

Comment utiliser l'humanité pour faire du calcul ?

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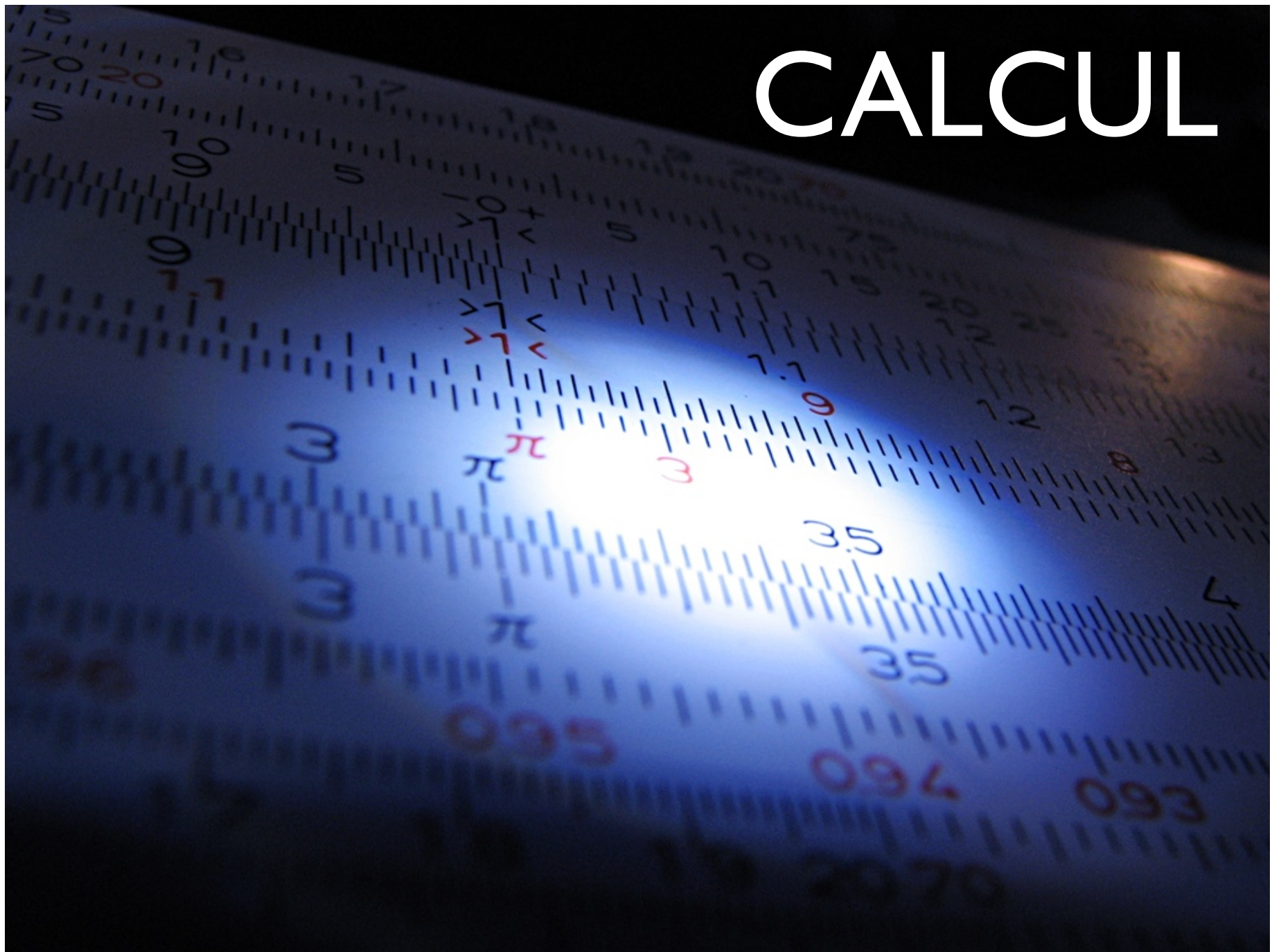
15 avril 2008



HUMANITE



CALCUL



HOMME



- 9 milliards d'heures
jouées au Solitaire en 2003
- Viaduc de Millau
1 000 000 d'heures



