Experiments on 3D Context Model for Panoramic Scene Understanding

APRIL, 6 2016

Original Paper:

PanoContext: A Whole-room 3D Context Model for Panoramic Scene Understanding. Y. Zhang, S. Song, P. Tan, J. Xiao. ECCV 2014

Additional experiments and presentation: Hilgad Montelo

Using datasets and code provided by the authors.

Overview

- PanoContext
- Experiment
- Results

PanoContext

- Algorithm

Experiment

- Recognizing objects in a bedroom
  - Using Matlab code provided by the authors (http://panocontext.cs.princeton.edu/)

Source: SUN360 Dataset

Experiment

- SUN360 Dataset

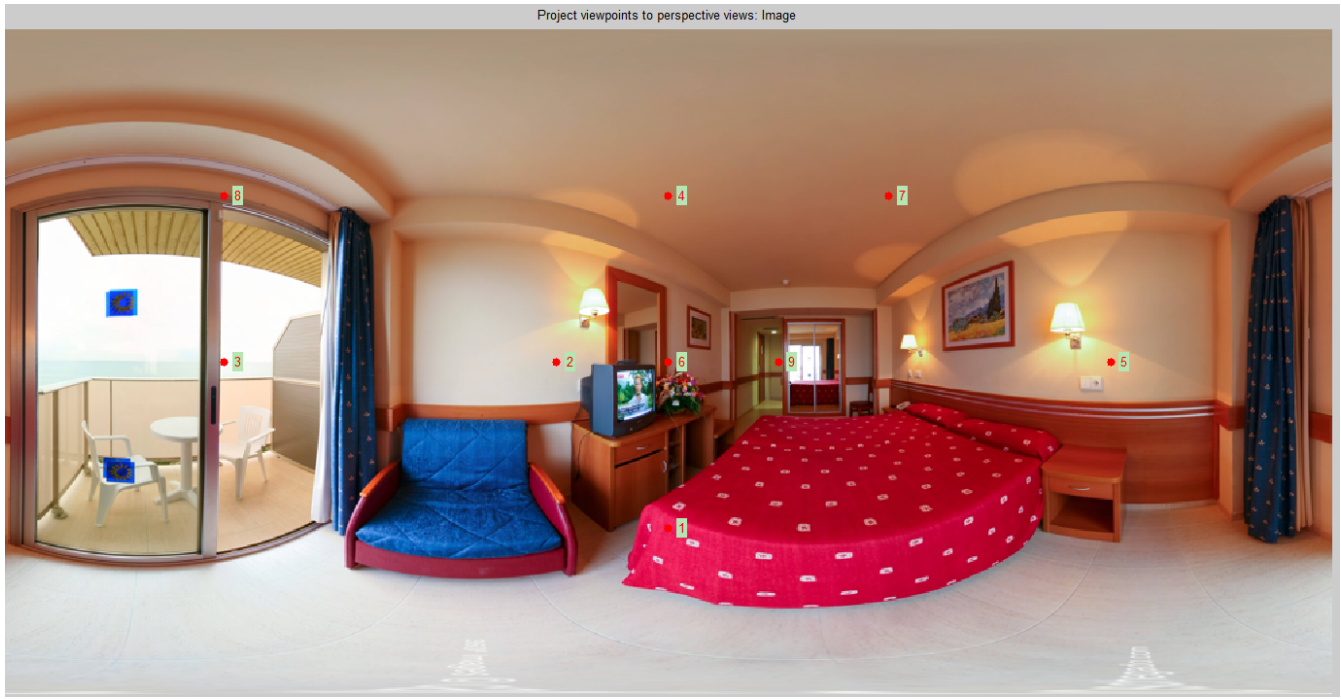
indoor/bedroom (624 images to be labeled / 1163 in total)

