

# like.com

visual search

----- Original message -----

From: "Lynne Neary" <[lynne\\_m\\_neary@yahoo.com](mailto:lynne_m_neary@yahoo.com)>

To: [contactus@like.com](mailto:contactus@like.com)

Date: [Fri, 18 Jul 2008](#) 02:54:20 -0700 (PDT)

Subject: Thank you

Where have you been all my life?! I can not get over this site. I'm still in awe. Why have I not heard of you before? I like to think that I'm "in the know" so to speak. But your site blew me away. I used to accidentally get stuck on Bizrate and Nextag and they NEVER had what I was looking for. Ever. In fact, I hate those damn sites. But YOU are a whole other story all together. I love you, I love you, I love you. And I'm going to tell everyone I know to check you out. I'm quite sure that they will become loyal followers as well. I can't thank you enough for your site. I enjoy every minute of it :o)

# Challenges and Recent Developments at Like.com

Baris Sumengen

Like.com

# Plan

- What has been going on at Like.com
- Visual search tech and shopping synergy
- Business aspects and challenges
- Likesense – new CBIR driven contextual advertising framework.

# Company Timeline

- \$50M funding in 3 rounds
- Company – Founded in August 2004
  - Started hiring in January 2005
- Riya.com – launched April 2006
  - Face detection and recognition to organize personal photo libraries
- Face Similarity – August 2006
  - Internal, did not launch publicly
- **Like.com – launched November 2006**
  - **Visual product search**
- **Likesense – June 2009**
  - **Contextual advertising platform for image views on social networks**

# Baris Sumengen

- Riya days
  - Clothing detection and similarity for improving face detection
- Like.com
  - Product manager for the development of visual search (Jan 2006 - Aug 2007)
  - Product manager for user behavior analysis (Sep 2007 – Mar 2008)
  - Currently leading the Search Engine Marketing team (Mar 2008 - present)

Like.com

**LIKE.COM**

# Like.com is Visual Search

Like.com is a visual search engine that allows shoppers to find apparel, shoes, and accessories based on their actual appearance.

- ★ Vision: To build the best soft goods shopping search engine
- ★ Proprietary visual search technology (color, shape, texture)
- ★ 8MM+ monthly visitors focused in apparel, shoes and accessories
- ★ Revenues for 2009 > \$15MM from \$1MM in 2007

# Growth Pattern





# Live Demo

Focus your search on a specific detail of this item



Adidas ClimaCool Micro Block Stripe Polo 592647  
\$64.99

|   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |
| Polo<br>SHOP<br>\$64.99<br>GolfDiscount Supe...                                   | Urban Pipeline<br>SHOP<br><del>\$20.00</del> \$9.99<br>Kohls                      | Nike<br>SHOP<br>\$48.00<br>mensredtag   | Polo<br>SHOP<br>\$48.00<br>mensredtag   | Nike<br>SHOP<br>\$48.00<br>mensredtag   | Haggar Cool 18<br>SHOP<br><del>\$50.00</del> \$35.00<br>BeallsFlorida               | Adidas<br>SHOP<br>\$64.99<br>GolfDiscount Supe...                                   | Adidas<br>SHOP<br>\$64.99<br>GolfDiscount Supe...                                   | Polo<br>SHOP<br>\$21.99<br>eBay   |
| VISUAL * SEARCH   | VISUAL * SEARCH   | VISUAL * SEARCH   | VISUAL * SEARCH   | VISUAL * SEARCH   | VISUAL * SEARCH   | VISUAL * SEARCH   | VISUAL * SEARCH   | VISUAL * SEARCH   |

