



Stealthy Image Manipulation with Python

January 27, 2018

https://rebeccawperry.github.io/python_seam_carving/

Rebecca Perry, PhD



Wayfair is Five Distinct Sites to Shop for the Home

wayfair.com

Est. 2011

An online destination
for all things home

Joss & Main

Est. 2011

Where beautiful
furniture and finds meet
irresistible savings

ALLMODERN

Est. 2006

Your home for affordable
modern design

BIRCH LANE

Est. 2014

A collection of classic
furnishings and timeless
home décor

PERIGOLD

Est. 2017

Unparalleled access to
the finest home décor
and furnishings





Wayfair is also a Tech Company

<https://tech.wayfair.com/>

 wayfair | TECH



Jobs



WAYFAIR TECHNOLOGY BLOG

Home

Data Science

Wayfair Next

Culture



W

NYSE Ticker
Symbol

HQ in
Boston

also in
Berlin!

1,200
Engineers



Proprietary Software Powers Key Parts of Our Business

- Company culture deeply rooted in technology and data
- Over 1,200 engineers and data scientists
- Becoming employer of choice for engineering and developer talent in Boston

Examples of Proprietary Technology

Ad Tech Stack

Keyword Search and
Retargeting Bidding

Campaign Management

Measurement and Analytics

Storefront

Product
Discovery

Stability and
Performance

Desktop and
Mobile

Personalization

Conversion

Product
Globalization

Business Operations

Warehouse
Mgmt

Transportation

Product
Catalog

Pricing

Infrastructure

Order Mgmt



Our Mission

**To transform the way people
shop for their homes**





Home is Largely Browsed...

Free Shipping Over \$49* | Up to 70% OFF Annual Upholstery Event »

Registry Idea Boards Account



Departments Rooms Inspiration Sale

Find anything for your home...



CREATE A COZY CORNER
Accent Chairs

Wayfair Club Chair
ALCT 1024
NOW \$179

Shop all accent chairs at [WAYFAIR.COM/ACCENTCHAIRS](https://www.wayfair.com/ACCENTCHAIRS)

Shop »



IDEAS & ADVICE

Your Daily Guide to Everything Home

ORGANIZATION | STYLES | ROOMS | DIY | OUTDOOR | ENTERTAINING | GUIDES | FEATURED SPACES

6 Backsplash Ideas to Steal

These tile looks will totally transform your kitchen.

Save to Idea Board



KITCHEN DESIGN ADVICE

There's no doubt your kitchen backsplash has to be durable—but that doesn't mean it can't also be stylish. Our editors gathered their favorite ideas to give your kitchen a little bit of extra character.

Subway



You've seen this tile in some of today's trendiest kitchens, but it's been around for ages—it was designed in 1904 for New York's first train station. Its timeless aesthetic can be embraced in its

Related Stories

- 3 Rules for Nailing the Monochromatic**
Real homes and what they get right.
- The 4 Pieces Every 20-Something's Bedroom Needs**
These decor essentials prove you're finally
- 10 Ways to Give Your Kitchen a New Look**
Easy updates and small renovations that make an impact

Looks You'll

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wayfair

EVERYTHING

UNDER THE SUN

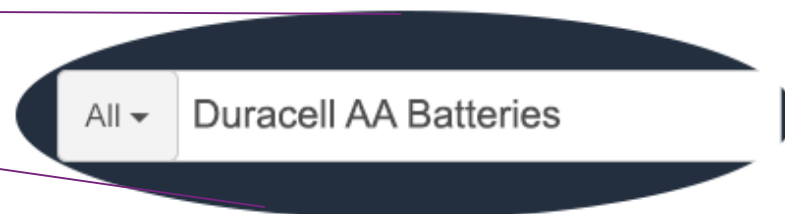
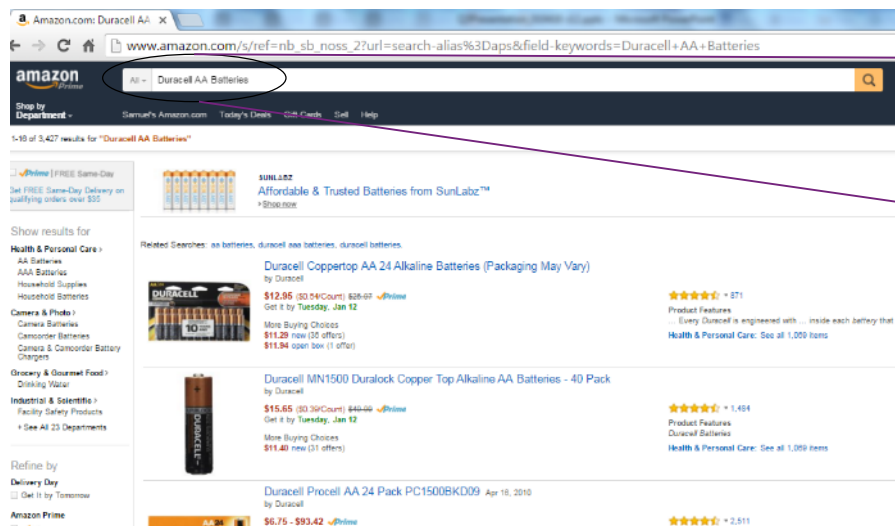
Spruce up your patio, lawn, and beyond with looks from our outdoor catalog

