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extract

Data stories worth sharing

Dogpatch studios, San Francisco

October 30th: 9am – 5pm

Data and Personalization: The Marketplace Holy Grail

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<https://github.com/karyafar/Extract2015>

Data Science



Rob Hall



Josh Attenberg



Diane Hu



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Corey Lynch



Andrew Clegg



Caitlin Cellier

Etsy is an online marketplace where people connect to buy and sell **unique** goods: Handmade, vintage, or craft supplies

Shop Sections

- [Shop home](#) 23 items
- [Bags](#) 9
- [Wallet](#) 5
- [Cases and other ideas](#) 7
- [For travel](#) 2

Shop Owner

 Coloredstars.com
Rome, Italy

Have a question?
Contact the shop owner.

Need a custom order?

[Request Custom Order](#)

Shop Info

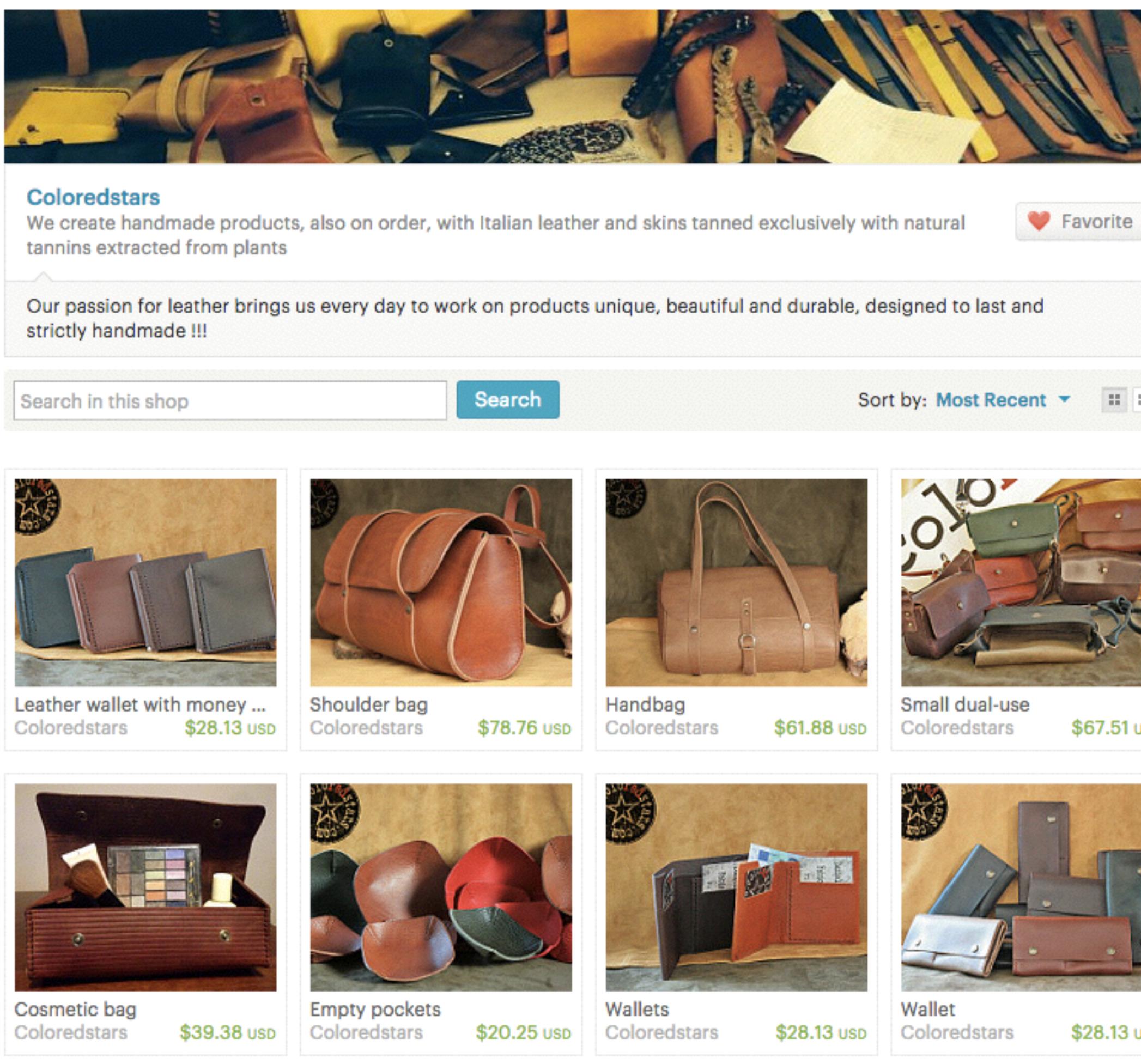
 Coloredstars
Opened on Nov 29, 2014

Policies

Reviews

 (3)

7 sales



ColoredStars
Rome, Italy

People buy and sell on Etsy from nearly every country in the world.