|   |   |  |   |   |   |   |   |   |
|---|---|--|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |
| Nike<br>SHOP<br>\$90.00<br>Golfsmith  | Men's Polo Shirts<br>SHOP<br>\$58.00<br>StyleRocket                               | Polo<br>SHOP<br>\$24.99<br>eBay  | Polo<br>SHOP<br>\$24.99<br>eBay   | Izod<br>SHOP<br><del>\$50.00</del> \$35.00<br>BeallsFlorida                         | Polo<br>SHOP<br>\$52.00<br>mensredtag   | Gary Player<br>SHOP<br>\$39.99<br>Men's Wearhouse                                   | Adidas<br>SHOP<br>\$64.99<br>GolfDiscount Supe...                                   | Adidas<br>SHOP<br><del>\$65.00</del> \$42.97<br>Golfsmith                           |
| VISUAL * SEARCH   | VISUAL * SEARCH   | VISUAL * SEARCH  | VISUAL * SEARCH   | VISUAL * SEARCH   | VISUAL * SEARCH   | VISUAL * SEARCH   | VISUAL * SEARCH   | VISUAL * SEARCH   |

|   |   |   |   |   |   |   |  |  |   |   |
|---|---|---|---|---|---|---|--|--|---|---|
|  |  |  |  |  |  |  | <div data-bbox="1406 1157 1720 1358"> <p>Discover Visual Search</p> <p>Find similar items based on color, shape, pattern.</p>  </div> |  |  |  |
| Under Armour<br>SHOP<br><del>\$64.00</del> \$49.99<br>Modell s                      | Diesel<br>SHOP<br>\$29.00<br>ssense   | Ezekiel<br>SHOP<br><del>\$30.99</del> \$24.99<br>Tilly's                            | Izod<br>SHOP<br><del>\$50.00</del> \$35.00<br>BeallsFlorida                         | Adidas<br>SHOP<br>\$59.99<br>Modell s   | Polo<br>SHOP<br>\$98.00<br>Lacoste  | Polo<br>SHOP<br>\$64.99<br>GolfDiscount Supe...                                       |  |  | Banana Republic<br>SHOP<br><del>\$44.50</del> \$29.90<br>bananarepublic               | Adidas<br>SHOP<br>\$64.99<br>GolfDiscount Supe...                                     |

# Live Demo

 Focus your search on a specific detail of this item



Men's Billabong Double Take Flannel  
**\$58.00**  
[Shop](#)



Ccs

[SHOP](#)

\$39.99  
CCS

[VISUAL \\* SEARCH](#)



Ccs

[SHOP](#)

\$39.99  
CCS

[VISUAL \\* SEARCH](#)



Quiksilver

[SHOP](#)

\$52.00  
Swell

[VISUAL \\* SEARCH](#)



Eastbay

[SHOP](#)

~~\$41.99~~ **\$24.99**

[VISUAL \\* SEARCH](#)



Michael Kors

[SHOP](#)

\$145.00  
Bloomingdales

[VISUAL \\* SEARCH](#)



Ben Sherman

[SHOP](#)

~~\$111.00~~ **\$88.80**

**FREE SHIPPING**

[VISUAL \\* SEARCH](#)



Bob

[SHOP](#)

\$30.94  
Bass Pro Shops

[VISUAL \\* SEARCH](#)



Element

[SHOP](#)

~~\$53.95~~ **\$48.97**  
Altrec

**FREE SHIPPING**

[VISUAL \\* SEARCH](#)



Ccs

[SHOP](#)

\$39.99  
CCS

[VISUAL \\* SEARCH](#)



Carhartt

[SHOP](#)

\$37.99  
Bass Pro Shops

[VISUAL \\* SEARCH](#)



ssense

[SHOP](#)

\$68.00

[VISUAL \\* SEARCH](#)



Moose Creek

[SHOP](#)

~~\$40.00~~ **\$12.00**  
Sierra Trading Post

[VISUAL \\* SEARCH](#)



CCS

[SHOP](#)

\$39.99  
CCS

[VISUAL \\* SEARCH](#)



CCS

[SHOP](#)

\$39.99  
CCS

[VISUAL \\* SEARCH](#)



# Competition

- Modista

The image shows a screenshot of the Modista website's product page for shoes. The top navigation bar includes the Modista logo with the tagline "explore your style.", category links for Women's Shoes, Men's Shoes, Kids, Handbags, Watches, and Eyewear, and social media icons for Facebook, Twitter, and YouTube. A search bar with a "Quick search..." placeholder and a "Go" button is present. Below the navigation, a "Refine By" dropdown menu is set to "(Price, Discount, Size, Width, Color, Retailer, Brand)". Navigation controls show "1-63 of 53,258" items, with "Prev" and "Next" buttons. On the right side of the navigation bar, there are links for "Back", "Recent", "Favorites", and "Start over".

