



Oct 26, 2018

What's for Dinner?

Using Predictive UX to Help Users Decide

About Us



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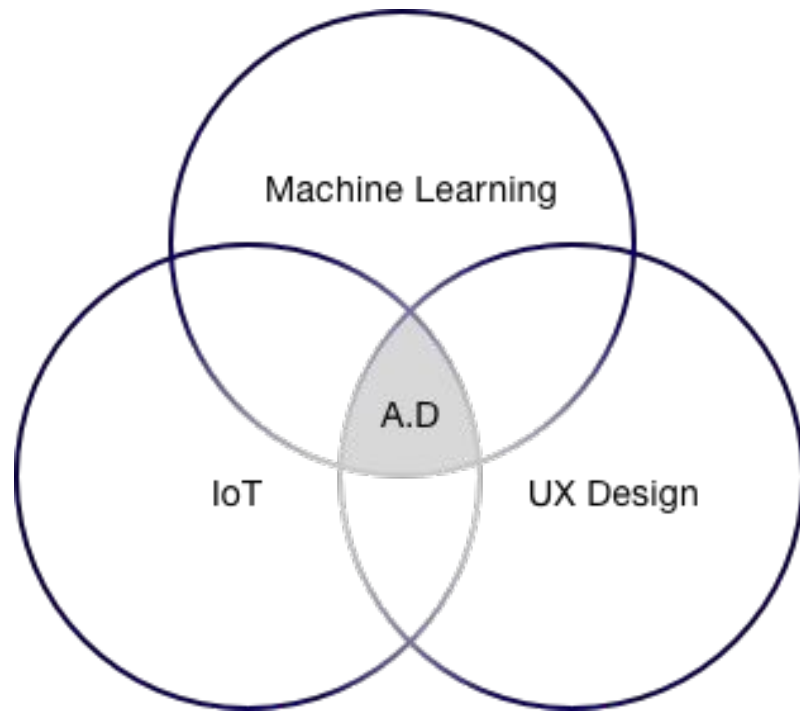
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The background is a dark, almost black, space filled with a dense, chaotic web of thin, glowing lines. These lines are primarily in shades of deep red and dark blue, creating a sense of movement and complexity. In the upper right corner, there is a bright, glowing point of light, possibly representing a star or a source of energy, from which some of the lines appear to emanate or converge. The overall effect is one of dynamic, interconnectedness.

What is Predictive UX?

“... A design pattern that moves around learning, predicting and anticipating.”

— Joël van Bodegraven



What is Predictive UX?

“Personalization is done by the system being used. Developers set up the system to identify users and deliver ... the content, experience, or functionality that matches their role.”

— Amy Schade, Nielsen Norman Group

What is Predictive UX?



What is Predictive UX?

GRUBHUI

Denver, CO

Filters

Clear all

I want

Delivery

Pickup

Deliver my food • Today, ASAP

Feature

☐ Free Delivery • 14
 ☐ Order Tracking • 17
 ☒ Open Now [1:04pm] • 247

Rating

☐ ★
 ☐ ★
 ☐ ★
 ☐ ★
 ☐ ★

Price

☐ \$
 ☐ \$\$
 ☐ \$\$\$
 ☐ \$\$\$\$
 ☐ \$\$\$\$\$

Delivery time

Any time

45 min

60 min

Any

Browse food near you

247 Restaurants

Lunch

Sandwiches

Asian

American

Salads

Pizza

Healthy

Japanese

Sushi

Hamburgers

Mexican

Open Now

X

Sort:

Default

Freshcraft
 American, Pub Food
 New

Not enough ratings
 \$\$\$\$ minimum
 0.89 mi • 45–55 min

Pizza & Grill
 Grill, Hamburgers...
 Coupons available

★★★★★
 3163 Ratings
 \$\$\$ minimum
 0.55 mi • 50–60 min

P.F. Chang's Downtown
 Asian, Chinese...

★★★★★
 992 Ratings
 \$\$\$ minimum
 0.86 mi • 30–40 min

Thai Basil
 Asian, Thai
 Coupons available

★★★★★
 1797 Ratings
 \$\$\$ minimum
 1.18 mi • 50–60 min

Protein Bar and Kitchen
 Healthy, Lunch Specials...

★★★★★
 123 Ratings
 \$\$\$ minimum
 0.69 mi • 45–55 min

Nicole's Chicago Style Pizza
 Lunch Specials, Pizza...