~21M

Active Buyers

1.4M

Active Sellers

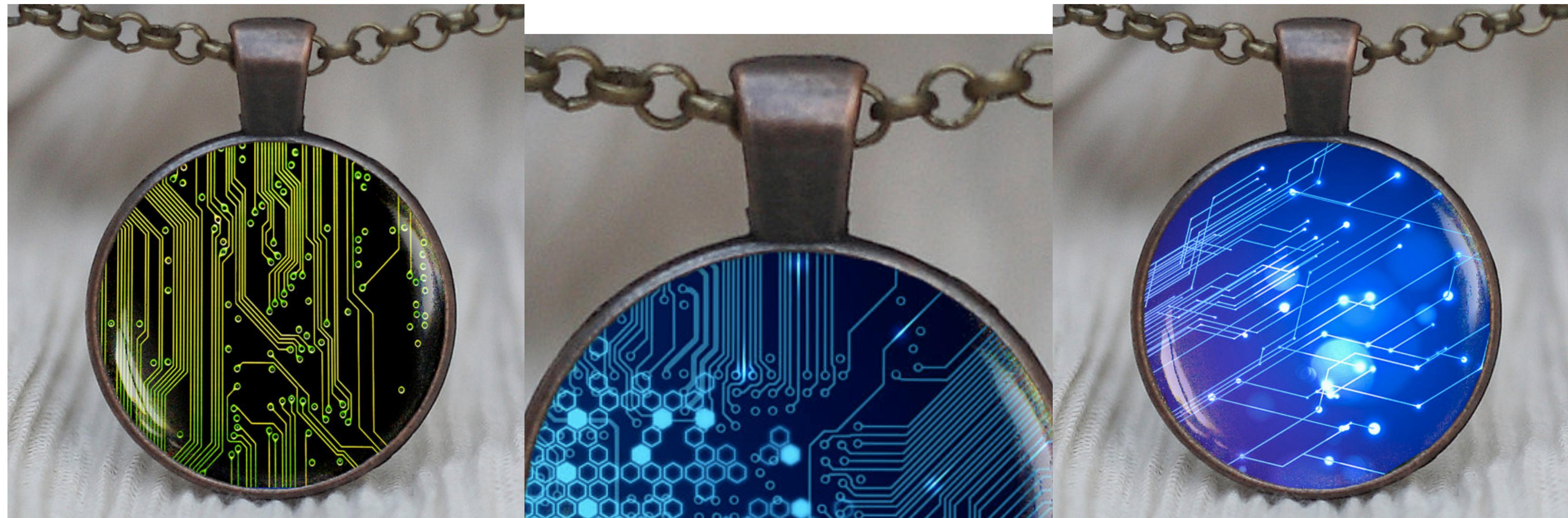
~35M

Listings

Stats as of March 31, 2015

In a 2014 survey of Etsy buyers, 92% agreed that Etsy offers products they cannot find elsewhere.

Unique Items, Unique Challenges



PendantWorld

Shop Owner



Larisa Rozina



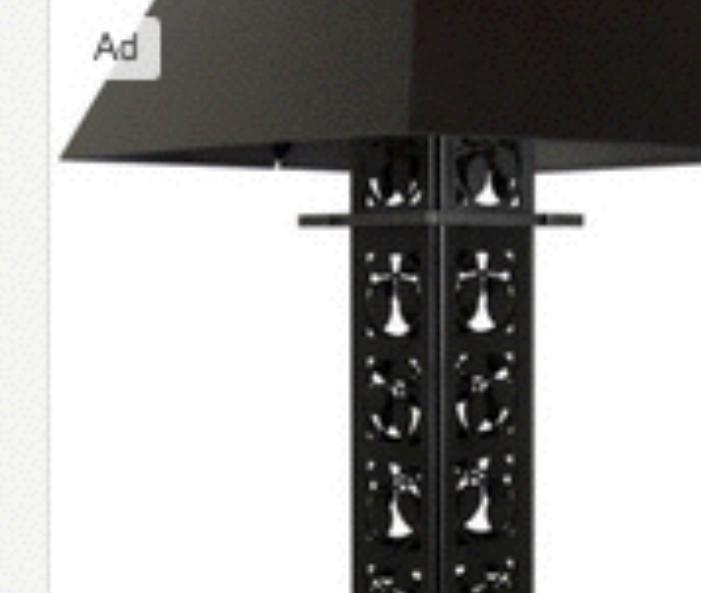
Circuit Board Pendant!

