

Multi-Task Learning for Dense Prediction Tasks: A Survey (Supplementary Materials)

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1 QUALITATIVE RESULTS

The supplementary materials provide additional visualizations of the results. First, Figures 1-2 show the predictions from various models on NYUD-v2, while Figures 3-4 show the results obtained with different task balancing techniques. We use a ResNet-50 backbone with dilated convolutions. The largest differences can be seen for the semantic segmentation task. We find that the decoder-focused model produces more accurate predictions for both examples.

Second, we include some qualitative results on PASCAL. Figures 5-6 and 7-8 show predictions obtained with different encoder- and decoder-focused models respectively. The encoder-focused models are based on a ResNet-18 backbone, while the decoder-focused models employ an HRNet-18 backbone. The qualitative differences between the encoder-focused models are rather small. Differently, we find qualitative improvements when comparing MTI-Net against its single-tasking equivalents on the semantic segmentation, human parts segmentation, edge detection and saliency estimation tasks.

Finally, Figures 9- 10 show the results after training the multi-task baseline model with ResNet-18 backbone with different task balancing techniques. The qualitative differences are small, except for the decline in performance on the edge detection task trained with MGDA.

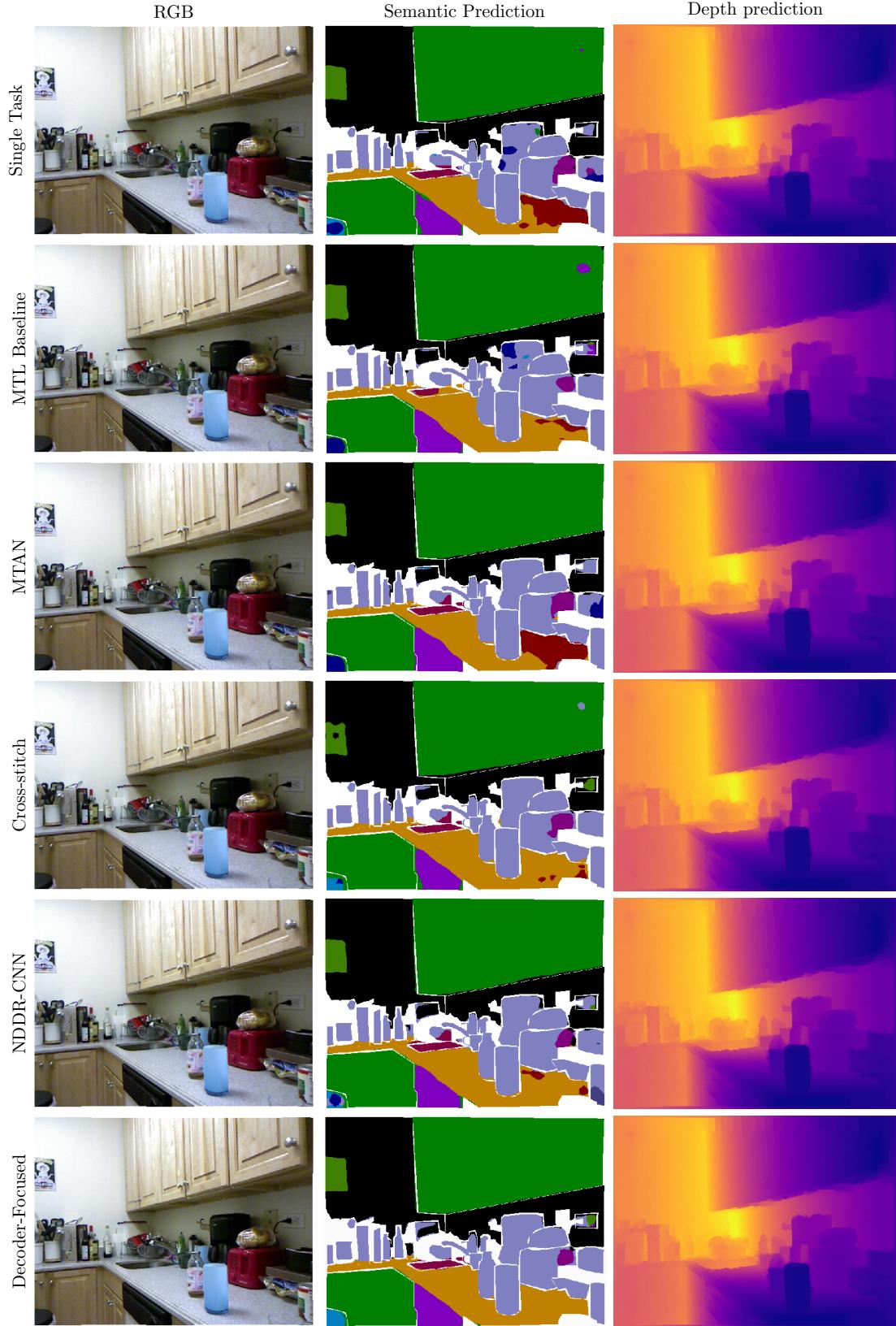


Fig. 1: Predictions on NYUD-v2 with various models (Example 1).

