EECS 442 Group Project

Surface Normals Prediction From a Single Image

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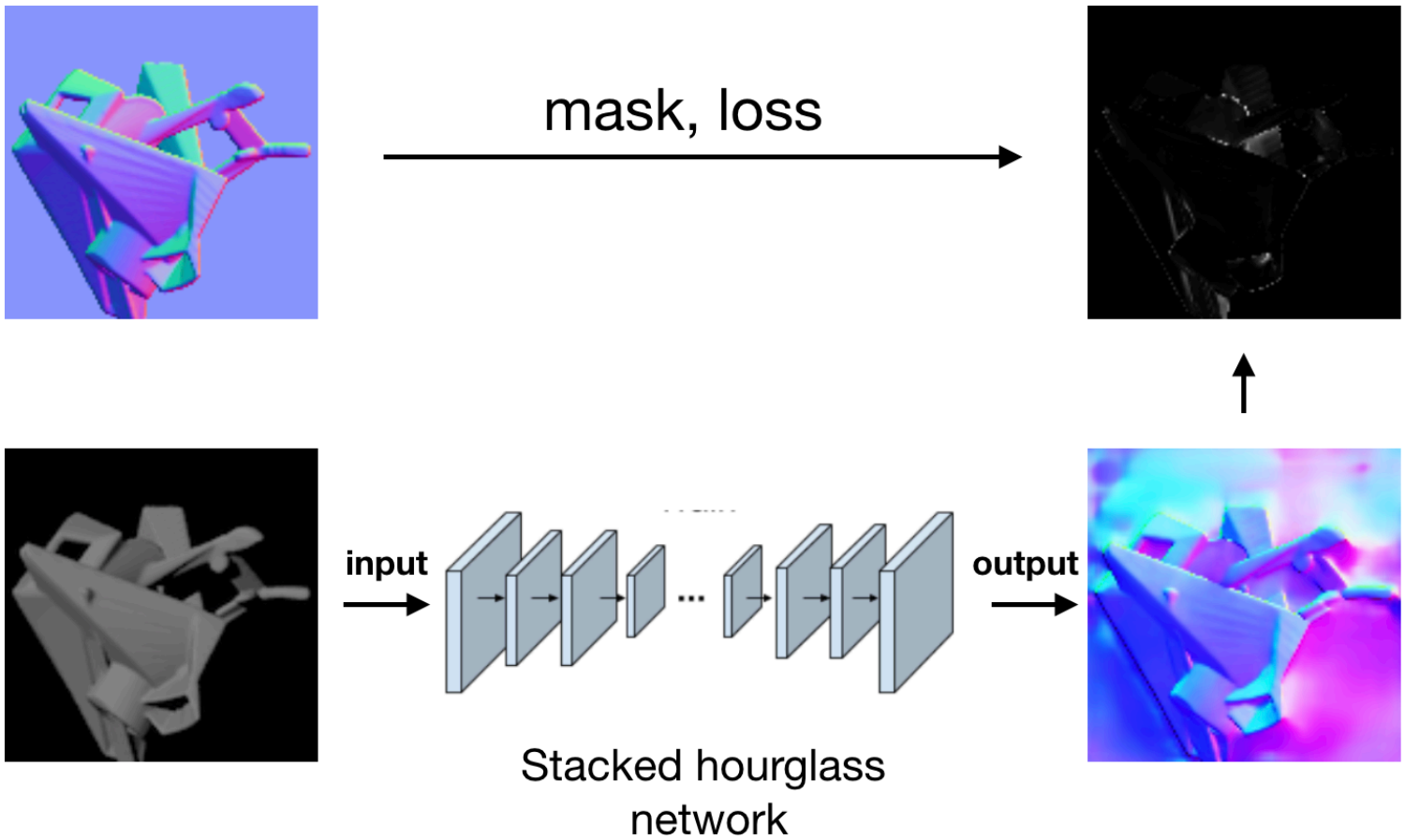
Method



http://www-personal.umich.edu/~wfchen/surface-normals-in-the-wild/

Implementation Details

- We modify the preprocess part for Hourglass network. We only use 3×3 kernel and the input size to hourglass is $(128, 128, 256)$.
- We propose a novel loss function. Suppose our prediction is N and the ground true is N',

$$\mathcal{L}(N, N') = \arccos(N \cdot N') + \lambda \cdot \sum_{i=1}^{3} (N_i - N'_i)^2$$

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References

1. Dharmasiri et al., “Joint Prediction of Depths, Normals and Surface Curvature from RGB Images using CNNs”.
   https://arxiv.org/abs/1706.07593
2. Newell et al., “Stacked Hourglass Networks for Human Pose Estimation”.
   https://arxiv.org/abs/1603.06937
3. Training code for “Associative Embedding: End-to-End Learning for Joint Detection and Grouping”
   https://github.com/umich-vl/pose-ae-train
4. Yang et al., “Shape from Shading through Shape Evolution”.
   https://arxiv.org/abs/1712.02961

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