Indoor Scene modelling from single panorama

Computer Vision (CS6350) TPA - 3

1 Problem Statement

Infer 3D structure of an indoor scene from a single 2D panorama. Recover the spatial layout by finding floor, ceiling and and walls. Recover shapes of typical indoor objects such as furniture. Depth information computed can be used to perform 3D reconstruction of the scene.

2 Input

• 2D panorama images.

3 Output

- Depth map for the panoramic scene
- 3D reconstruction of the panoramic scene.
- Demo should run on an unknown undoor scene

4 Datasets

- PanoContext (http://panocontext.cs.princeton.edu/)
- SUN360 (http://people.csail.mit.edu/jxiao/SUN360/main.html)

Hints for excellence : *Points will be awarded for accurate reconstruction of scenes with cluttered objects*

5 References

- Yang Yang, Shi Jin, Ruiyang Liu, Sing Bing Kang, Jingyi Yu, "Automatic 3D Indoor Scene Modeling From Single Panorama", Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition. 2018.
- Zou, Chuhang, et al. "LayoutNet: Reconstructing the 3D Room Layout from a Single RGB Image." Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition. 2018.
- Yang, Hao, and Hui Zhang. "Efficient 3d room shape recovery from a single panorama." Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition. 2016.
- Zhang, Yinda, et al. "Panocontext: A whole-room 3d context model for panoramic scene understanding." European Conference on Computer Vision. Springer, Cham, 2014.