Labeled

Source: SUN360 Dataset

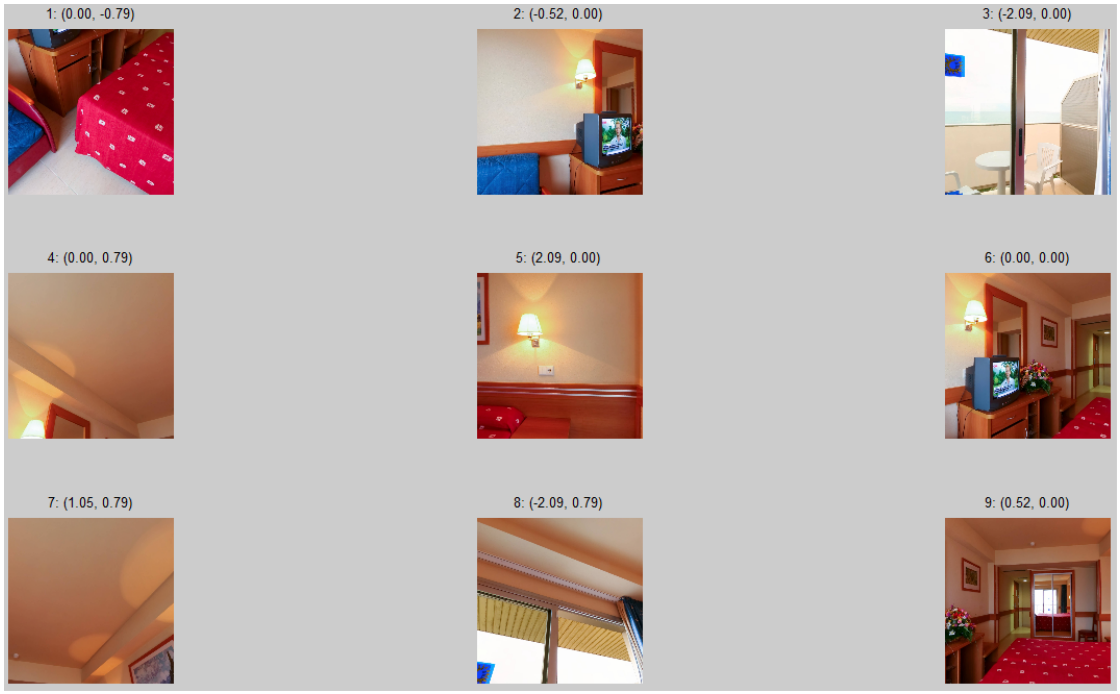
Experiment

- Projecting viewpoints to perspective (Generating Hypothesis)



