Machine Perception CIS 580 Spring 2012

Grading Policy: Homeworks 50%, Midterm 20%, Final 30%

Homeworks on paper and using Matlab.

Midterm is on paper.

Final is a project including paper calculations and Matlab.

Resources:

Szeliski's book
http://research.microsoft.com/en-us/um/people/szeliski/Book/

H. Farid, http://www.cs.dartmouth.edu/farid/Hany_Farid/Tutorials/Entries/2011/6/3_Fundamentals_of_image_Processing.html

Zisserman and Hartley, Multiple View Geometry

Castleman, Digital Image Processing

Machine Perception: in this course only vision => computer vision

Main journals of the field:

- IEEE Pattern Analysis Machine Intelligence (PAMI)
- Int. Journal of Computer Vision (IJCV)
- CVIU, IVC, PR, PRL,..

Main conferences of the field:

- IEEE Computer Vision Pattern Recognition
- IEEE Int. Conf. Computer Vision
- European Conference Computer Vision

Graphics and Robotics are the nearest fields, great vision papers at SIGGRAPH as well as at ICRA and Trans. Robotics or IJRR.

Applications: JPEG-MPEG compression

OCR

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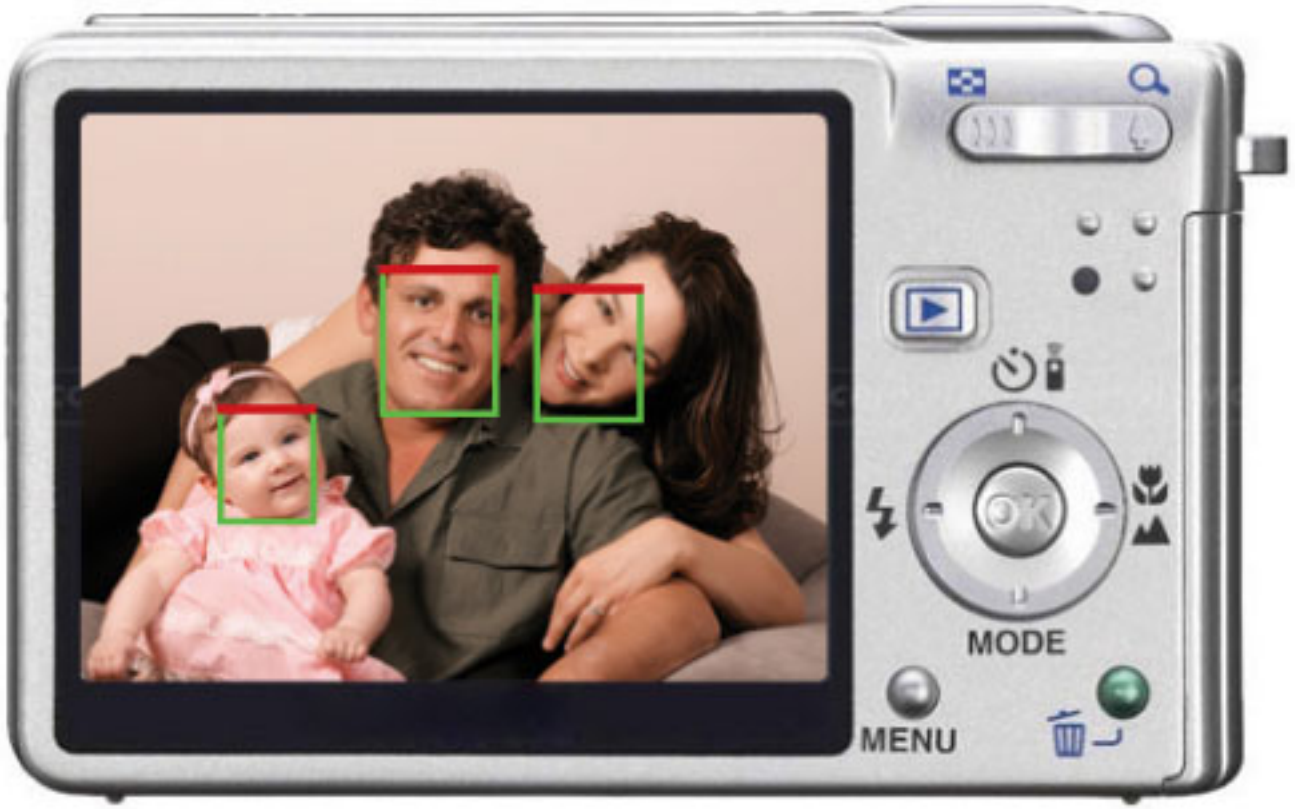
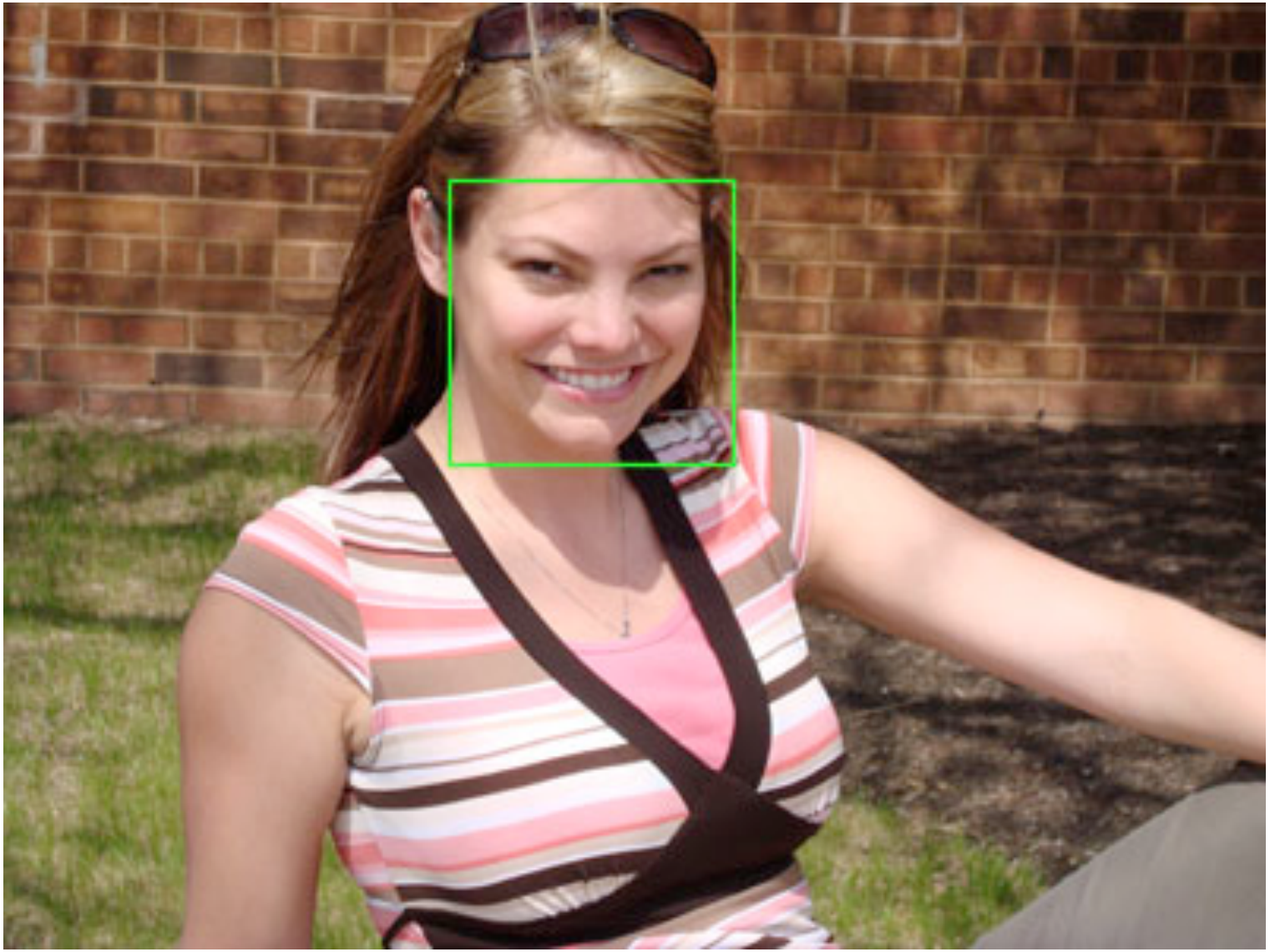
Face detection inside millions of cameras



