UNDERSTANDING AND PREDICTING IMAGE MEMORABILITY AT A LARGE SCALE

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QUICK DEMO

• LaMem Demo
POPULARITY DATA

- Random sample of scene categories from SUN dataset.
- Task was to press the space bar whenever they saw an identical repeat of an image at any time in the sequence.
- Memorability score defined as percentage of correct detections.
- 2,222 target images.
**RANK CORRELATION**

<table>
<thead>
<tr>
<th></th>
<th>Human Performance</th>
<th>State of the Art</th>
<th>MemNet</th>
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<tbody>
<tr>
<td>Popularity Data</td>
<td>0.75</td>
<td>0.54*</td>
<td>0.52</td>
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T-SNE EMBEDDINGS
DO PEOPLE MAKE IMAGES MEMORABLE?

• 17.8% of the data have pedestrians detected in them.

• 2.4% have faces detected.

• Pedestrians detected using HOG features and faces using Haar feature-based cascade classifiers.

• What if these people were blurred?
BASELINES

0.73

0.73

0.72
BLURRING PEOPLE

0.80

0.70

Actual Memorability: 0.90
Blurring detected pedestrians or faces doesn’t seem to consistently decrease memorability
REMOVING PEOPLE

0.80

0.75

Actual Memorability: 0.90
Removing people or faces from images shows stronger signs of decreasing memorability, but still not very conclusive.
ADDING FACE TO IMAGES

• What happens if we paste a face into all of our images?

![Image with Face Paste]

- Actual: 0.61
- Predicted: 0.60
- Predicted with Face: 0.62
All Images

Images with People

Images without People

Number of Images

Change in memorability (added faces - normal)
Adding a face to images seems to increase memorability
SUMMARY

• MemNet generalizes to the popularity dataset - approaching state-of-the-art results (without fine-tuning).

• t-SNE embeddings suggest people might improve memorability while landscapes and structures are not very memorable.

• Inconclusive results when blurring/removing people in images and its effects on MemNet. Perhaps stronger results if hand blur all people.

• Adding a single 27x27 face to images looks to boost predicted memorability especially for images with no people.

• Adding or removing people from images may be changing predicted memorability for other reasons.
REFERENCES

• http://web.mit.edu/phillipi/Public/WhatMakesAnImageMemorable/

• http://memorability.csail.mit.edu/