Etsy Overview

All Categories > "desk lamp" (10,756 Results)

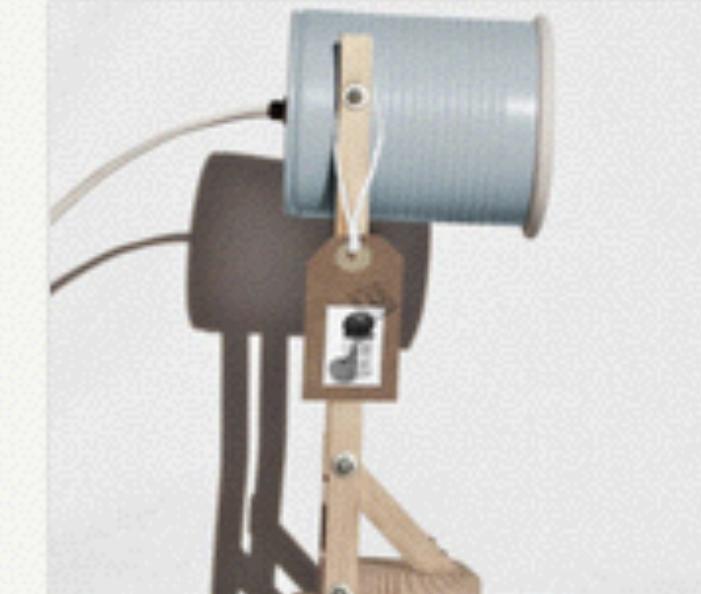
Sort By: Relevancy ▾

 Ad
Edison Lamp Nostalgic - Steampunk ...
Timberson \$95.00 USD

 Ad
Cascade Lamp by LightWater Artisans
LightwaterArtisans \$749.00 USD

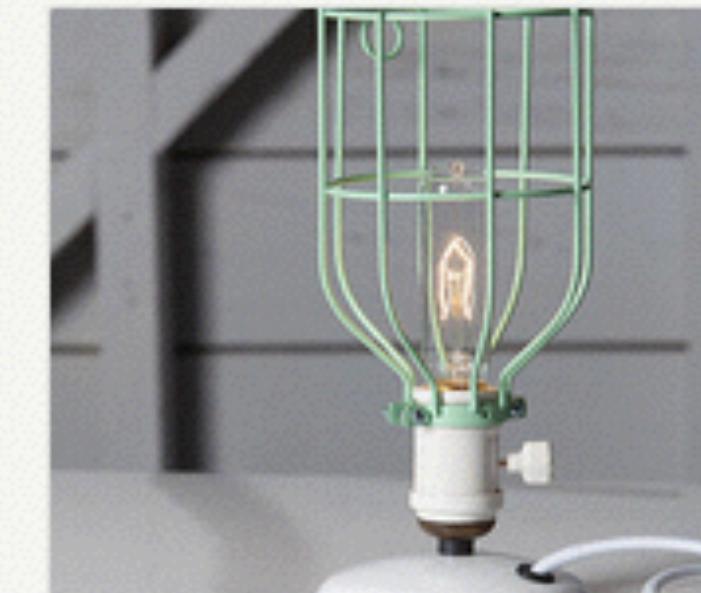
 Ad
Brass Branches Desk Lamp w/ Marbl...
brandonlenoir \$199.00 USD

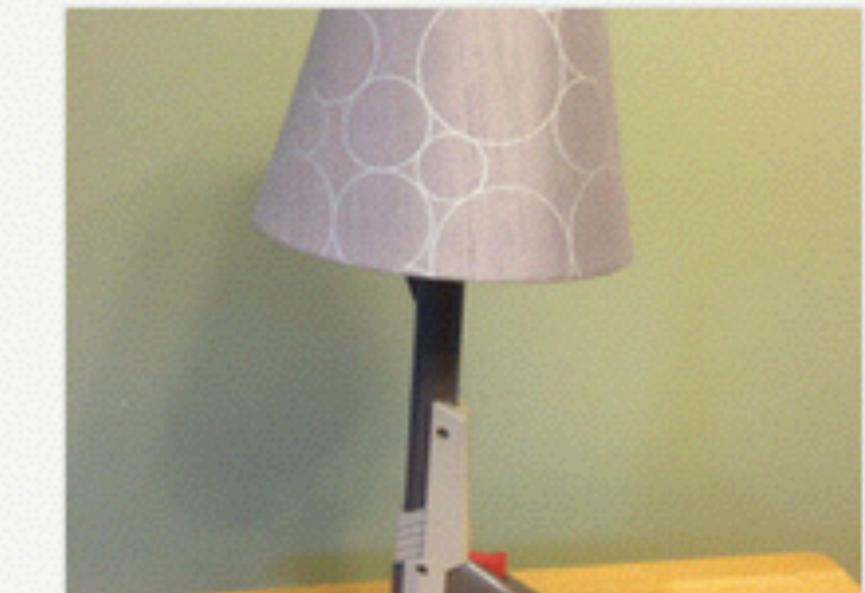
 Ad
Desk Lamp, Nursery Lamp, Bedside ...
EllaMenoPeaDesign \$65.00 USD