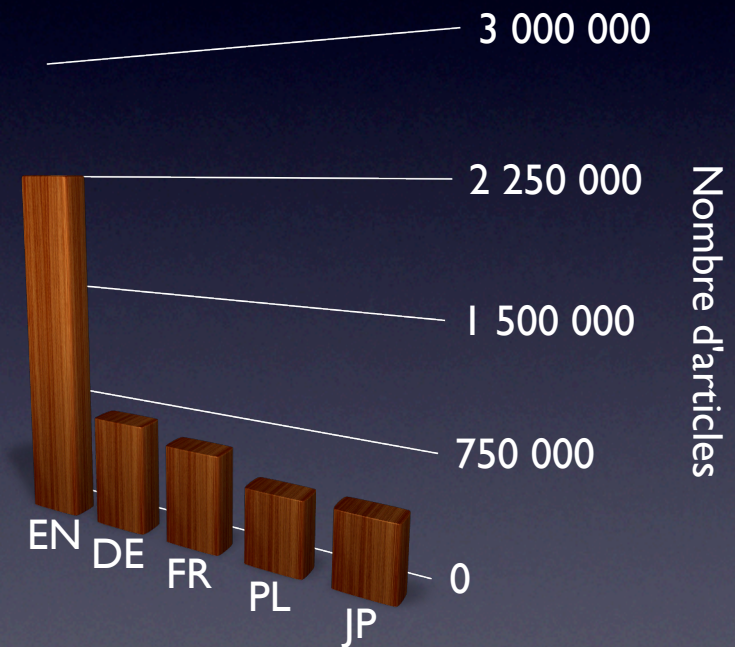
Calculer pour soi et
pour les autres



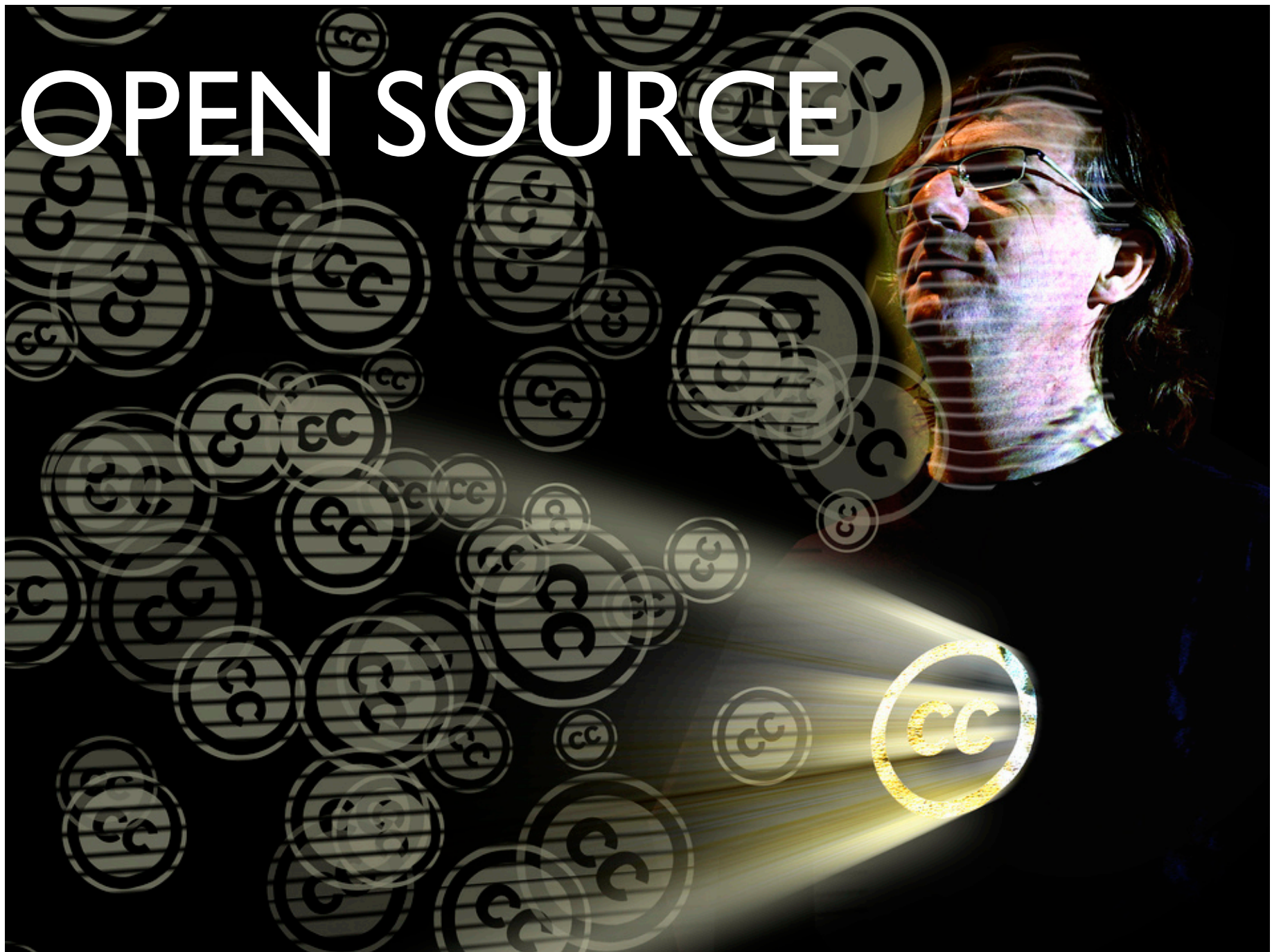
WIKIPEDIA

Wikipedia

- 10 000 000 articles
- 1 500 000 images
- 11 000 000 utilisateurs
- 4 000 administrateurs



