



Using SEO + Machine Learning to *Improve the Customer Journey*



seerfest

<https://bitly/seerfest-seo>



the **MIRACLE**

of **SCIENCE**

with **SOUL**TM



City of Hope

City of Hope is a leading research and treatment center for **cancer**, **diabetes** and other life-threatening diseases.

They have one of the largest **bone marrow and stem cell transplant** programs in the world.





@eywu



[linkedin.com/in/ericcywu](https://www.linkedin.com/in/ericcywu)



github.com/eywu





VIBE

intuit.

myspace

eHow



yp



LIVESTRONG



UBER

SPIN



BloomNation



CONDÉ NAST



move

CRACKED




Demystifying SEO with experi... x

A Medium Corporation [US] | https://medium.com/@Pinterest_Engineering/demystifying-seo-with-experiments-a183b325cf4c

Guest

Medium

Sign in / Sign up

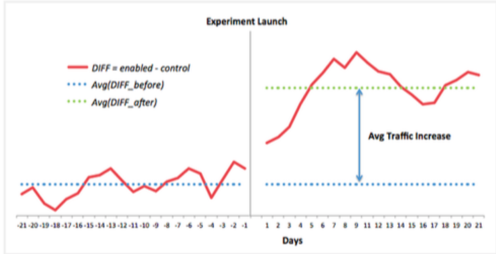
 Pinterest Engineering Follow

Inventive engineers building the first visual discovery engine, 100 billion ideas and counting. <https://...>
Jan 27, 2015 · 6 min read

Demystifying SEO with experiments

Julie Ahn | Pinterest engineer, Growth

Building an SEO experiment framework



[Figure - 3] Traffic difference between two groups

$$\frac{\text{avg}(DIFF_{after}) - \text{avg}(DIFF_{before})}{\text{avg}(enabled_{before})} \quad \bullet \quad DIFF = enabled - control$$

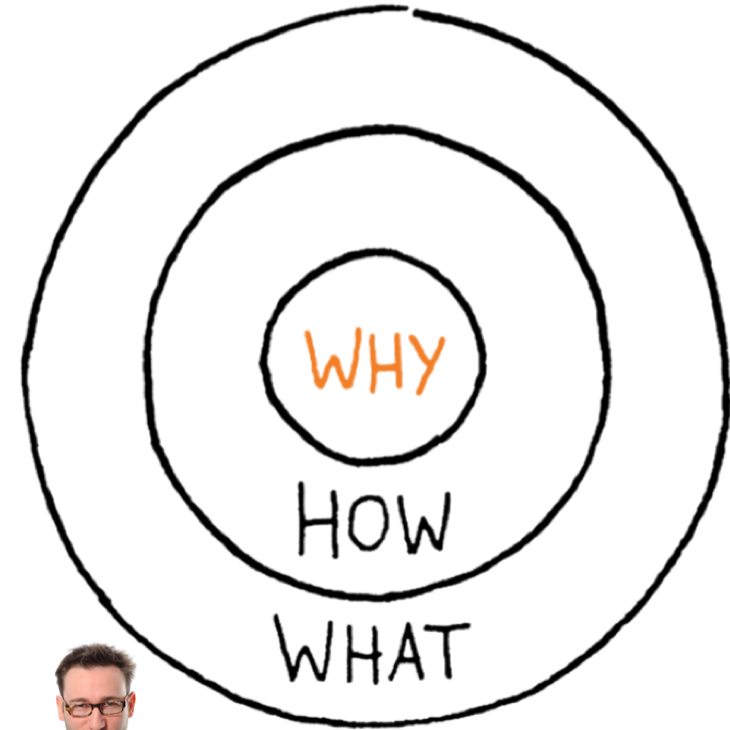
What we learned

There are hundreds of different ways to do SEO, including sitemaps, link-



The Agenda

1. **Why** does the Customer Journey matter to SEO?
2. **How** can we use SEO to improve the customer journey?
3. **What** do we use and build to improve the customer journey?



Why the Customer Journey *Impacts SEO*



How Most See SEO

The 3 Cs of SEO

1. Content (i.e. Keywords)
2. Code (i.e. Crawlability)
3. Credibility (e.g. Links)





SEARCH ENGINE


ROUNDTABLE


Google Brain Canada: Google Search Uses Click Data For Rankings?

Sep 11, 2017 • 9:05 am | (51)

by [Barry Schwartz](#) | Filed Under [Google Search Engine Optimization](#)

[Mike Kilinski](#) attended the annual Think Auto Google event in Toronto, Canada last week at that event, the head of Google Brain in Canada said that Google now uses click data for rankings. He said Google looks to train their AI models when "someone clicks on a page and stays on that page, when they go back" and so on.



Mike Kilinski
@mikekilinski 

[@rustybrick](#) Nick Frost, Head Google Brain Toronto/Canada just confirmed pogo sticking part of Google Brain search algo, I have it on tape ;) twitter.com/mikekilinski/s...

2:33 PM - Sep 7, 2017

9 12

It was not 100% clear if he was talking about just training the models or if it directly impacts the live search results. It might just be used for building new models later based on the feedback they get back from these models. Google has [time](#) and [time again](#) said that they do not use click data for ranking purposes because it is too easy to spam and too noisy.

But here we have someone at Google supposedly saying they do. Here is the audio recording Mike grabbed:



How Most See SEO

The ~~3~~ 4 Cs of SEO

1. Content (i.e. Keywords)
2. Code (i.e. Crawlability)
3. Credibility (e.g. Links)
4. Clicks (e.g. Pogo sticking)





MACHINE LEARNING

Our Speculation:

Algorithm Shift

- February 2017 Update turned on Machine Learning for more of the core algo evaluator.
- Head of AI John Giannandrea replaced Amit Singhal, who was anti-ML, for Head of Search



HOW WE THINK ABOUT

Google

+



- 1. Keywords
- 2. Links
- 3. Content
- 4. Authority

PREDICT USER ACTION



(3.2)

In this session, the user formulates a series of queries in pursuit of multiple tasks.

In general, the average series of query formulations within a user session can be summarized as a probability matrix (3.4) between the following formulation states:

- New query
- ⊕ Add word(s) to query
- ⊖ Remove word(s) from query
- ⊙ Change word(s) in query
- ⊢ More results for same query
- ⊡ Return to a previous query
- End of session

(3.3)

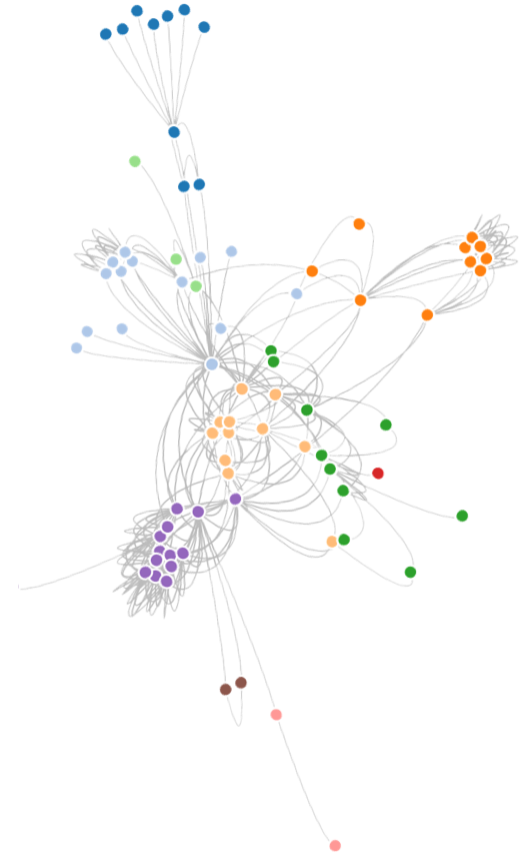
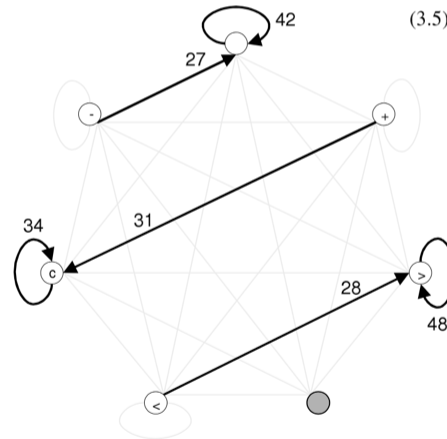
Navigational queries account for 21% of the total query frequency.

