Dealing with small data and training blind spots in the Manhattan world
(Additional results)

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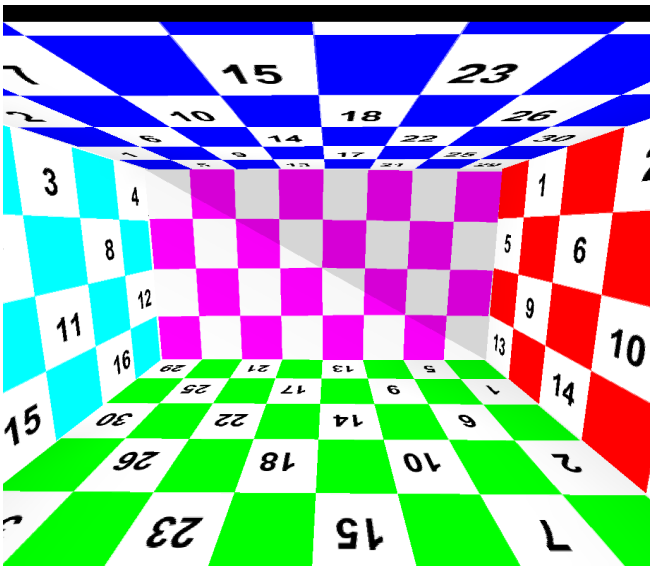
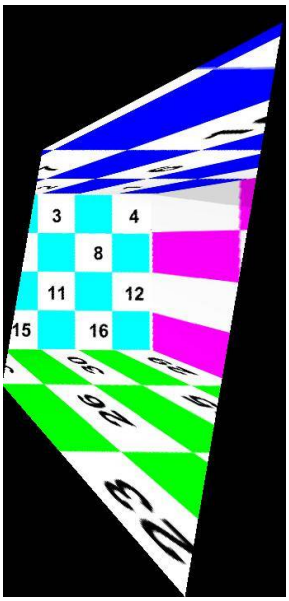
Novel Views From Single Image

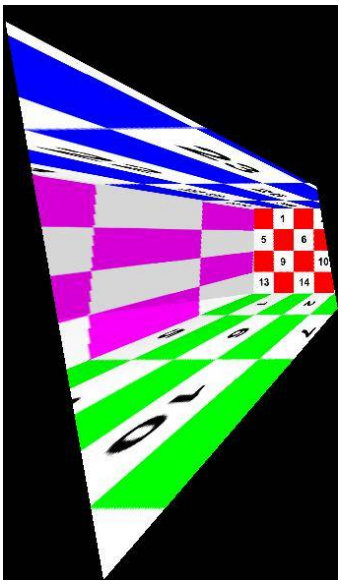
Example 1: Multiple Novel Views From Single Image