The main content area features a large grid of 80 different shoe models arranged in 8 rows and 10 columns. On the left side of the grid, a detailed view of a "Converse MT Star 3" shoe is shown. This view includes the shoe's name and model, a "Description and more views" button, "Add to Favorites" and "Email / Share" buttons, a "Buy at 6pm.com" button with a right-pointing arrow, and pricing information: "41% off! (was \$60.00) \$35.67" and "Sizes: 4-5.5".

At the bottom left of the page, there are filter options for "Color" and "Shape", with a "Show prices" checkbox and a vertical slider bar.




# User Experience, User Behavior

- Visitext: Integrating visual search into text search
  - Color/pattern cues to text conversion
  - Learning styles from visual cues (boots, sandals, v-neck, etc.)
- Cross category visual match
- Simplified the user interface over time
- A/B testing and user studies
  - Intuition does not always overlap with the experiments

# Business Aspects

- Patents
- Traditional business
  - Generating traffic
  - Generating revenues
  - Generating contribution
  - Breaking even and profitability

# Patent Overview

|  | <u>Patent No</u>   | <u>Status</u> | <u>Concepts Covered</u>   |
|--|--|---------------|---|
|   | <b>7,542,610</b>   | GRANTED       | <ul style="list-style-type: none"> <li>- Image similarity concept with application to merchandise images</li> <li>- Using portion of an image to search for merchandise</li> </ul>  |
|   | <b>7,519,200</b>   | GRANTED       | <ul style="list-style-type: none"> <li>- Probabilistic face recognition system</li> <li>- Use of Clothing, Time, Location, Tags to enhance recognition information</li> </ul>   |
|  | <b>20080080745</b><br><b>20080212899</b><br><b>20060251292</b><br><b>20060251338</b><br><b>20060253491</b> | IN REVIEW     | <ul style="list-style-type: none"> <li>- Improved search capability for fast and accurate similarity matching</li> <li>- 'Out-Of-Stock' Widget based on Similarity</li> <li>- Use of manual enrichment for segmentation</li> <li>- Displaying advertisement for baby/product</li> </ul> |

8 More Patent applications in the review pipeline

# Generating Traffic

- Free traffic (less predictable)
  - Direct/Viral traffic
  - Organic search engine traffic (SEO)
- Paid traffic (more predictable)
  - Search engine marketing (SEM)
  - Email marketing
  - Banner advertising

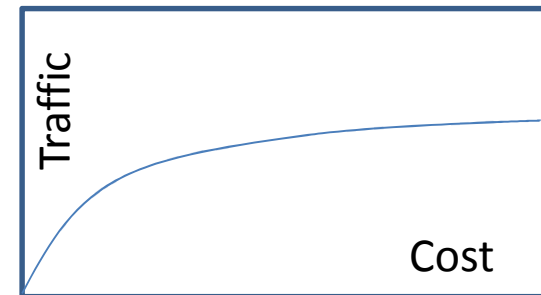
# Generating Revenues

- Landing page optimization  
=> increases revenue per visitor (RPV)
- Banner advertising/Email marketing
  - Landing on a visual search page increases RPV
- Search engine marketing – bid on keyword searches
  - VisiText enables better keyword landing pages.