Timeline (hh:mm:ss)	Query
00:00	○ dail news
01:06	⊙ daily news
10:42	○ frito lay
13:48	○ smoking celebrities
14:36	⊢ smoking celebrities
22:18	○ cd reviews
32:48	⊢ cd reviews
40:06	○ bestbuy.com
41:18	○ tower records
47:00	○ money making opportunities
51:42	○ gumball machines
51:54	⊢ gumball machines
57:54	⊢ gumball machines
01:03:48	○ vending opportunities
01:05:48	○ inventions
01:09:00	⊢ inventions
01:18:36	○ patents
01:23:12	⊡ smoking celebrities
01:33:18	○ images.mp3.com
01:33:36	○ www.ajolie.com
01:36:24	○ the sopranos
01:38:30	⊢ the sopranos

Timeline (days)	Query
0	○ google
2	○ yahoo!mail
8	○ travellodge
13	⊡ yahoo!mail
24	○ www.trapeze.com

(3.4)

	To State							
	%	○	⊕	⊖	⊙	⊢	⊡	●
○	42	6	2	15	24	6	5	
⊕	25	4	3	31	26	8	4	
⊖	27	18	2	15	26	8	4	
⊙	20	4	3	34	28	6	5	
⊢	20	5	1	17	48	5	4	
⊡	27	4	1	13	28	21	6	



On a given day, 41% of users search just once. Such user behavior is described in the following section.



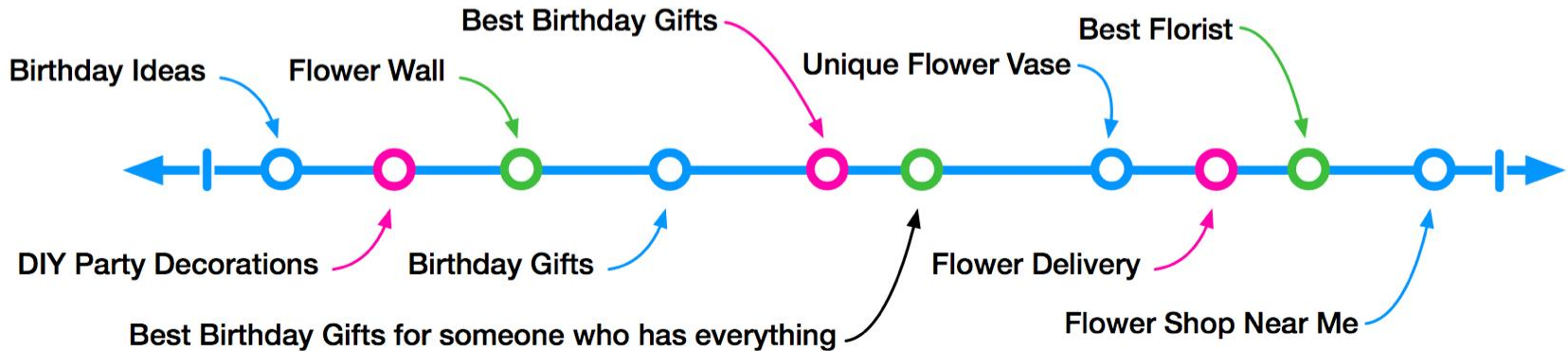
The Customer Journey

Google



Google Search

I'm Feeling Lucky





Google Search

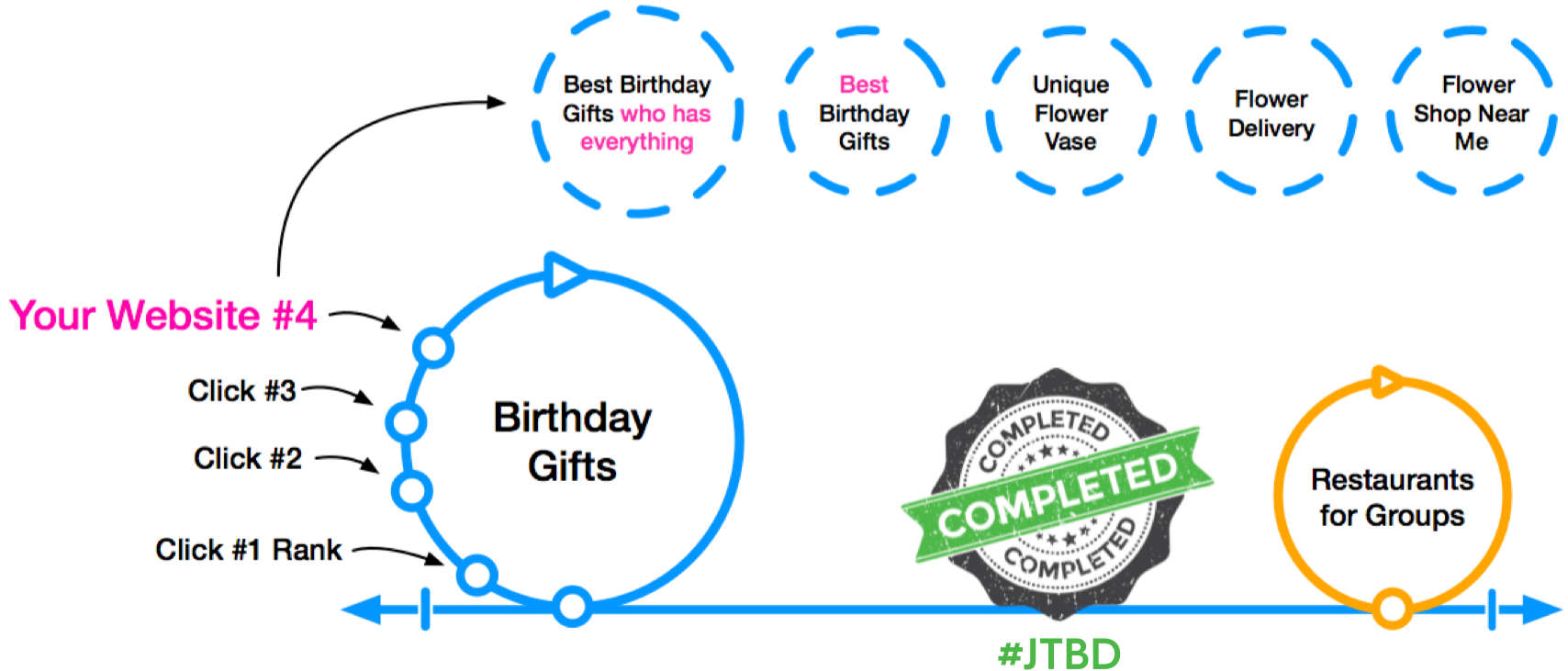
I'm Feeling Lucky



If you solve the
customer's intent,
you can **leap frog**
the competition



User Intent Solved



How We See SEO

The ~~3~~ 4 Cs of SEO

1. Content (i.e. Keywords)
2. Code (i.e. Crawlability)
3. Credibility (e.g. Links)
4. ~~Clicks~~ Customer Journey (i.e. Solve intent)