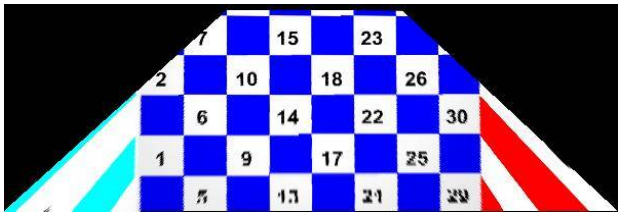
Left View



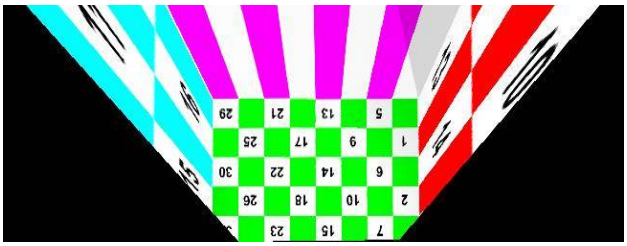
Right View



Ceiling View



Floor View



Perspective Image

Left View

Right View

Floor View

Novel Views For Non-Box Manhattan Scenes

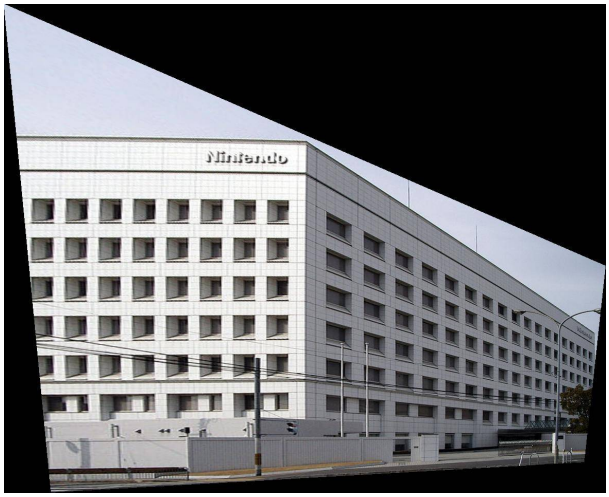
Perspective Image

Front View

Side View

Perspective Image

Side Face



Front Face

Perspective Image

Front View

Side view

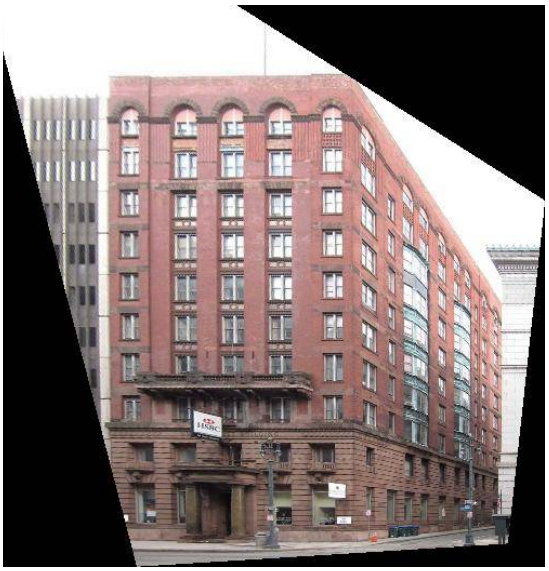
Perspective Image

Front Face

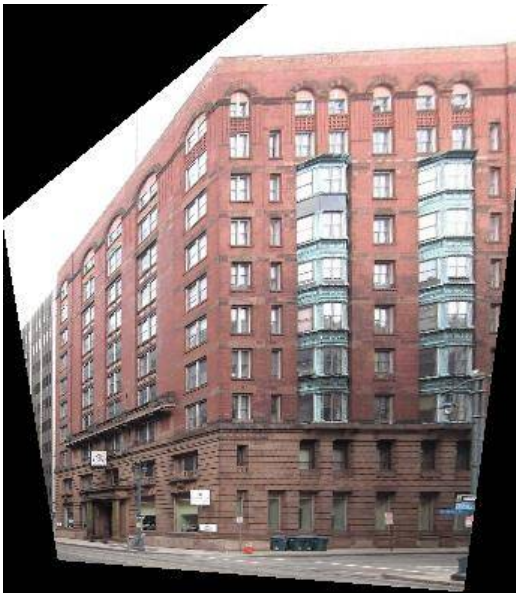
Side Face

Perspective Image

Front Face



Side Face



Invariant Mid-Level Discriminative Patches

Example 1: Qualitative Comparison of Mid-Level Patches [3] & Our Invariant Patches

Mid-Level Patches (Singh et al. [3])

Invariant Patches (Ours)

Single Invariant Mid-Level Detector Firing in Different Viewpoints

Different Viewpoints

*** only top detection per image is shown**

Rectified Detections

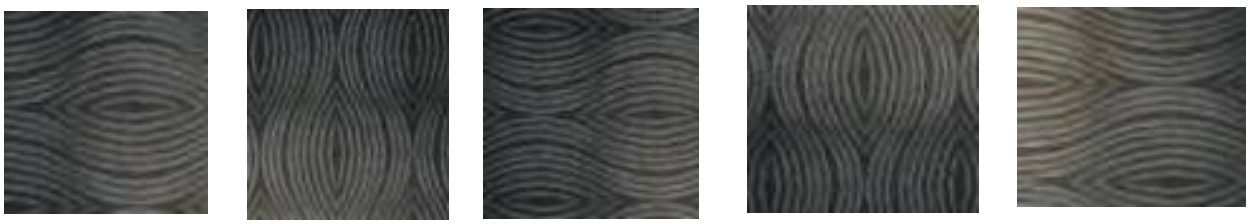
More Examples Follow ….

Example 2

Qualitative Comparison of Mid-Level Patches [3] & Our Invariant Patches

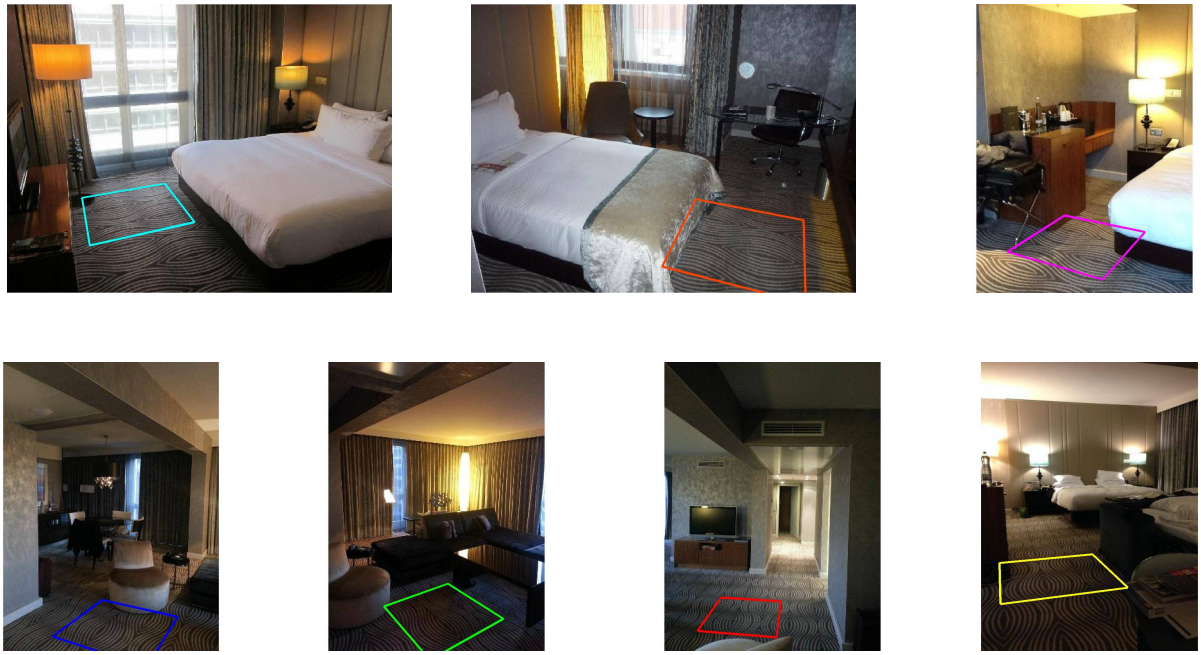
Mid-Level Patches (Singh et al. [3])

Invariant Patches (Ours)



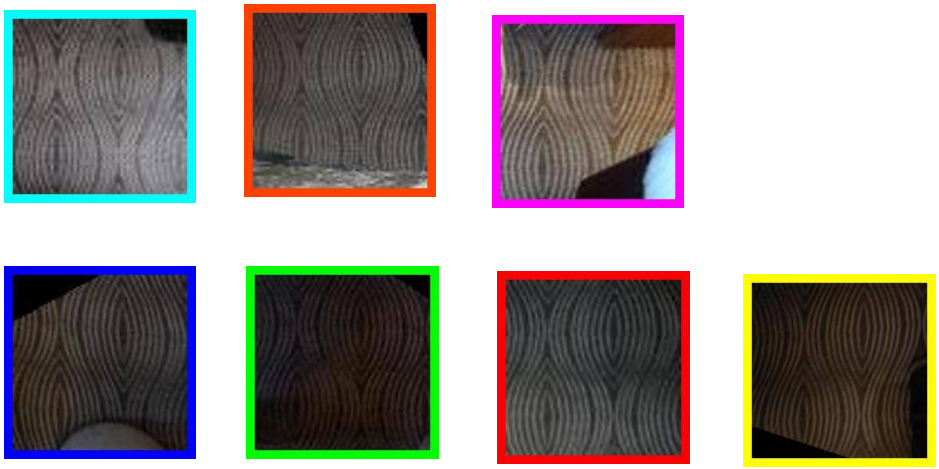
Single Invariant Mid-Level Detector Firing in Different Viewpoints

