Edge Adaptive Seeding for Superpixel Segmentation Supplementary Material

Christian Wilms and Simone Frintrop

University of Hamburg

1 Additional Quantitative Results using SLIC

In this section we present the quantitative results of the experiments we conducted on NYUV2 [22], SUNRGBD [23], and Fashionista [30] datasets using SLIC [1]. As described in the paper, we used uniform seeding with SLIC, DASP (only on NYUV2 and SUNRGBD) as well as the approach of [10] adapted to images and our edge adaptive seeding with Structured Edges (SE) [6, 7] based priors and ground truth (GT) edges based priors. The results are shown in terms of boundary recall (REC) [16] and undersegmentation error (UE) [17] using the evaluation framework of [24]. Fig. 1 shows the results on NYUV2, Fig. 2 on SUNRGBD and Fig. 3 on Fashionista.

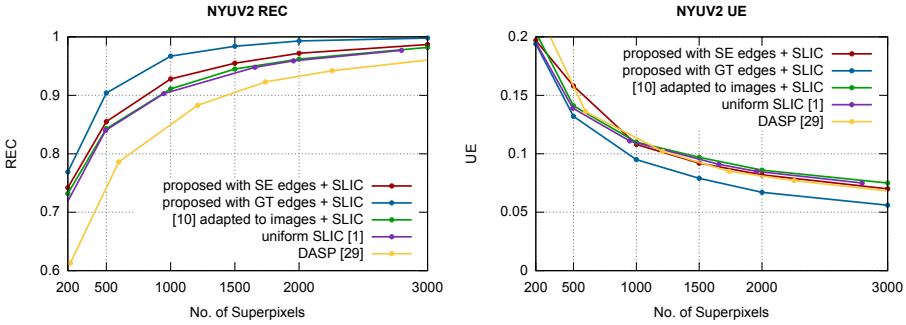

Fig. 1. Boundary recall (REC) and undersegmentation error (UE) on the NYUV2 dataset of uniform SLIC, SLIC with saliency based seeding of [10], SLIC with the proposed edge adaptive seeding based on SE edges and GT edges as well as DASP.

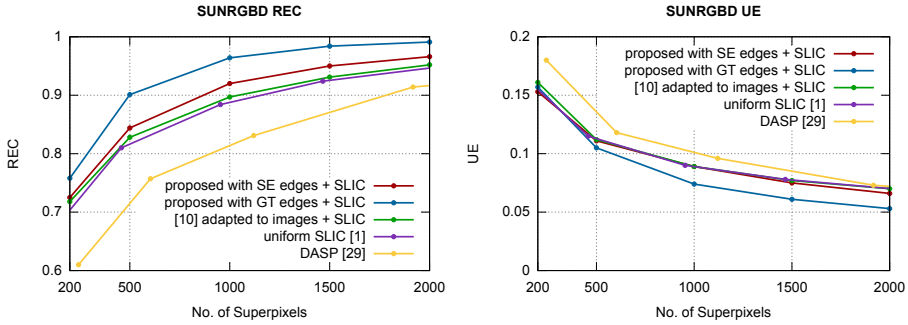

Fig. 2. Boundary recall (REC) and undersegmentation error (UE) on the SUNRGBD dataset of uniform SLIC, SLIC with saliency based seeding of [10], SLIC with the proposed edge adaptive seeding based on SE edges and GT edges as well as DASP.

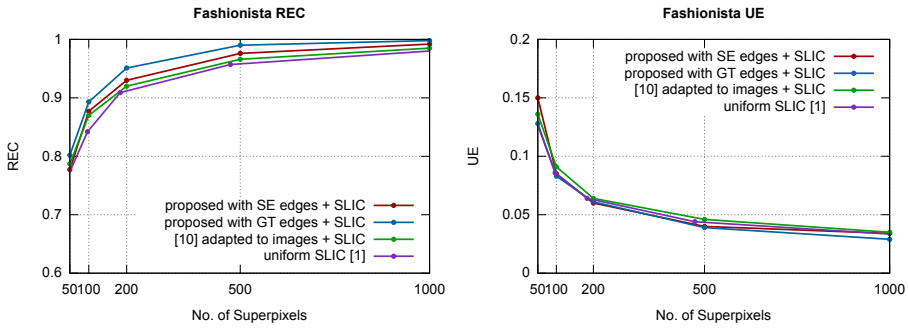

Fig. 3. Boundary recall (REC) and undersegmentation error (UE) on the Fashionista dataset of uniform SLIC, SLIC with saliency based seeding of [10], SLIC with the proposed edge adaptive seeding based on SE edges and GT edges.