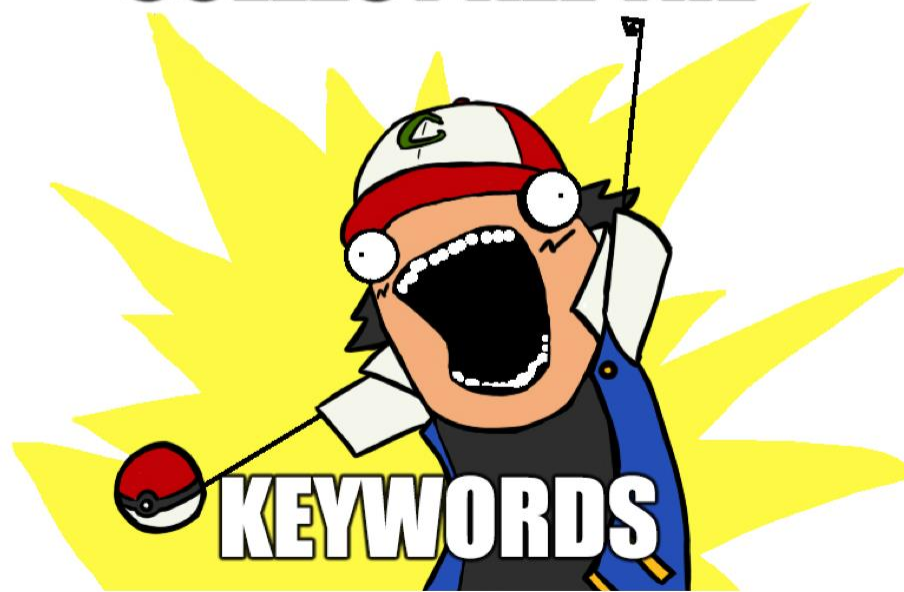


How to leverage SEO to
*Improve the
Customer Journey*



Determine Intent

COLLECT ALL THE





Search Console

Help ▾ | Settings ▾

- Home
- All Messages
- Web Tools

Sort: **By property health** | Alphabetically | [List icon] ▾

ADD A PROPERTY | Create a set

http://www.bloomnation.com/ Website	No new messages or recent critical issues.	Manage property ▾
https://www.bloomnation.com/ Website	No new messages or recent critical issues.	Manage property ▾
https://www.bloomnation.com/florist/ Website	No new messages or recent critical issues.	Manage property ▾
https://www.bloomnation.com/shop/ Website	No new messages or recent critical issues.	Manage property ▾
https://www.bloomnation.com/shop/ashburn-va/ Website	No new messages or recent critical issues.	Manage property ▾
https://www.bloomnation.com/shop/atlanta-ga/ Website	No new messages or recent critical issues.	Manage property ▾
https://www.bloomnation.com/shop/boston-ma/ Website	No new messages or recent critical issues.	Manage property ▾
https://www.bloomnation.com/shop/chicago-il/ Website	No new messages or recent critical issues.	Manage property ▾

Upgrade

Medium

Tobias Willmann [Follow](#)

Head of #SEO at Blick.ch

Jun 27, 2017 · 4 min read

Google Search Console API tests

Looping over an array with the alphabet

```
alphabet =  
["a", "b", "c", "d", "e", "f", "g", "h", "i", "j", "k", "l", "m", "n", "o", "p", "q",  
 "r", "s", "t", "u", "v", "w", "x", "y", "z"]  
  
for i in range(len(alphabet)):
```

Later in the request query you get the values out of the array

```
requestQuery = {  
  'startDate': daysago.strftime('%Y-%m-%d'),  
  'endDate': daysago.strftime('%Y-%m-%d'),  
  'dimensions': ['page', 'query'],  
  "dimensionFilterGroups": [  
    {  
      "groupType": "and",  
      "filters": [  
        {
```



KEYWORD HERO

FEATURES PRICING DASHBOARDS APPLICATIONS FAQs

SEE BEHAVIORAL AND TRANSACTIONAL METRICS PER KEYWORD

Secondary dimension Sort Type: Default

advanced

Keyword	Acquisition		Behavior			Conversions		
	Sessions	Bounce Rate	Pages / Session	Avg. Session Duration	Goal Conversion Rate	Goal Completions	Goal Value	
	6,385 % of Total: 84.40% (7,565)	77.59% Avg for View: 77.16% (0.56%)	1.42 Avg for View: 1.42 (-0.44%)	00:01:28 Avg for View: 00:01:28 (-0.54%)	4.20% Avg for View: 0.00% (0.00%)	268 % of Total: 0.00% (0)	\$7,630.70 % of Total: 0.00% (\$0.00)	
1. roses	192 (3.01%)	52.08%	2.26	00:02:28	0.52%	1 (0.00%)	\$34.00 (0.00%)	
2. order flowers	172 (2.69%)	72.67%	1.45	00:01:36	2.90%	5 (0.00%)	\$0.00 (0.00%)	
3. buttercup	149 (2.33%)	69.80%	1.61	00:01:49	0.00%	0 (0.00%)	\$0.00 (0.00%)	
4. buy roses		64.93%	1.53	00:02:03		0 (0.00%)	\$0.00 (0.00%)	
5. flower bouquet		88.04%	1.22	00:00:53		0 (0.00%)	\$0.00 (0.00%)	
6. valentines flower bouquet	88 (1.38%)	79.55%	1.28	00:01:57	3.41%	3 (0.00%)	\$133.80 (0.00%)	
7. buy flowers	77 (1.21%)	50.65%	1.94	00:02:14	0.00%	0 (0.00%)	\$0.00 (0.00%)	
8. buy flower bouquet	74 (1.16%)	75.68%	1.38	00:01:30	0.00%	0 (0.00%)	\$0.00 (0.00%)	
9. (not provided)	73 (1.14%)	69.86%	1.60	00:02:12	0.00%	0 (0.00%)	\$0.00 (0.00%)	
10. order bouquet with roses	69 (1.08%)	65.22%	1.62	00:01:42	1.45%	1 (0.00%)	\$60.00 (0.00%)	

Show rows: 10 Go to: 1 1 - 10 of 905

KEYWORD REVENUE
See How Much Money Each Keyword Brings You And Optimize Like Never Before.

