Puppy or Bagel?

Justin Pearson

2016-03-12

Based on Tweets from https://twitter.com/teenybiscuit/media

Example

In[1]:=
```
Clear["Global`*"];
Import["https://pbs.twimg.com/media/Cc_Io2UUEAAOSP-.jpg"]
```
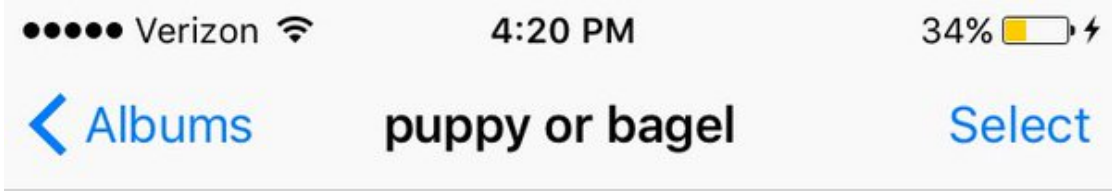
Out[1]=

Can Mathematica tell the difference?

In[2]:= **data =**

```
⎛        "puppy or bagel?"          "https://pbs.twimg.com/media/Cc_Io2UUEAAOSP-.jp
⎜ "labradoodle or fried chicken?"  "https://pbs.twimg.com/media/Ccl9aAYWwAEaJQ3.jp
⎜      "duckling or plantain?"      "https://pbs.twimg.com/media/CURr0wqVAAAtyh9.jp
⎜        "sheepdog or mop?"         "https://pbs.twimg.com/media/CdIm-TwUMAI-HLt.jp
⎜      "chihuahua or muffin?"       "https://pbs.twimg.com/media/CdJavKoUAAAFLBG.jp
⎜     "shiba or marshmallow?"       "https://pbs.twimg.com/media/CdTwYQdUIAA8gpC.jp
⎝      "parrot or guacamole?"       "https://pbs.twimg.com/media/CdY2DYMUkAATHkk.jp


⎞
⎟ ;
⎟
⎠
```

In[3]:= **label[pic_] := ImageIdentify[pic]; (* THIS IS WHERE THE MAGIC HAPPENS *)**

In[4]:= **f[title_, url_] := ⎛url // Import //**
    ImageTake[#, -ImageDimensions[#][[1]]] & //   (* crop top of image *)
     ImagePartition⎡#, ImageDimensions[#] ╱ 4⎤ & //
      (* cut into a 4x4 grid of images *)
      Map[Labeled[#, label[#]] &, #, {2}] & //   (* identify & label *)
       Grid[#, Frame → All] & //   (* format *)
        Panel[Column[{Style[title, 18], #}, Alignment → Center]] &⎞

In[5]:= **MapThread[f, dataᵀ] // Column**

puppy or bagel?

Guinea pig	soft pretzel	Rhodesian ridgeback	kaiser roll
bread	redbone	soft pretzel	canine
polar bear	donut	golden retriever	donut
donut	Rhodesian ridgeback	donut	bread dough

labradoodle or fried chicken?
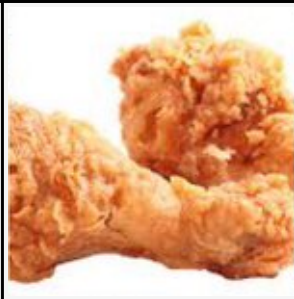
komondor	starches	Airedale terrier	bran muffin
toy poodle	bran muffin	poodle	croquette
croquette	toy poodle	buttermilk biscuit	terrier
bran muffin	Airedale terrier	buttermilk biscuit	toy poodle
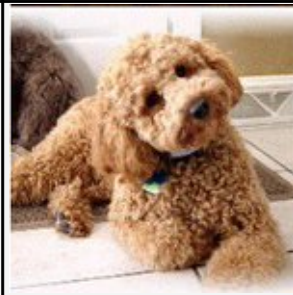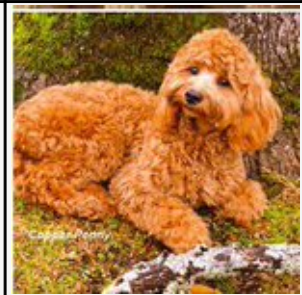
duckling or plantain?