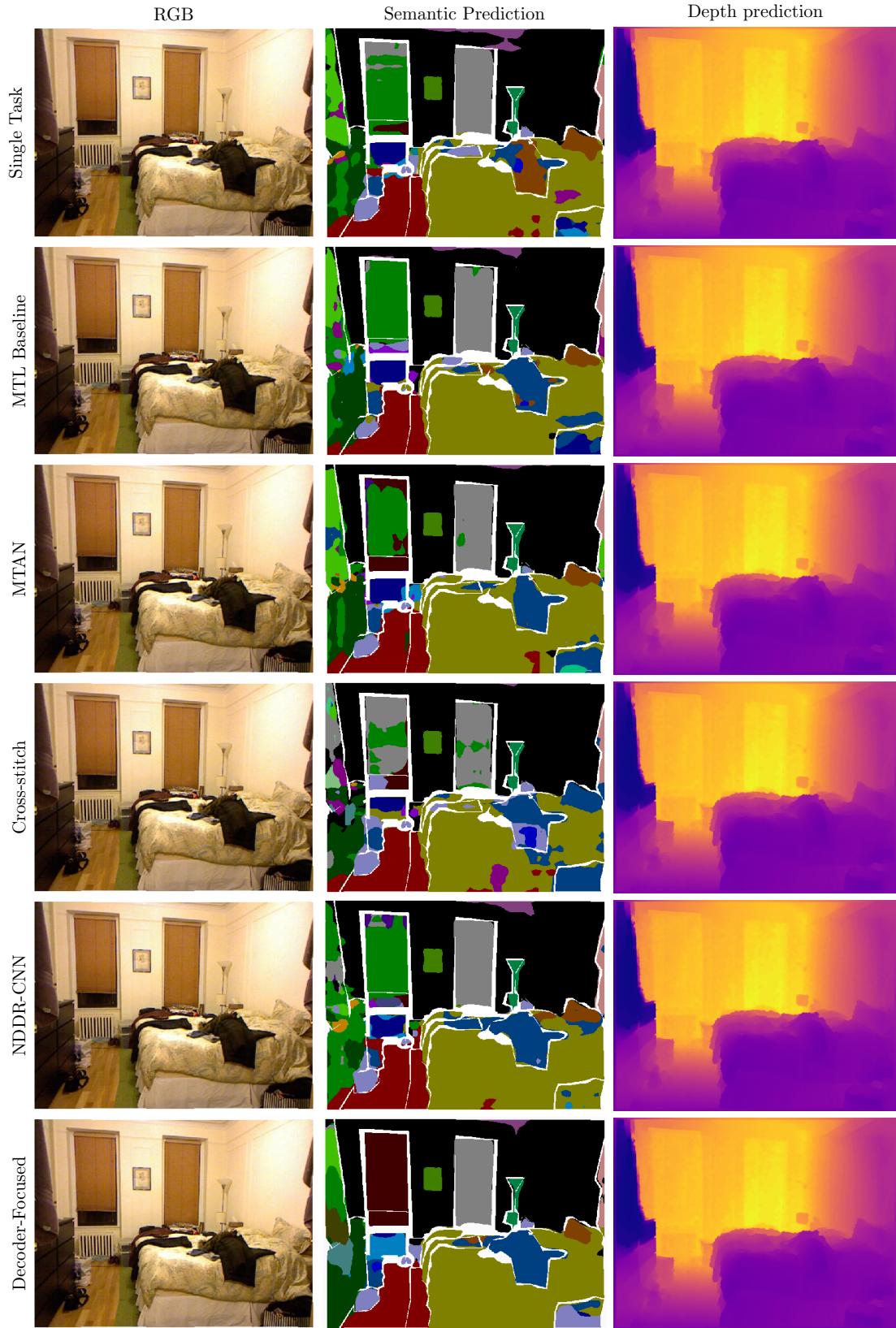


Fig. 2: Predictions on NYUD-v2 with various models (Example 2).