Topic Extraction: Automotive

Introduction

Price

Gas Mileage

Driveability

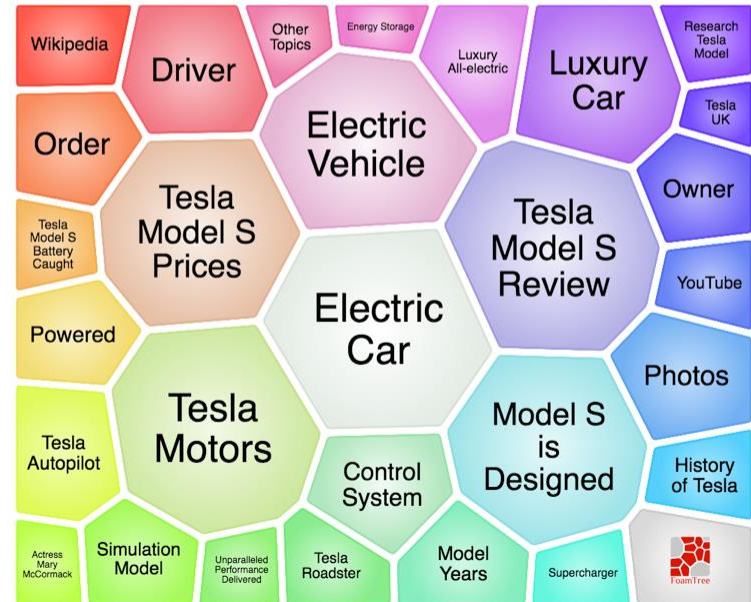
Interior

Exterior

Safety

Capacity

- Keyword extraction
- NLP clustering
- Merge with Google Search Console



Customer Journey Matrix



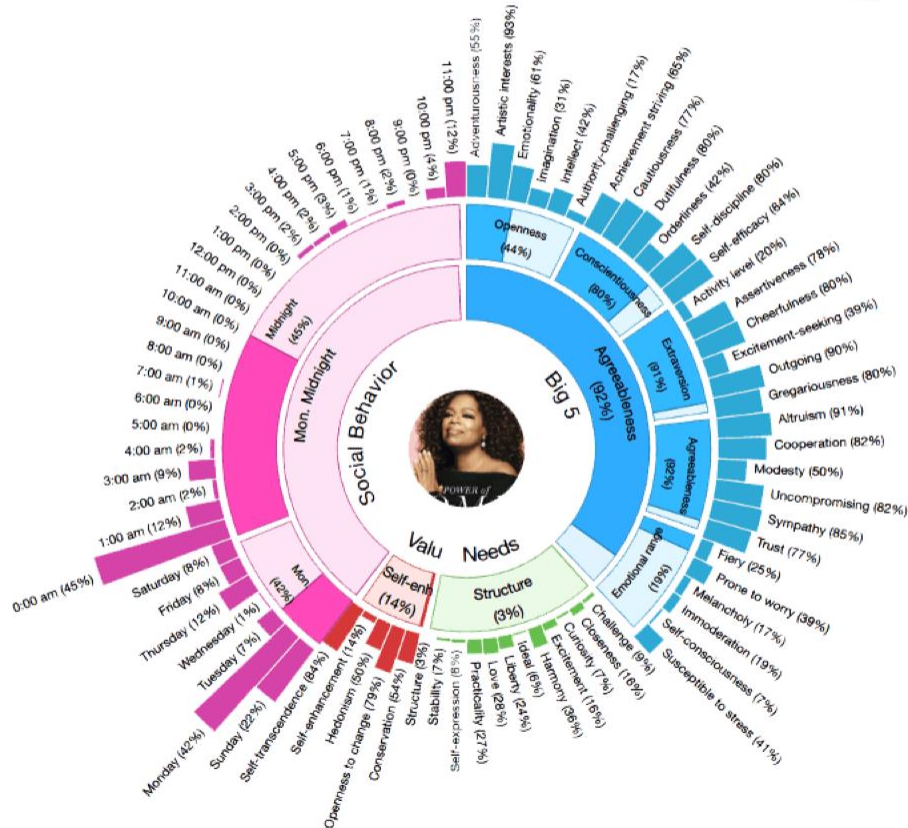
Page: myweb.com
Visitors: 1114838, 1502438 (+34.77%)



What to build to
*Improve the
Customer Journey*



Predictive Persona Profiler



<https://personality-insights-demo.ng.bluemix.net/>





Machine Learning for Marketers

A COMPREHENSIVE GUIDE TO MACHINE LEARNING

Machine learning is a term thrown around in technology circles with an ever-increasing intensity. Major technology companies have attached themselves to this buzzword to receive capital investments, and every major technology company is pushing its even shinier parentartificial intelligence (AI).

Chapter 1



Read Now >

The Basics of Machine Learning

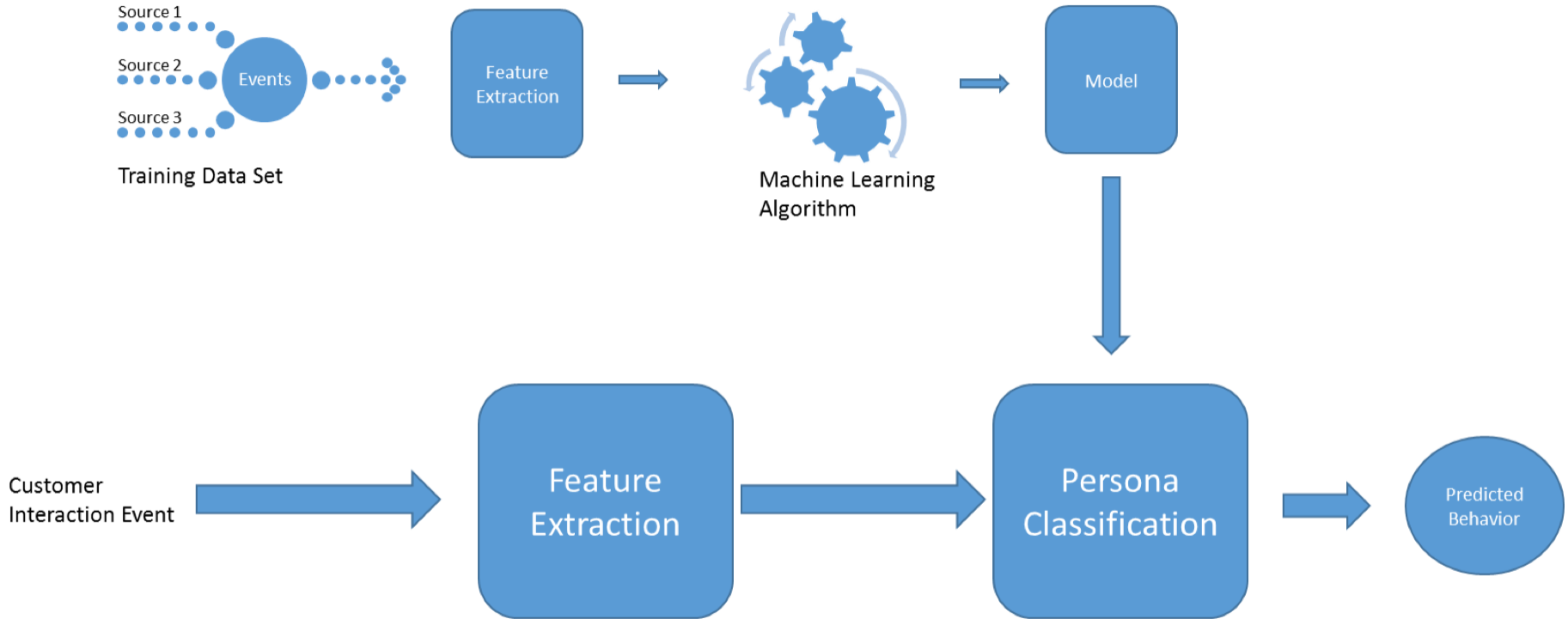
Machine learning is a term thrown around in technology circles with an ever-increasing intensity. Major technology companies have attached themselves to this buzzword to receive capital investments, and every major technology company is pushing its even shinier parentartificial intelligence (AI).

