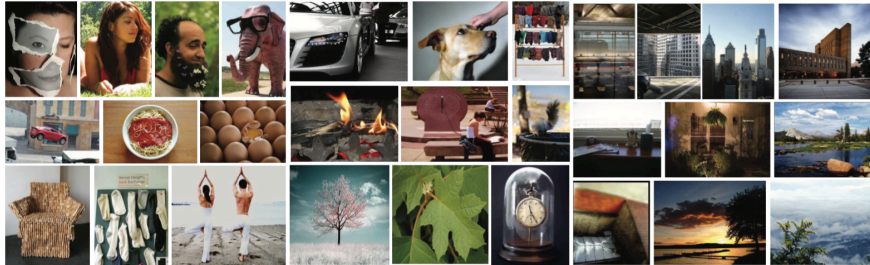


# The memorability of visual images

Khosla, Raju, Torralba, Oliva (2015)

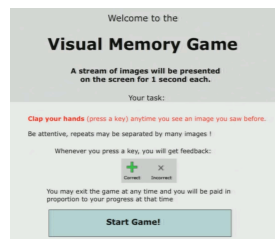


high memorability

low memorability

## Amazon Mechanical Turk:

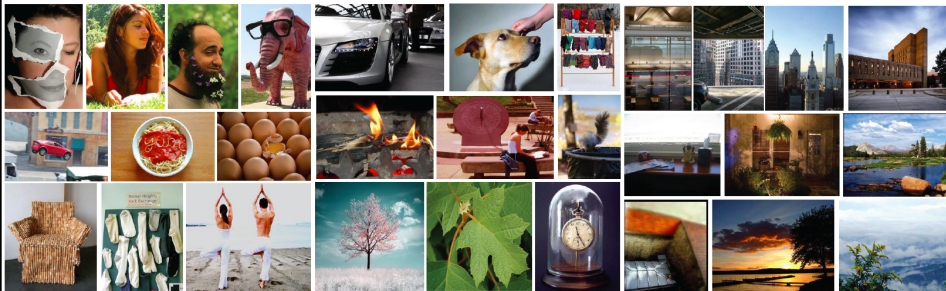
- *objective* memorability scores
- 60,000 photographs
- consistency across observers