Different Viewpoints



* only top detection per image is shown

Rectified Detections

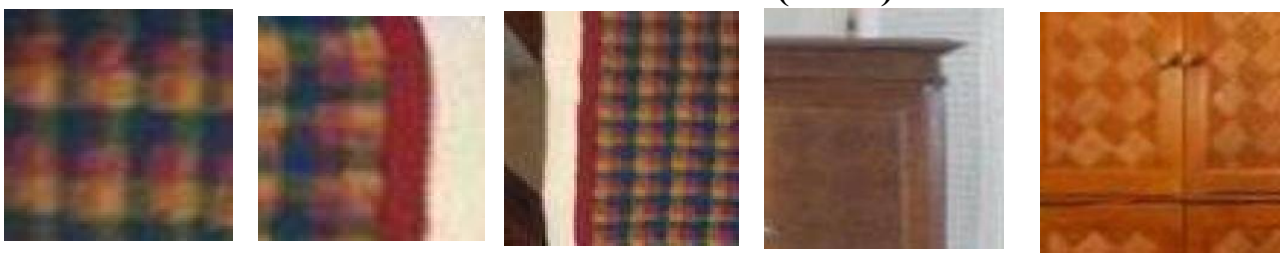


Example 3

Qualitative Comparison of Mid-Level Patches [3] & Our Invariant Patches

Mid-Level Patches (Singh et al. [3])

Invariant Patches (Ours)

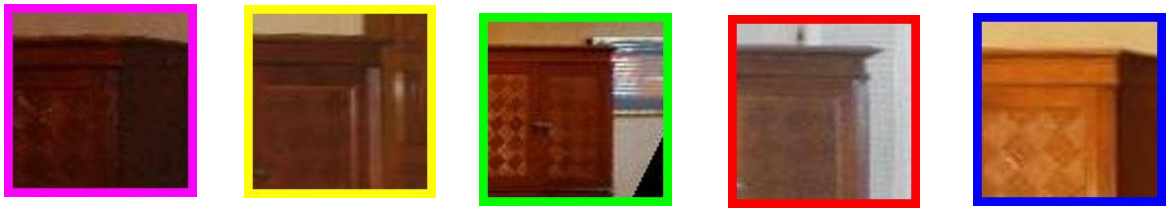


Single Invariant Mid-Level Detector Firing in Different Viewpoints

Different Viewpoints

*** only top detection per image is shown**

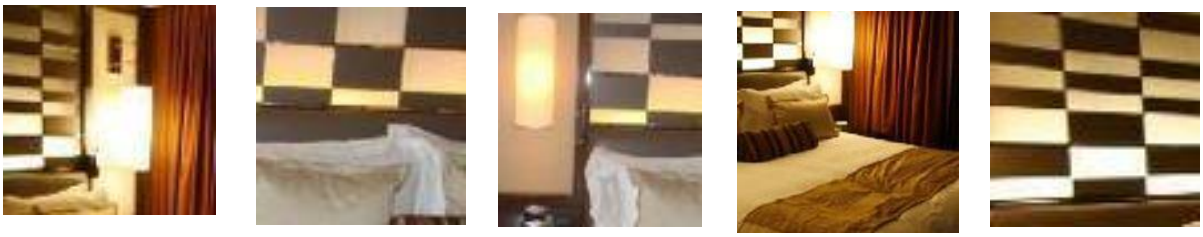
Rectified Detections



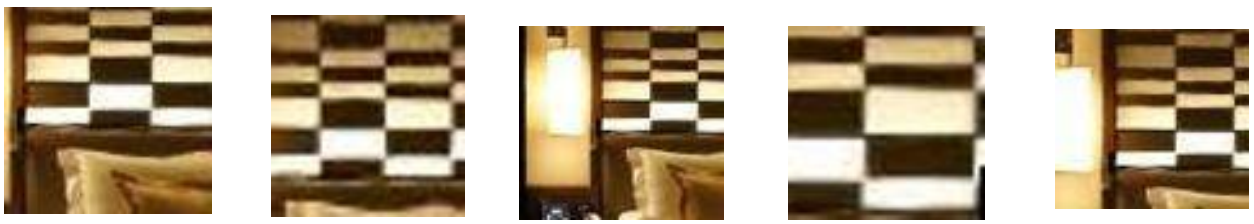
Example 4

Qualitative Comparison of Mid-Level Patches [3] & Our Invariant Patches

Mid-Level Patches (Singh et al. [3])