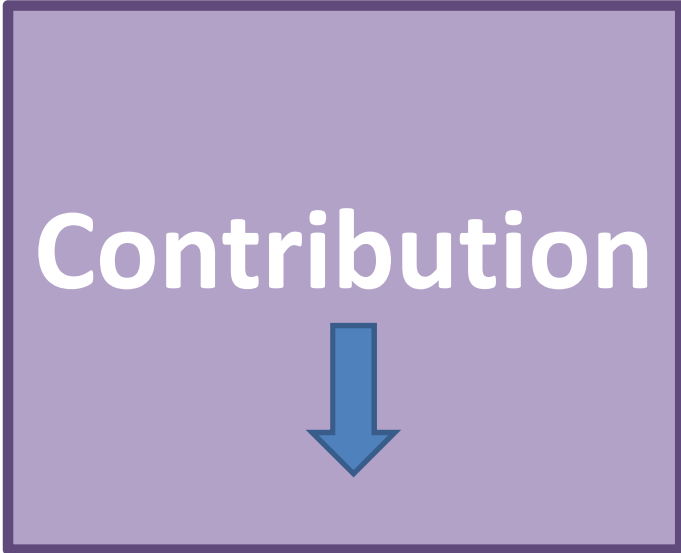


# Generating Contribution

- Find traffic where cost is less than revenues
  - Predict the revenue per visitor on a specific landing page.
  - Predict and learn cost vs. traffic graph for each banner, keyword we bid on
  - Optimize for maximum revenue and contribution



# DILEMMA



Likesense

**LIKESENSE**

# End User Experience Step 1

Like.com style  
drawer shows  
visually matching  
products

The screenshot shows a Myspace profile page for a user named Russ. The page features a blue header with the Myspace logo, a search bar, and navigation links. The main content area displays a photo gallery titled "My Albums - My Photos". A photo of a woman in a purple dress is selected, and a "Dress Like Her" drawer is open, showing a small image of the dress. The drawer is annotated with a callout box stating "Like.com style drawer shows visually matching products". To the right of the photo gallery, there is a sidebar with several sections: "Housing Rescue Bill Passed" with a state selection tool, "Links to the photo" with a URL and photo code, and "Sponsored Links" featuring "Pimp My Profile (Free)".

myspace.com a place for friends- Status: Russ has joined MySpace! Mood: good 😊 (Update) Images Search Powered by Google

(1) Profile Friends Music Video More My Account Sign Out

My Albums - My Photos Switch to Public View to view comments.

Set as Default Use as Album Cover Move Photo Delete Photo Tag Photo Customize Photo

Now! Print

Photo 5 of 5 Previous | Next

Dress Like Her In this photo: Start Tagging

Housing Rescue Bill Passed \$133,000 Mortgage for Under \$679/Mo!

Select Your State California

CALCULATE NEW PAYMENT

Links to the photo

Photo URL: <http://viewmorepics.myspace.com/index.c> Copy

Photo code: copy it to your profile

<a href="http://viewmorepics.myspace.co" Copy

Sponsored Links

**Pimp My Profile® (Free)**

Get Layouts, Backgrounds & Glitter:  
Download Now to Pimp Your Profile!

[www.webfetti.com](http://www.webfetti.com)

# LikeSense Scans Images & Presents Relevant Products

On Roll over the drawer to open

myspace.com a place for friends. Status: Russ has joined MySpace! Mood: good 😊 (Update) Images Search POWERED BY Google

Home Mail (1) Profile Friends Music Video More My Account Sign Out

My Albums - My Photos Switch to Public View to view comments.

Set as Default Use as Album Cover Move Photo Delete Photo Tag Photo Customize Photo

Now! Print

Photo 5 of 5 Previous | Next

Dress Like Her

In this photo: Start Tagging

Etro \$98.00 \$74.99 Shop Now

Thayer \$98.00 \$74.99 Shop Now

Rebecca Taylor \$98.00 \$74.99 Shop Now

What Comes Around \$98.00 \$74.99 Shop Now

Biabona

Housing Rescue Bill Passed \$133,000 Mortgage for Under \$679/Mo!