★★★★★
 1790 Ratings
 \$\$\$ minimum
 0.93 mi • 50–60 min

Brothers BBQ (Washington St)
 BBQ, Lunch Specials

★★★★★
 1370 Ratings
 \$\$\$ minimum
 1.15 mi • 35–45 min

Pepper Asian Bistro
 Asian, Chinese...

★★★★★
 4275 Ratings
 \$\$\$ minimum
 1.93 mi • 45–55 min

Red Ginger
 Asian, Japanese...







★★★★★
 1345 Ratings
 \$\$\$\$ minimum
 0.98 mi • 60–70 min

Erbert & Gerbert's Sandwich Shop
 Gluten-Free, Lunch Specials...

★★★★★
 669 Ratings
 \$\$\$ minimum
 0.83 mi • 25–35 min

Little India Restaurant & Bar (E 6th Ave)
 Healthy, Indian

★★★★★
 2114 Ratings
 \$\$\$\$ minimum
 0.80 mi • 30–40 min


Free delivery all month!		
No delivery fee on your first order and all orders for 30 days. Promo applied at checkout.		
All Restaurants		
	McDonald's Fast Food, Burgers, Sandwiches, American (Traditional), American (New), Breakfast & Brunch Free	34 mins
	Taco Bell Mexican, Fast Food, Late Night Free	33 mins
	Subway Fast Food, Sandwiches, Lunch, Salads Free	55 mins
	DiCicco's Italian Free	50 mins
	Village Inn American Diner Free	46 mins
	Tower Tap & Grill Salads, Desserts, American (Traditional)	

Machine Learning



NETFLIX





Machine Learning Powers the End User Experience

Machine learning is the science of getting computers to do things (and learn and improve) without being explicitly programmed.

Machine Learning

1

**Define your
problem in
machine
learning terms**

2

**Collect training
data in a
suitable format**

3

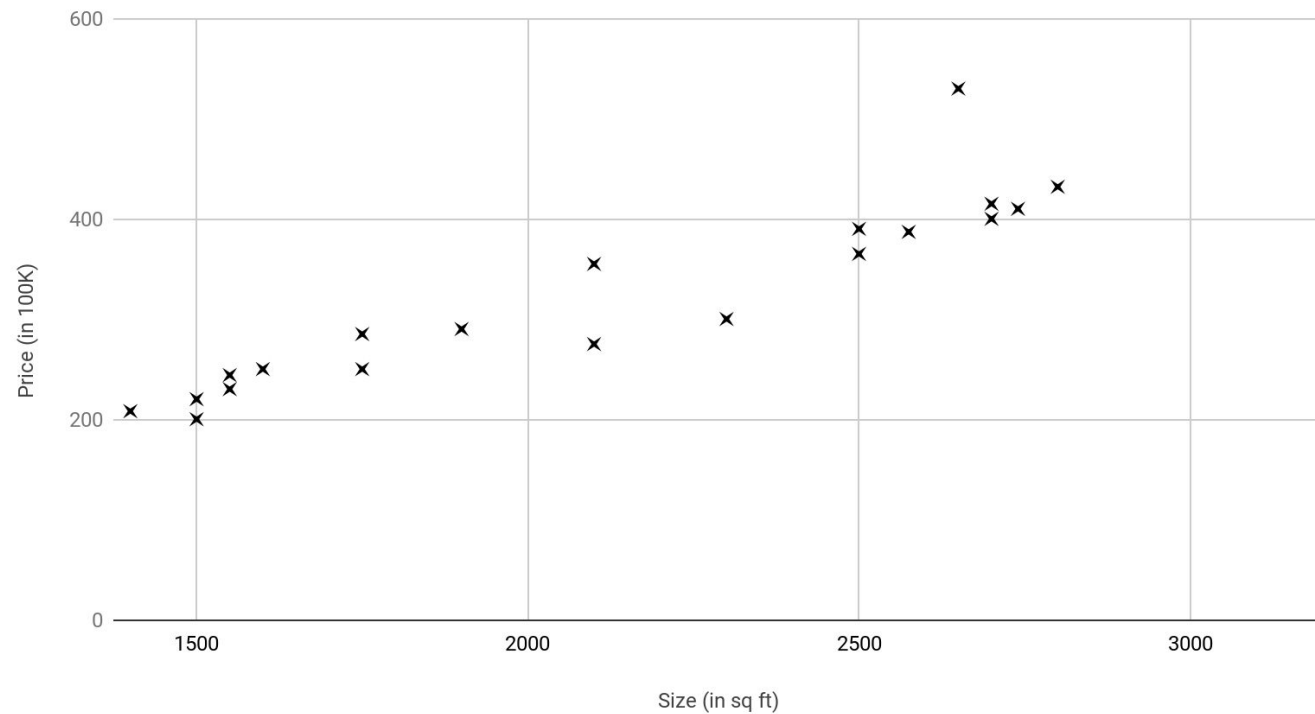
**Build a model
(or a set of
models)**

Example:

Predicting the price of a house, given its square footage.