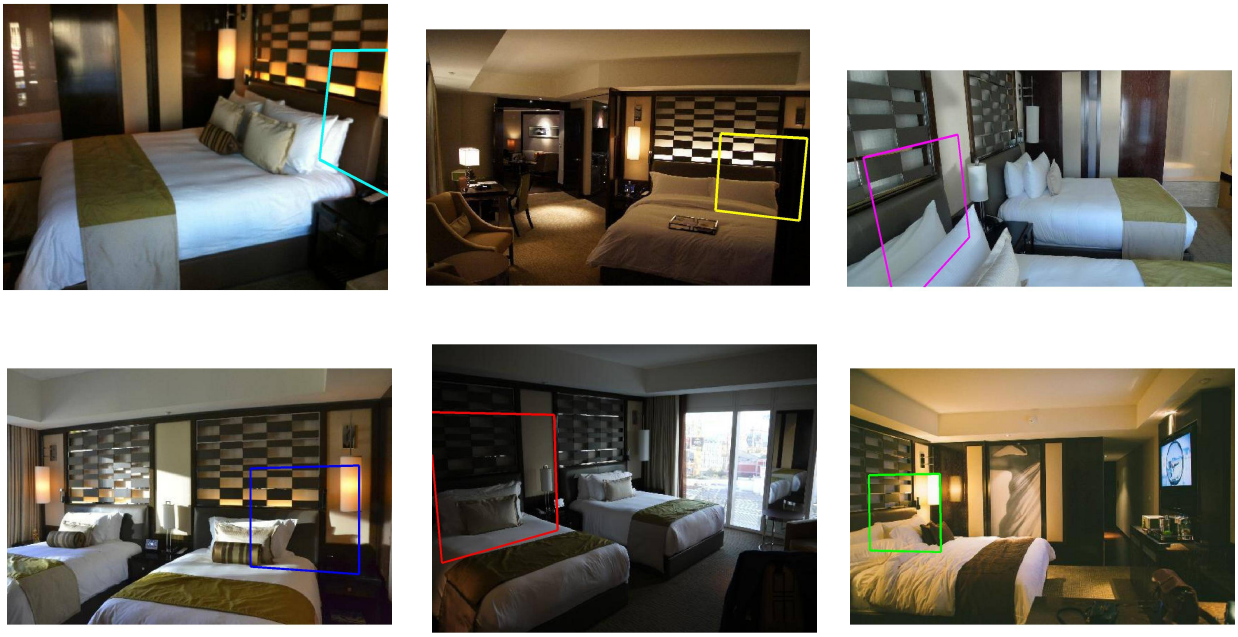


Invariant Patches (Ours)



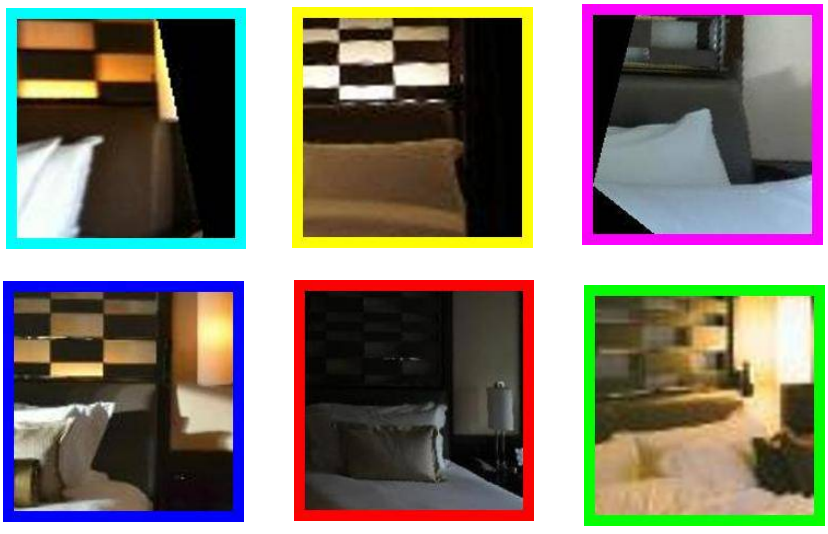
Single Invariant Mid-Level Detector Firing in Different Viewpoints

Different Viewpoints



*** only top detection per image is shown**

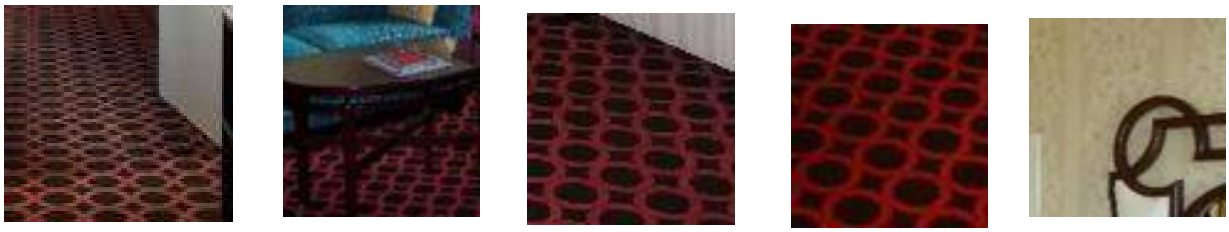
Rectified Detections



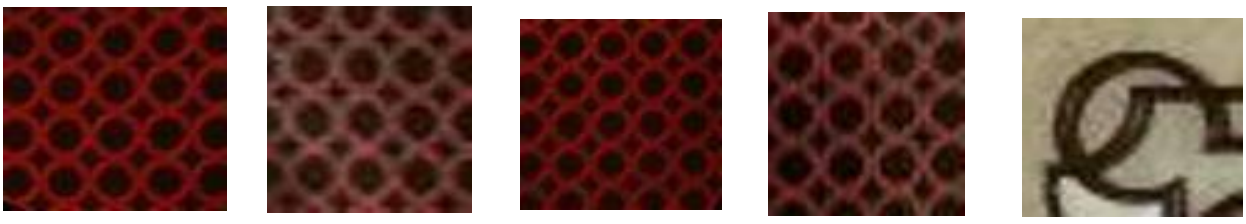
Example 5

Qualitative Comparison of Mid-Level Patches [3] & Our Invariant Patches

Mid-Level Patches (Singh et al. [3])