 Ad
Desk lamp , pastel light cyan color.....
ILIU \$29.25 USD

 Ad
Mid Century desk lamp vintage yello...
rubyinthesky \$49.99 USD

 Ad
Vintage Mid-Century Desk Lamp
UrbanAmericana \$125.00 USD

 Ad
Industrial Desk Lamp - Mint Green Wi...
IndLights \$89.00 USD

 Ad
Nintendo zapper gun desk lamp
WarriorGameCrafts \$65.00 USD

All Categories > "desk lamp" (10,756 Results)



Edison Lamp Nostalgic - Steampunk ...

Timberson

\$95.00 USD

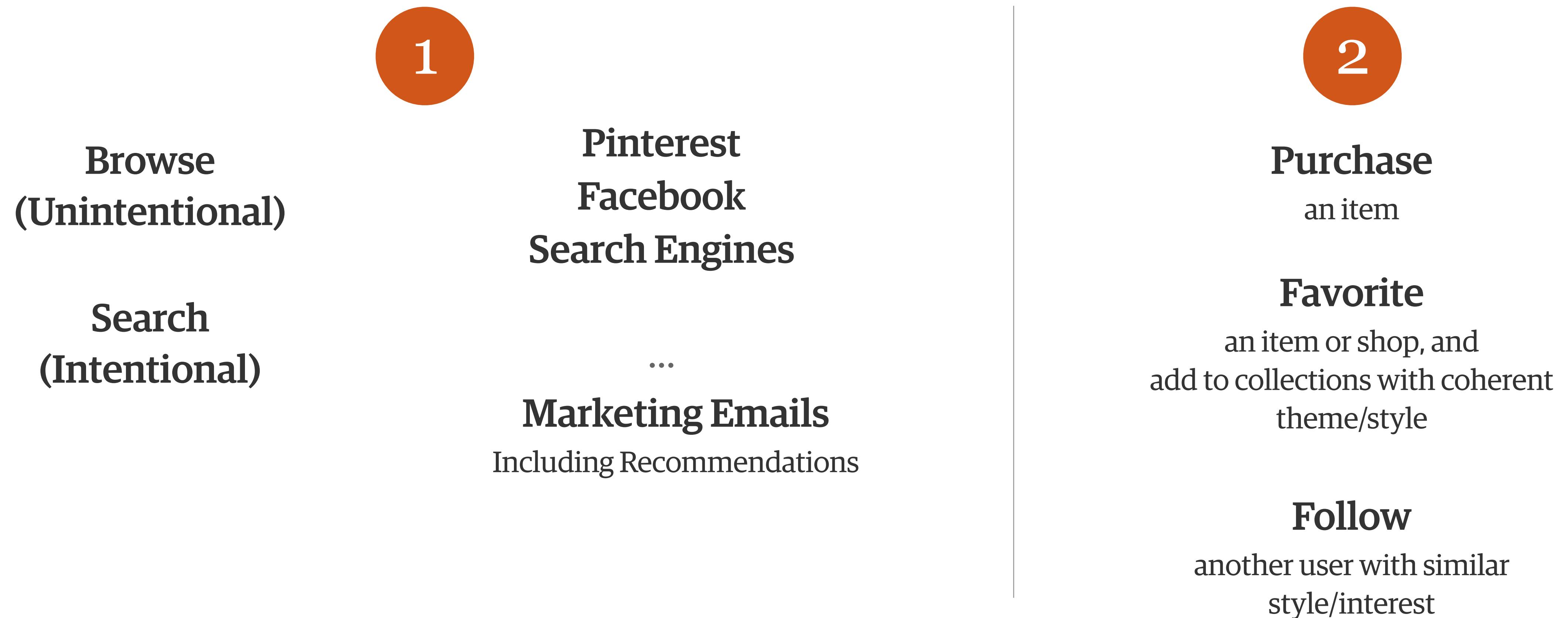


Cascade Lamp by LightWater Artisans

LightwaterArtisans

\$749.00 USD

How do people typically use Etsy?