Smile detection in cameras

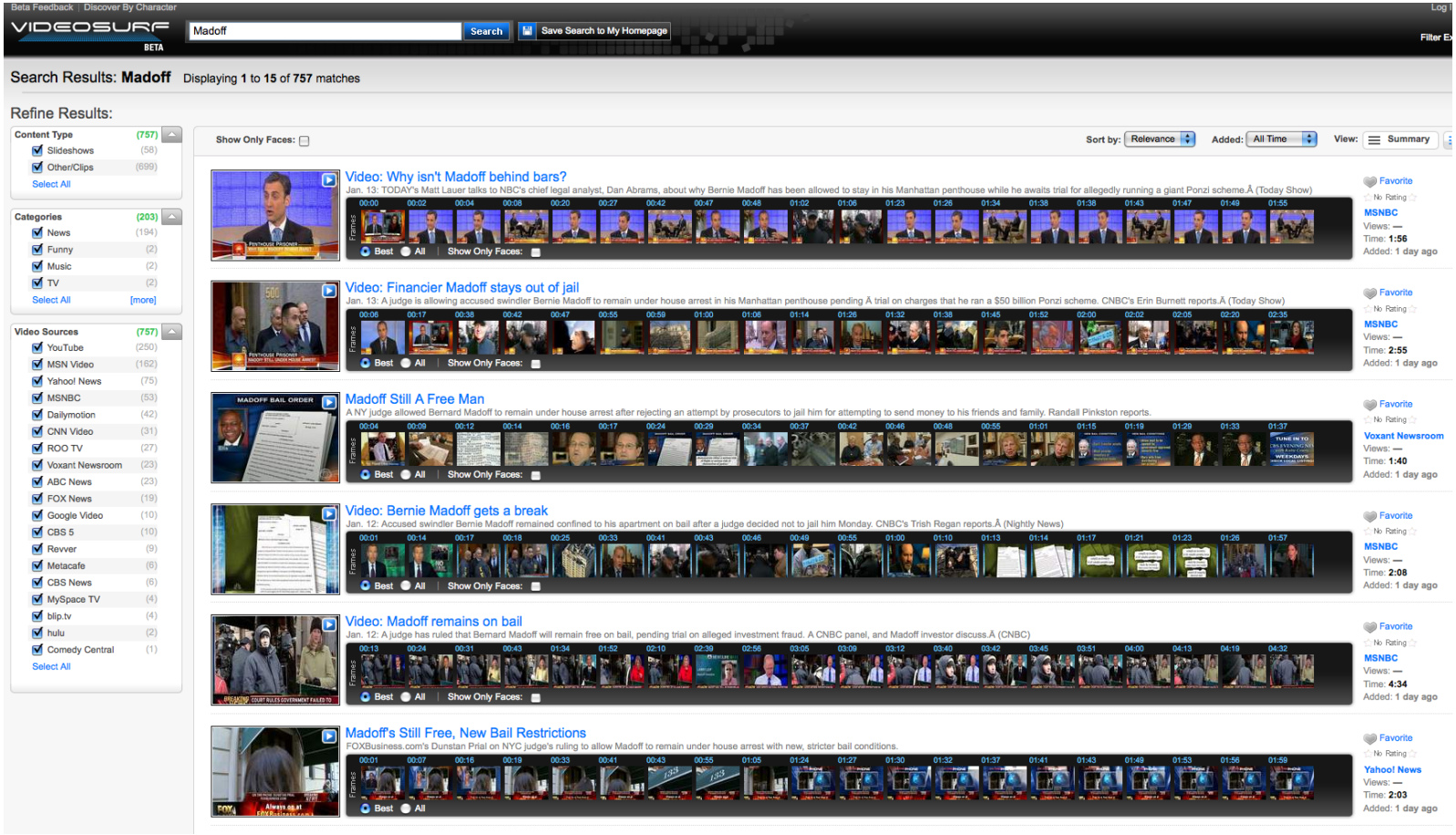


Panoramic stitching