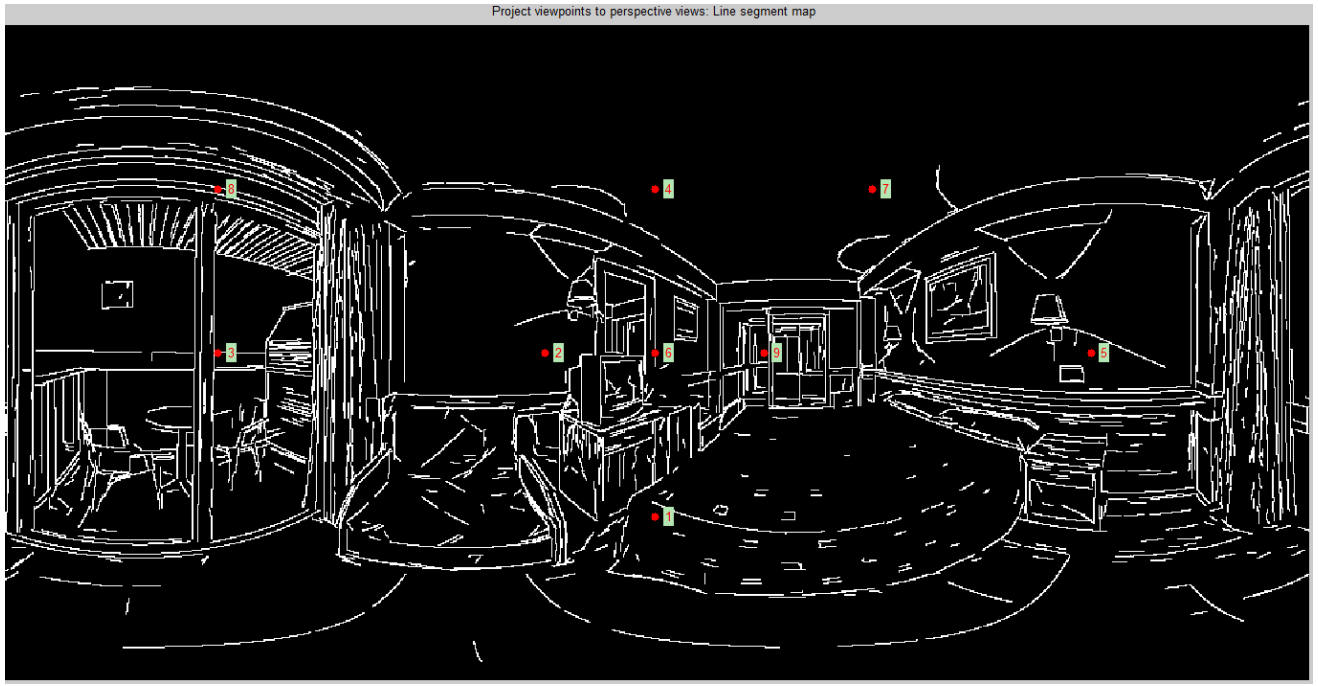
Experiment

- Projecting viewpoints to perspective (Generating Hypothesis)



Experiment

- Line Segment Map (Generating Hypothesis)



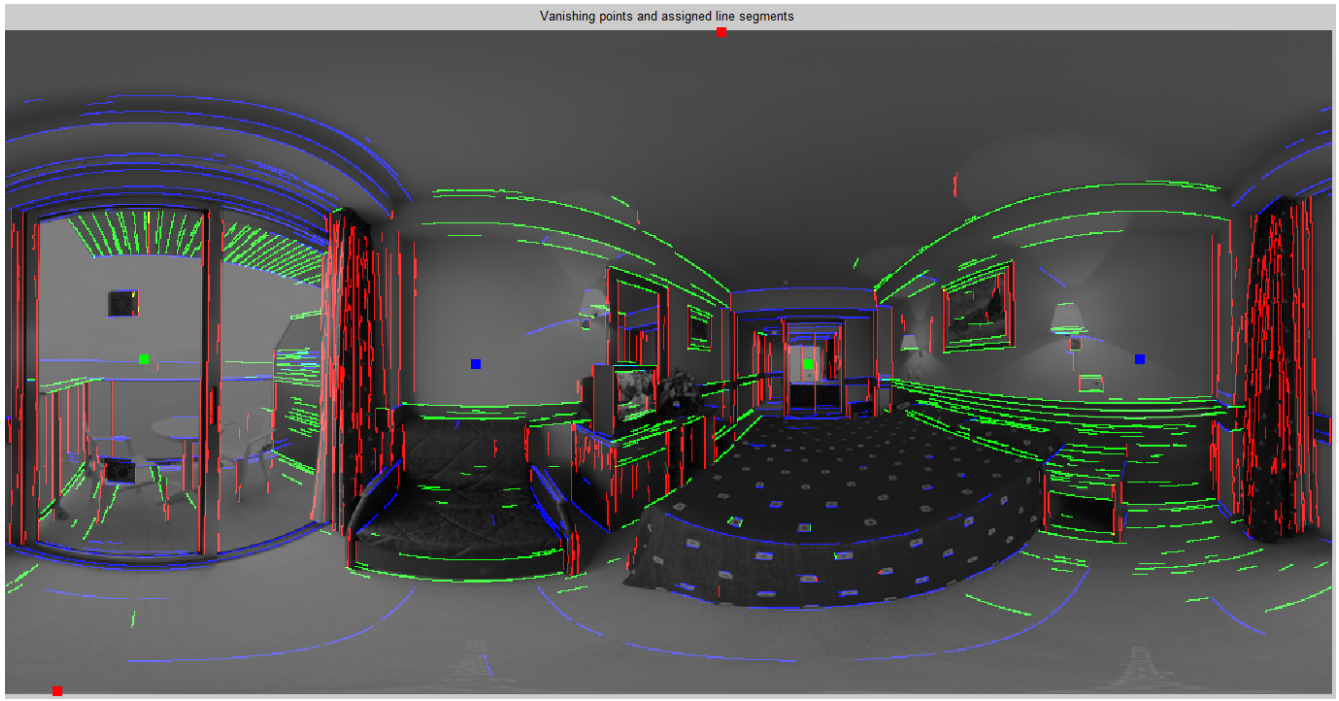
Experiment

- Projecting viewpoints in line segments to perspective

(Generating Hypothesis)

