DATA-DRIVEN DESIGN

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SYMPOSIUM ON FRONTIERS OF BIG DATA

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THE ERA OF DESIGN

Experience digital design constantly

Better UX is a competitive advantage

Pay premiums for higher-quality, personalized products

Design in Tech Report, KPBC
John Maeda, 2016
Tens of billions of dollars spent annually
Decisions based on intuition and HiPPOs
MONEY DOESN'T GUARANTEE RESULTS
DESIGN DATA IS EVERYWHERE
DESIGN MINING: using knowledge discovery and data mining techniques to build data-driven design tools
THE DESIGN PROCESS

- Need-finding
- Ideation
- Iteration
- Creation
- Evaluation
- Final Design
SCAFFOLD THE DESIGN PROCESS

**find** inspiration & relevant examples

**understand** successful patterns and trends

**generate** new designs

**evaluate** alternatives
BUILD DOMAIN SPECIFIC SYSTEMS FOR CAPTURING DATA, MODELING SEMANTICS

WEB PAGES

MOBILE APPS

FASHION OUTFITS
DESIGN MINING THE WEB
DESIGN SEARCH

Search for desktop pages that are about: coffee contain: Image Background Add more...

370 results found in Food. Related Categories: Drinks (306), Travel (122).

Select view: 📷 Screenshot ☐ Font ☐ Color ☐ Element

8CR SOME COFFEE ROASTING

STUMPTOWN COFFEE

LITTLE AMPS COFFEE ROASTERS

YOU DRINK COFFEE, WE PLANT TREES.
# Track Design Changes & Trends

<table>
<thead>
<tr>
<th>URL</th>
<th>Design Changes</th>
<th>Most Recent Design</th>
<th>Previous Design</th>
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<td>Tagline Changed</td>
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<td>CTA Count Decreased</td>
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<td>Last crawled on 7/6/2016</td>
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</table>
CORRELATE DESIGN WITH PERFORMANCE

APOSE Business Software / All Business Software / Main CTA Intent / Testing Culture

Comparison Set
- All
- Testing Culture
- Bounce Rate
- Time on Site
- Pages Per User
- Traffic Ranking

Feature Distribution
For Main CTA Intent across Sites With an Established Testing Culture:
- Sign Up
- Free Offer
- Demo
- Learn More
- Request
- Watch
- Download
- Contact

- Percent of Sites (752 pages)
- 100%

Insights
Sites With an Established Testing Culture are:
- 21-60% less likely to use: Contact
- 6-43% more likely to use: Demo
- 54-118% more likely to use: Free Offer
- 55-83% more likely to use: Sign Up

Examples for Main CTA Intent "Sign Up"
- Dropbox
- Eventbrite
- Hubspot

Examples for Main CTA Intent "Free Offer"
AUTOMATIC RETARGETING

Bricolage: Example-Based Retargeting for Web Design
Kumar et al., CHI `11
Bricolage: Example-Based Retargeting for Web Design
Kumar et al., CHI '11
Spring 2010 jQuery Talks

I gave a number of talks this spring on jQuery and especially on some of the recent additions made in jQuery 1.4. Below are all the slides and demos that I've given.

The conferences / meetups that I spoke at (or will speak at, in the case of MIX), and the talks that I gave. are [..]

24 Comments - Posted: March 4th, 2010 - Tags: jquery, speaking, talks, workshop

.closest(Array) in jQuery 1.4

A new method signature is slated for jQuery 1.4: .closest(Array). It builds upon the previous .closest() method and hyper-optimizes the logic needed for handling event delegation (and live events).

closest() (and by extension, is()) has become a critical function in jQuery. With more people using live events reducing any overhead has become of the utmost importance. [..]

50 Comments - Posted: December 18th, 2009 - Tags: closest, live, jquery

.nodeName Case Sensitivity

When working with the DOM .nodeName property there are two hard-and-fast rules that most people abide by:

The node names of HTML elements are always uppercase, even if they're explicitly created using lowercase characters. <html> will result in a .nodeName === "HTML" (see the HTML 5 draft).
The node names of XML elements are always in the[..]

31 Comments - Posted: November 24th, 2009 - Tags: dom, javascript, browsers

Previous entries
INTERACTION MINING FOR MOBILE APPS
ERICA

APP + USER

UI HIERARCHY

USER INTERACTION

SCREENSHOT

USER INTERACTION TRACE

EXTRACT ELEMENT PROPERTIES

CONNECT VIEWS WITH INTERACTIONS

with Biplab Deka and Zifeng (Forrest) Huang

UIST 2016
FLOW PATTERNS

ADDING

“create”, “add”

Yummly

Evernote

Gallery Vault

with Biplab Deka and Zifeng (Forrest) Huang

UIST 2016
FLOW PATTERNS

ONBOARDING

Android ViewPager

“Tutorial”, “Skip”, “Get Started”

Google Drive

Beep’nGo

YouCam Perfect

with Biplab Deka and Zifeng (Forrest) Huang

UIST 2016
23 FLOW CLASSES, >3000 EXAMPLES

with Biplab Deka and Zifeng (Forrest) Huang

UIST 2016
TESTING AND GENERATING UI LAYOUTS

USABILITY ISSUES

REVERSE ENGINEERING

with Biplab Deka and Zifeng (Forrest) Huang

UIST 2016
STYLE MINING FOR FASHION OUTFITS
Happy Valentine’s Day

Happy Valentine’s Day! Have a nice time with your boyfriends, and don’t forget about people who are alone (like me). The next few days will be in tones of romance, couples, blush colors. Have a nice weekend! Send warm hugs and love.