How it works

1. Publisher drops 1 line of javascript on the page
2. Likesense analyzes photo
3. Face detection to find face
4. Shirt is always below face
5. Skin color from face to find neckline
6. Hair color to cut out hair color from shirt color
7. Finds similar shirts
8. Finds matching accessories
9. When user rolls over tab the drawer opens

Links to the photo

Photo URL: http://viewmorepic

Photo code: copy it

Sponsored Links

Pimp My Profile ® (F)

Get Layouts, Backgrounds & Download Now to Pimp Your I

www.webfetti.com

# End User Experience with Accessorize

The screenshot displays a Myspace profile page for a user named Russ. The page features a navigation bar with options like Home, Mail, Profile, Friends, Music, Video, and More. The main content area shows a photo of a woman in a purple dress, with a 'Dress Like Her' section recommending items from Etro, Thayer, Rebecca Taylor, and What Comes Around. A sidebar on the right contains a 'Housing Rescue Bill Passed' calculator for California, 'Links to the photo' section, and a 'Sponsored Links' section for 'Pimp My Profile'.

**myspace.com** a place for friends  
Status: Russ has joined MySpace!  
Mood: good 😊 (Update)

Home Mail (1) Profile Friends Music Video More My Account Sign Out

### My Albums - My Photos

Switch to Public View to view comments.

Set as Default Use as Album Cover Move Photo Delete Photo Tag Photo Customize Photo

Now! Print

Photo 5 of 5 Previous | Next

#### Dress Like Her

In this photo: Start Tagging

- Etro**  
\$74.99  
[Shop Now](#)
- Thayer**  
\$74.99  
[Shop Now](#)
- Rebecca Taylor**  
\$74.99  
[Shop Now](#)
- What Comes Around**  
\$74.99  
[Shop Now](#)

#### Complete the Look

- Etro**  
\$74.99  
[Shop Now](#)
- Etro**  
\$74.99  
[Shop Now](#)
- Etro**  
\$74.99  
[Shop Now](#)

### Housing Rescue Bill Passed

\$133,000 Mortgage for Under \$679/Mo!

Select Your State  
California

[CALCULATE NEW PAYMENT](#)

LowerMyBills.com

#### Links to the photo

Photo URL:  
<http://viewmorepics.myspace.com/index.c> [Copy](#)

Photo code: copy it to your profile  
<a href="http://viewmorepics.myspace.co" [Copy](#)

#### Sponsored Links

**Pimp My Profile® (Free)**

Get Layouts, Backgrounds & Glitter:  
Download Now to Pimp Your Profile!

[www.webfetti.com](http://www.webfetti.com)

powered by like.com

# End User Experience with Celeb Fun Match

The screenshot shows a Myspace profile page for a user named Russ. The page features a navigation bar with links for Home, Mail (1), Profile, Friends, Music, Video, and More. The main content area is titled "My Albums - My Photos" and displays a photo of a woman in a purple dress. Below the photo, there are several shopping recommendations for similar dresses, including brands like Etro, Thayer, Rebecca Taylor, and What Comes Around. A section titled "Celebrities That She Looks Like" shows two celebrities: Parker Posey and Ginnifer Goodwin. The page also includes a sidebar with a "Housing Rescue Bill Passed" advertisement, a "Links to the photo" section, and a "Sponsored Links" section for "Pimp My Profile @ (Free)".

**myspace.com** a place for friends  
Status: Russ has joined MySpace!  
Mood: good 😊 (Update)

Home Mail (1) Profile Friends Music Video More My Account Sign Out

### My Albums - My Photos

Switch to Public View to view comments.

Set as Default Use as Album Cover Move Photo Delete Photo Tag Photo Customize Photo

Now! Print

Photo 5 of 5 Previous | Next

#### Dress Like Her

In this photo: Start Tagging

**Etro**  
\$74.99  
Shop Now

**Thayer**  
\$74.99  
Shop Now

**Rebecca Taylor**  
\$74.99  
Shop Now

**What Comes Around**  
\$74.99  
Shop Now

**Celebrities That She Looks Like**

Parker Posey

Ginnifer Goodwin

powered by like.com

### Housing Rescue Bill Passed

\$133,000 Mortgage for Under \$679/Mo!