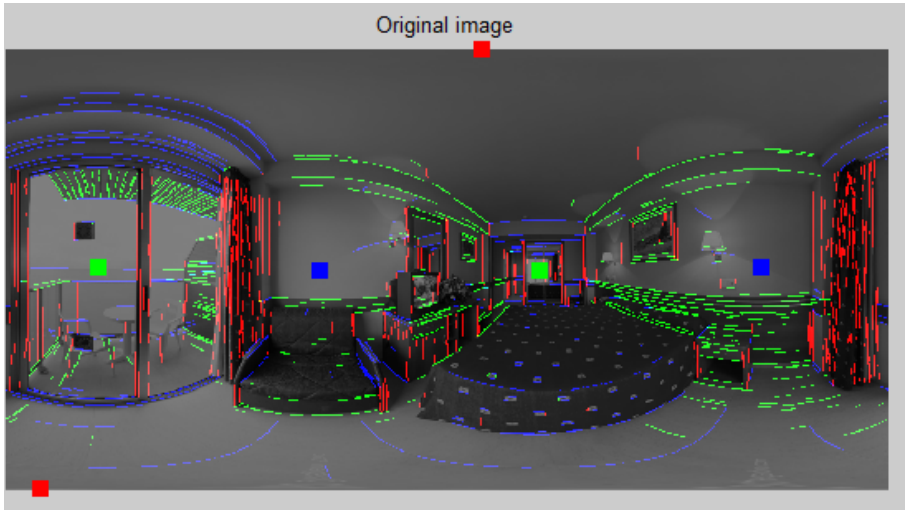
Experiment

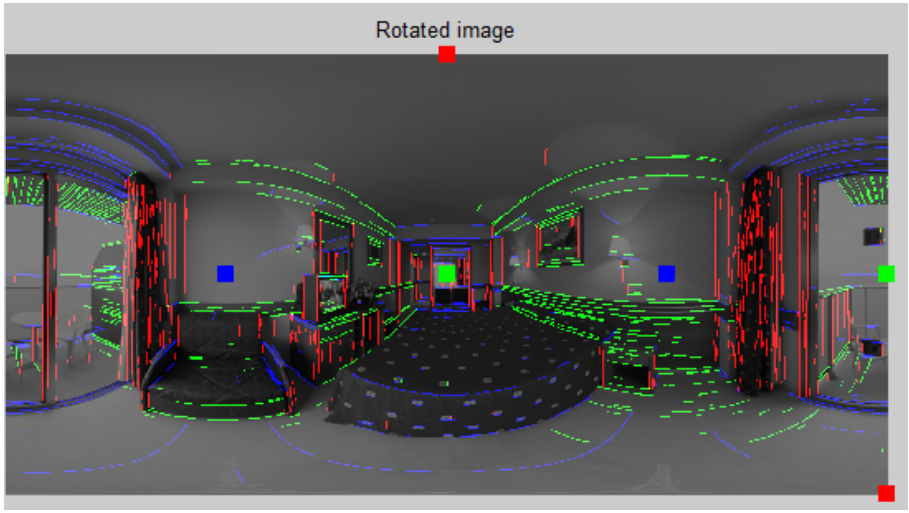
- Vanishing points and assigned line segments