Chapter 2

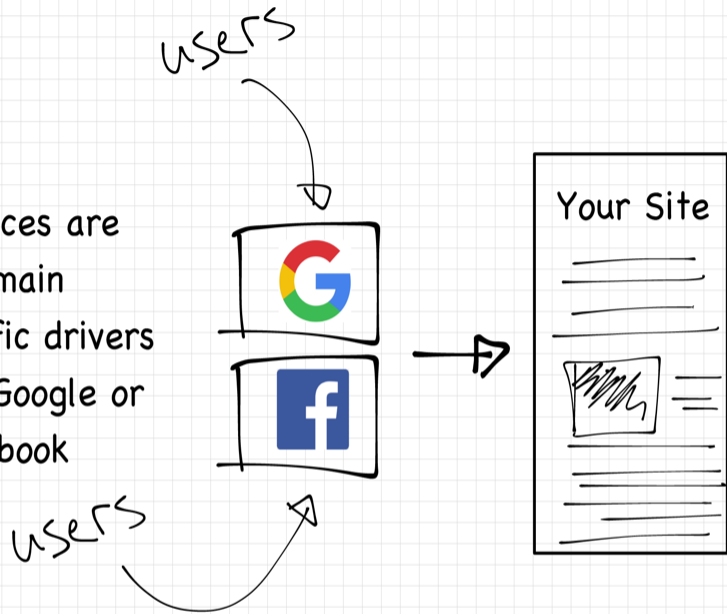


Supervised vs Unsupervised Learning and Other Essential Jargon

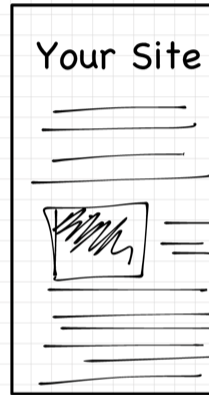
By 2020, the digital universe will be 40,000 exabytes, or 40tn gigabytes, in comprehensive size. In contrast, the human brain can hold only 1 million gigabytes of memory. Too much data exists for humans to parse, analyze, and understand. Here is where machine learning is finding its value: The raw amount and constant growth of data creates a need for methods to make sense of that data overload in ways that can impact an array of professions



Chances are
you main
traffic drivers
are Google or
Facebook



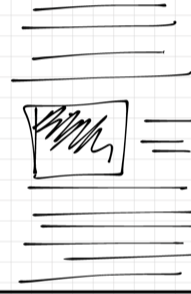
But... Other digital channels have higher ROI



- SEM
- Affiliate
- Email
- Remarketing
- Display



Your Site

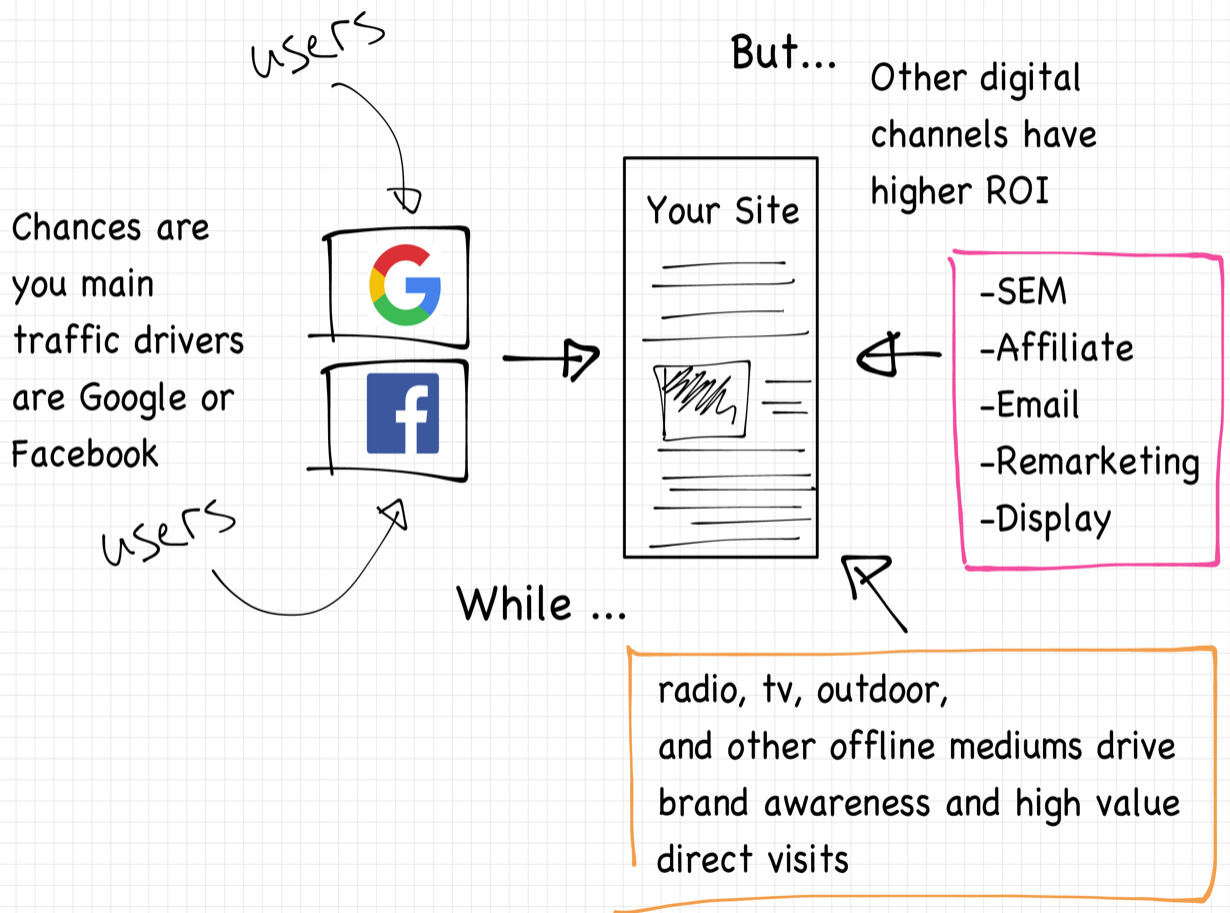


While ...