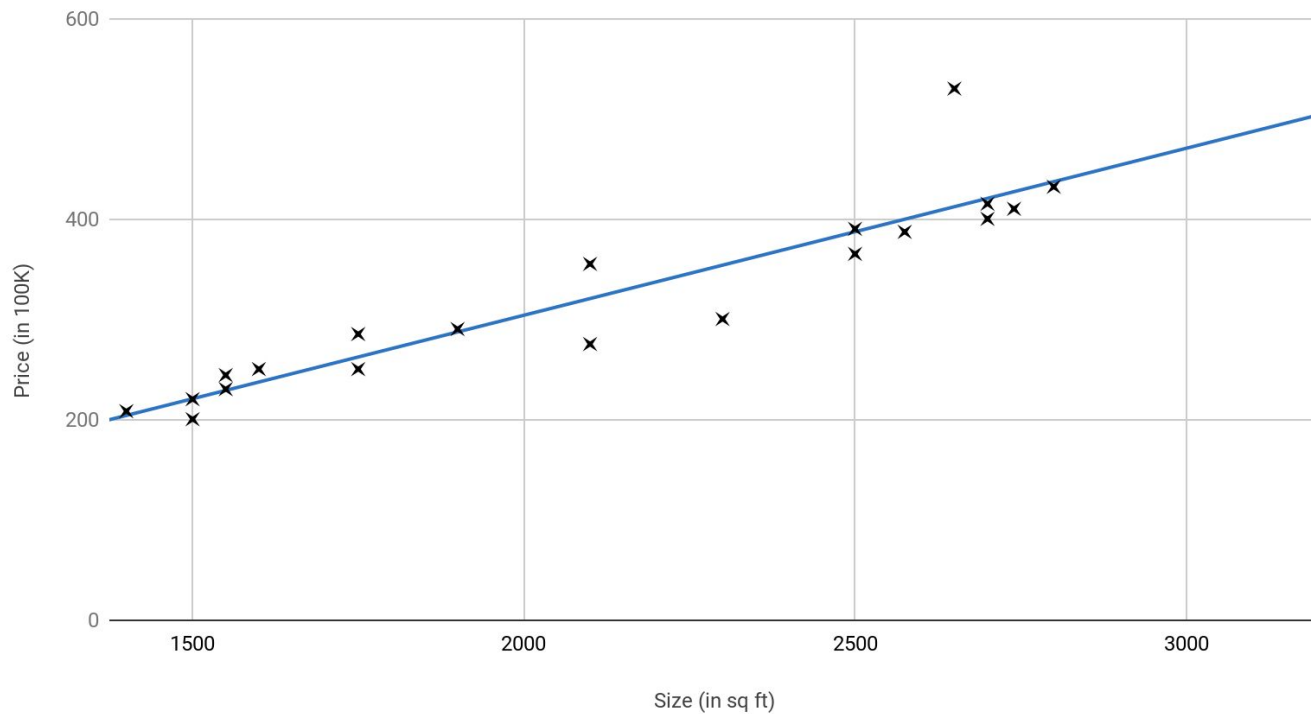
Machine Learning

Home Price vs. Size



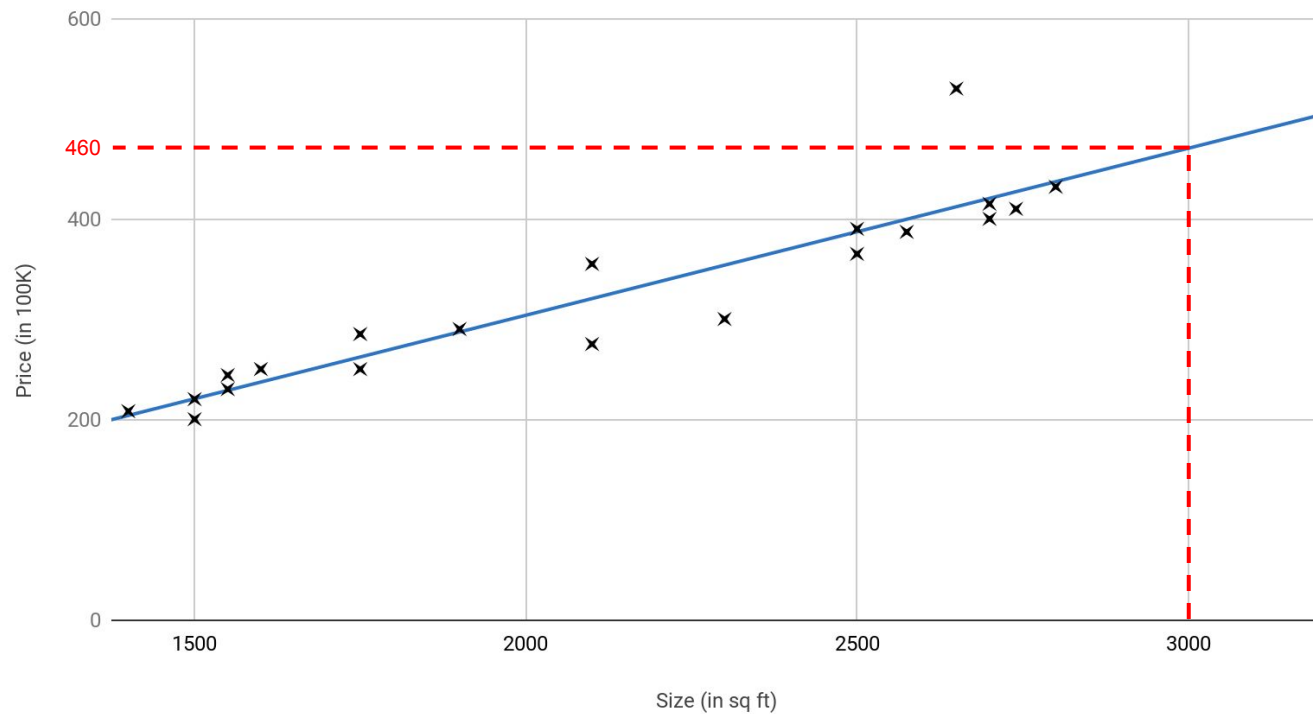
Machine Learning

Home Price vs. Size



Machine Learning

Home Price vs. Size



For our use case, it is clear that we need a recommendation system.

Recommenders are a subclass of machine learning techniques that aim to predict a user's preference.

Content-Based Recommendation

- You have features that can capture the characteristics of an item (eg. the genre of a song).
- Recommend other items with similar characteristics.

Collaborative Filtering

- Make recommendations based on preferences of other users with similar tastes (collaboration).
- The features of items themselves are not important.

It is very common to have **hybrid recommender systems**, which use a combination of both content-based and collaborative filtering.

The background of the slide is a dark, starry space. Overlaid on this are numerous thin, bright orange lines that appear to be light trails or data paths. These lines originate from a point near the bottom center and fan out towards the top right corner. Some lines are straight, while others form curved, looping patterns, suggesting movement or a complex system.

