

# Depth Estimation Proposal

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## 1 Project: Monocular depth estimation

Topic. Depth Estimation for Distance Measuring.

Datasets. KITTI; DDAD; ???.

Research on usage Depth Estimation [DL-]models to measure the distance between camera and object on image without LIDAR. The goal is to have a trained model which will outperform baseline on a secret test set.

Assignment. Propose a method (in the form of paper review or your own designed idea) you would like to implement during internship.

based on the paper Boosting Monocular Depth Estimation Models to High-Resolution via Content-Adaptive Multi-Resolution Merging [2]

The ability of neural networks to accurately estimate depth from a single picture has been demonstrated. Although the inferred depth maps sometimes lack fine-grained details and have resolutions considerably below one megapixel, that's why in this approach we can use the multi resolution scaling and depth estimating at each scale and then, Using a trained model, we may create multi-megapixel depth maps with a high degree of information by merging estimations at various resolutions with shifting context.

In this approach we will show how to use existing monocular depth estimation networks to generate highly detailed estimations we will even do so without re-training these networks we achieve our results by getting several estimations at different resolutions we then merge those into a structurally consistent high resolution depth map, this is what we will be inspired by to train and construct or develop the current networks we have.

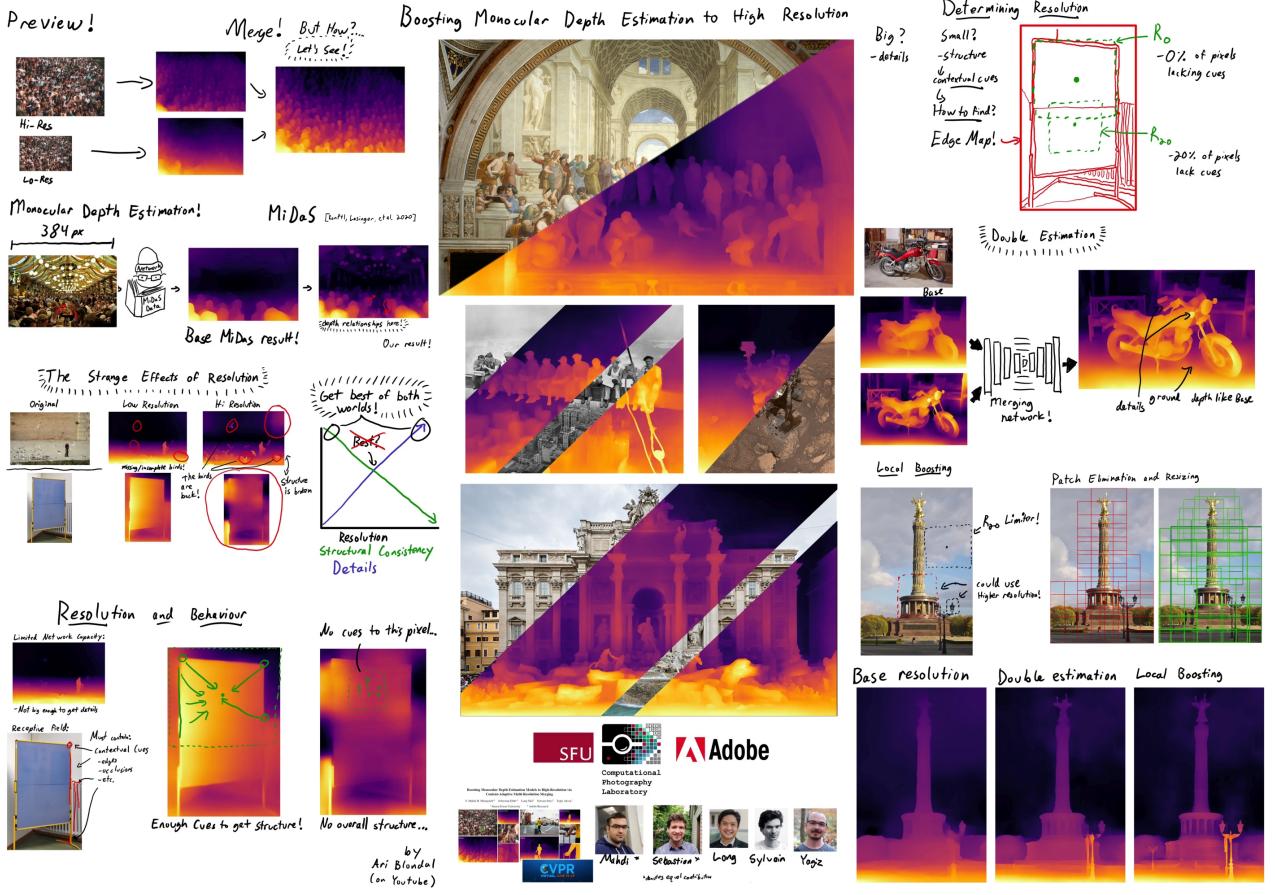


Figure 1: Method Poster Explained

## 2 Results

In github we have a jupyter notebook with all steps to implement the algorithms [1].

## References

- [1] Depth estimation. <https://github.com/SinanIbra/Surveillance-Camera-Calibration-with-DLT>. Accessed: 2022-08-09.
- [2] S. Mahdi H. Miangoleh, Sebastian Dille, Long Mai, Sylvain Paris, and Yağız Aksoy. Boosting monocular depth estimation models to high-resolution via content-adaptive multi-resolution merging. 2021.



(a) image 1



(b) image 2

Figure 2: images that will be processed



(a) result 1



(b) result 2

Figure 3: results after implementing Boosting Monocular Depth Estimation