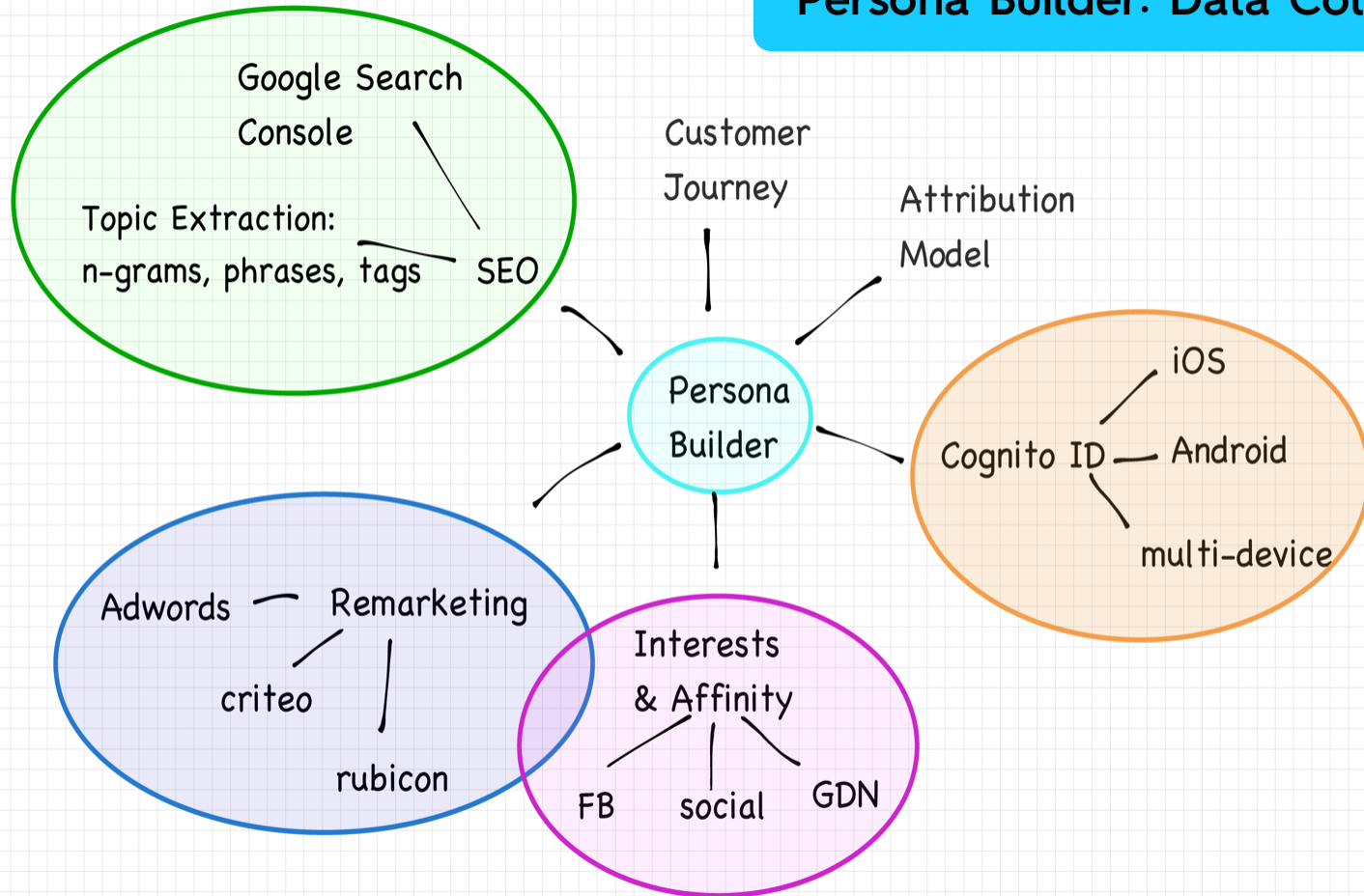


radio, tv, outdoor,
and other offline mediums drive
brand awareness and high value
direct visits



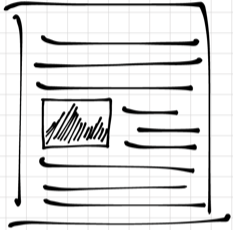


Persona Builder: Data Collector



Source

Site Content



Google

Search Console

- Directory "Hack"
to supplement

`/palm-desert/ca/`

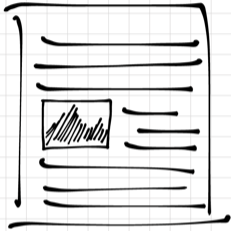
`/palm-desert/ca/daises/`

`/palm-desert/ca/daises/gerbera`

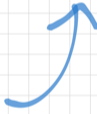


Source

Site Content



Google



Extract

Topic & Intent Extraction

- IBM Watson
- Aylien
- Datum Box
- Diffbot
- Text Razor

Search Console

- Directory "Hack"
to supplement

/palm-desert/ca/

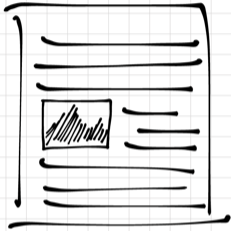
/palm-desert/ca/daises/

/palm-desert/ca/daises/gerbera



Source

Site Content



Google

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/palm-desert/ca/

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/palm-desert/ca/daises/gerbera



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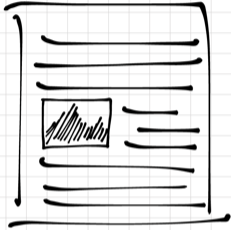
Search Intent