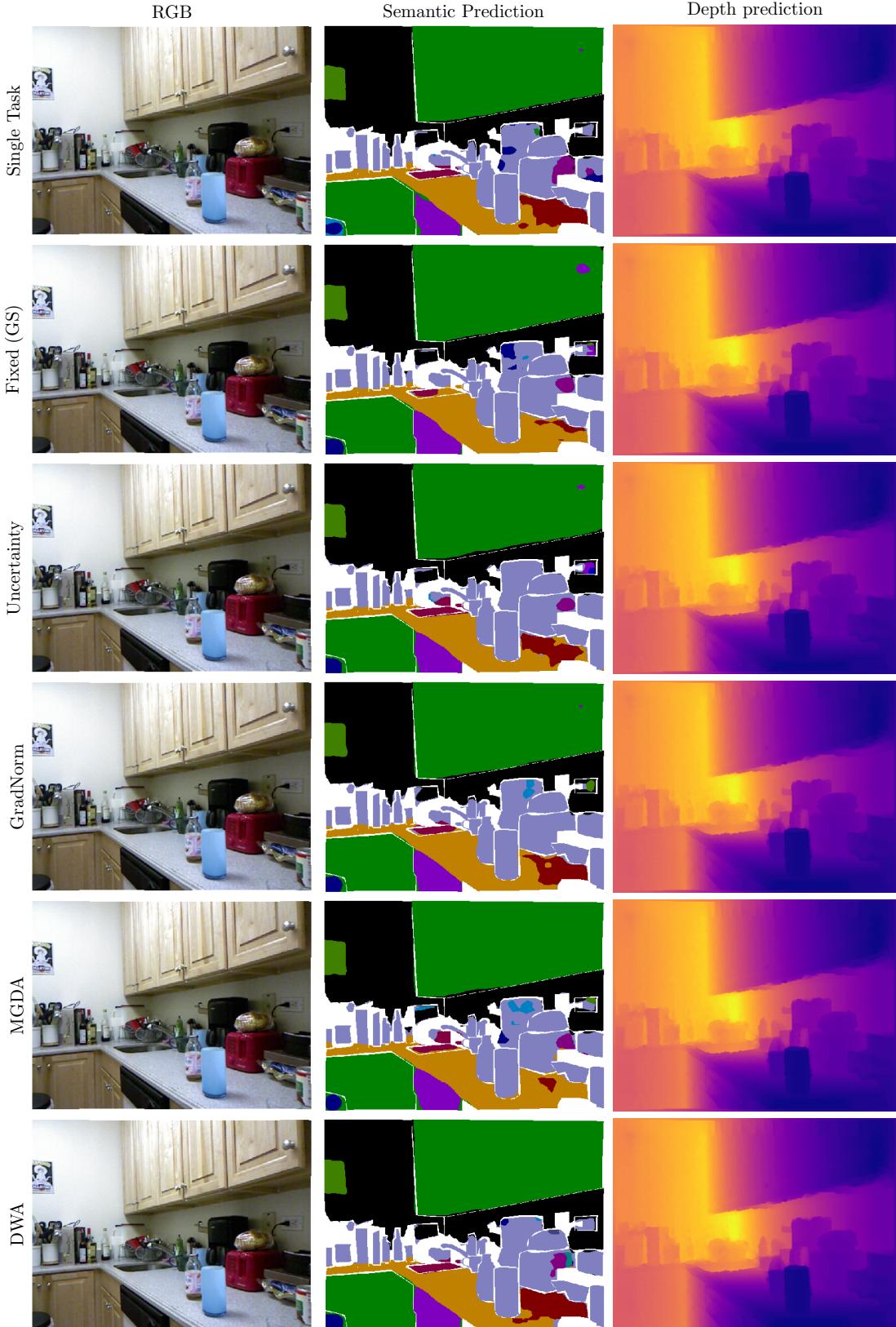


Fig. 3: Predictions on NYUD-v2 with various task balancing techniques (Example 1).

