

Brain Harvest

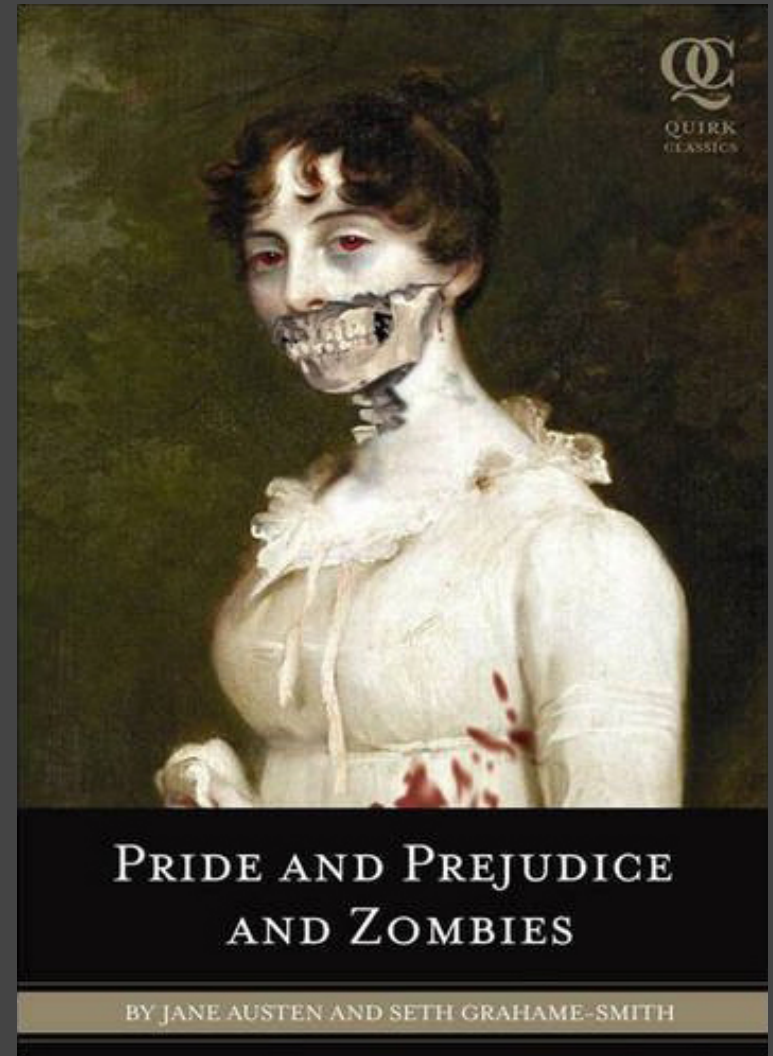
Dan Lessin

CS 395T: Visual Recognition and Search

2/19/09

Brain Harvest

- Brains
- Altruism
- Hedonism
- How LabelMe Works
- How Peekaboom Works
- How Well LabelMe Works
- How Well Peekaboom Works