Shop Now



...and Not Searched

Most ecommerce shopping is done via branded search



This is not possible in home where brands are not known...

Leading Furniture and Home Décor Brands



...And consumers can't describe what they are looking for



Unlike other Retail Categories, Home Shoppers Desire Uniqueness

CPG Category Example: Paper Towels



vs.

Home Category Example: Lighting





Imagery is Incredibly Important

Supplier Contributed
Content





Imagery is Incredibly Important

Supplier Contributed Content



Our Own Photo Studios' Photographs





Imagery is Incredibly Important

Supplier Contributed Content



Our Own Photo Studios' Photographs



3D Models used for Computer-Generated Imagery

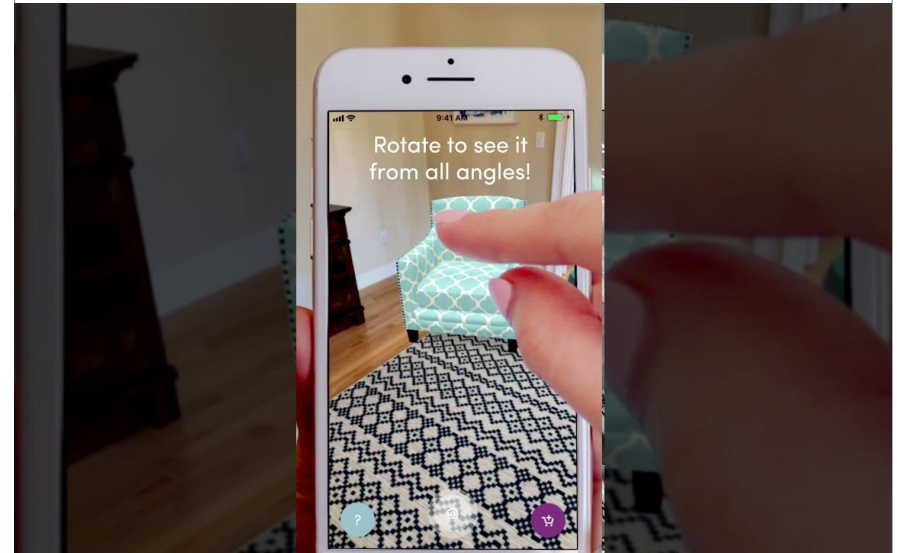
3D Models Enable Visual Imagery and Viewing 3D Products in context with Augmented Reality

- 3D images allow for inspiring visual imagery without the expense of product samples and physical photo studios
- Augmented Reality allows customers to preview accurately sized 3D models in their homes. This feature is built into our iOS mobile app, making it available to millions of our customers with Apple devices. It is also available on Android phones with Google Tango technology and coming soon to 100M Android devices

Image Rendered from 3D Models



Wayfair App on iPhone





There are lots of interesting tech challenges around generating and displaying imagery

How can we load
images quicker?

Data Science, Product Media, and my team Wayfair Next Research
all use tools like Python to develop answers to these questions



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How can we generate inspirational imagery for 8,000,000+ products?

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How can we display products in settings that are most appealing to each customer?

How can we generate 3D models from photographs?

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Workshop resources available at:

https://rebeccawperry.github.io/python_seam_carving/