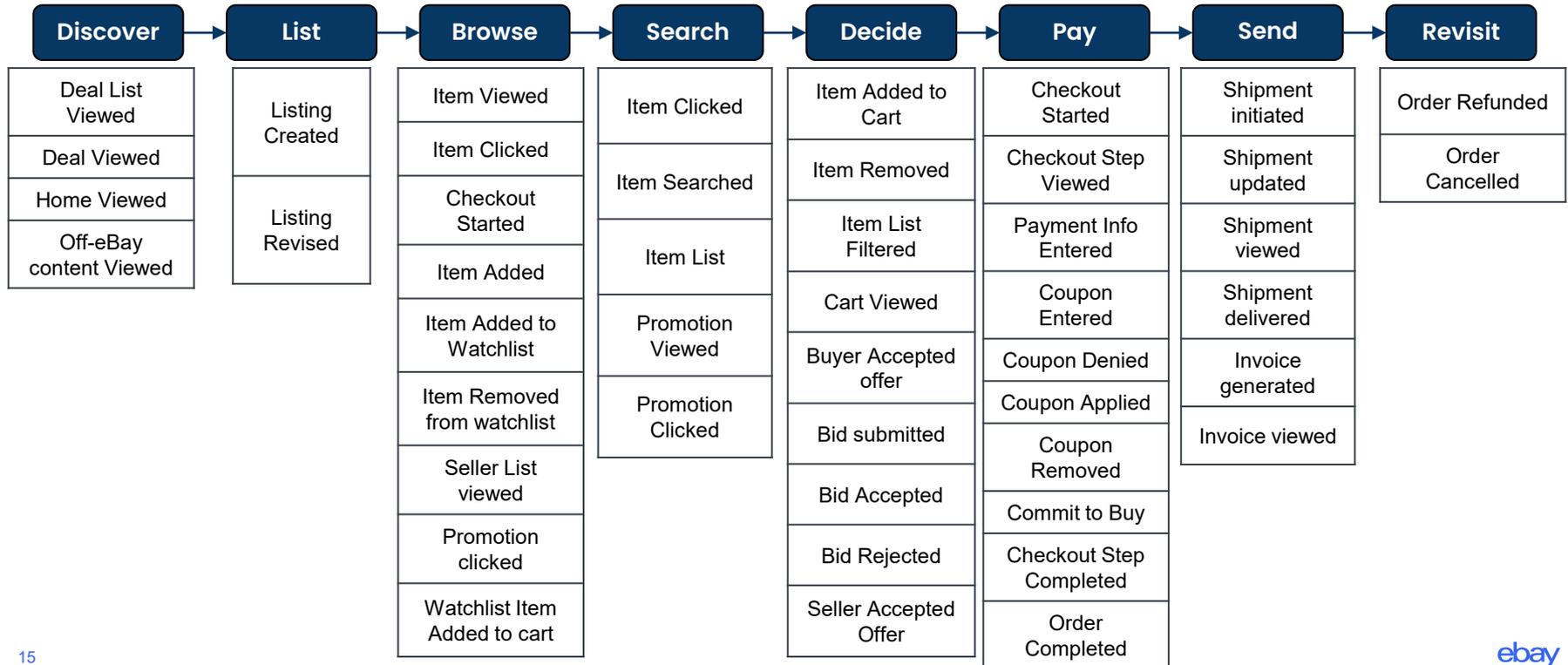
Basketball-NBA

LeBron James Lakers Robzilla
Limited Edition Serigraph Print

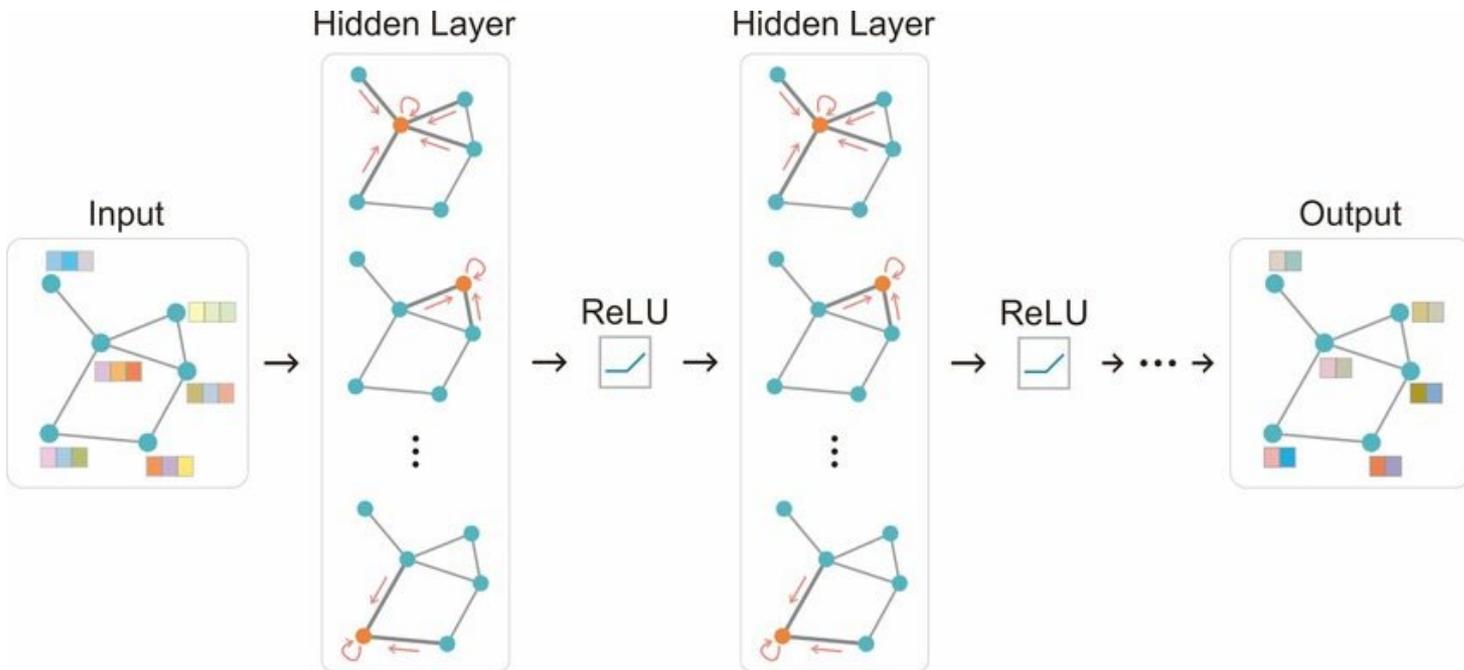


Customer Interest: "Lebron James"

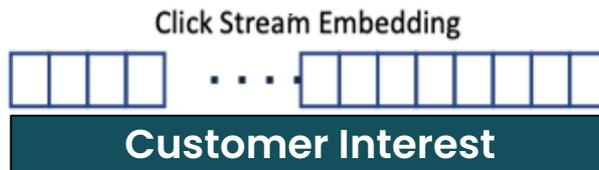
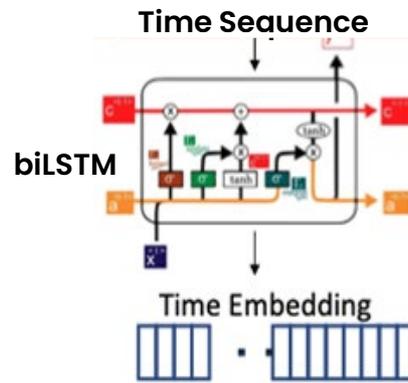
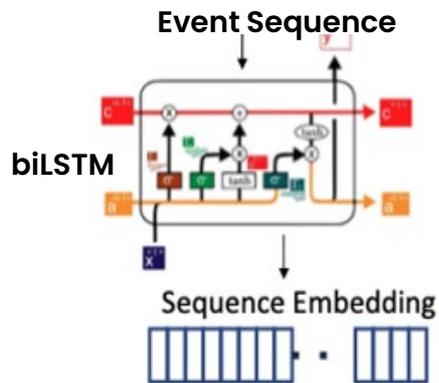
We built an **Interest Graph** of 63 actions to dynamically find in real-time customer's interests as they emerge



We built an **Interest Graph** of 63 actions to dynamically find in real-time customer's interests as they emerge



Time Attention Based Behavior Sequence Embedding



The **Interest Graph** approach can be brought to life via a bi-directional hyper-personalized browse experience

INSERT VIDEO HERE

Questions?