Data, Data, Data

Recommendations on Etsy



Bamboo Honeycomb Place Mat &...

\$51.67 USD | buProducts



Similar to some of your favorites

...

ITEM RECS

Justin Huan
, SG

Follow

1573 favorites >

Has favorites we think you'll enjoy

...

A user profile for Justin Huan from Singapore. It includes a circular profile picture of a black and white dog, the user's name, their location, a 'Follow' button, and a section showing items liked by the user. Below this, there is a grid of recommended items including a small potted plant, a small palm tree in a gold pot, and a black mug.

USER REC

RichwoodCreations ★★★★★
Rustic, Functional & Decorative ...

102 items >

Sells items similar to your favorites

...

A shop profile for RichwoodCreations. It features a circular profile picture of a man, the shop's name, its rating, and a brief description. Below this is a grid of rustic wooden items including a world map wall art, a wooden box with a monogram, a wooden clock, and a wooden serving tray.

SHOP REC

Recommendations on Etsy

Hi, Kamelia!

Following Interactions

You have new activity! Click to refresh. X

Looking for your shop activity?



Recently Favorited Items



New Items From Your Favorite Shops



Our Picks For You



One-of-a-Kind Gift Ideas

[Shop Now](#)

Browse

Trending Items

Father's Day Gifts

Summer Celebrations

Gift Ideas

Mobile Accessories

Story Behind the Shop [See more](#)



TwoGuysBowties

Meet the co-founders of men's accessories line Two Guys Bow Tie Co.

Recommendations on Etsy

iPad 12:32 85%

Your Feed Trending

Jedi Order - Bottle Opener Keychain... £3.30 SARNSTIE

Similar to some of your favorites

Froggy Creations 45 listings

DiceBagChick ★★★★★ (83 reviews)

Sells items similar to your favorites

77 listings

THE WALKING DEAD THE ARTIE LOGOPACK 64 listings

Marketing Emails

It's The Little Things

Etsy <emails@mail.etsy.com>
to me ▾

May 2 (10 days ago)

Etsy

[View this email online](#)

Picked for You

Deer Ring Dish - Trinket Di...
£4.75

Mens Squid on a Bike T S...
£12.89

I'M AN
ENGINEER
TO SAVE TIME LET'S JUST
ASSUME THAT I'M NEVER WRONG
Funny Engineer T-Shirt En...
£10.17

Womens VONNEGUT... S...
£12.21

Energy Flow Fitted Hat ma...
£16.96

Mens Vintage Robot Comp...
£13.56

Cart Recommendations

You might also like...



Rose Gold Letter
Necklace, Lower Case
Letter, Rose Gold Initial,
Rose Gold Initial
Necklace, Initial Jewelry

By [PROJECTDAHLIA](#)

\$26.00 USD

Add to Cart



Gold Jewelry, Gold Bow
Necklace, dainty
handmade necklace,
everyday, simple,
birthday, wedding,

By [PROJECTDAHLIA](#)

\$24.00 USD

Add to Cart



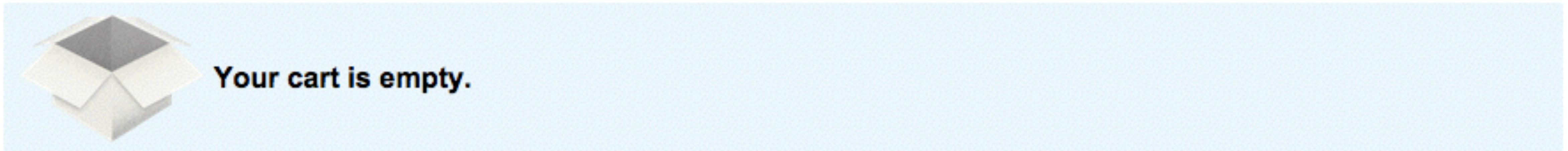
Thin Gold chain necklace
14 - 50 inch small 2mm
gold chain oval links
chain gold plated chain
flat link chain ...