barbecued wing	gosling	barbecued wing	mantled ground squirrel
pallasite	Yorkshire pudding	domestic cat	pistachio nut
brown algae	gosling	yam	edible banana
yam	gosling	fish	Angora rabbit
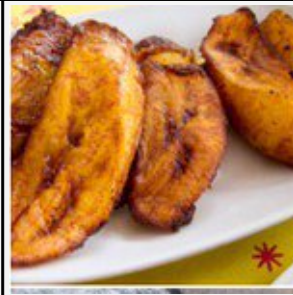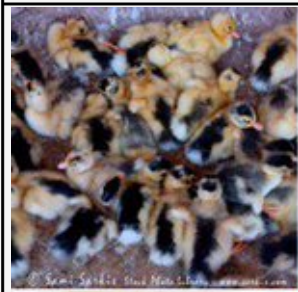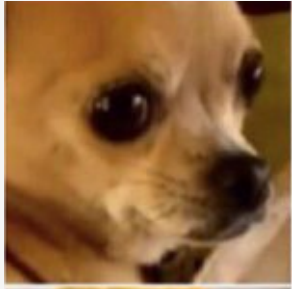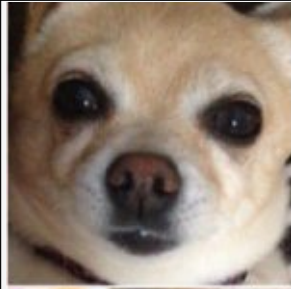
sheepdog or mop?

komondor	mop	komondor	mop
mop	komondor	mop	komondor
komondor	grass skirt	sheep dog	grass skirt
grass skirt	komondor	mop	komondor

Out[5]=

chihuahua or muffin?

bran muffin	Chihuahua	bran muffin	Chihuahua
Chihuahua	harp seal	Chihuahua	bran muffin
harp seal	Chihuahua	bran muffin	Chihuahua
Chihuahua	hot cross bun	Chihuahua	brioche

shiba or marshmallow?

chow chow	flagon	chow chow	nose
popover	dingo	golden hamster	domestic dog
dingo	bootie	Pembroke Welsh corgi	kaiser roll
carnivorous mammal	dingo	golden hamster	chow chow
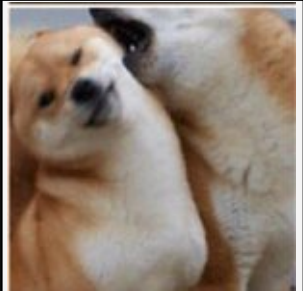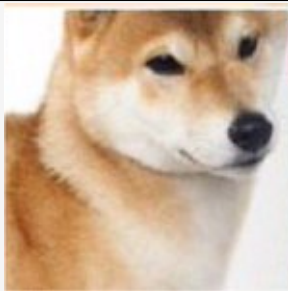
parrot or guacamole?

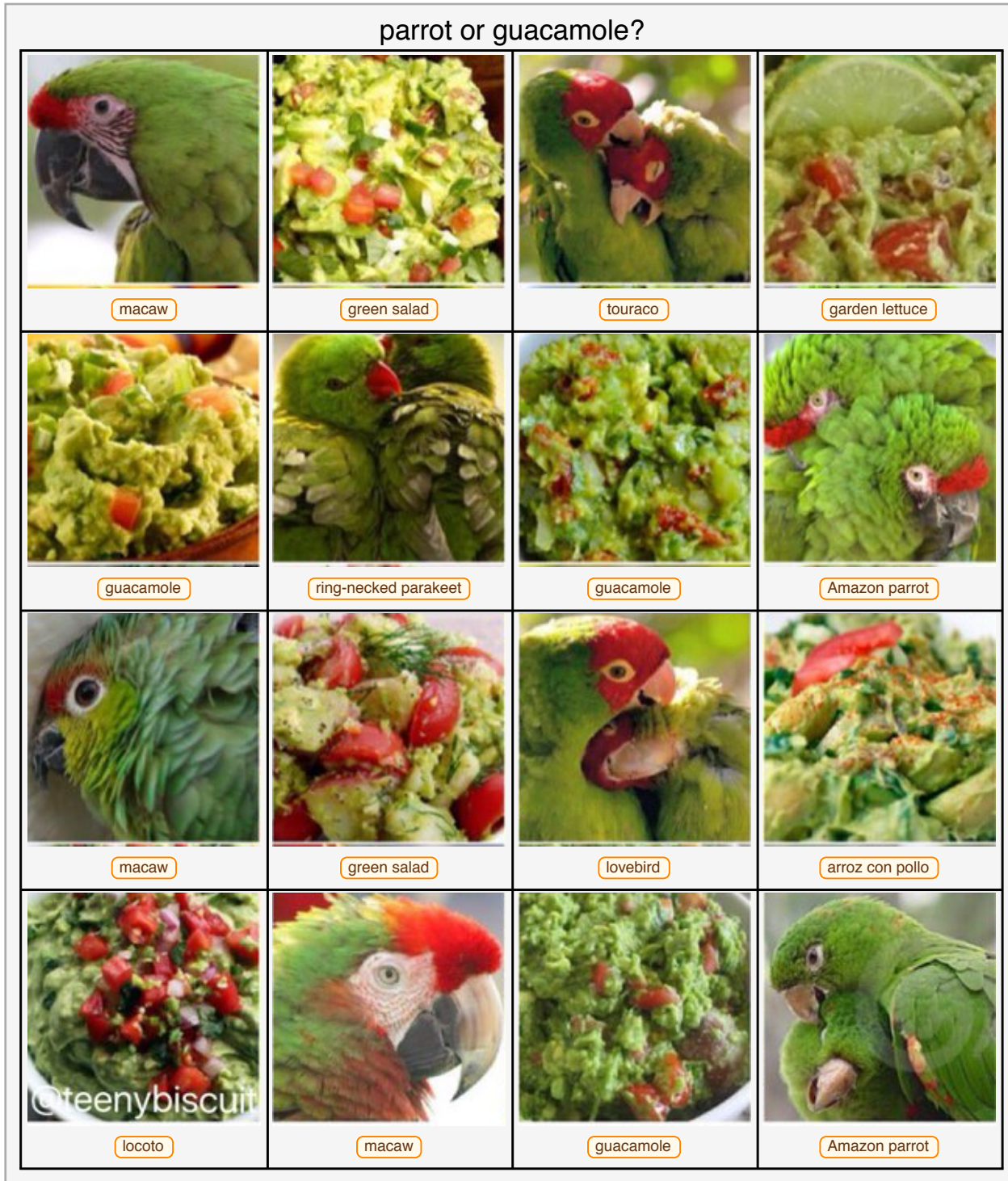| macaw | green salad | touraco | garden lettuce |
guacamole	ring-necked parakeet	guacamole	Amazon parrot
macaw	green salad	lovebird	arroz con pollo
locoto	macaw	guacamole	Amazon parrot

