CV Assignment 4: Depth Map Prediction from a Single Image

Due Date: June 04, 2017

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1 Introduction

In this assignment, you will implement two approaches for depth estimation from a single image and compare the performance of different depth estimation methods by using at least three evaluation measures.

The whole framework of the implementation for depth estimation from a single image is shown in Figure 1, it may serve as a reference for your assignment.

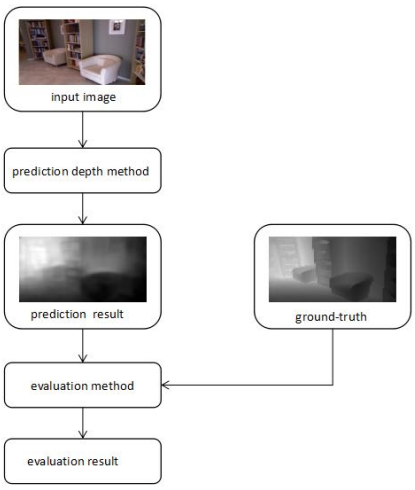

Figure 1: The framework of this assignment

In order to complete your task, you need to access and read the content of the two websites. The content of the website contains the paper, datasets, and the required code. Please refer to the website for details: `https://bitbucket.org/chhshen/depth-estimation-from-single-images/overview` and `http://www.cs.nyu.edu/~deigen/depth/`.

The details of this assignment are given in the following sections.

2 Depth Map Prediction from a Single Image

In this section, you will implement two methods on an image to get scene depth.

The two methods are derived from two papers:

- David Eigen, Christian Puhrsch, and Rob Fergus. Depth map prediction from a single image using a multi-scale deep network. NIPS. 2014.
- Fayao Liu, Chunhua Shen, Guosheng Lin, Ian Reid. Learning Depth from Single Monocular Images Using Deep Convolutional Neural Fields. CVPR. 2015.

3 Evaluation of Results

In this part of the assignment, you will compare the quality of two methods using at least three evaluation measures. Choose at least two evaluation measures from:

- Abs relative difference
- Squared relative difference
- Root mean square error (RMSE) (linear)
- RMSE (log)

4 Submission

1. Your code

2. A report with your results and simple explanation

Zip all your files and submit your assignment to ouceecv@163.com with the subject: YourName_Assignment4.zip. The name of your zip file should be the same as the email subject.