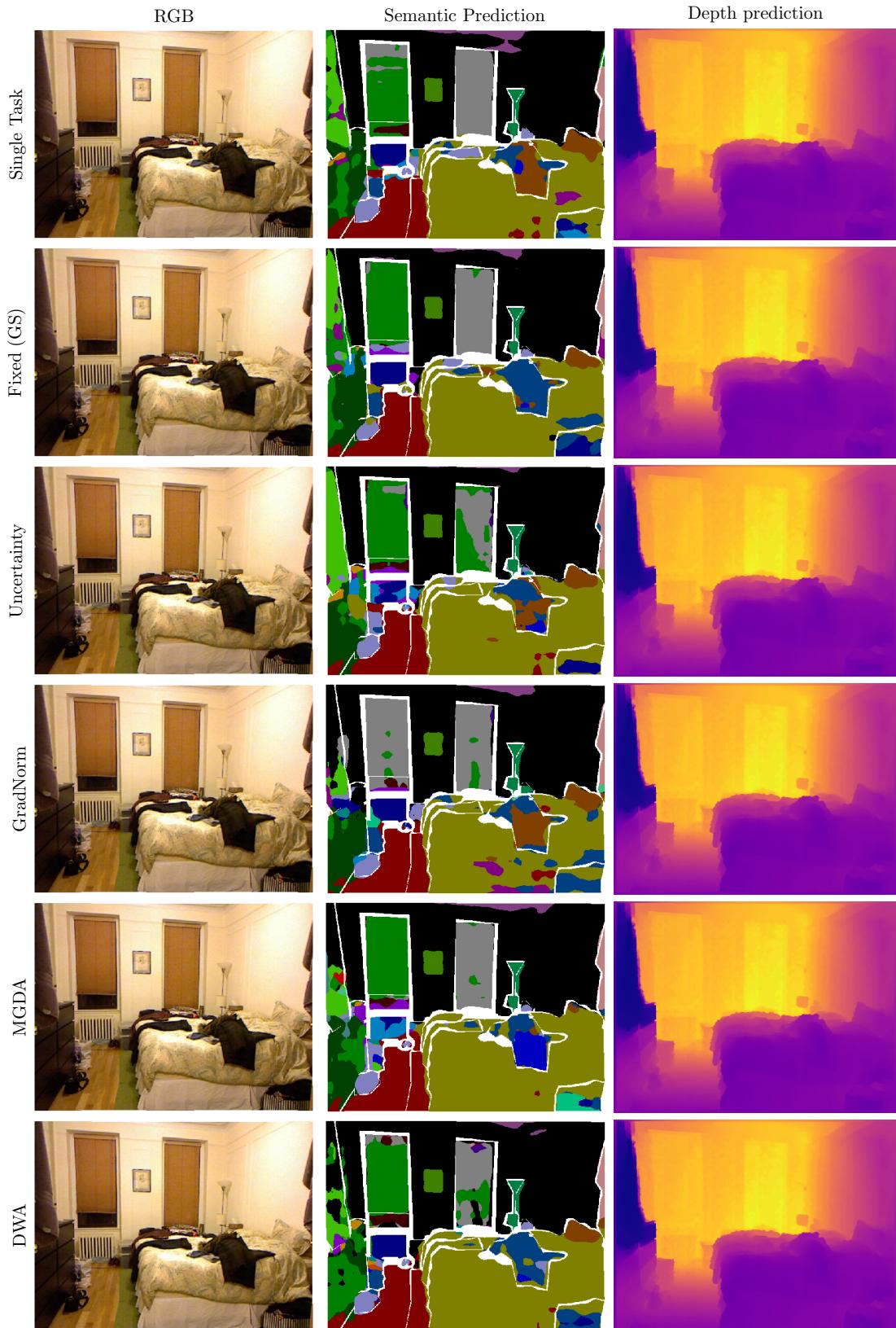


Fig. 4: Predictions on NYUD-v2 with various task balancing techniques (Example 2).