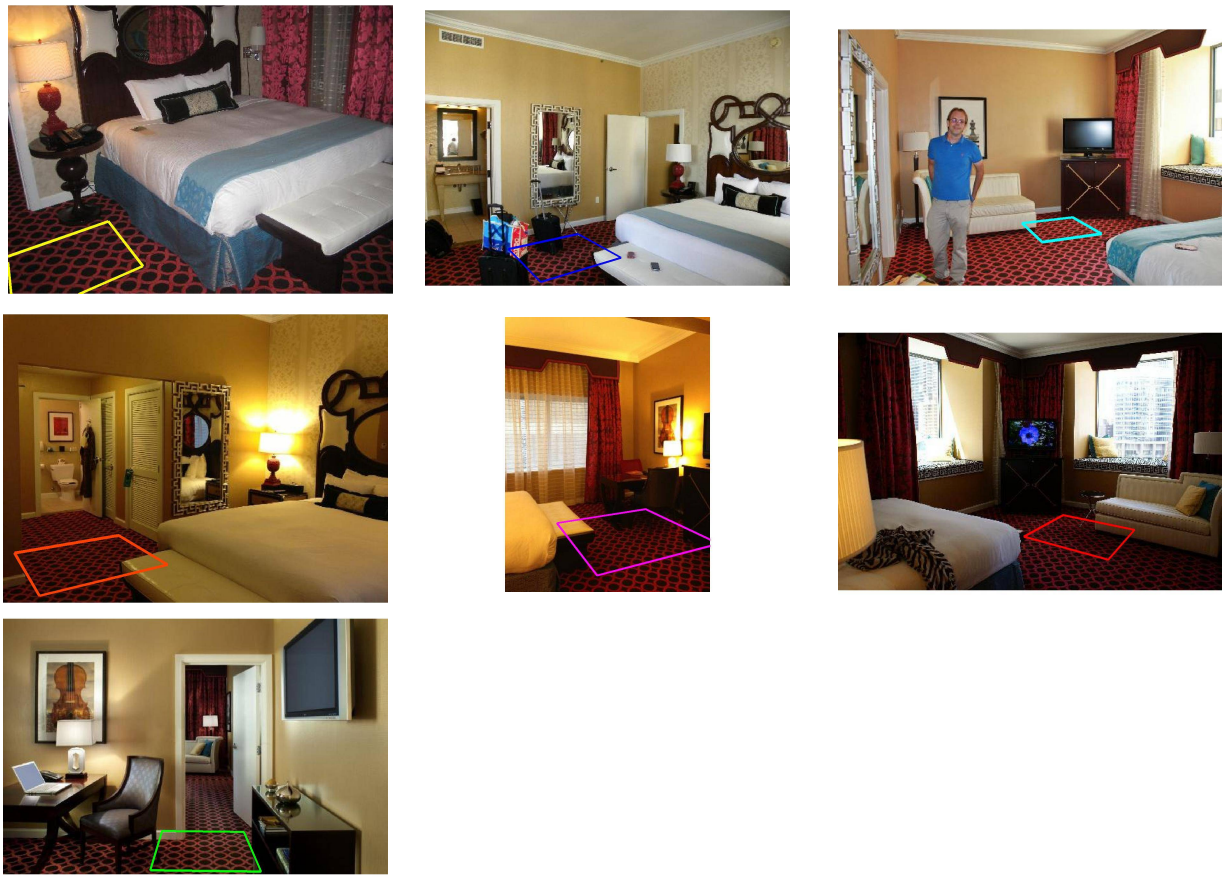


Invariant Patches (Ours)



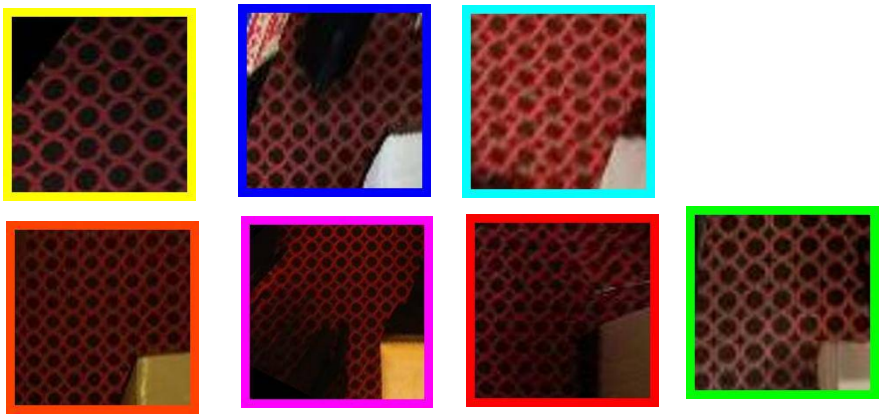
Single Invariant Mid-Level Detector Firing in Different Viewpoints

Different Viewpoints



*only top detection per image is shown

Rectified Detections



Example 6

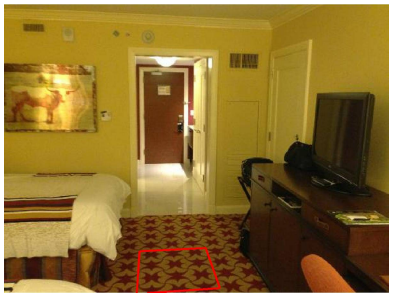
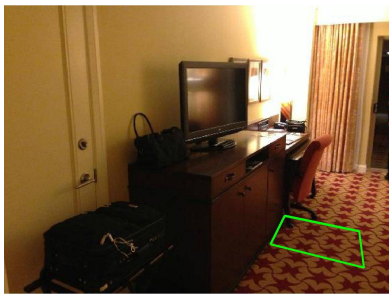
Qualitative Comparison of Mid-Level Patches [3] & Our Invariant Patches

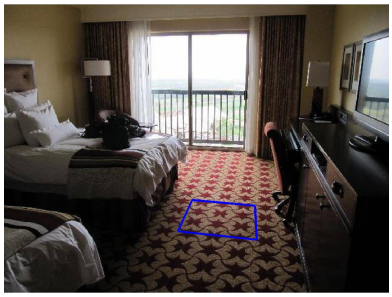
Mid-Level Patches (Singh et al. [3])

Invariant Patches (Ours)