- Informational ~ 80%
- Navigational ~ 15%
- Transactional ~ 05%



Source

Site Content



Google

Search Console

- Directory "Hack"
to supplement

/palm-desert/ca/

/palm-desert/ca/daises/

/palm-desert/ca/daises/gerbera



Extract

Topic & Intent Extraction

- IBM Watson
- Aylien
- Datum Box
- Diffbot
- Text Razor



Search Intent

- Informational ~ 80%
- Navigational ~ 15%
- Transactional ~ 05%

FYI

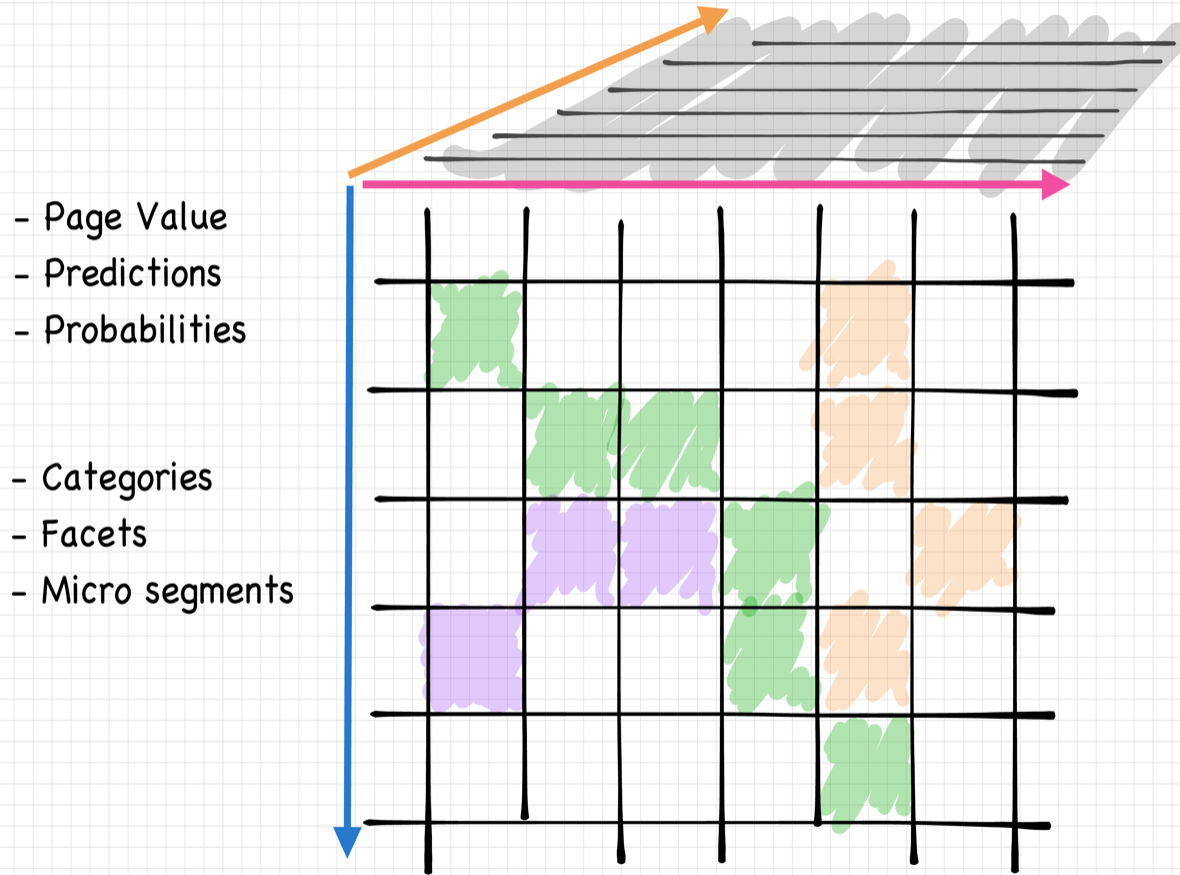
Mobile results are different

- Skew local
- CTR Impact*
- Ad footprint large
- Top 3
- Fewer search refinements

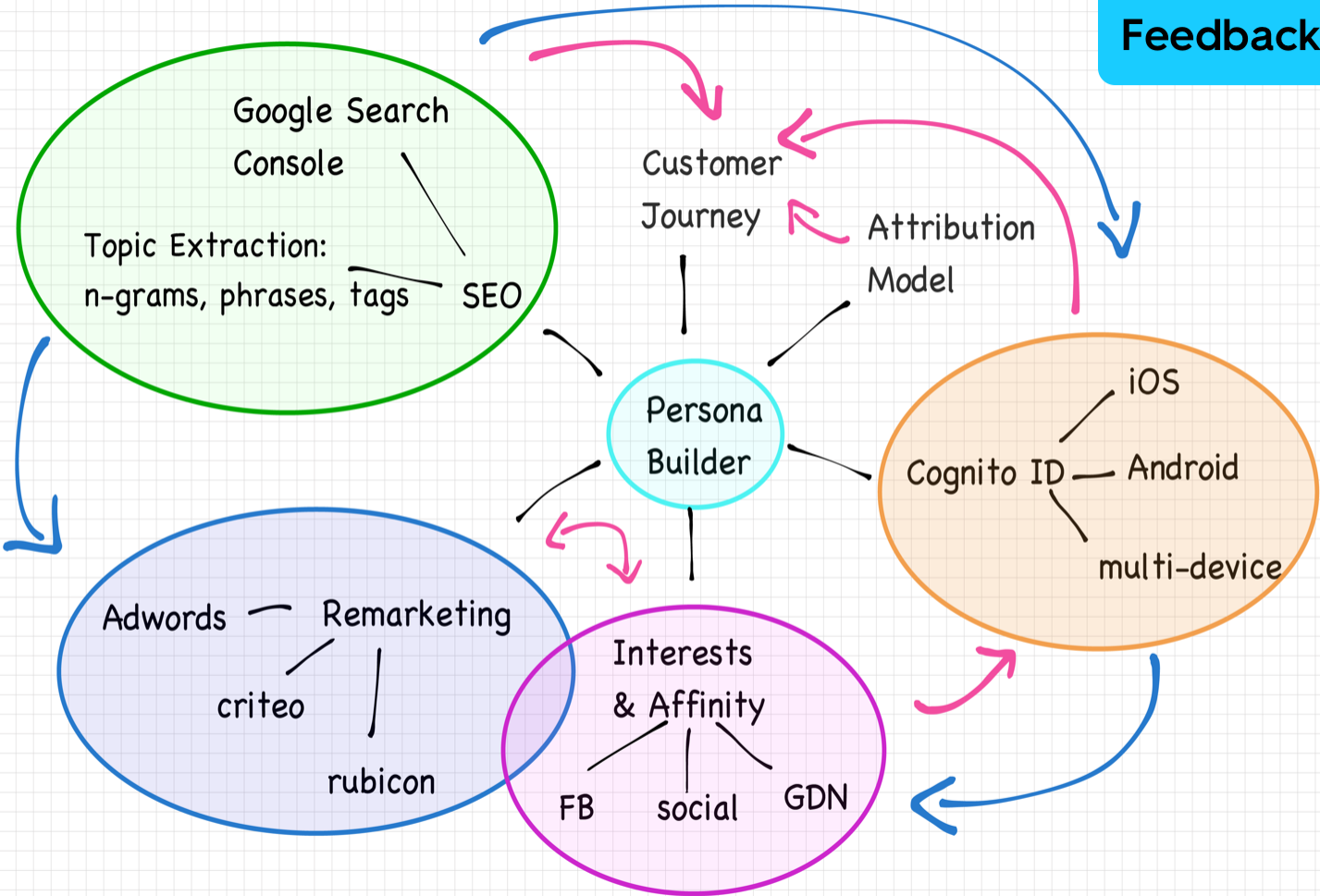
note: Content is indexed
from Desktop view