Select Your State  
California

CALCULATE NEW PAYMENT

LowerMyBills.com

Links to the photo

Photo URL:  
<http://viewmorepics.myspace.com/index.c> Copy

Photo code: copy it to your profile  
<http://viewmorepics.myspace.co> Copy

Sponsored Links

**Pimp My Profile @ (Free)**

Get Layouts, Backgrounds & Glitter:  
Download Now to Pimp Your Profile!

[www.webfetti.com](http://www.webfetti.com)

# Likesense Example

Upload Search - Mozilla Firefox

File Edit View History Bookmarks Tools Help










http://rlab-0020.rlab.niqa.com/cgi-bin/xiaofan/search2upload.cgi?automate=0&action=upload&rotate=0&segmentation=1&groundtruth=UNKNOWN&fp=0&keywords=6&browse

Customize Links Home Bargains Free Hotmail Windows Marketplace http://www.like.com/... Windows Media Windows

Upload Search RIYA Research resources Yahoo! Mail - burakgokturk@yahoo.com Facebook | Register for Facebook Facebook | Privacy Policy

>>> [Choose a random query](#) | [Go to main page](#)

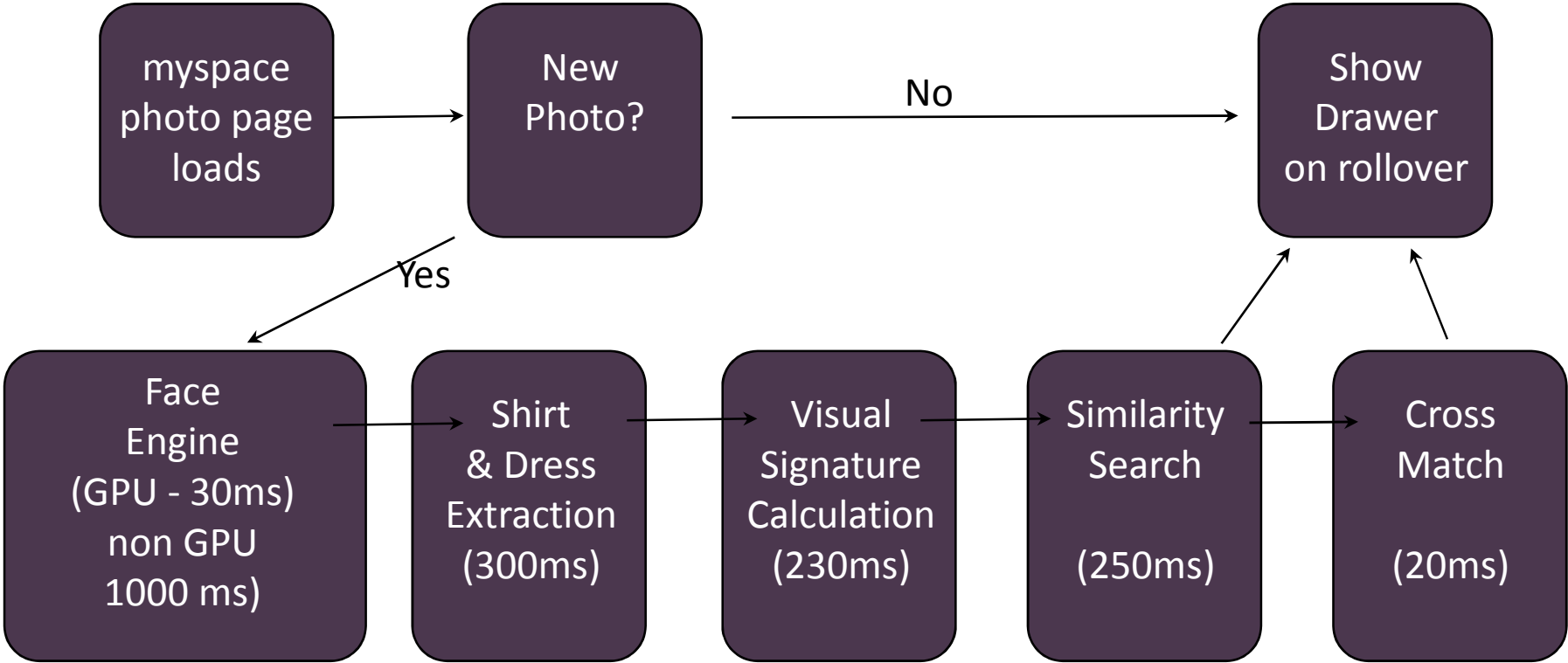
xiaofan/uploaddata/90/SlideExample1180992421