Single Invariant Mid-Level Detector Firing in Different Viewpoints

Different Viewpoints



***only top detection per image is shown**

Rectified Detections

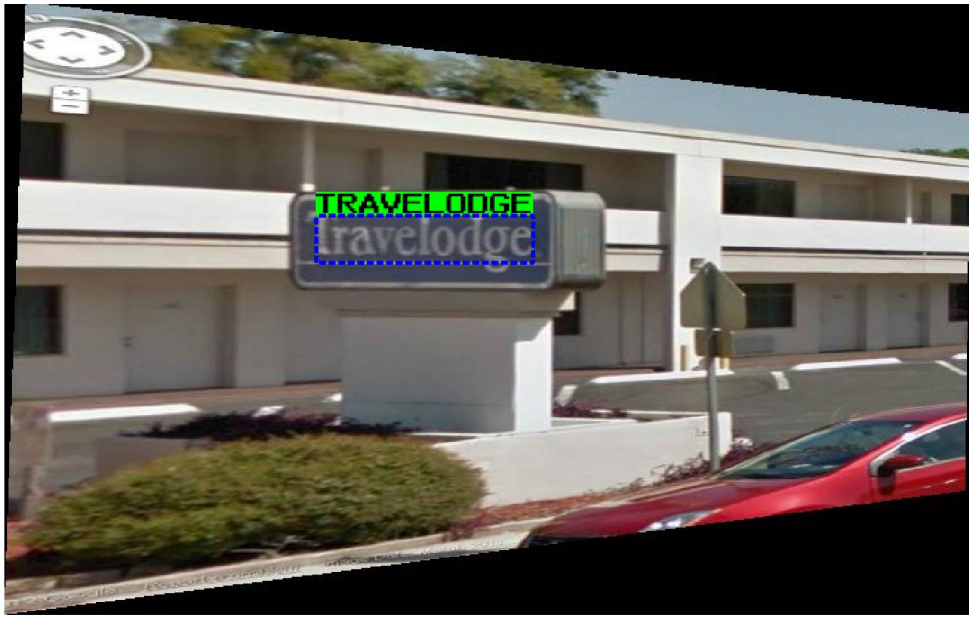



End-to-End Perspective Text Spotting

Example1:Perspective Text Spotting

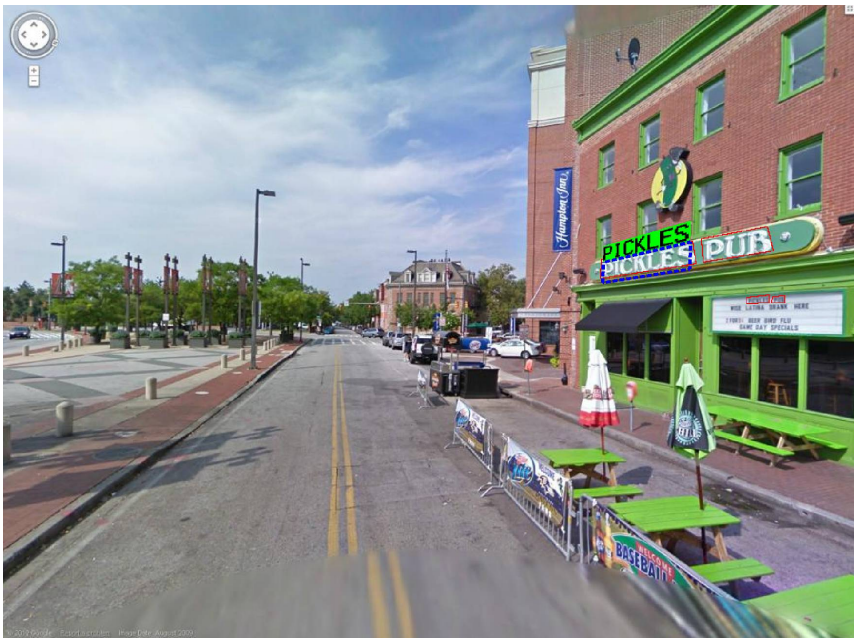
(Ground Truth, Detection)

Novel View Responsible For the Text Spotted Above

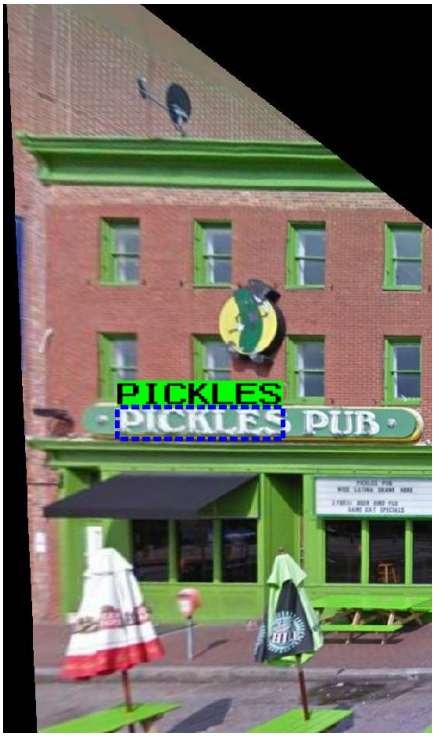


More Examples Follow ….

Perspective Text Spotting (Ground Truth, Detection)



Novel View Responsible For the Text Spotted Above



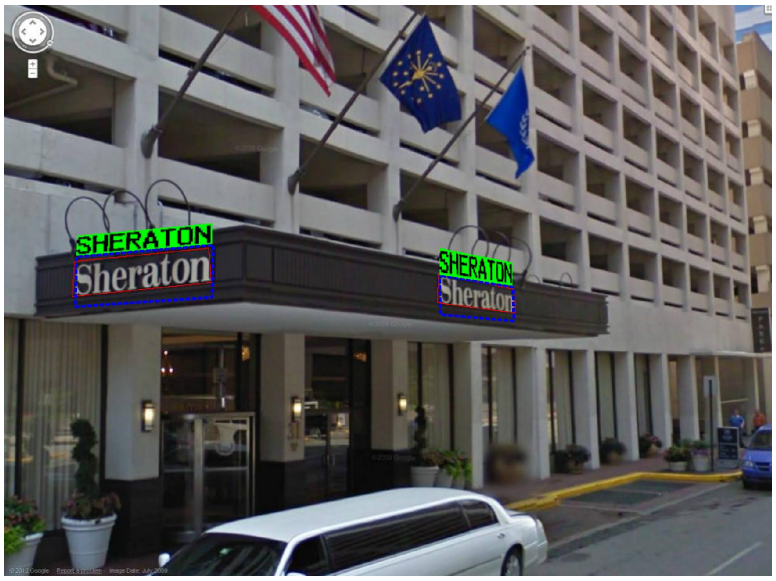
Perspective Text Spotting (Ground Truth, Detection)

Novel Views Responsible For the Text Spotted Above

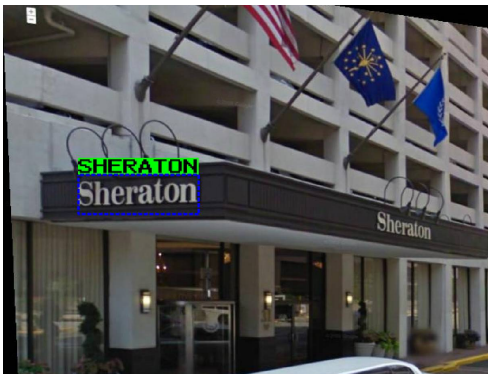
Perspective Text Spotting (Ground Truth, Detection)

