

Monocular Depth Estimation

Team: Justice League

Rahul Allam, Akash Thorat and Gaurav Bhosale

Introduction

- We will talk about monocular depth estimation
- Importance of depth from monocular camera.
- Problem definition.
 - The problem can be framed as: given a single RGB image as input, predict a dense depth map for each pixel. Given a training set $T = \{(I^i, D^i)\}_{i=1}^M$, $I^i \in I$ and $D^i \in D$, the task is to learn a non-linear mapping $\Phi: I \rightarrow D$. I is Image and D is Depth map.

Background

- Brief about Previous Classical methods used for depth estimation.
 - We talk about different classical monocular and stereo based methods for depth estimation.

Texture and Gradient Variation based methods

Shading based methods

Colour/Haze based methods
- Different architectures monocular depth estimation.
 - We talk about different deep learning-based architectures used for monocular depth estimation.

Method

- Architecture
 - Reasons for choosing this architecture.
 - We will describe the architecture, each component and the role it plays in the network
- Training
 - We will talk about the training process in this section

Experiments

- We will talk about all the experiments performed i.e. changing the network, hyper parameters

Results

- In this section, we will talk about the output depth maps generated by the network.

- We will also talk about the results achieved from our experiments

Conclusion

- Summarize our results and learnings.
- We will talk about possible real-world implementation of this project in different sectors.