Note

Different versions of MMA perform differently. Here's mine:

```
In[6]:=  Print["Mathematica version: ", $Version]
         Print["I ran this program on: ", Today]
```

Mathematica version: 11.1.1 for Mac OS X x86 (64-bit) (April 27, 2017)

I ran this program on: 📅 Day: **Fri 9 Jun 2017**

More informative labels

Sometimes MMA's default identifications are quite specific. What the hell is a "komondor"? It can be nice to know the "genus" (broader concepts) of a label. Here's a function for that.

```
In[8]:=  broaden[e_Entity] :=
           (NestList[First[#["BroaderConcepts"]] &, e, 2] // Flatten // Reverse)
```

```
In[9]:=  broaden[ soft pretzel (concept) ]
```

```
Out[9]=  { cracker , pretzel , soft pretzel }
```

```
In[10]:=  show[elist_List] := Module[{e, f, g},
            {e, f, g} = elist[[1 ;; 3]];
            Row[{Style[e["Name"] <> "→" <> f["Name"] <> "→", FontSize → 10], g}]]
```

```
In[11]:=  show@broaden[ soft pretzel (concept) ]
```

```
Out[11]=  cracker→pretzel→ soft pretzel
```

```
In[12]:=  label = show@*broaden@*ImageIdentify;
```

Now run it again.

```
In[13]:=  MapThread[f, dataᵀ] // Column
```

puppy or bagel?

rodent→cavy→ Guinea pig

cracker→pretzel→ soft pretzel

domestic dog→hunting dog→ Rhodesian ridgeback

bread→bun→ kaiser roll

food→baked goods→ bread

hunting dog→hound→ redbone

cracker→pretzel→ soft pretzel

placental mammal→carnivorous mammal→ canine

carnivorous mammal→bear→ polar bear

cake→friedcake→ donut

sporting dog→retriever→ golden retriever

cake→friedcake→ donut

cake→friedcake→ donut

domestic dog→hunting dog→ Rhodesian ridgeback

cake→friedcake→ donut

mixture→dough→ bread dough

labradoodle or fried chicken?

working dog→sheep dog→
komondor

food→foodstuff→ starches

hunting dog→terrier→
Airedale terrier

quick bread→muffin→
bran muffin

domestic dog→poodle→
toy poodle

quick bread→muffin→
bran muffin

canine→domestic dog→
poodle

sustenance→dish→ croquette

sustenance→dish→ croquette

domestic dog→poodle→
toy poodle

quick bread→biscuit→
buttermilk biscuit

domestic dog→hunting dog→
terrier

quick bread→muffin→
bran muffin

hunting dog→terrier→
Airedale terrier

quick bread→biscuit→
buttermilk biscuit

domestic dog→poodle→
toy poodle

duckling or plantain?