|   |   |   |   |   |
|---|---|---|---|---|
|  | <p>1)</p> <p>e7e92c2e6540e52ca46390e4dc88a075d78f7e4</p> <p>Dist: 0.176028</p> <p>\$25.990000</p> <p>MensShirts</p> <p>UncleSamsDEALS.com-SDCFedProcessor-Apparel</p> <p>0 0.000183 7e-06 0.053309 0.05163 0.002278 0 0.053905 0.011981 0.000734 </p>  | <p>2)</p> <p>5aa3ea544a6a77e76330a6f78064d120d5e6822c</p> <p>Dist: 0.190537</p> <p>\$29.950001</p> <p>MensShirts</p> <p>hawaiianshirtsplus.com-SDCFedProcessor-Apparel</p> <p>0 0.000126 9e-06 0.038549 0.077983 0.001751 0 0.043123 0.008229 0.000767 </p>  | <p>3)</p> <p>a32a97e6f1a096c7aeb7c3b96401b513aa967f7</p> <p>Dist: 0.204632</p> <p>\$17.990000</p> <p>MensShirts</p> <p>Kohls</p> <p>0 0.000111 1e-05 0.066539 0.060235 0.002339 0 0.05709 0.017363 0.000943 </p>                                 | <p>4)</p> <p>d503a73f0b0d7c22a2ee3990e42af1659</p> <p>Dist: 0.209710</p> <p>\$51.900002</p> <p>MensShirts</p> <p>www.amazon.com</p> <p>0 0.000128 8e-06 0.048651 0.100033 0.0.047017 0.01034 0.000671 </p>                       |
|   | <p>6)</p> <p>b874897cdf8e2cd0fe6b6b4937d799561a05f</p> <p>Dist: 0.217846</p> <p>\$130.000000</p> <p>MensShirts</p> <p>www.StyleRocket.com</p> <p>0 0.000135 8e-06 0.058505 0.07368 0.003559 0 0.071671 0.009632 0.000656 </p>                        | <p>7)</p> <p>5e5a1f175aa6433c792058755b4f7192226464</p> <p>Dist: 0.219724</p> <p>\$17.990000</p> <p>MensShirts</p> <p>Kohls</p> <p>0 0.000106 1e-05 0.038594 0.088739 0.002313 0 0.050756 0.018343 0.000864 </p>   | <p>8)</p> <p>2e4d489c8d55444e39c12fa44ba4365b14497883</p> <p>Dist: 0.221626</p> <p>\$34.950001</p> <p>MensShirts</p> <p>Cabela's-SDCFedProcessor-Apparel</p> <p>0 0.000231 9e-06 0.067916 0.091428 0.002543 0 0.045598 0.012866 0.001035 </p>  | <p>9)</p> <p>38447e6aa3cd7ff1e12b439304e61428e</p> <p>Dist: 0.223299</p> <p>\$79.949997</p> <p>MensShirts</p> <p>Wine Enthusiast-SDCFedProcessor-</p> <p>0 0.000164 1.2e-05 0.048162 0.107025 0.056376 0.008348 0.001052 </p>  |

Done



# Architecture



# Face detection and Segmentation

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- A challenging example where segmentation is able to get the dress mostly.

# Live Demo for Likesense

Questions?

[baris@like.com](mailto:baris@like.com)