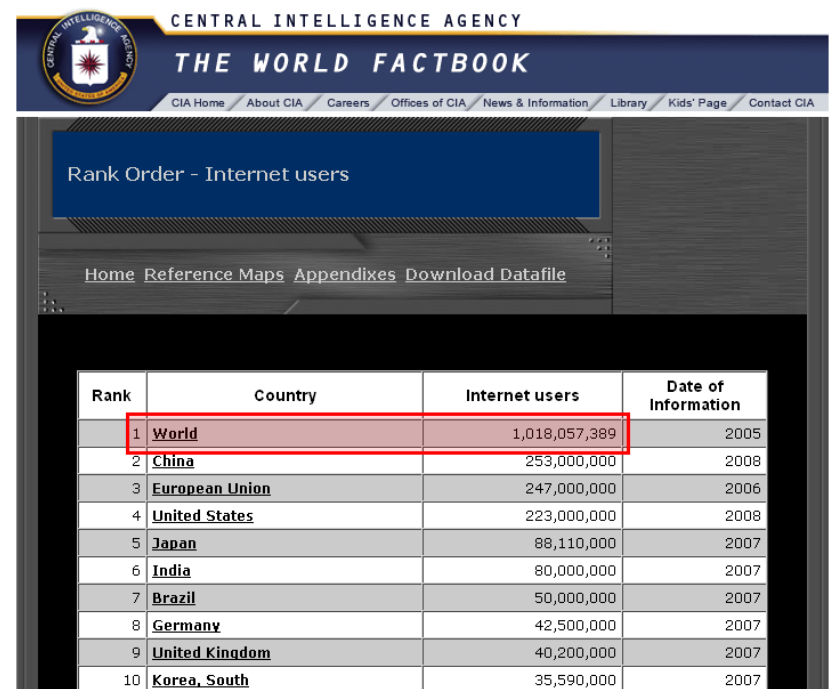
Brains

Caltech 256

Elisabeth Fano
Nick Lo
Julie May
Weiyu Xu
Marco Andreetto
Claudio Fanti

[The Caltech-256. G. Griffin, A. Holub, and P. Perona, Caltech Technical Report]

LabelMe/Peekaboom



CENTRAL INTELLIGENCE AGENCY
THE WORLD FACTBOOK

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Rank Order - Internet users

Home Reference Maps Appendixes Download Datafile

Rank	Country	Internet users	Date of Information
1	World	1,018,057,389	2005
2	China	253,000,000	2008
3	European Union	247,000,000	2006
4	United States	223,000,000	2008
5	Japan	88,110,000	2007
6	India	80,000,000	2007
7	Brazil	50,000,000	2007
8	Germany	42,500,000	2007
9	United Kingdom	40,200,000	2007
10	Korea, South	35,590,000	2007

[<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2153rank.html>]

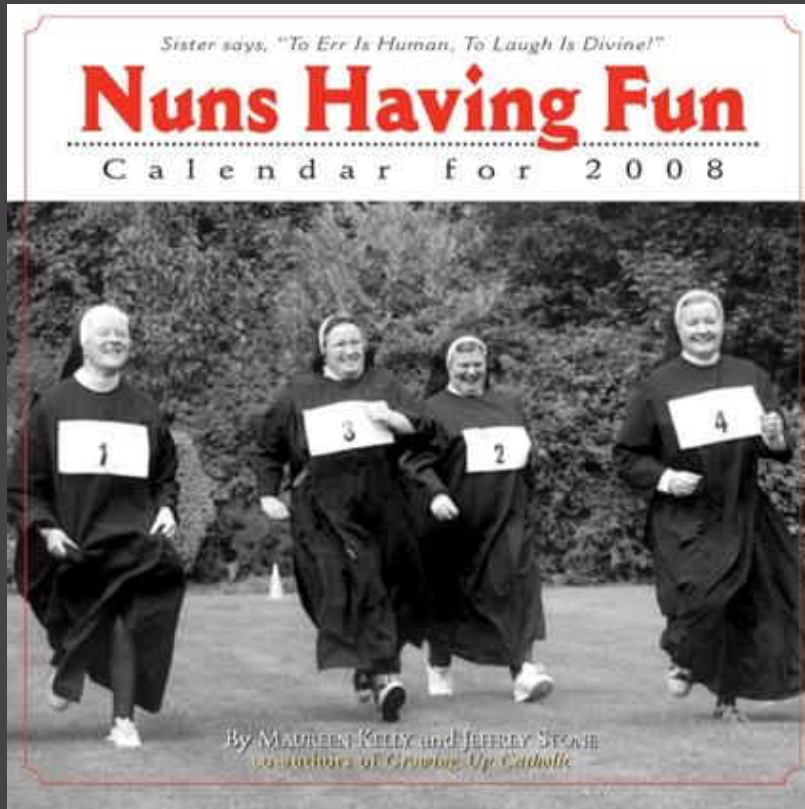
Altruism



LabelMe: a database and web-based tool for image annotation. B. Russell, A. Torralba, K. Murphy, and W. Freeman, IJCV 2008.