By [acanthusjd](#)

\$6.00 USD

Add to Cart

Empty Cart Recommendations



Recommended Items



**Silver, gold, rose gold
Bracelet- Pearl Bracelet-
White Pearl- Dainty Silver
Bracelet- Tiny Pearl
Jewelry- 925...**

By West9th

\$14.00 USD

Add to Cart



**slip cast porcelain
hanging crystal planter**

By Beanandbailey

\$27.00 USD

Add to Cart



**Aqua Mint Earrings Aqua
Dangle Earrings
Bridesmaid Gifts Bridal
Jewelry Drop Earrings
Jewelry Accessories**

By LimonBijoux

\$22.00 USD

Add to Cart

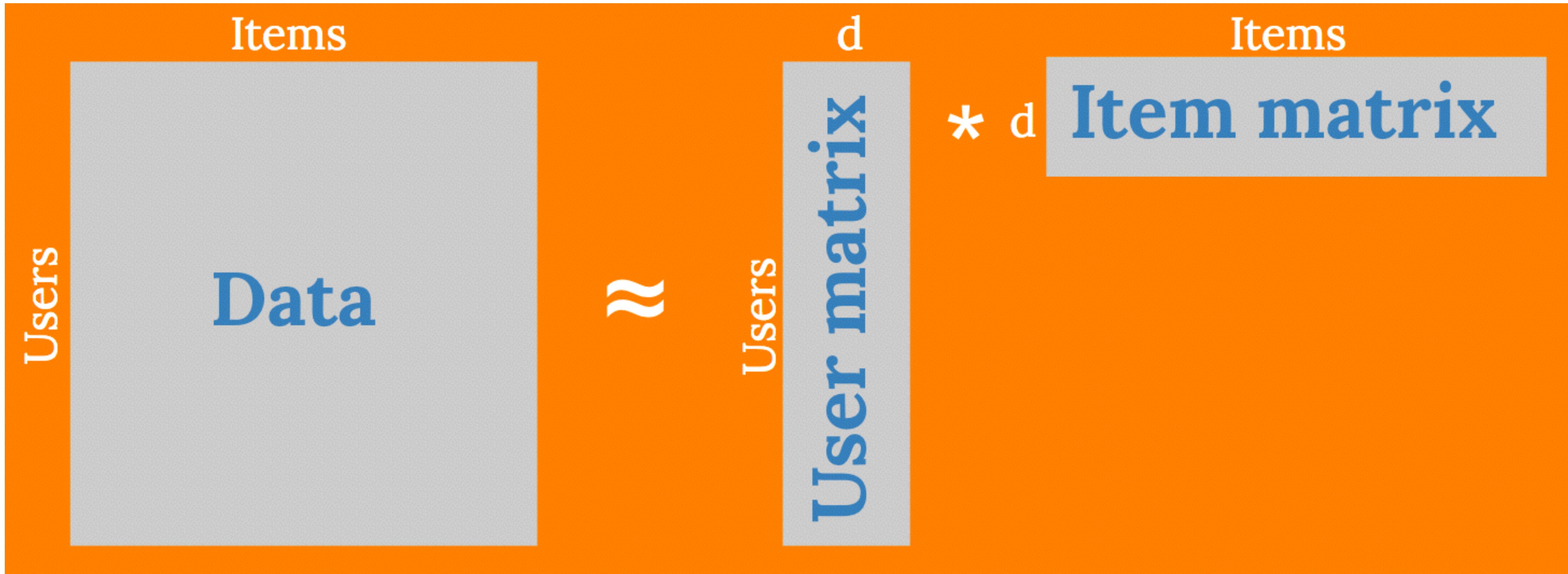
Personalization

- **Collect Data**
- **Scrub**
- **Model**
- **Generate Recommendations**

Matrix Factorization (MF)

		Items				
						...
		Alice	1	1	0	0
		Bob	0	0	1	1
		Corey	1	0	1	0
		...				

Matrix Factorization (MF)