Novel View Responsible For the Text Spotted Above

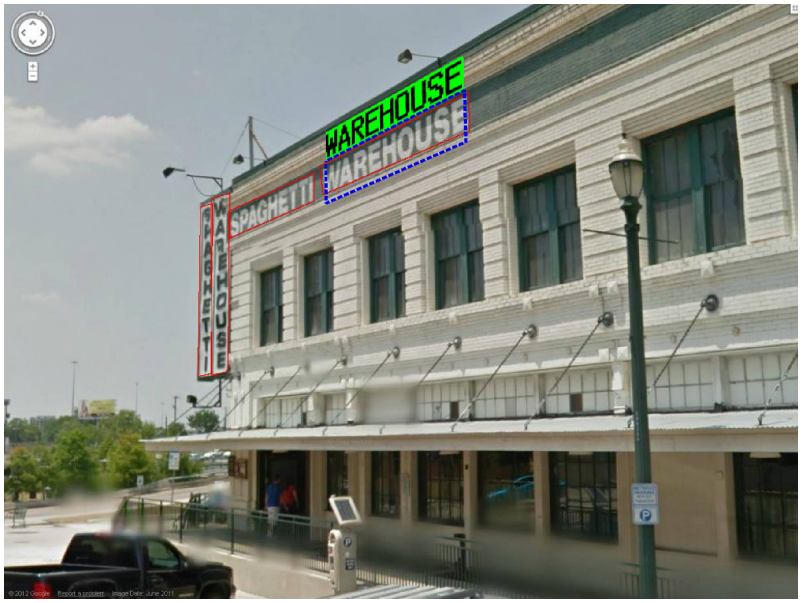
Perspective Text Spotting (Ground Truth, Detection)



Novel Views Responsible for the Text Spotted Above



Perspective Text Spotting (Ground Truth, Detection)

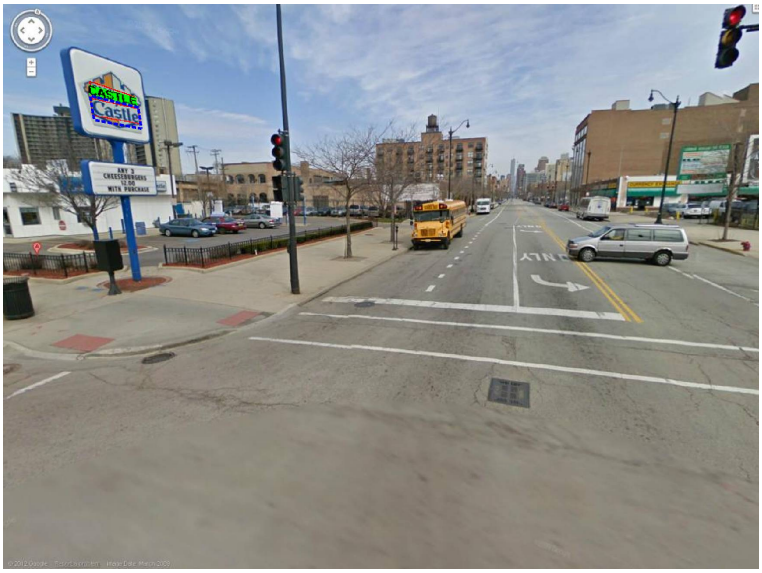


Novel View Responsible For the Text Spotted Above

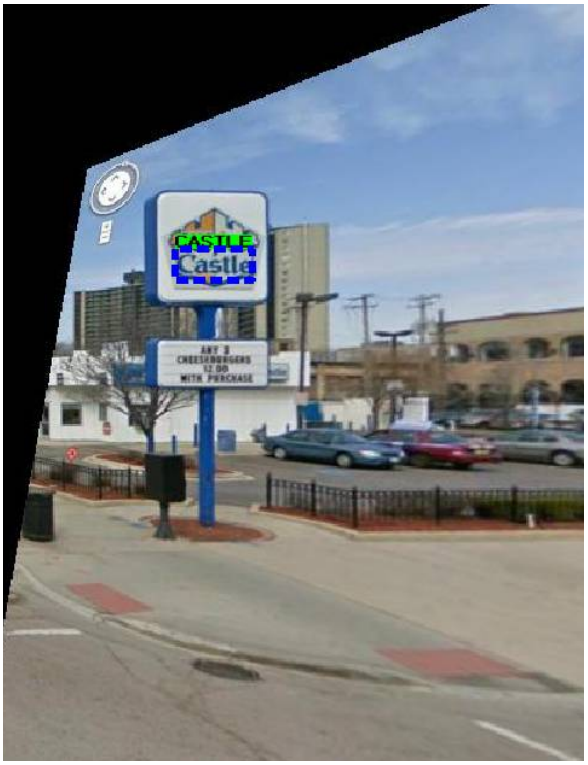
Perspective Text Spotting (Ground Truth, Detection)

Novel View Responsible For the Text Spotted Above

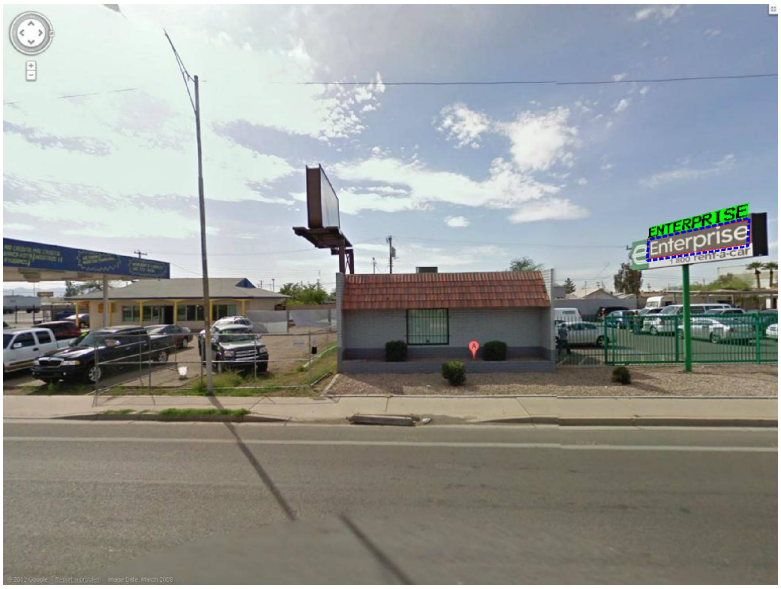
Perspective Text Spotting (Ground Truth, Detection)