LaMem database

## Most memorable

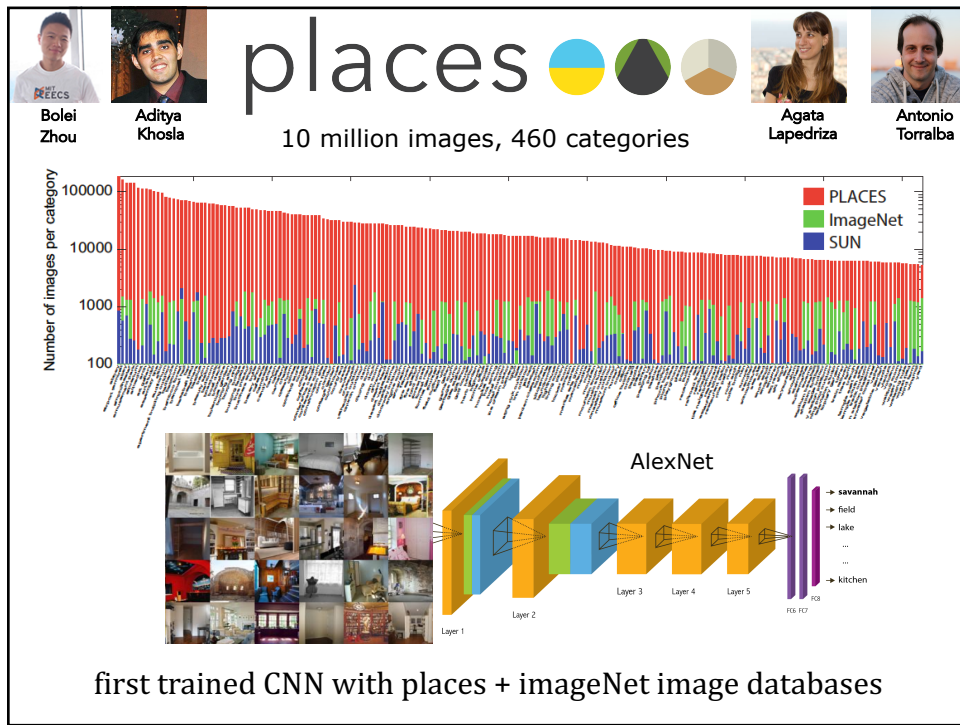
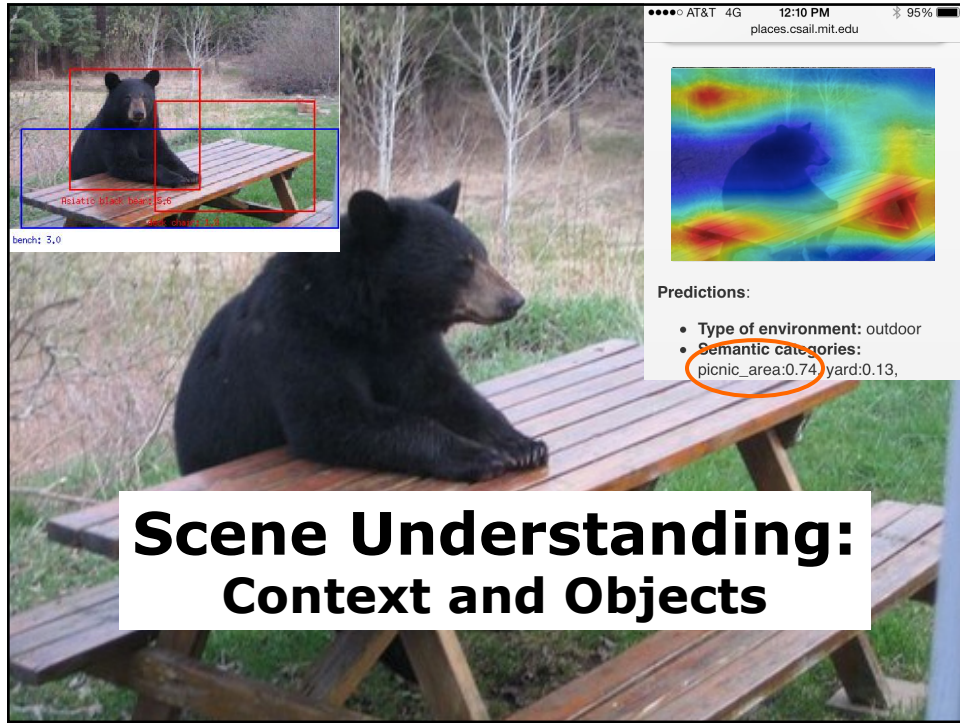
## Least memorable



- Focus
- Enclosed Setting
- Dynamics
- Unusual

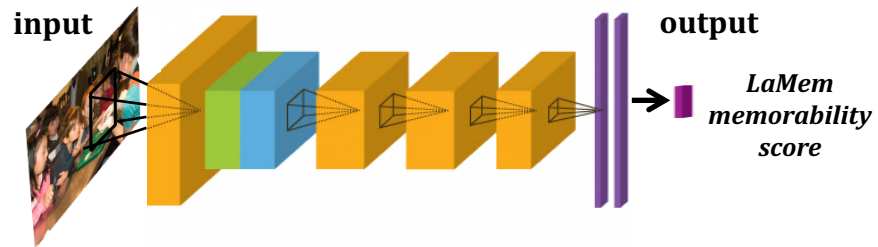
- No single focus
- Distant view
- Static
- Common

You need to recognize to remember!