Users

Alice	0.9	-0.1
Bob	-0.8	0.5
Corey	0.1	0.8

Items

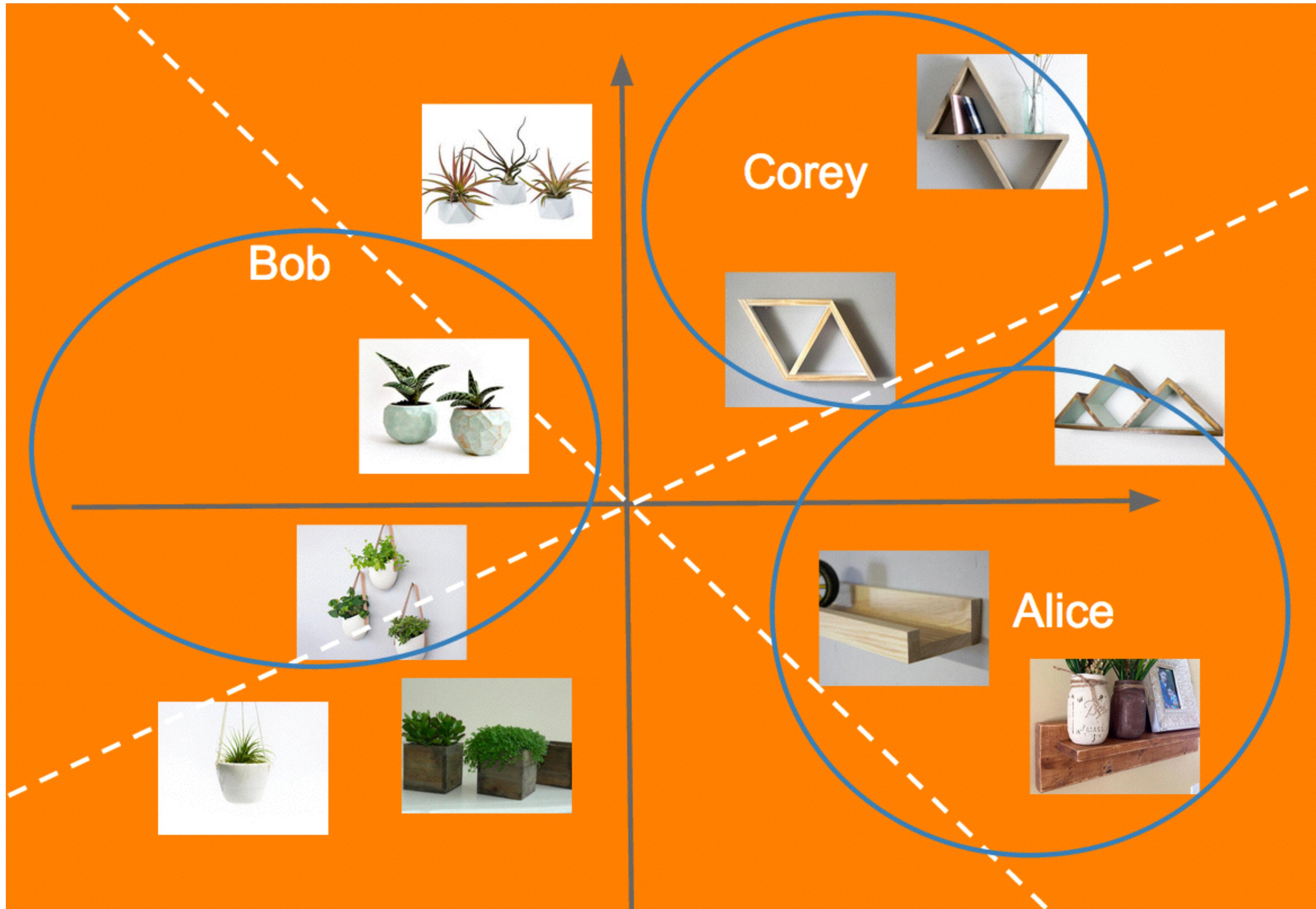
			
0.8	0.9	-0.7	-0.8
0.9	0.1	0.7	-0.5

score[Corey,



$$] = 0.1 * 0.9 + 0.8 * 0.1 = 0.17$$

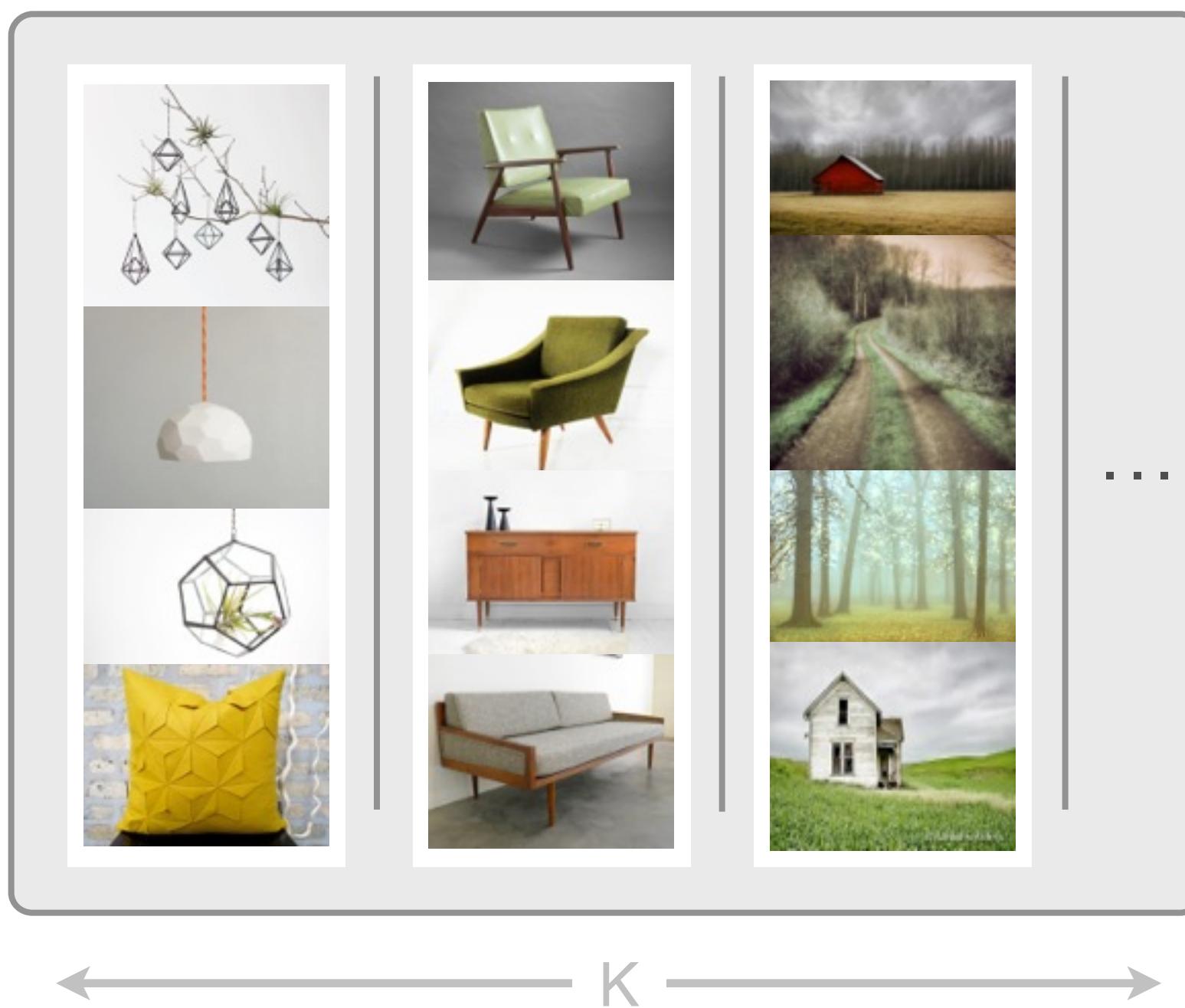
Locality Sensitive Hashing (LSH)



Latent Dirichlet Allocation (LDA)

Discover popular styles on Etsy as a distribution over items

“geometric” “mid-century” “surreal”



Represent each user as a distribution over popular styles, i.e. “style profile”



Discovering User Styles

Different styles discovered by LDA

ANIMALS



TENTACLES