Experiment

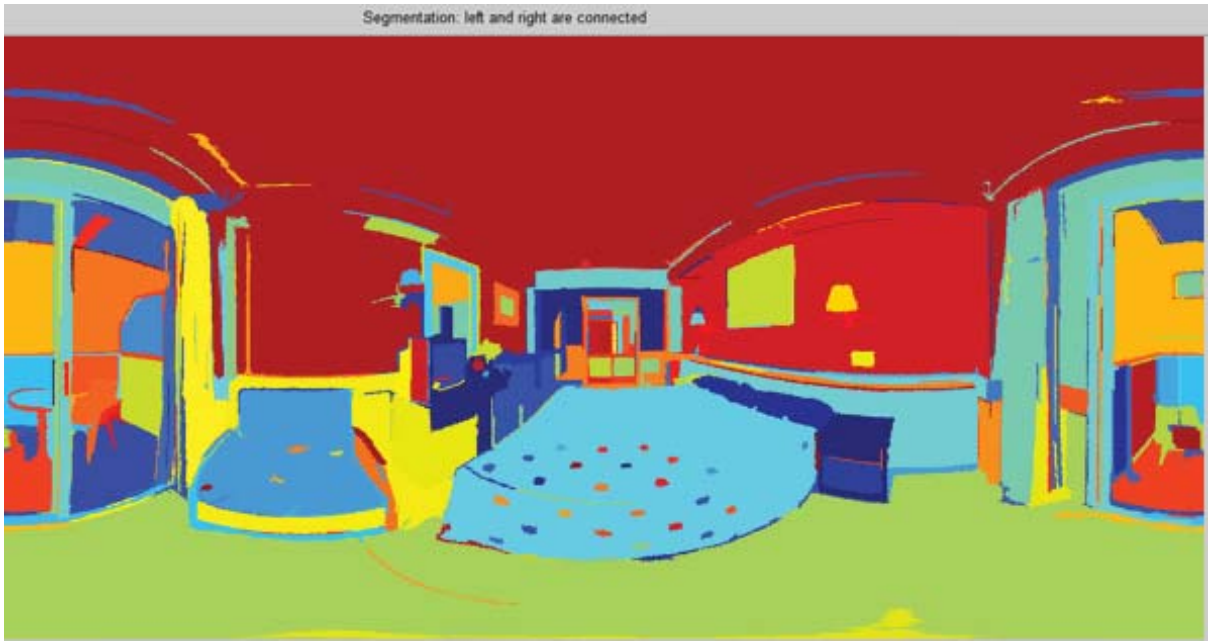
- Vanishing points and assigned line segments





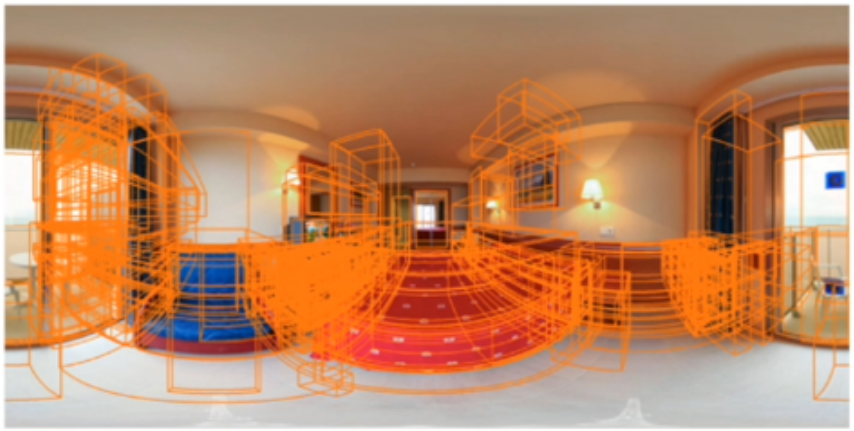
Experiment

- Segmentation (Object detected in the room)