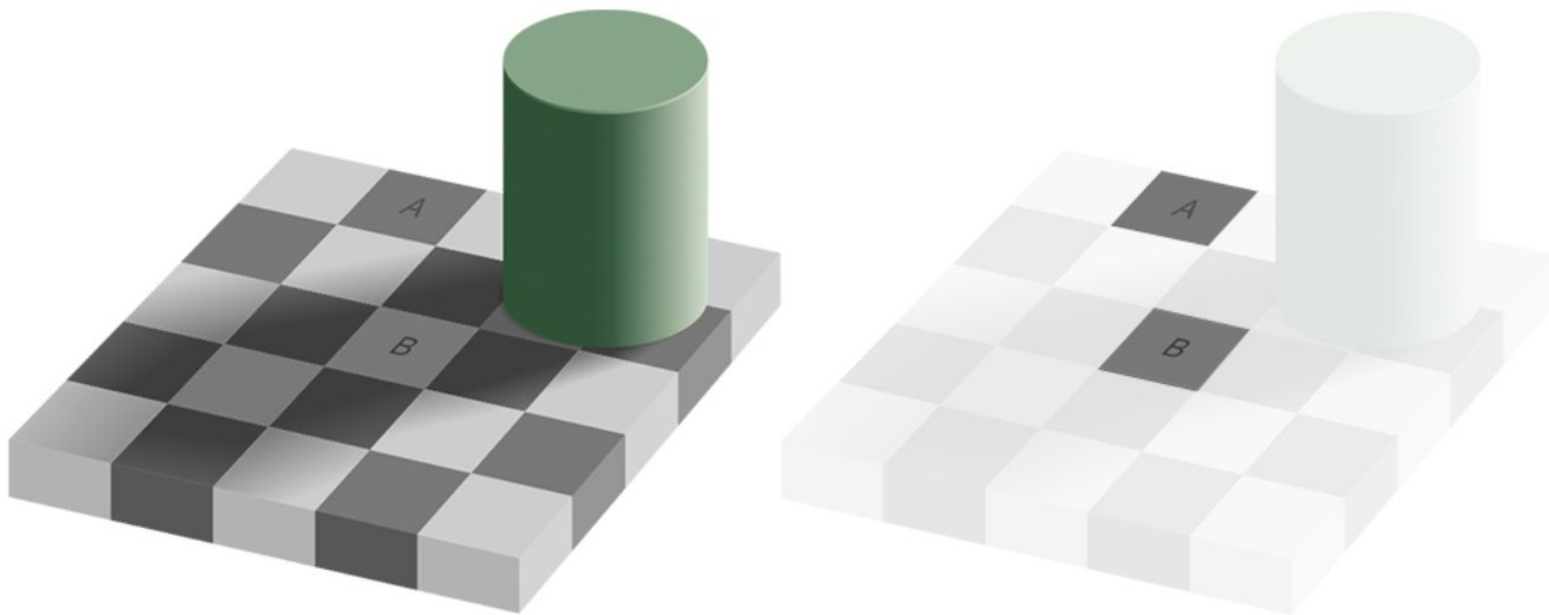
UX Principles of Predictive UX

Why Predictive UX?

“This is about putting cutting-edge technology at the service of users so they can dedicate more time to the high-level processing tasks that modern living requires of them.”