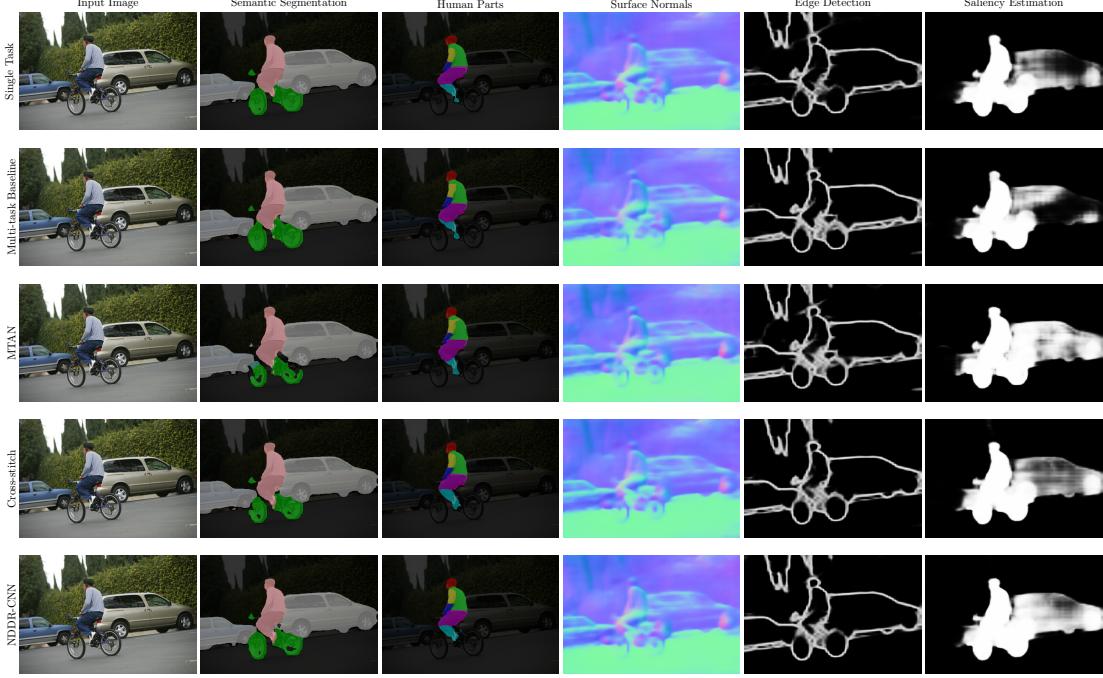


Fig. 5: Predictions on PASCAL with models based on the single-scale ResNet-18 backbone (Example 1).