"My grandmother told me that every good thing I do helps some human being in the world. I believed her 50 years ago and still do." -- Maya Angelou

Hedonism



"That man is richest whose pleasures are cheapest." -- Henry David Thoreau



Peekaboom: A Game for Locating Objects in Images. L. von Ahn, R. Liu, and M. Blum, CHI 2006.

How LabelMe Works



Please [contact us](#) if you find any bugs or have any suggestions.



[Show me another image](#)

Label as many objects and regions as you can in this image



Edit/delete object

window

Done Delete

[Sign in](#) (why?)

With your help, there are **91348** labelled objects in the database ([more stats](#))

Instructions ([Get more help](#))

Use your mouse to click around the boundary of some objects in this image. You will then be asked to enter the name of the object (examples: car, window).

Good



Bad



Labeling tools



[Erase segment](#)



[Zoom](#)

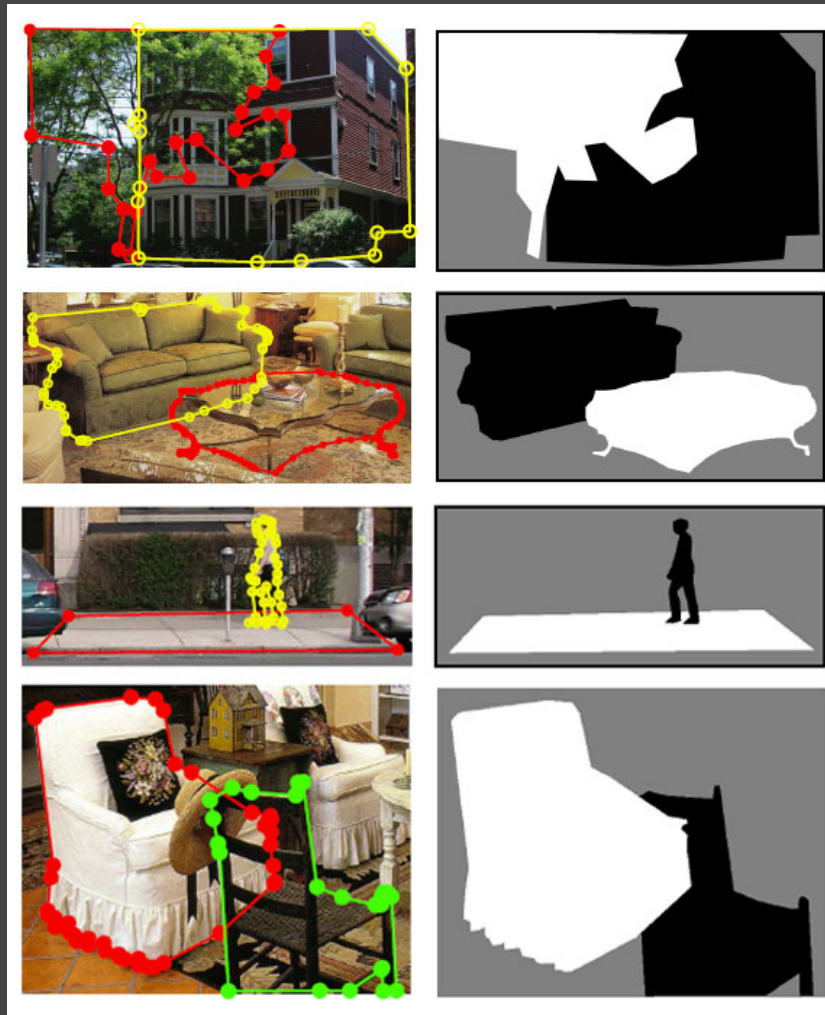


[Fit Image](#)