— Laura Busche, Brand Content Strategist

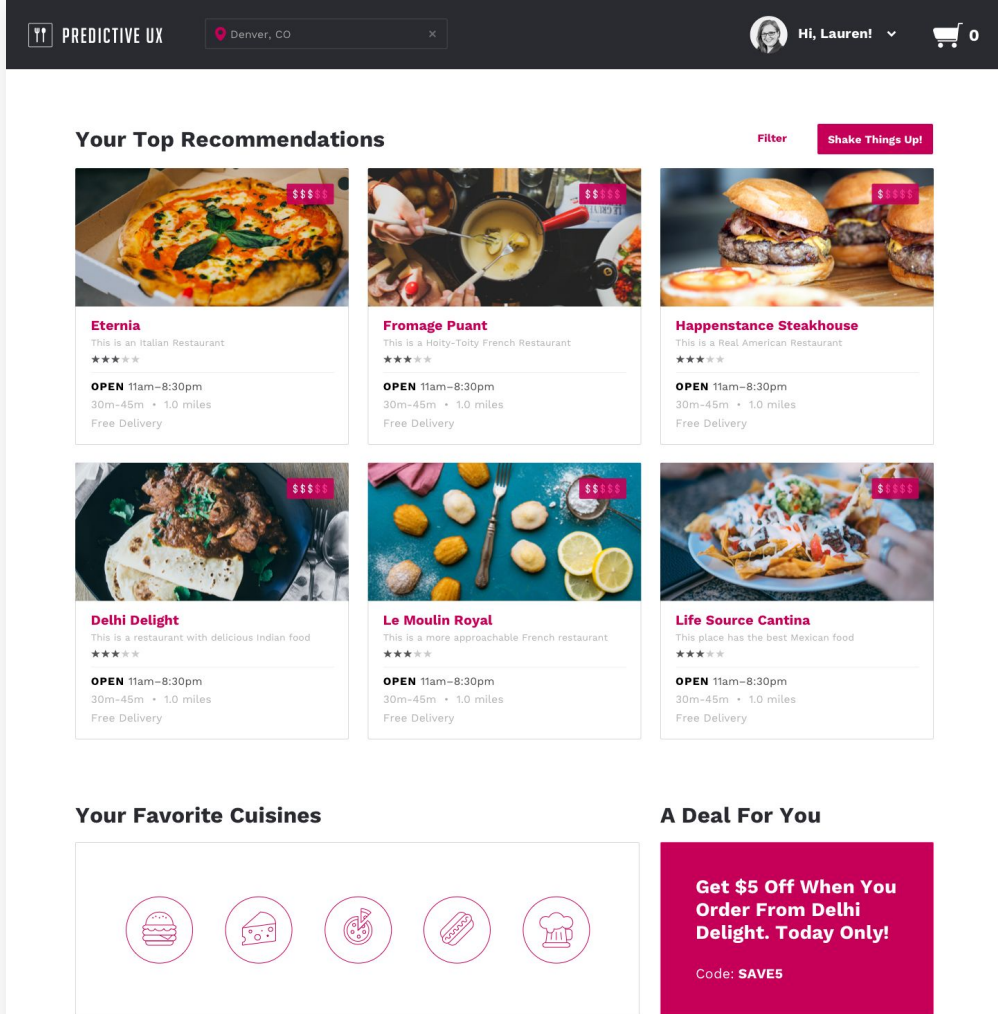
The Challenge



“Bias and context beat analysis and content when it comes to human perception.”

Principle 1


Create minimal
interfaces with
just enough
content + design
elements for the
user's needs



Principle 2


Design Against the Experience Bubble

Your orders



Royal Nepal Restaurant 2
1 Meat Samosa, 1 Chicken Tikka...

Restaurant Closed



Mix it up! Try a new restaurant today

Find local options

PREDICTIVE UX

Denver, CO


Hi, Lauren!

0


Your Top Recommendations

Filter


Shake Things Up!




Eternia
This is an Italian Restaurant
★★★★
OPEN 11am-8:30pm
30m-45m • 1.0 miles
Free Delivery




Fromage Puant
This is a Holey-Tolly French Restaurant



Happenstance Steakhouse
This is a Real American Restaurant



Delhi Delight
This is a restaurant with deli
★★★★

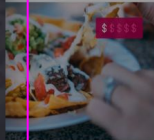


We Offer Healthy Options too!

Turn on “Healthy Mode” now to see it in action.






☐ Turn on Healthy Mode

Save Profile Manage Profile



tina
This is Mexican food

Favorite Cuisines



A Deal For You

Get \$5 Off When You Order From Delhi Delight. Today Only!