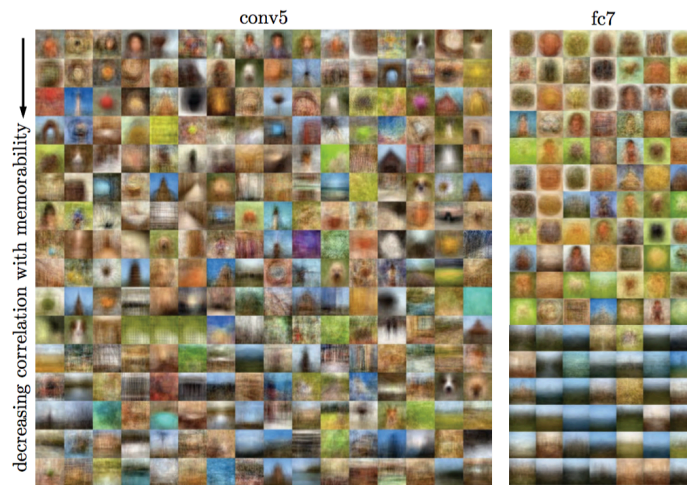
## MemNet

CNN for predicting image memorability



Khosla, Raju, Torralba, Oliva (2016) *Understanding and Predicting Image Memorability at a Large Scale*. <http://memorability.csail.mit.edu/>

## Visualizing CNN “features”



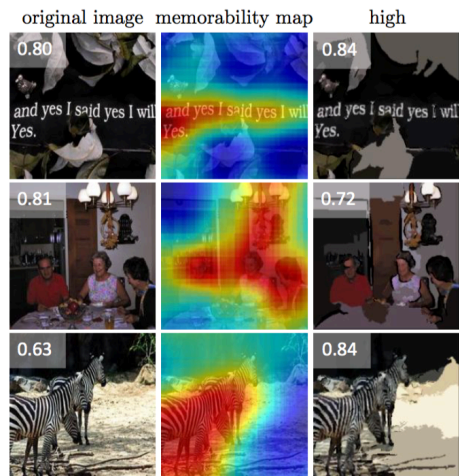
average of images that maximally activate neurons in two layers near output of MemNet (ordered (top to bottom) by correlation with memorability)

Visualizing *receptive field* of MemNet neurons with strong positive or negative correlation with memorability



Saliency: which image regions are memorable?

generate a *memorability map*: scale up the image size, apply MemNet to overlapping subregions



use memorability map to de-emphasize the less memorable details

AMT experiment shows highlighted regions contribute to higher memorability scores

### Preserving most memorable regions



*applications of memorability work?*

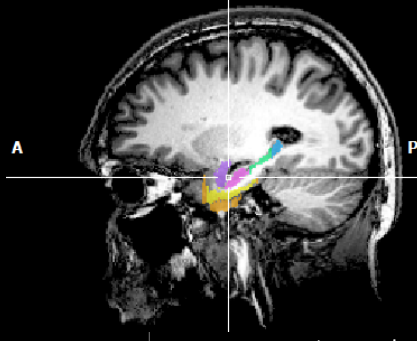
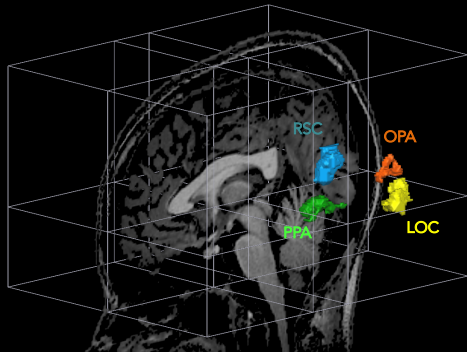
### Neural framework of memorability



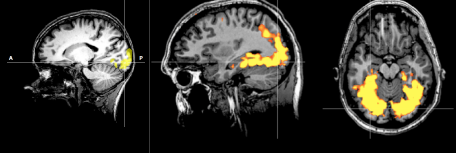
Wilma Bainbridge

**Perception**  
(ventral/dorsal visual cortex)

**Memory**  
(Medial Temporal Lobe)



early visual areas



attention network