GEOMETRIC



MID-CENTURY MODERN



Generating Recommendations

USER'S FAVORITES



ITEM RECOMMENDATIONS



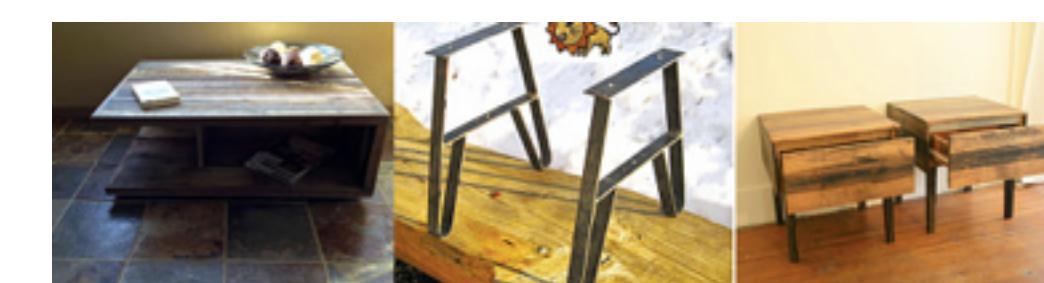
STYLE #428



STYLE #54



STYLE #655



STYLE #87

What We Have Learned

A/B Testing

- **Variant:** LDA or MF personalized recommendations
- **Control :** No recommendations
- **Significant increase in all business metrics**

Personalized content best engages users and enhances business metrics.

More Data, More accurate models, Better
recommendations

Questions?

Thank you!

<https://github.com/karyafar/Extract2015>

Etsy