Towards Robust Monocular Depth Estimation in the Wild

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Project Objectives

This project is separated into two parts. The first part will focus on the creation of a new mixed dataset in the wild that has high diversity and depth maps with a unified scale using a state-of-the-art depth estimation boosting technique. The second part of the project will pivot to experiments and evaluation of various models and deduce the best network architecture and loss function when a deep learning model is trained on our new mixed dataset.

## A New Mixed Dataset in the Wild

Double estimation

- Output two depth estimation using low- and high-resolution images.
- Merge depth estimation results together for better structure consistency and higher details

Low resolution

High resolution

Merging network
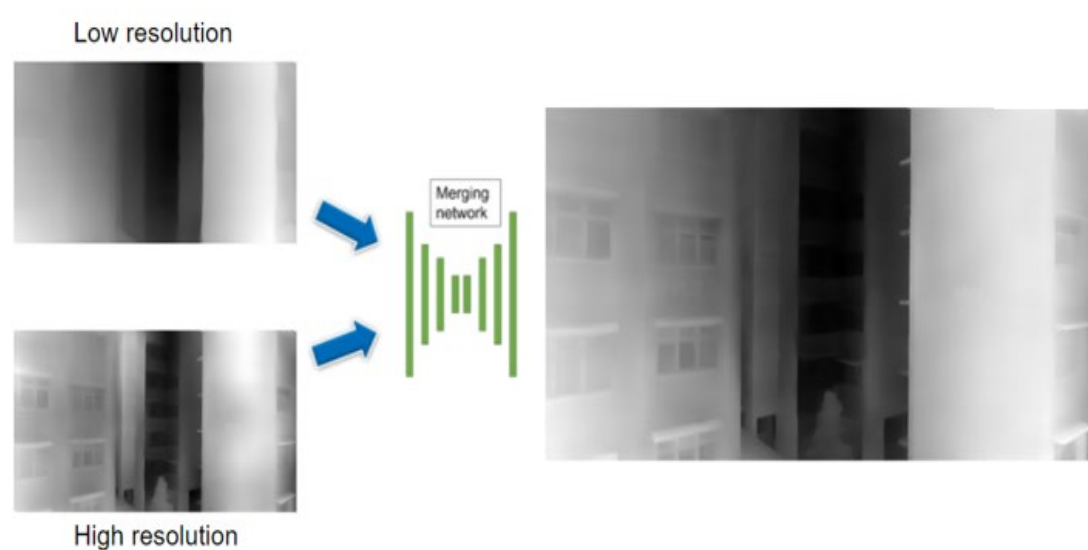
Patch estimation

- Patches across the input RGB image is selected for another double estimation
- Resulting output will be merged back for better depth estimation result

Before patch estimation   After patch estimation
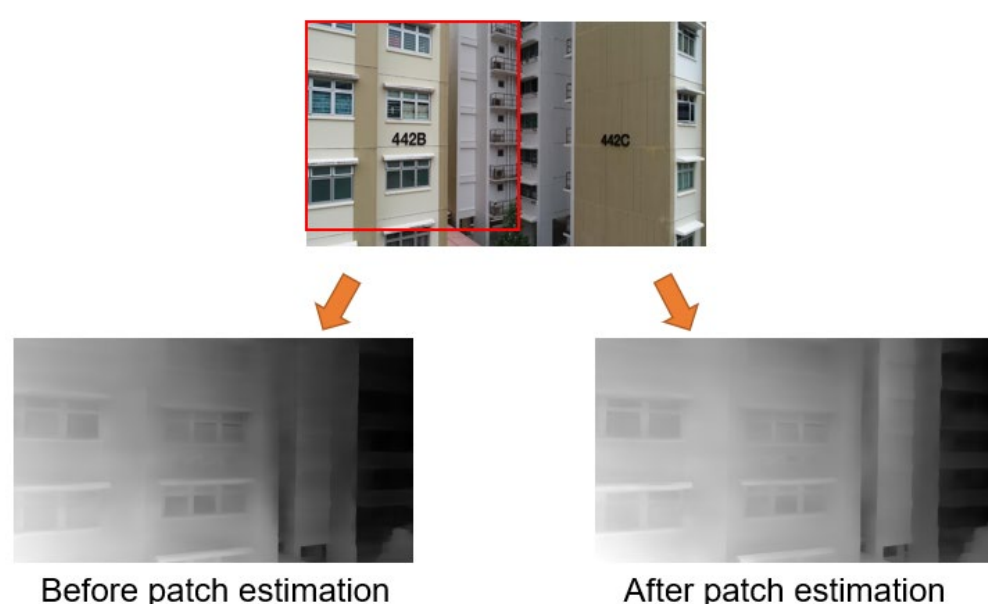
Results

Comparison with existing solution

- A comparison of our monocular depth estimation model with existing solution on real world data

RGB   Existing solution   Ours

More Qualitative result

- A comparison of our monocular depth estimation model with existing solution on real world data

RGB	Ours