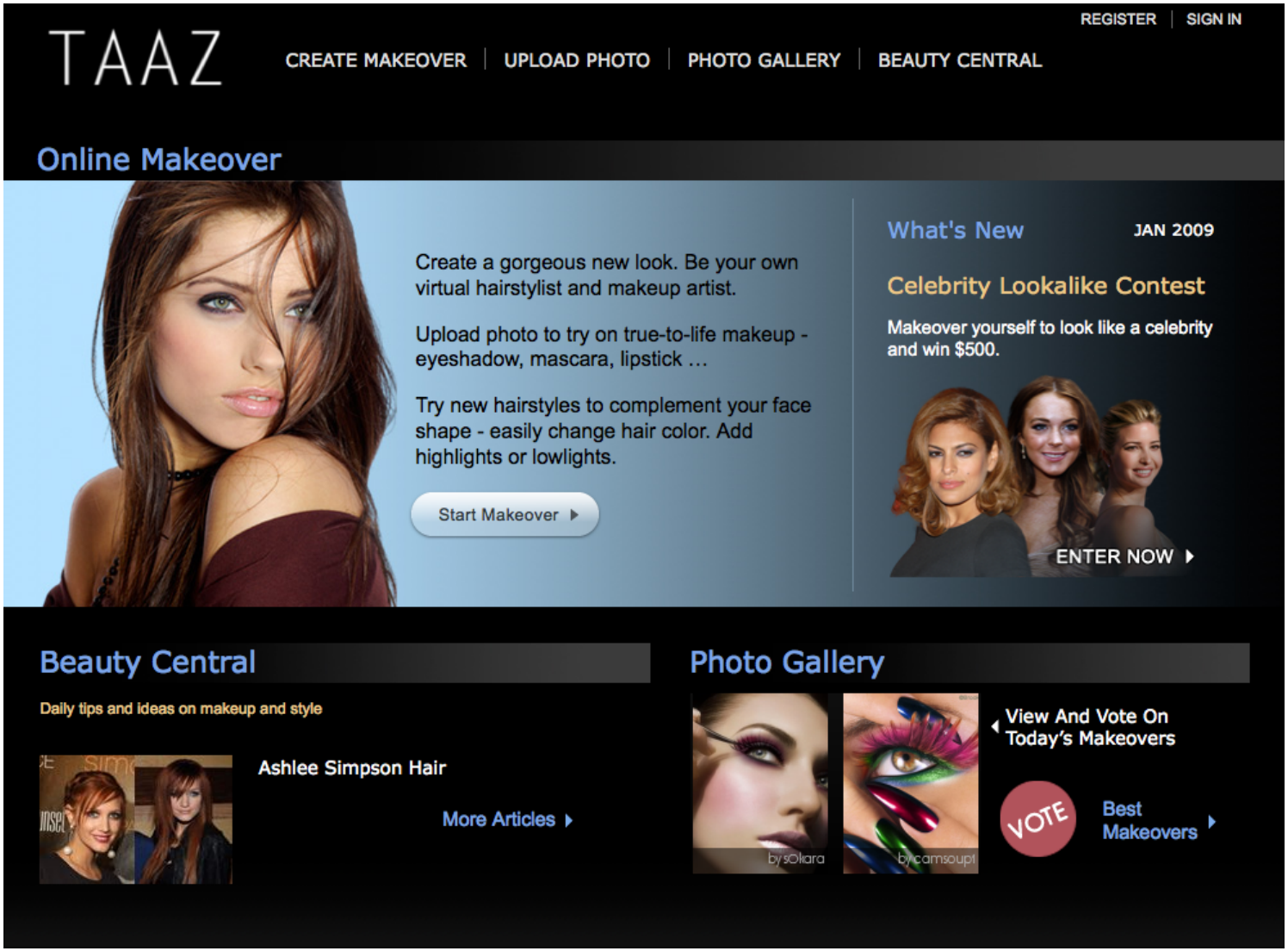
In all photo-management systems (here photoshop)