Code: **SAVE5**

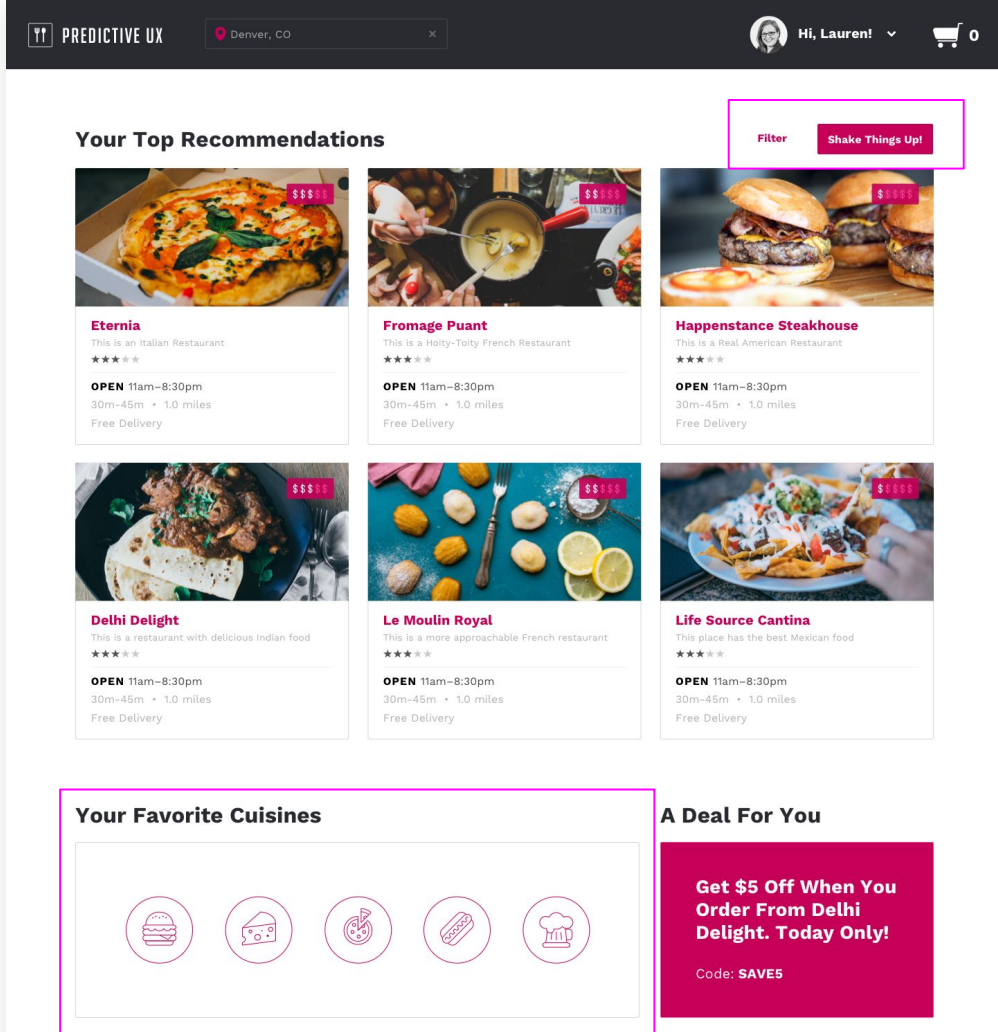
Principle 3

**“Predictive” does
not mean the same
thing as “Control.”**



Principle 3

Allow users to make as few choices as possible, without being pushy





Can This Be Built in Drupal?

Why Drupal?

1

**Easy content
management +
data storage**

2

**Relatively
smooth admin
experience**

3

**API-first
approach allows
quick and easy
integrations**

Can This Be Built in Drupal?

Apache PredictionIO

- Open-source
- Full machine learning stack
- Customizable templates
- Easily deploy as web service



Recommenders

Classification

Regression

NLP

Clustering

Similarity

Other

Cstablo-template-text-similarity-classification

Star 7

Text similarity engine based on Word2Vec algorithm. Builds vectors of full documents in training phase. Finds similar documents in query phase.

Support: [Github issues](#)

Type	Language	License	Status	PIO min version	Apache PIO Convesion Required
