Quantifying and improving CNN robustness against common image degradations

Abstract: For visual task like optical flow estimation, CNN models commonly rely on clean training sets. For the reason that the network has not seen a variety of corruptions that are not contained in the training phase, we aim to look at how robust methods are against degradations. To measure the robustness of state-of-the-art approaches, we present a large, corrupted synthetic dataset based on *FlyingThings3D* dataset. We find that the models can already deal with some corruptions though, the accuracy may be substantially compromised as a result of corrupted data. Taking the successful experience of fine-tuning DispNet on degraded data, we prepare a pre-trained FlowNet2 model for robustness enhancement, which is then trained on specific corruptions. It turns out that the results are optimistic while still room to make progress. To be concrete, we have addressed the detailed training pipeline, and the key training stages that offer the key improvement on the results.