Object removal in photo editors

Videosurf.com



taaz.com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CREATE MAKEOVER | UPLOAD PHOTO | PHOTO GALLERY | BEAUTY CENTRAL
Online Makeover
Create a gorgeous new look. Be your own virtual hairstylist and makeup artist.
Upload photo to try on true-to-life makeup - eyeshadow, mascara, lipstick …
Try new hairstyles to complement your face shape - easily change hair color. Add highlights or lowlights.
Start Makeover
What's New
JAN 2009
Celebrity Lookalike Contest
Makeover yourself to look like a celebrity and win $500.
ENTER NOW
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Daily tips and ideas on makeup and style
Ashlee Simpson Hair
More Articles
Photo Gallery
View And Vote On Today's Makeovers
VOTE
Best Makeovers

Virtual Yellow Line and Billboards

Sportsvision.com: Tracking and annotating

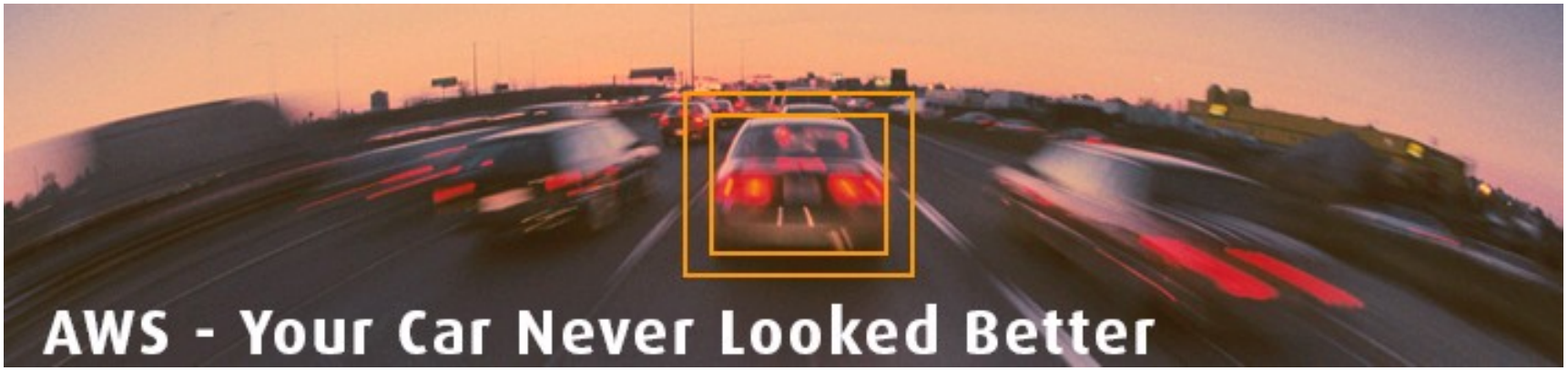
Tracking and replacing images: Imagineer

Evoretail.com

Bottom of the cart and top of the cart detection!