sustenance→dish→ barbecued wing	anseriform bird→goose→ gosling	sustenance→dish→ barbecued wing	squirrel→gopher→ mantled ground squirrel
meteor→meteorite→ pallasite	bread→quick bread→ Yorkshire pudding	animal→domesticated animal→ domestic cat	nut→edible nut→ pistachio nut
protoctist→alga→ brown algae	anseriform bird→goose→ gosling	stem→tuber→ yam	herbaceous plant→banana→ edible banana
stem→tuber→ yam	anseriform bird→goose→ gosling	vertebrate→aquatic vertebrate→ fish	leporid→rabbit→ Angora rabbit
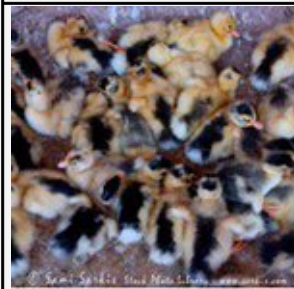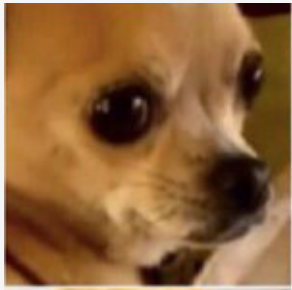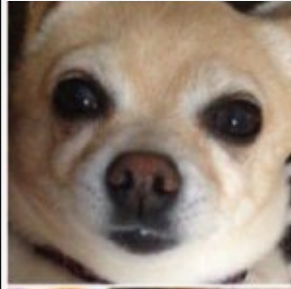
sheepdog or mop?

Out[13]=

working dog→sheep dog→ komondor

implement→cleaning equipment→ mop

working dog→sheep dog→ komondor

implement→cleaning equipment→ mop

implement→cleaning equipment→ mop

working dog→sheep dog→ komondor

implement→cleaning equipment→ mop

working dog→sheep dog→ komondor

working dog→sheep dog→ komondor

garment→skirt→ grass skirt

domestic dog→working dog→ sheep dog

garment→skirt→ grass skirt

garment→skirt→ grass skirt

working dog→sheep dog→ komondor

implement→cleaning equipment→ mop

working dog→sheep dog→ komondor
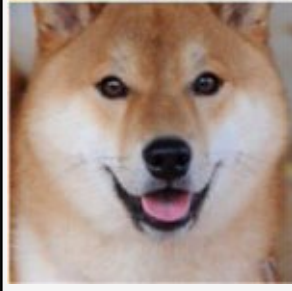
chihuahua or muffin?

quick bread→muffin→
bran muffin

domestic dog→toy dog→
Chihuahua

quick bread→muffin→
bran muffin

domestic dog→toy dog→
Chihuahua

domestic dog→toy dog→
Chihuahua

seal→earless seal→ harp seal

domestic dog→toy dog→
Chihuahua

quick bread→muffin→
bran muffin

seal→earless seal→ harp seal

domestic dog→toy dog→
Chihuahua

quick bread→muffin→
bran muffin

domestic dog→toy dog→
Chihuahua

domestic dog→toy dog→
Chihuahua

bun→sweet roll→
hot cross bun

domestic dog→toy dog→
Chihuahua

bread→bun→ brioche

shiba or marshmallow?

domestic dog→spitz→ chow chow

container→vessel→ flagon

domestic dog→spitz→ chow chow

receptor→chemoreceptor→ nose

quick bread→muffin→ popover

canine→wild dog→ dingo

rodent→hamster→ golden hamster

carnivorous mammal→canine→ domestic dog

canine→wild dog→ dingo

footwear→slipper→ bootie

domestic dog→Welsh corgi→ Pembroke Welsh corgi

bread→bun→ kaiser roll

mammal→placental mammal→ carnivorous mammal

canine→wild dog→ dingo

rodent→hamster→ golden hamster

domestic dog→spitz→ chow chow

parrot or guacamole?

bird→parrot→ macaw

salad→tossed salad→ green salad

bird→cuculiform bird→ touraco

herbaceous plant→lettuce→ garden lettuce

condiment→dip→ guacamole

parrot→parakeet→ ring-necked parakeet

condiment→dip→ guacamole

bird→parrot→ Amazon parrot

bird→parrot→ macaw

salad→tossed salad→ green salad

bird→parrot→ lovebird

dish→chicken and rice→ arroz con pollo

shrub→pepper→ locoto

bird→parrot→ macaw

condiment→dip→ guacamole

bird→parrot→ Amazon parrot

Future work: How to pick one of two options?

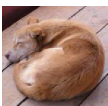I want to restrict the identification to "puppy" or "bagel". But it's a pain to figure out how to say "bagel" in Mathematica.

In[14]:= `ImageIdentify[``, "bread" | "canine", SpecificityGoal → 0]`

Out[14]= canine

In[15]:= `ImageIdentify[``, "bread" | "canine", SpecificityGoal → 0]`

Out[15]= bread

In[16]:= `ImageIdentify[``, "bread" | "canine", 8, "Probability",`

`SpecificityGoal → 0, PerformanceGoal → "Quality", RecognitionThreshold → .8]`

Out[16]= ⟨| canine → 0.991601, domestic dog → 0.989945, hunting dog → 0.983719 |⟩