Polygons in this image ([XML](#))

- [door](#)
- [door](#)
- [road](#)
- [stair](#)
- [window](#)
- [window](#)
- [sidewalk](#)
- [building region](#)
- [house](#)
- [window](#)
- [window](#)
- [window](#)

How LabelMe Works



Depth Ordering

How LabelMe Works



$$\text{object-part score} : \frac{N_{O,P}}{N_P + \alpha}$$

N_P : number of images containing both O and P

$N_{O,P}$: number of images in which P has high overlap with O

α : concentration parameter (set to 5)

$N_{O,P}$	N_P	$\frac{N_{O,P}}{N_P}$	$\frac{N_{O,P}}{N_P + \alpha}$
1	1	1.0	0.167
5	5	1.0	0.500
10	10	1.0	0.667

Object-Part Hierarchy

How Peekaboom Works

★ YOU AND A RANDOM PARTNER TAKE TURNS **PEEKING** AND **BOOMING** ★

PEEK : GUESS WHAT YOUR PARTNER IS REVEALING

TIME LEFT
2:23

SCORE
300

peek
HINT
HIDE



GUESSES

fur	100
cat	100
dog	100
sheep	100
horse	100

GUESS HERE

PASS

HINTS HELP YOU GUESS

PASS FOR DIFFICULT IMAGES

BOOM : REVEAL PARTS OF THE IMAGE TO YOUR PARTNER

TIME LEFT
2:23

SCORE
300

boom
CLICK THE IMAGE TO REVEAL AREAS TO YOUR PARTNER.
RIGHT CLICK TO PINN AN AREA OF THE IMAGE.