#valentinesday
#personalsle
#sweaterweather

Red cardigan,
Long sleeve tops,
Mango tops

Stack heel shoes,
Oxford shoes

Retro sunglasses,
Heart sunglasses,
Hippie glasses

Short sleeve shirts,
White t shirt,
Lightweight shirt,
Mango shirt

with Kristen Vaccaro and Karrie Karahalios
UIST 2016
Happy Valentine's Day!

Happy Valentine's Day! Have a nice time with your boyfriends, and don't forget about people who are alone (like me). The next few days will be in tones of romance, couples, blush colors. Have a nice weekend! Send warm hugs and love.

#valentinesday
#personalstyle
#sweaterweather

Red cardigan, Long sleeve tops, Mango tops

Stack heel shoes, Oxford shoes

Retro sunglasses, Heart sunglasses, Hippie glasses

Short sleeve shirts, White t shirt, Lightweight shirt, Mango shirt

with Kristen Vaccaro and Karrie Karahalios
UIST 2016
POLYLINGUAL TOPIC MODELS

with Kristen Vaccaro and Karrie Karahalios

UIST 2016
POLYLINGUAL TOPIC MODELS

1. **STYLE**
   - prom, occasion, special, party, holiday, bridesmaid

   **ELEMENT**
   - dress, shoe, cocktail, evening, mini, heel, costume

2. **STYLE**
   - party, summer, night, sexy, vintage, fitting, botanical

   **ELEMENT**
   - dress, mini, sleeveless, cocktail, skater, flare, out, lace, floral

1. **STYLE**
   - summer, vintage, beach, american, relaxed, retro, unisex

   **ELEMENT**
   - short, denim, highwaisted, shirt, top, cutoff, form, distressed

2. **STYLE**
   - biker, motorcycle, vintage, summer, college, varsity, military

   **ELEMENT**
   - jacket, black, leather, shirt, zip, denim, sleeve, faux

with Kristen Vaccaro and Karrie Karahalios
UIST 2016
STYLE QUIZ

USER INPUT

ELEMENTS

triangle bathing suit swimsuit swim one-piece white slimming leather wedge platform ankle-strap peep-toe sandal red knot silk head-wrap headband polka-dot dolce&gabbana cat-eye round sunglasses white

TOP STYLES

beach summer swimming bathing sexy retro getaway fishing

with Kristen Vaccaro and Karrie Karahalios
UIST 2016
STYLE QUIZ

USER INPUT

urban outfitters
summer tops
cotton shirts wrap
skirt high low navy
tie-dye purple
summer billabong
beach bag hippie
retro bagpack
print day pack
boho jewelry
bohemian rope
bracelet leather
cord

ELEMENTS

boho
bohemian
summer
vintage
holiday
party
wet
sexy

with Kristen Vaccaro and Karrie Karahalios
UIST 2016
STYLE QUIZ

USER INPUT

ELEMENTS

t-shirt purple
shirt cap sexy
balconette
mesh strappy
lingerie short
pleated skirt
man bag pink
loius vuitton
purse white
shoe leather t-
strap platform
pump pointed-
toe high-heel

TOP STYLES

party
sexy
wedding
night
special
occasion
realreal
season

with Kristen Vaccaro and Karrie Karahalios
UIST 2016
"I'm in town for New York Fashion Week and I'd like to find something flashy, maybe a little funky, to wear to the shows. You know everyone’s out, watching the different groups, the runway-to-street crowd, the blogger-style crowd... Me, I'm more of a streetstyle, streetchic person. Just edgy enough, you know?"
I need some clothes for a yoga retreat I’m doing next month. We’ll be up in the mountains in Colorado, enjoying the calming natural beauty. It is so beautiful up there in nature... and we’ll be running, doing yoga all day, sweating and finding zen...

- yoga
- activewear
- fitness
- nature
- natural beauty
- running
- athletic
- jogging
- colorado
- retreat
- sweat
“I need an outfit for a beach wedding that I’m going to early this summer. I’m so excited -- it’s going to be warm and exotic and tropical... I want my outfit to look effortless, breezy, flowy, like I’m floating over the sand! Oh, and obviously no white! For a tropical spot, I think my outfit should be bright and colorful.”
CONSIDERATIONS
BIG DATA?

10 M interior designs

40 M outfits

houzz

POLYVORE
BIG DATA?

- 10 M interior designs
- 40 M outfits
- 27 bn words
- 1,000 bn photos
DATA STREAMS IN DESIGN
DATA STREAMS IN DESIGN

Text, Images, Video, Audio
DATA STREAMS IN DESIGN

Text, Images, Video, Audio

Human Interaction
DATA STREAMS IN DESIGN

Text, Images, Video, Audio

Human Interaction

Structure
DATA STREAMS IN DESIGN

Text, Images, Video, Audio

Human Interaction

Structure

Network Connectivity
DATA STREAMS IN DESIGN

Text, Images, Video, Audio
Human Interaction
Structure
Network Connectivity
History
DATA STREAMS IN DESIGN

CONVERSION
BOUNCE RATE
TIME ON SITE
PAGES PER USER
...

Text, Images, Video, Audio
Human Interaction
Structure
Network Connectivity
History
Performance