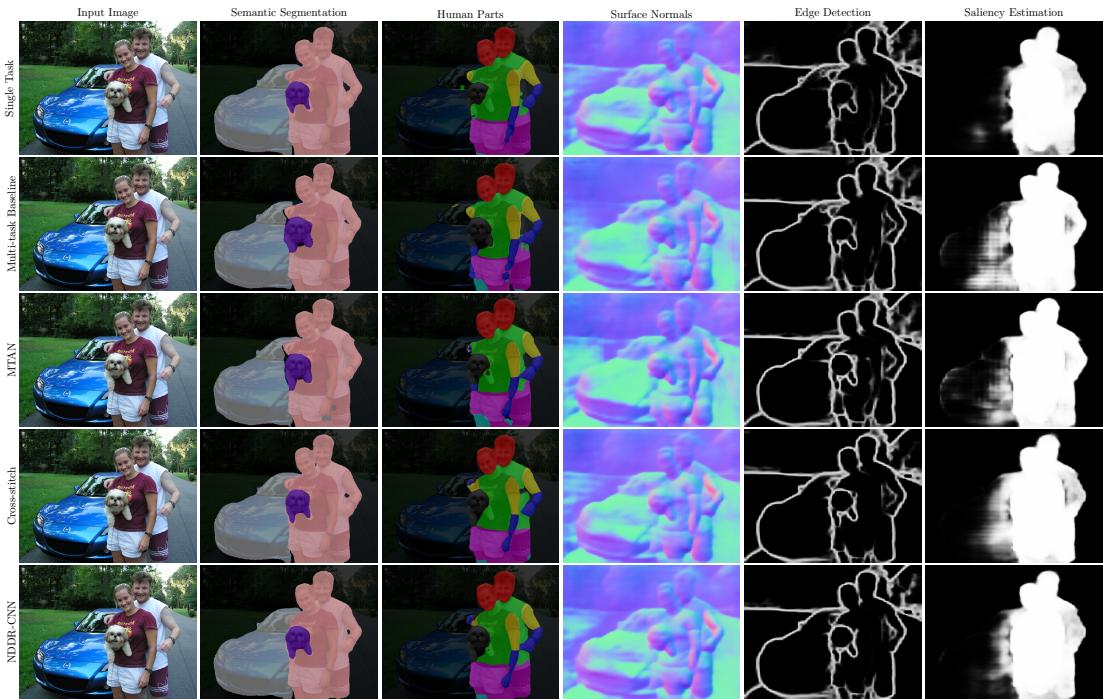


Fig. 6: Predictions on PASCAL with models based on the single-scale ResNet-18 backbone (Example 2).

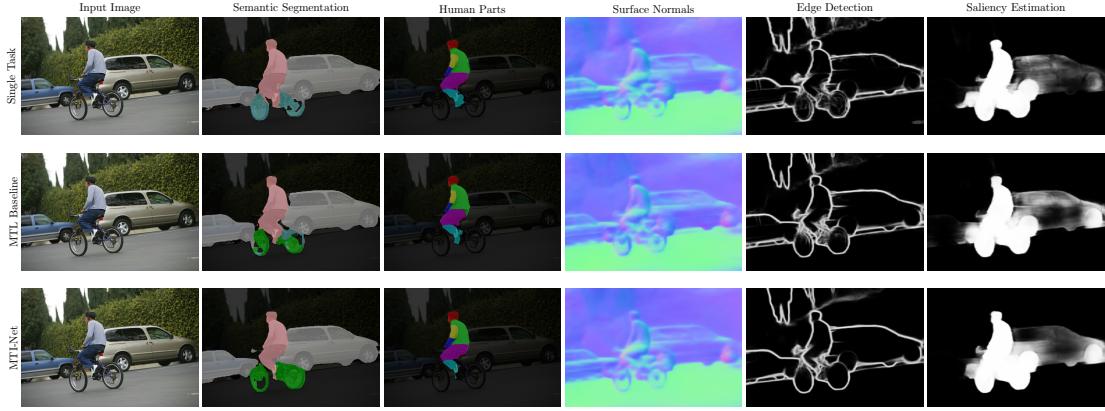


Fig. 7: Predictions on PASCAL with models based on the multi-scale HRNet-18 backbone (Example 1).

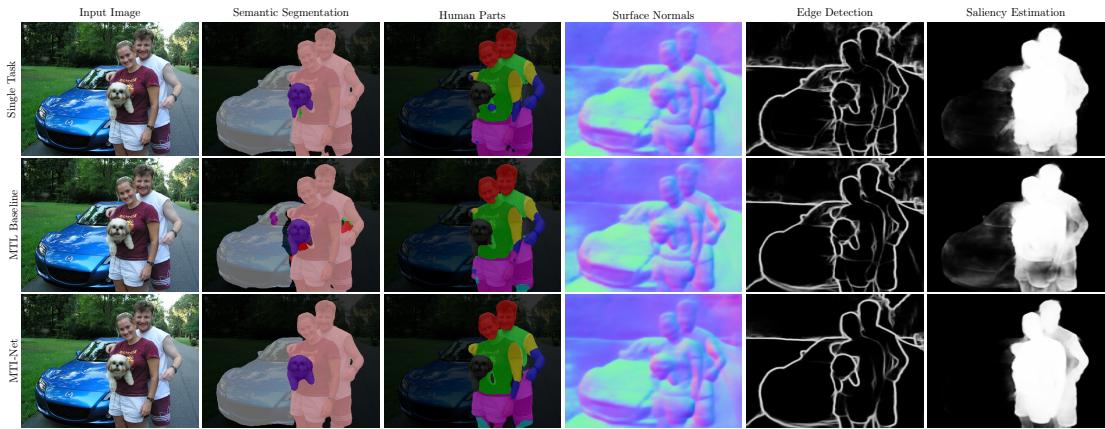


Fig. 8: Predictions on PASCAL with models based on the multi-scale HRNet-18 backbone (Example 2).