COW



GUESSES

fur	100
cat	100
dog	100
sheep	100
horse	100

HINTS

GIVE HINTS IF NECESSARY

TELL YOUR PARTNER IF A GUESS IS **HOT** OR **COLD**

How Peekaboom Works

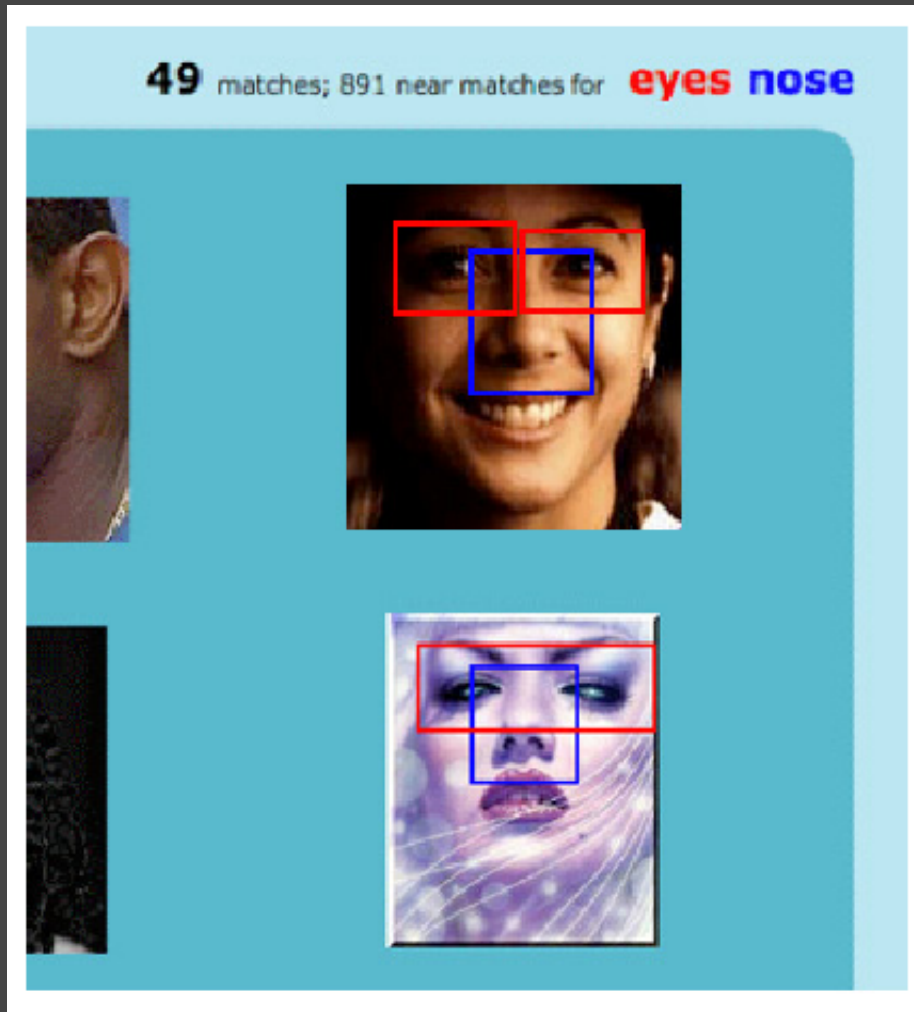


Hints

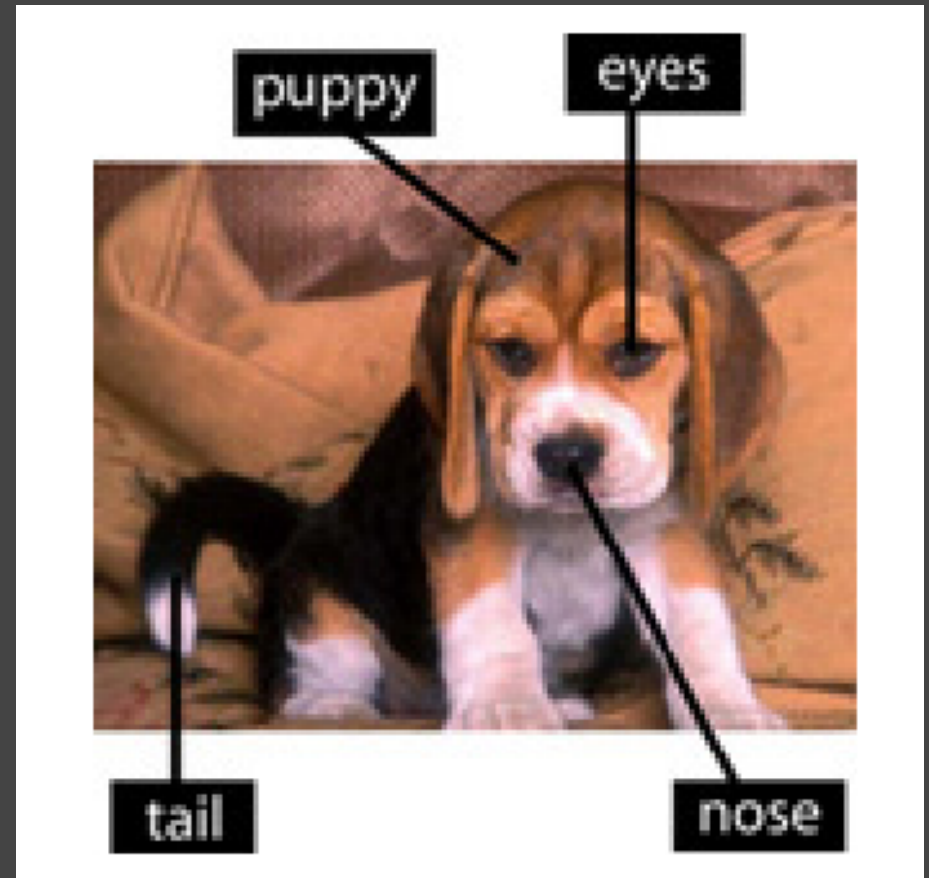


Pings

How Peekaboom Works

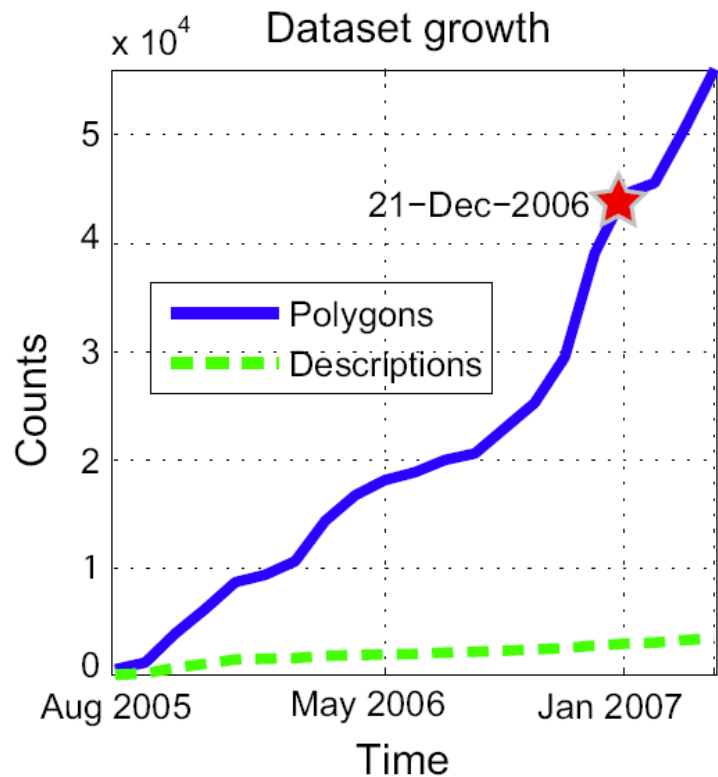


Object Bounding Boxes



Object Pointers

How Well LabelMe Works



Dataset	# categories	# images	# annotations	Annotation type
LabelMe	183	30369	111490 44059	Polygons
Caltech-101 [12]	101	8765	8765	Polygons
MSRC [45]	23	591	1751	Region masks
CBCL-Streetscenes [5]	9	3547	27666	Polygons
Pascal2006 [9]	10	5304	5455	Bounding boxes

2.3 Content and evolution of the LabelMe database

We summarize the content of the LabelMe database as of December 21, 2006. The database consists of 111490 polygons, with 44059 polygons annotated using the