MobileEye

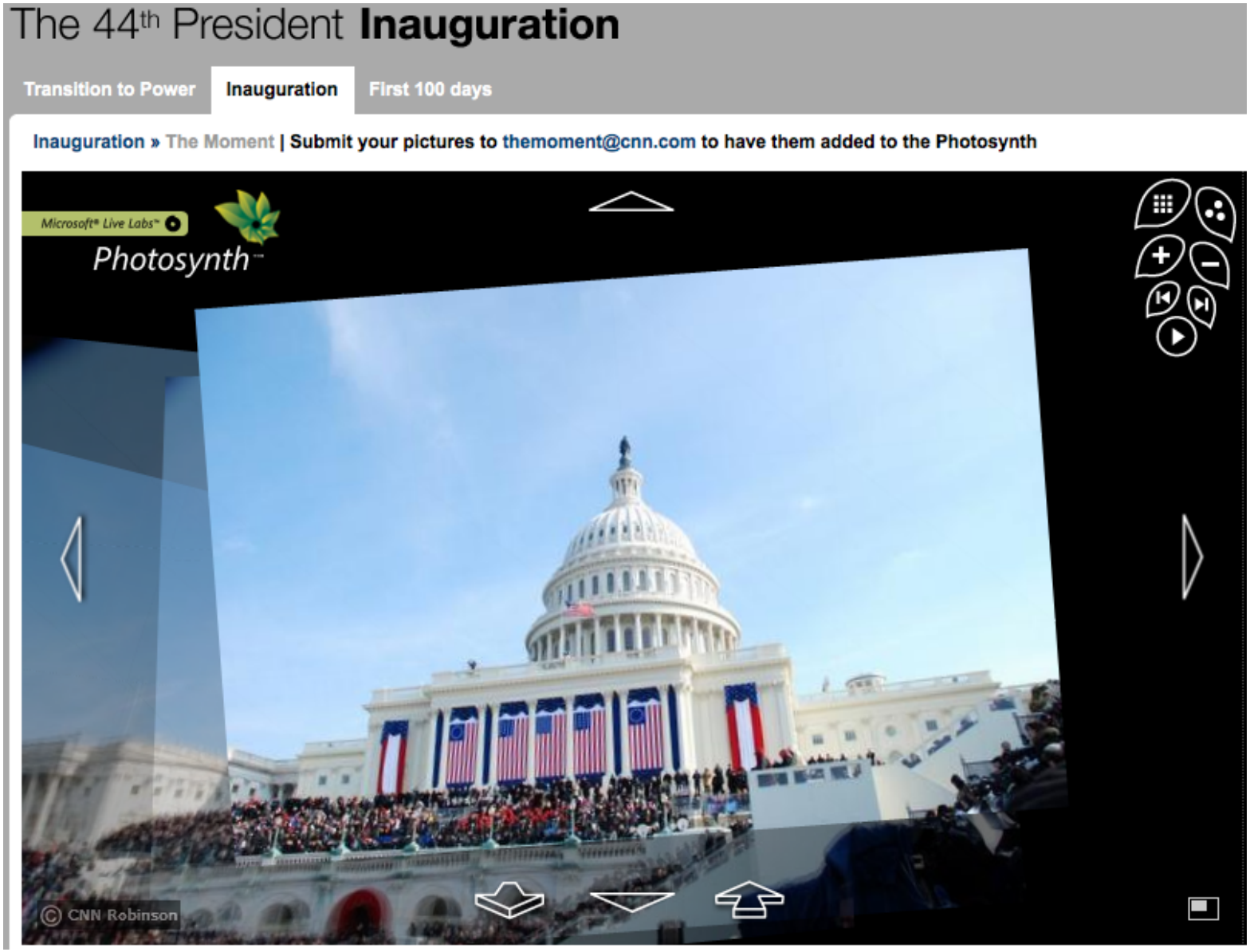
- Lane Departure Warning (BMW 5’ series)
- Forward Collision System (2.7 sec ahead)
- Headway monitoring and Warning
- Off-road path finding