Parallel	Scala	Apache Licence 2.0	alpha	0.9.5	requires conversion

Topic Labelling with Wikipedia

Star 9

This template will label topics (e.g. topic generated through LDA topic modeling) with relevant category by referring to Wikipedia as a knowledge base.

Support: [Github issues](#)

Type	Language	License	Status	PIO min version	Apache PIO Convesion Required
Parallel	Scala	Apache Licence 2.0	stable	0.10.0-incubating	already compatible

Text Classification

Star 29

Use this engine for general text classification purposes. Uses OpenNLP library for text vectorization, includes t.f.-i.d.f.-based feature transformation and reduction, and uses Spark MLLib's Multinomial Naive Bayes implementation for classification.

Support: [Github issues](#)

Type	Language	License	Status	PIO min version	Apache PIO Convesion Required
Parallel	Scala	Apache Licence 2.0	alpha	0.11.0-incubating	requires conversion

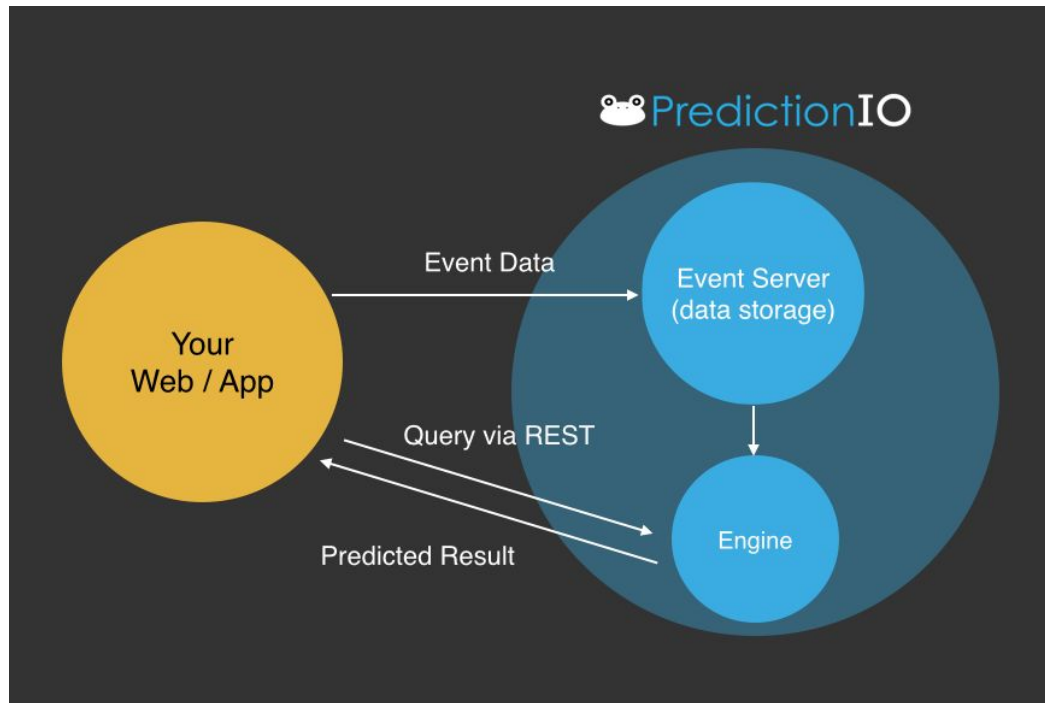
Can This Be Built in Drupal?