online tool and 67431 polygons annotated offline. There are 11845 static pictures and 18524 sequence frames with at least one object labeled.

As outlined above, a LabelMe description corresponds to the raw string entered by the user to

How Well Peekaboom Works

"One unfortunate side effect of playing so much in such a short time was a mild case of carpal tunnel syndrome in my right hand and forearm"

"I would say that it gives the same gut feeling as combining gambling with charades while riding on a roller coaster."

"This game is like crack."

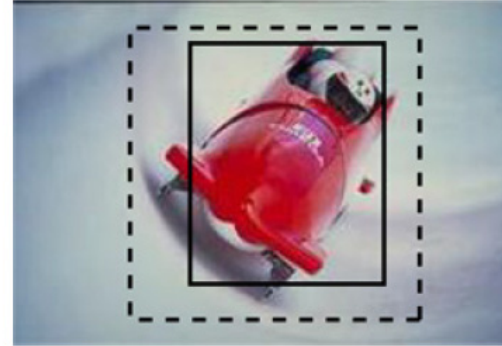


Figure 9. Experiment image with lowest overlap between a volunteer generated bounding-box (solid lines) and one generated by Peekaboom (dashed lines).

$$\text{OVERLAP}(A,B) = \text{AREA}(A \cap B) / \text{AREA}(A \cup B)$$

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