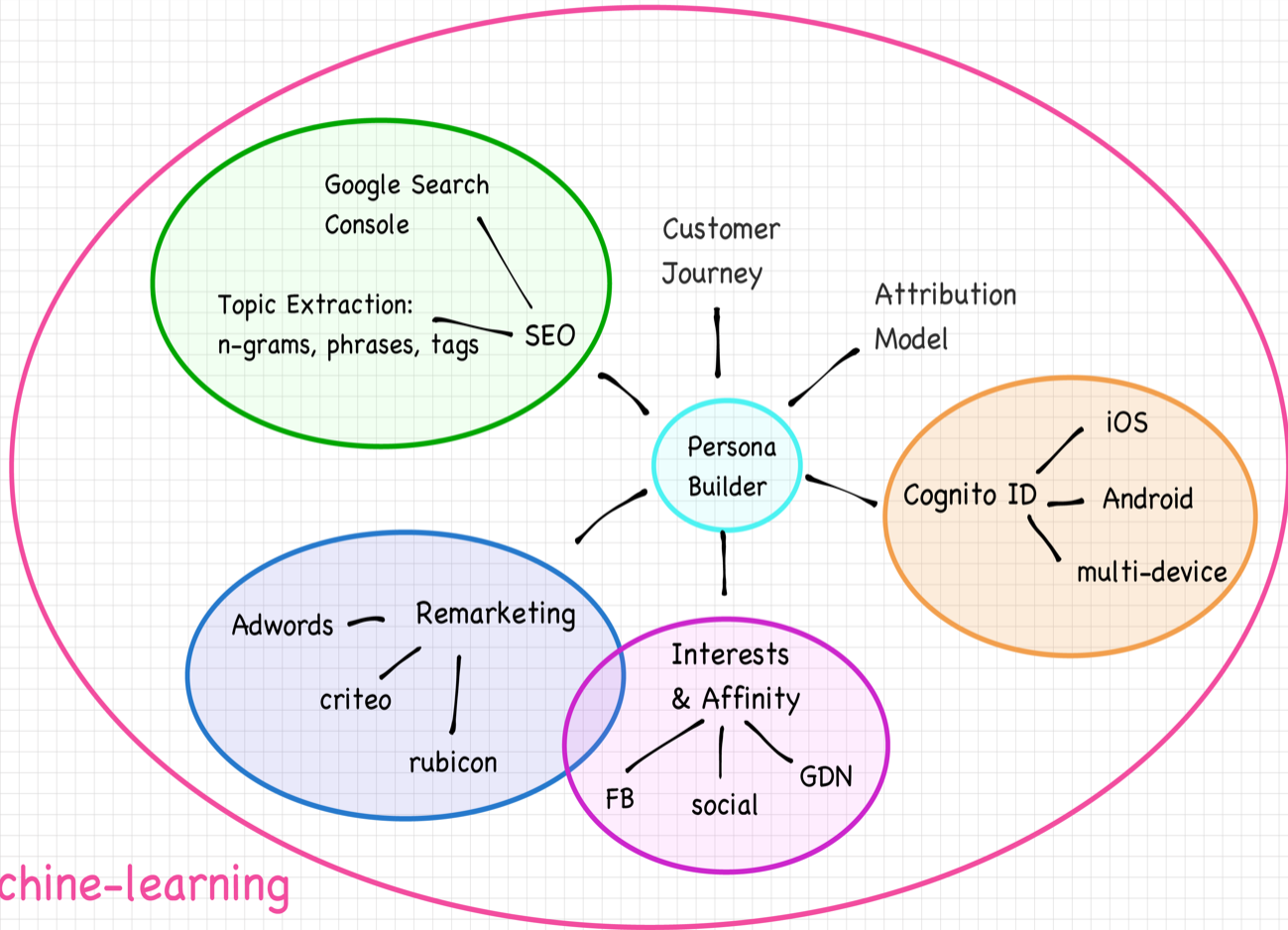


Customer Journey Matrix



Feedback Loop

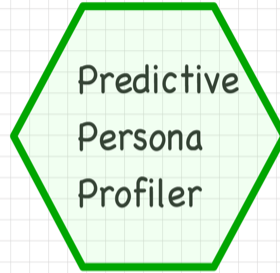
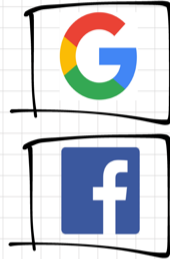




#machine-learning



Your main
traffic drivers:
Google and
Facebook



Digital Acquisition
& Retention Channels

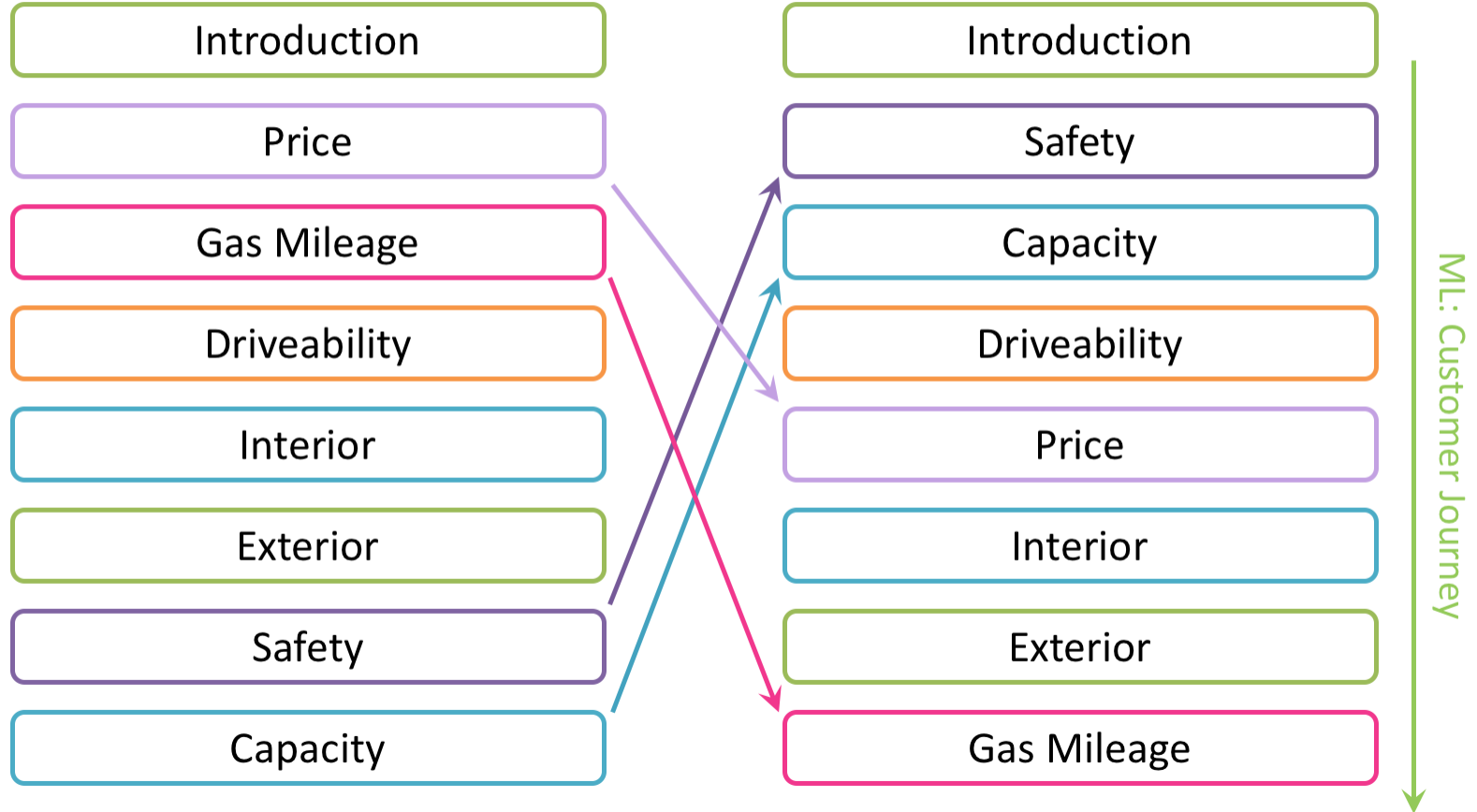
- SEM
- Affiliate
- Email
- Remarketing
- Display



radio, tv, outdoor,
and other offline
driving brand awareness and
high value direct visits



Dynamic Content Reordering





Eric Wu (Eric Wu)

@eywu

Head of Product & Growth

@BloomNation. I ❤️ Lean & #JTBD.

Mentor, Advisor, Angel Investor, Consultant, Dev, and Search Geek (IR + NLP).

Los Angeles, CA

eywu.com

Joined March 2007



Eric Wu (Eric Wu)

@eywu

SEO is NOT a marketing discipline. #SEO is product mgmt where the use cases & job stories begin w/ "When a customer uses a search engine"

12:39 PM - 9 Mar 2016

14 Retweets 52 Likes



5



14



52



Edit profile



Add another Tweet



Dawn Anderson @dawnieando · 9 Sep 2017

Replying to @eywu

May I borrow this tweet for my BrightonSEO deck?



2



2



Eric Wu (Eric Wu) @eywu · 9 Sep 2017

Of course! I'd be honored!



1



1



Your Tweet activity

Your Tweets earned **6,258 impressions** over the last **28 days**

[View your top Tweets](#)

Los Angeles trends · [Change](#)

Iceland

439K Tweets

#PERDEN

25.1K Tweets



BloomNation



@eywu



GROWTH GAUGE
GROW. MEASURE. LEARN



<https://bit.ly/seerfest-seo>