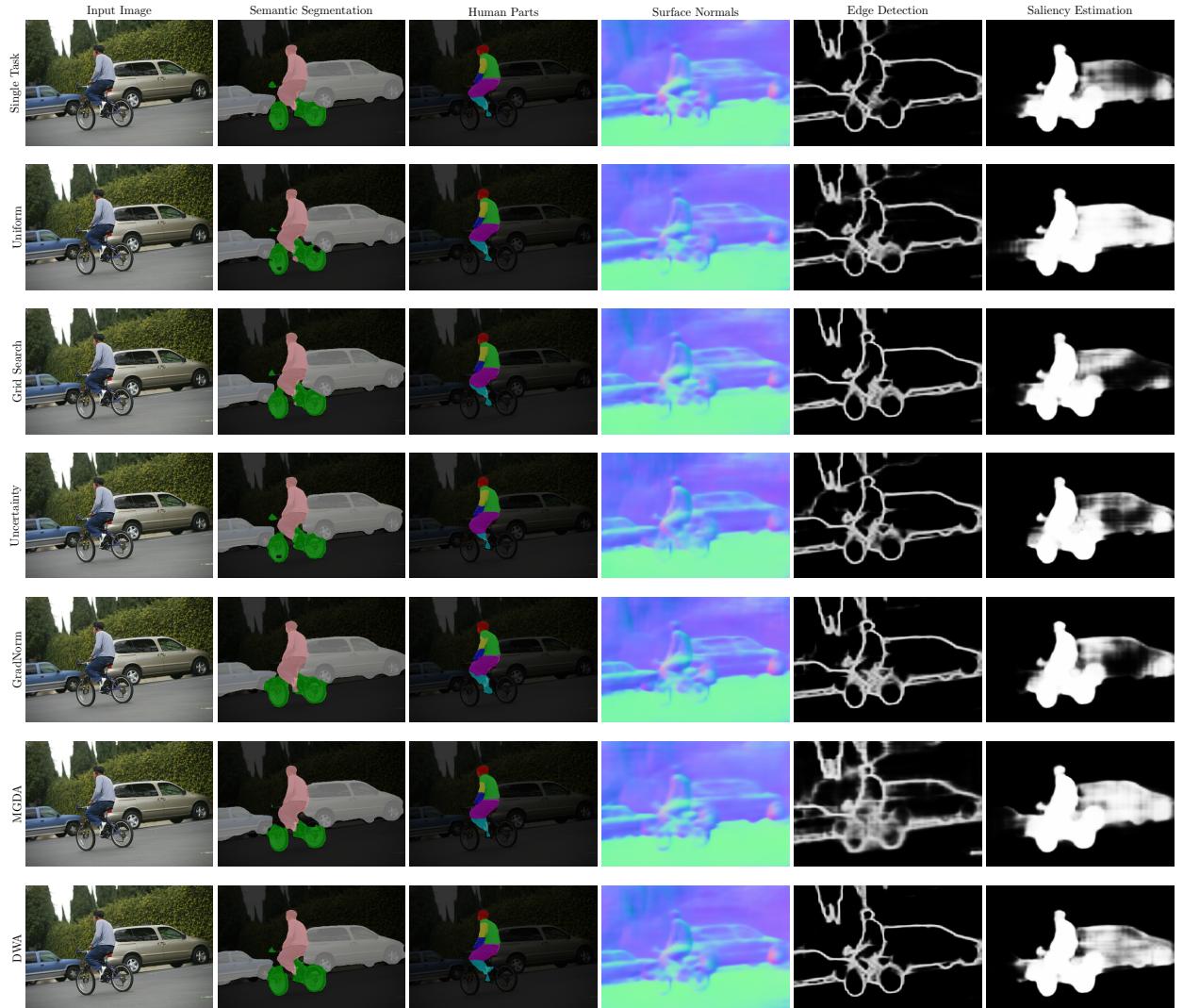


Fig. 9: Predictions on PASCAL with various task balancing techniques (Example 1).