Surveillance

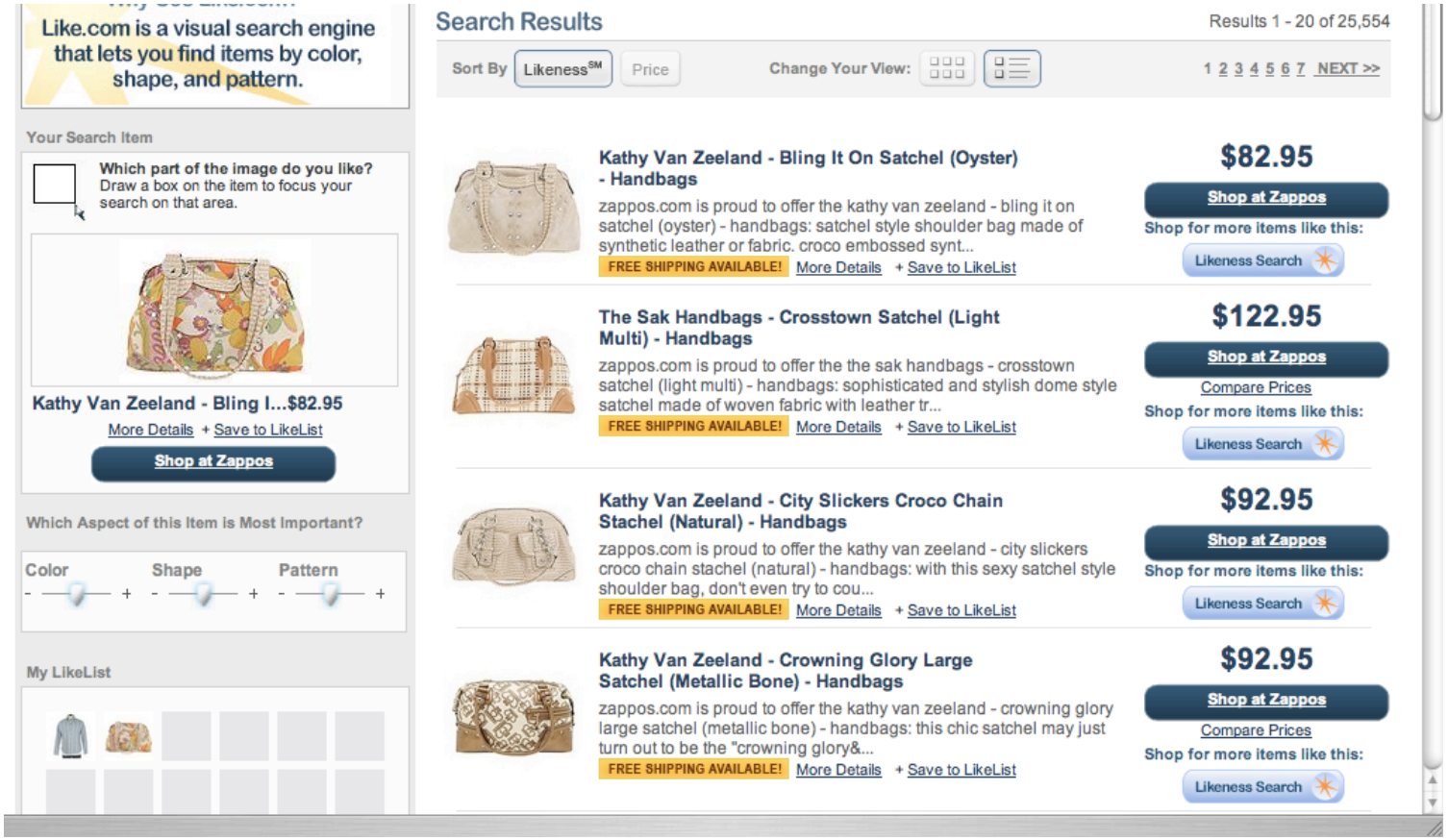
ObjectVideo Inc

Microsoft Photosynth



like.com (now boutiques.com at Google): image search for products

Given an image query of a product, find the closest products in shape, color, pattern.



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Google Goggles, Snaptell and others

Primesense and Kinect

And more applications in…

David Lowe's

Computer Vision Industry Compendium

http://www.cs.ubc.ca/spider/lowe/vision.html