OPEN SOURCE



L'open source

- OpenOffice.org : ~10 000 000 SLOC*
- Linux Kernel 2.6.0 : 5 200 000 SLOC*
- Debian GNU/Linux 4.0 : 283 000 000 SLOC*

*SLOC : Source Lines Of Code

Calculer pour la science

Click Workers

<http://clickworkers.arc.nasa.gov>

- NASA
- Projet pilote (2000-2001)
- Détection et classification de cratères
- Mars et astéroïdes

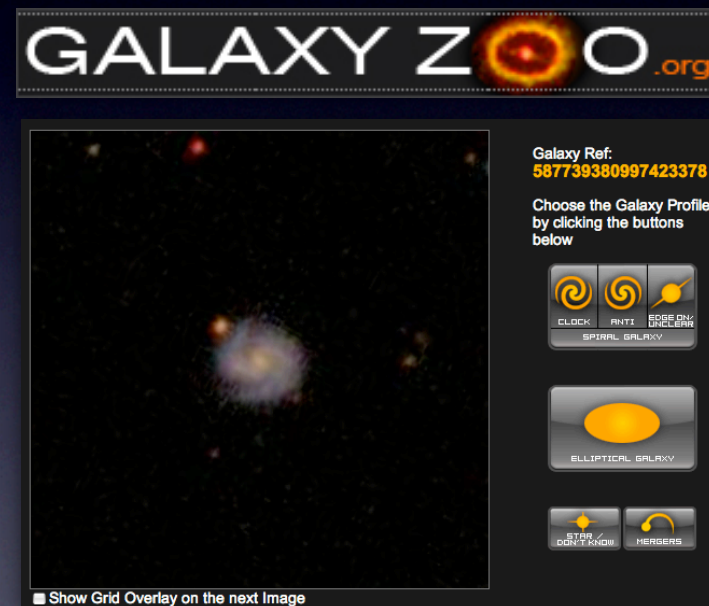


- Sur un an:
 - 100 000 clickworkers
 - 14 000 heures de travail
 - 2 300 000 cratères ajoutés

Galaxy Zoo

<http://www.galaxyzoo.org>

- Classification des galaxies
- elliptique / spiralée
- sens horaire/anti-horaire



- Depuis le juillet 2007 :
 - 85 000 participants
 - 12 000 000 galaxies classées
 - 60 000 galaxies / heures

"We now have the world's largest computer
working for us, through the combined power of
all these human brains"

Daniel Thomas,
Portsmouth University

Calculer...
sans s'en apercevoir

Luis von Ahn

- Professeur assistant,
Cargenie Mellon
University
- Thèse : "Human
Computation"
- MacArthur Fellow en
2006 ("genius award")



ESP GAME





Chaise longue

Plage

Mer

Ciel

Nuages

Les moteurs de recherche

- Nom de l'image
 - La-photo-de-mon-chat.jpg
- Contexte textuel
 - "Voici mon chat en train de se reposer sur le canapé :"



- photo
- chat
- train
- reposer
- canapé

ESP Game

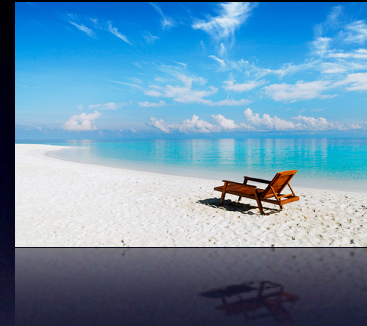
- Jeu en ligne
- 2 joueurs
- Les partenaires ne se connaissent pas et ne peuvent pas communiquer
- But : *taper le même mot*
- Les deux partenaires voient la même images

Joueur 1



Chaise longue
Plage
Mer

Joueur 2



Mer
Ciel

ESP Game

0:49
Time Left

The ESP Game

0100
score



Taboo Words

WOMAN

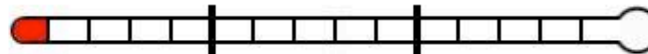
Your Guesses

GLOBE

Type your next guess:

Pass

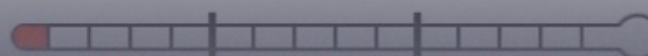
Your partner has
entered a guess



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Flag

Your partner has
entered a guess



© 2005 Carnegie Mellon University, all rights reserved. Patent Pending.