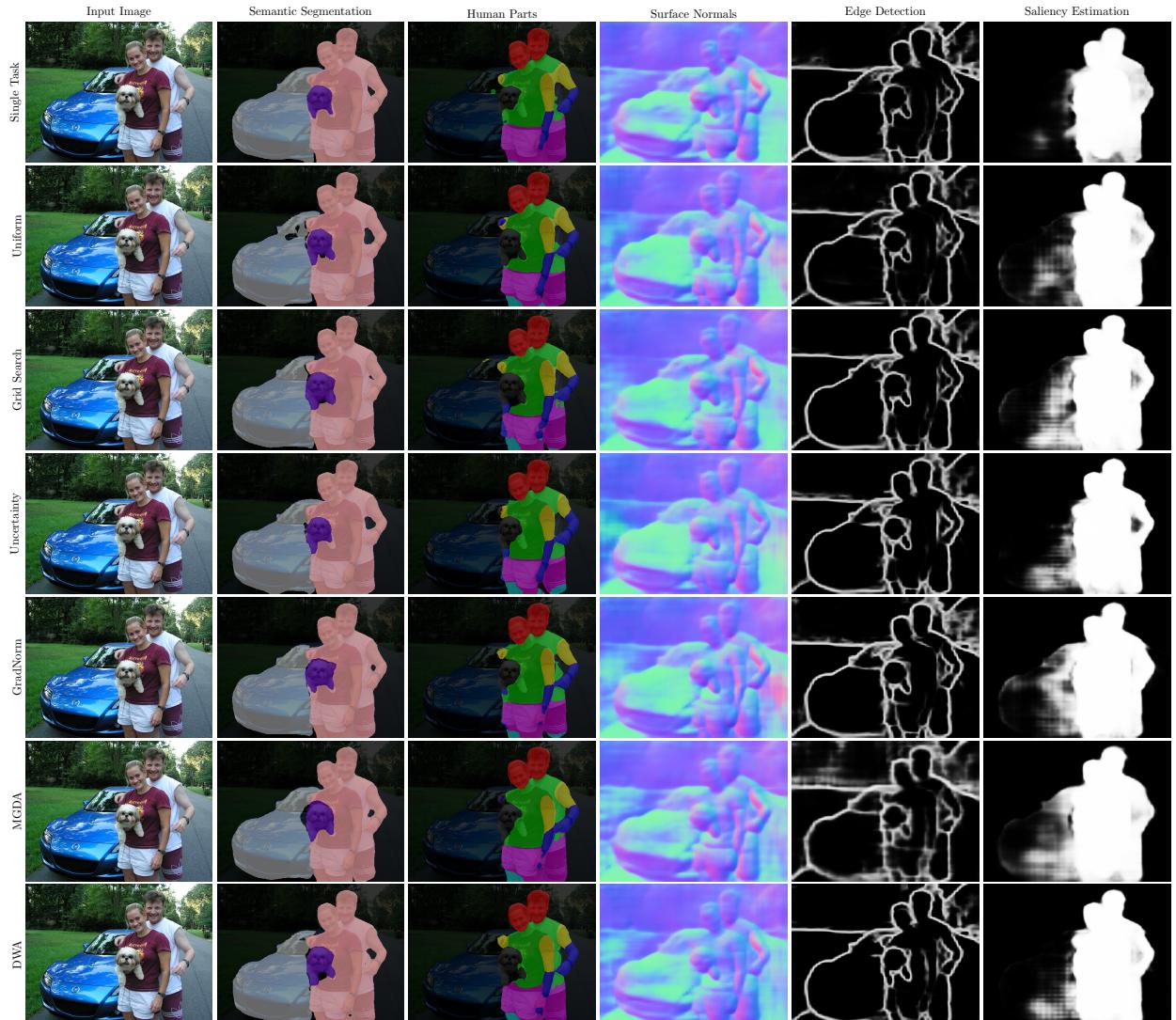


Fig. 10: Predictions on PASCAL with various task balancing techniques (Example 2).