Event Server

Collects data from app and provides it to the engine.

Engine

Reads training data and builds a predictive model using machine learning algorithms.



Can This Be Built in Drupal?

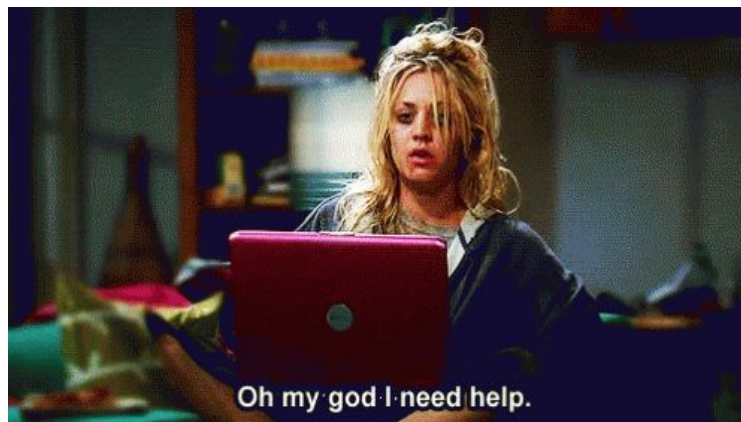
Explicit Data

- User explicitly provides information, like rating or buying an item



Implicit Data

- No explicit feedback; use information already available, like binge watching a show



A dark, textured brick wall serves as the background. It is densely populated with a grid of black security cameras, each mounted at a slight angle. A vertical rectangular window is positioned in the upper center, and a dark door is at the bottom center. Two people, a woman in a dark jacket and a man in a brown jacket, stand at the bottom left, looking up at the wall of cameras.

Privacy Concerns + Ethics

“Privacy is at the heart of customer relationships; without the promise of keeping people’s data safe no one will oblige in giving access to that data.”

— Joël van Bodegraven

What's Causing Trust Issues?

1

**Personal data
being sold on
the black market**

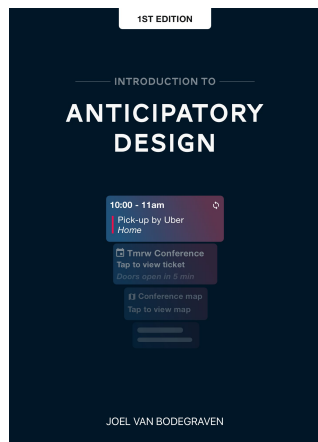
2

**Trackers profile
us and follow
our every move**

3

**Forcing users to
sign unfriendly
privacy policies**

Acknowledgements



Introduction to Anticipatory Design eBook



Aubrie Hill

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Appendix

Development Tools

- Apache PredictionIO: <https://predictionio.apache.org>
- PredictionIO engine template gallery:
<https://predictionio.apache.org/gallery/template-gallery>
- Creating custom Drupal modules:
<https://www.drupal.org/docs/8/creating-custom-modules>
- REST API documentation: <https://restfulapi.net>

References

- [Anticipatory Design](#)
- <https://www.nngroup.com/articles/customization-personalization/>

Appendix

Interesting Reads

- “Instagram has a drug problem. Its algorithms are making it worse.”
https://www.washingtonpost.com/business/economy/instagram-has-a-drug-problem-its-algorithms-make-it-worse/2018/09/25/c45bf730-bdbf-11e8-b7d2-0773aa1e33da_story.html
- “Why artificial intelligence is learning emotional intelligence”
<https://www.weforum.org/agenda/2018/09/why-artificial-intelligence-is-learning-emotional-intelligence>



Thank You!