Flag

- **10 000 000** tags collectés
- Certains y jouent plus de **20 h**/semaine

5000 personnes jouant simultanément
peuvent tagger toutes les images de Google
Images en **2 mois**

Google Image Labeler



Image Labeler BETA

@gmail.com | [Help](#) | [Sign Out](#)

Google Image Labeler

time left

00:09

score

450

passes

2

label

pass

Your partner has suggested 4 labels.



zoom out

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off-limits

gym
weights
cartoon

my labels



Peekaboom

Peekaboom

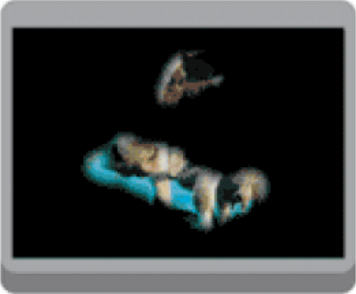
★ YOU AND A RANDOM PARTNER TAKE TURNS PEEKING AND BOOMING ★

PEEK : GUESS WHAT YOUR PARTNER IS REVEALING

TIME LEFT
2:23

SCORE
300

peek
HINT
HOLD



QUESTIONS ?

fur	100
cat	100
dog	100
sheep	100
horse	100

GUESS HERE

PASS

HINTS HELP YOU GUESS

PASS FOR DIFFICULT IMAGES

YOU GUESS
HINTS HELP

DIFFICULT IMAGES
PASS FOR

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 PIN AN AREA OF THE IMAGE

COW



QUESTIONS ?

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

IF NECESSARY
GIVE HINTS

A GUESS IS HOT OR COLD
TELL YOUR PARTNER IF

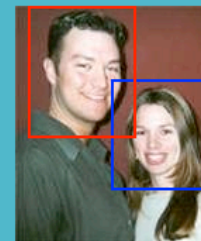
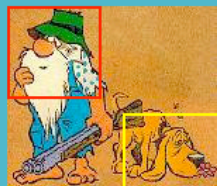
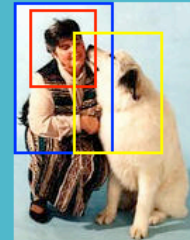
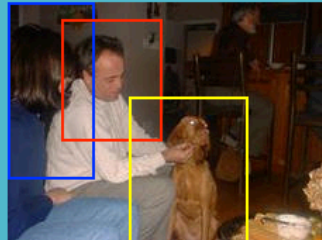


Beta Search. Searching roughly 20,000 images.

Search

sample
queries:
man dog,
car tree

6 matches; 6675 near matches for **man woman dog**





ReCaptcha

CAPTCHA

- **C**ompletely **A**utomated **P**ublic **T**uring test to **T**ell **C**omputers and **H**umans **A**part
- Inventé par Luis von Ahn

The logo for 'galsib' is written in a red, stylized, lowercase font with a slight slant.The logo for 'criess' is written in a green, stylized, lowercase font with a slight slant.The logo for 'stessi' is written in a blue, stylized, lowercase font with a slight slant.

Constat

- CAPTCHA : **150 000** heures de travail/jour
- Il faut **10s** pour résoudre un CAPTCHA
- **54 000 000** CAPTCHA résolus par jour

OCR

Scanned type

This aged portion of society were distinguished from

OCR reads as

"niis aged pntkm at society were distinguished frow."

ReCaptcha

1 We start with a scanned book containing thousands of words.

Now is the time for
all good men to come
to the aid of their ne

2 Next we extract a word that cannot be read by OCR. These words come in a variety of fonts, and are inherently distorted by the age of the book or the quality of the scan.

between

3 To add extra security, the word is then distorted even more, using random lines and warps.

between

4 A CAPTCHA is generated with two distorted word images from books.



ReCaptcha

STOP SPAM. READ BOOK.

WHERE tween

Type the two words:

RECAPTCHA™
stop spam.
read books.







Sources

- <http://s23.org/wikistats>
- http://en.wikipedia.org/wiki/Line_of_code
- <http://www.galaxyzoo.org>
- <http://clickworkers.arc.nasa.gov>
- <http://www.cs.cmu.edu/~biglou>
- http://en.wikipedia.org/wiki/Luis_von_Ahn
- "Labeling Images with a Computer Game", Luis von Ahn and Laura Dabbish
- "Peekaboom: A Game for Locating Objects in Images" Luis von Ahn, Ruoran Liu et Manuel Blum
- <http://recaptcha.net>

Images

- http://www.flickr.com/photos/chris_gin/2197585153/
- <http://www.flickr.com/photos/fdecomite/1374201167/>
- <http://www.flickr.com/photos/sookie/101363593/>
- <http://www.flickr.com/photos/bastique/69784702/>
- <http://www.flickr.com/photos/mikeblogs/323586599/>
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- <http://www.flickr.com/photos/gi/304120801/>
- http://www.flickr.com/photos/charles_chan/544022867/

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