

Get Smooth

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$$\underset{Z}{\text{minimize}} \quad \sum_{source} \lambda_{source} \sum_i W_i^{source} |Z_i - \hat{Z}_i^{source}| \quad (1)$$

$$+ \lambda_{flat} \sum_i \left(\left| \frac{\partial Z}{\partial x} \right|_i + \left| \frac{\partial Z}{\partial y} \right|_i \right) \quad (2)$$

$$+ \lambda_{smooth} \sum_i |\Delta Z|_i \quad (3)$$

Where the λ hyperparameters control the strengths of each term, Z_i is the recovered shape at pixel i , Z^{source} is the input depth map from some source, and W^{source} is the per-pixel confidence associated with each source.

The code contains a hyperparameter "ROBUSTIFY-SMOOTHNESS". If 1, then the equation is as above. If 0, then the smoothness priors are on squared-error, not absolute error:

$$\underset{Z}{\text{minimize}} \quad \sum_{source} \lambda_{source} \sum_i W_i^{source} |Z_i - \hat{Z}_i^{source}| \quad (4)$$

$$+ \lambda_{flat} \sum_i \left(\left(\frac{\partial Z}{\partial x} \right)_i^2 + \left(\frac{\partial Z}{\partial y} \right)_i^2 \right) \quad (5)$$

$$+ \lambda_{smooth} \sum_i (\Delta Z)_i^2 \quad (6)$$