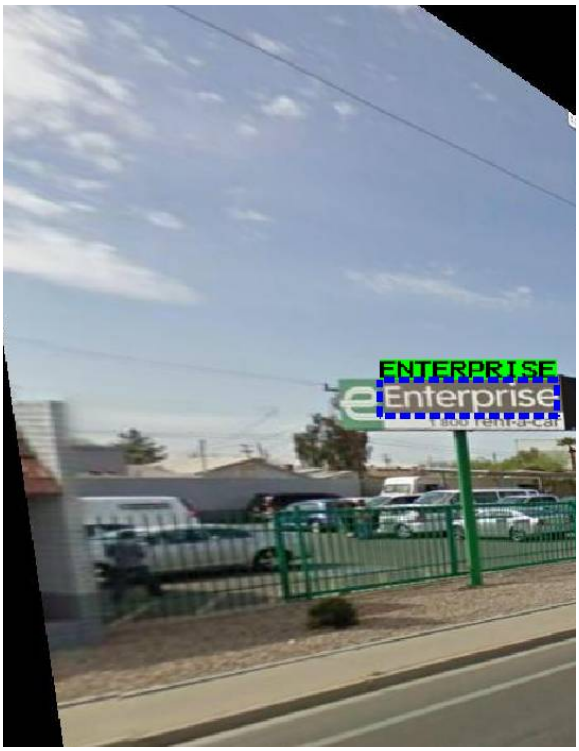
Novel View Responsible For the Text Spotted Above



Perspective Text Spotting (Ground Truth, Detection)



Novel View Responsible For the Text Spotted Above



Perspective Text Spotting (Ground Truth, Detection)

Novel View Responsible For the Text Spotted Above

Spotting The Text Missed By The Annotators

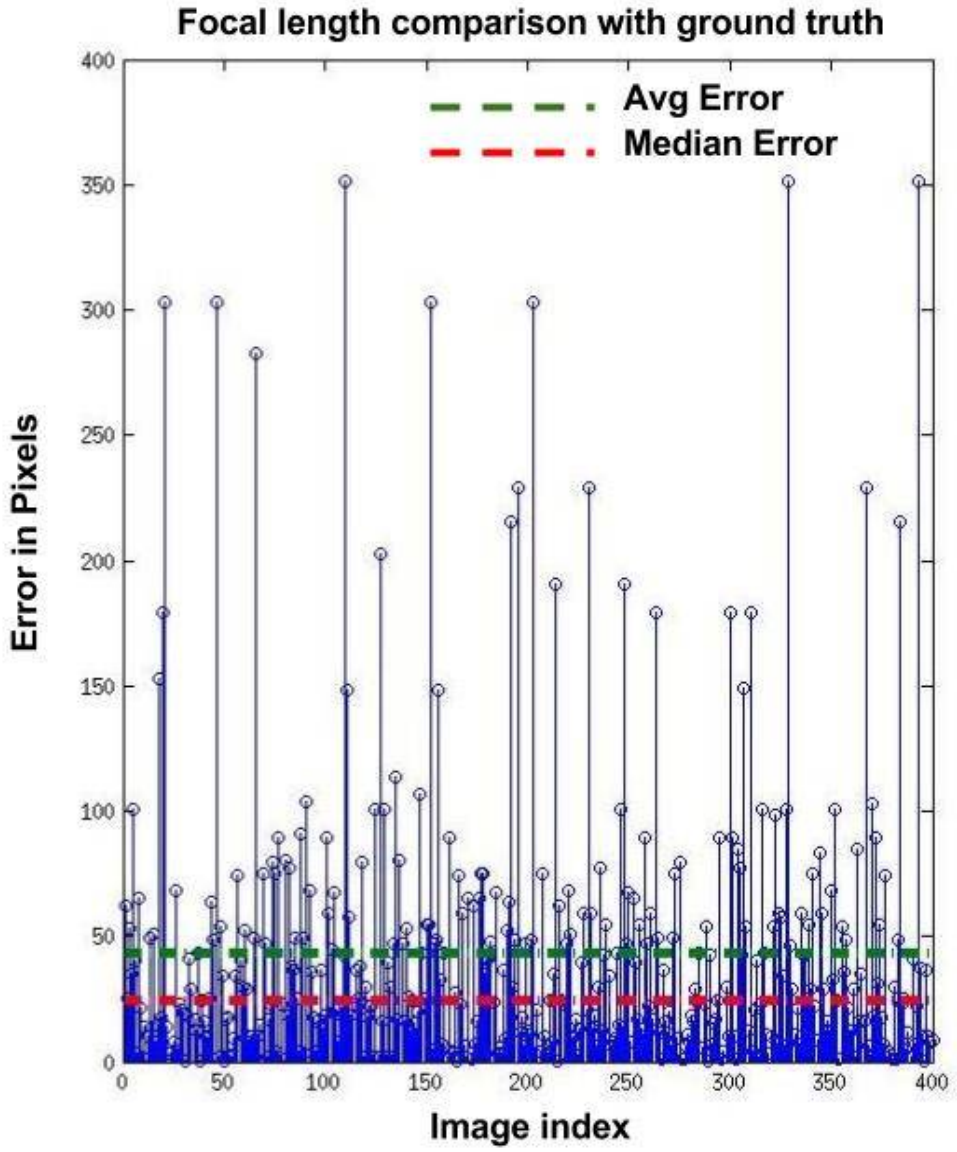
Perspective Text Spotting (Ground Truth, Detection)

Novel View Responsible For the Text Spotted Above

Perspective Text Spotting (Ground Truth, Detection)

Novel View Responsible For the Text Spotted Above

Single Image Focal Length Estimation



- Ground truth focal length estimated using the standard multiple image camera calibration method [2].
- Single Image focal length estimated using [1].
- Median errors = **24.75 pixels**. Total test images = 400 images. Image size = 640x480.

Bibliography

1: D.F. Fouhey, A.Gupta, M. Hebert, Data-driven 3d primitives for single image understanding, ICCV, 2013.
2: S. Singh, A. Gupta, A. A. Efros, Unsupervised discovery of mid-level discriminative patches, ECCV, 2012
3: Jean-Yves Bouguet, Camera Calibration Toolbox for Matlab,http://www.vision.caltech.edu/bouguetj/calib_doc/ , 2004.