Experiment

- Set of objects in the room

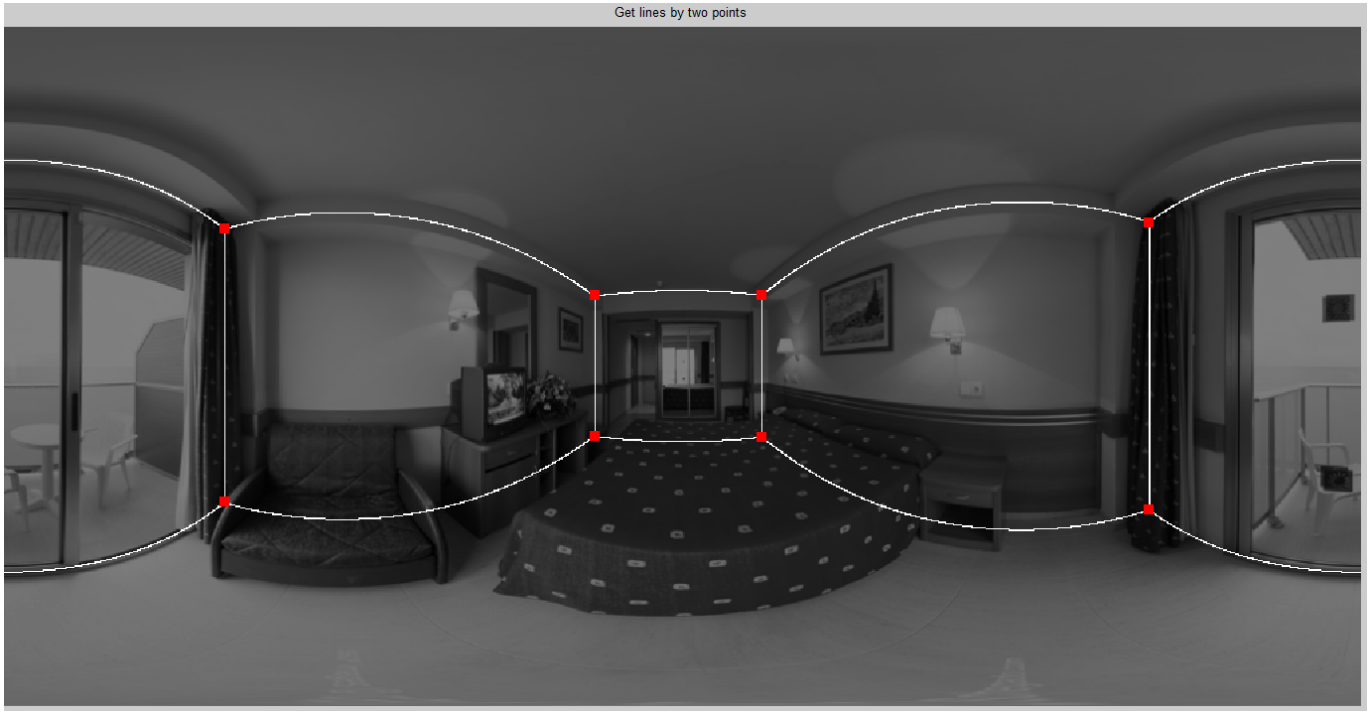


Experiment

- Detecting wall regions (3D reconstruction)

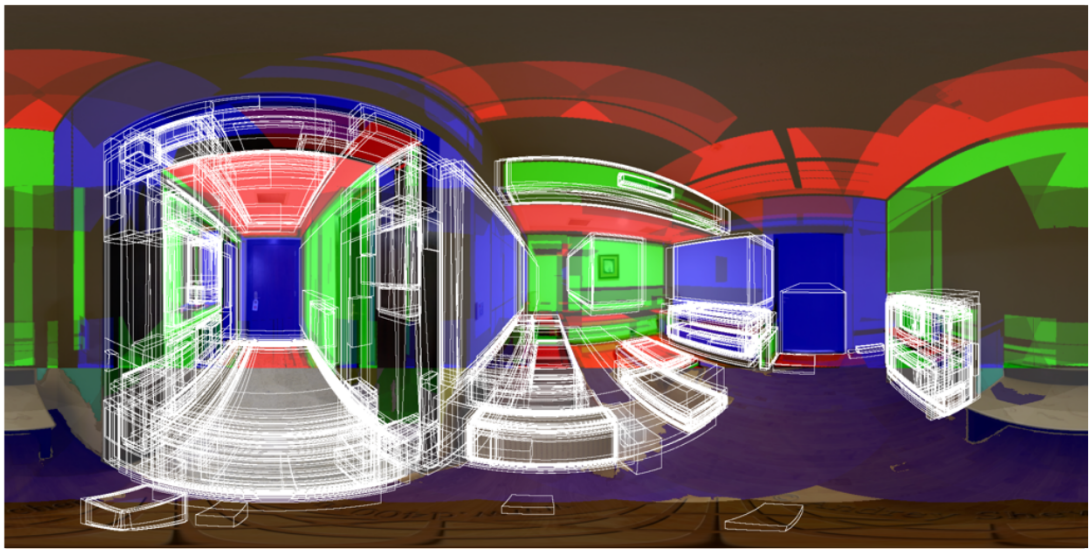
Experiment

- 3D reconstruction



Experiment

- Recognizing objects in a living room



Results

- Accuracy

category	accuracy	category	accuracy
background	86.90	wardrobe	27.44
bed	78.58	tv	34.81
painting	38.70	door	19.40
nightstand	39.66	chair	9.61
window	35.58	sofa	11.10
mirror	38.15	cabinet	5.46
desk	29.55	average	35.00

Source: Y. Zhang, S. Song, P. Tan, J. Xiao. ECCV 2014