2 Qualitative Results using SEEDS

In this section we present qualitative results of the experiments we conducted on SBD [11] and NYUV2 [22] datasets using SEEDS [5]. Fig. 4 presents ground truth, edge density, clusters, standard SEEDS segmentation and, the result of proposed seeding with SEEDS.

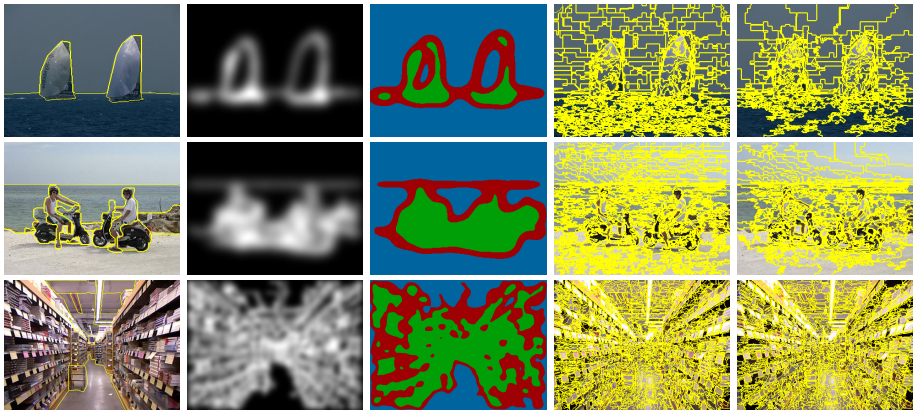

Fig. 4. Qualitative results of the edge adaptive seeding with SEEDS on images from SBD (1st & 2nd row) and NYUV2 (3rd row). From left to right: input image with ground truth, edge density, clusters, uniform SEEDS segmentation, result of proposed seeding with SEEDS.

3 Additional Quantitative Results using SEEDS

In this section we present the quantitative results of the experiments we conducted on SBD [11], NYUV2 [22], SUNRGBD [23], and Fashionista [30] datasets using SEEDS [5]. As described in the paper, we used uniform seeding with SEEDS, DASP (only on NYUV2 and SUNRGBD) as well as the approach of [10] adapted to images and our edge adaptive seeding with Structured Edges (SE) [6, 7] based priors and ground truth (GT) edges based priors. The results are shown in terms of boundary recall (REC) [16] and undersegmentation error (UE) [17] using the evaluation framework of [24]. Fig. 5 shows the results on SBD, Fig. 6 on NYUV2, Fig. 7 on SUNRGBD and Fig. 8 on Fashionista.

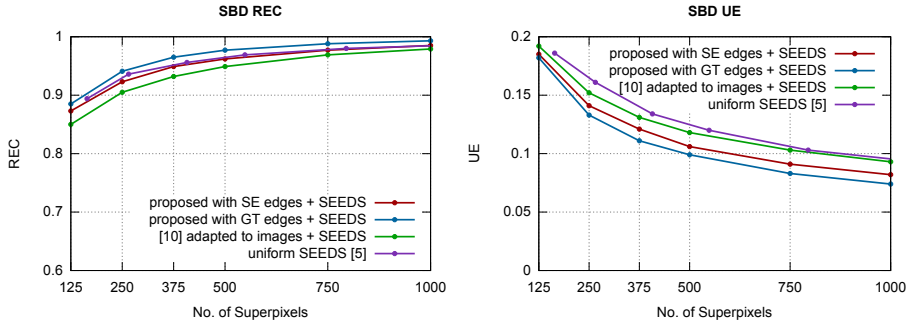

Fig. 5. Boundary recall (REC) and undersegmentation error (UE) on the SBD dataset of uniform SEEDS, SEEDS with saliency based seeding of [10], SEEDS with the proposed edge adaptive seeding based on SE edges and GT edges.

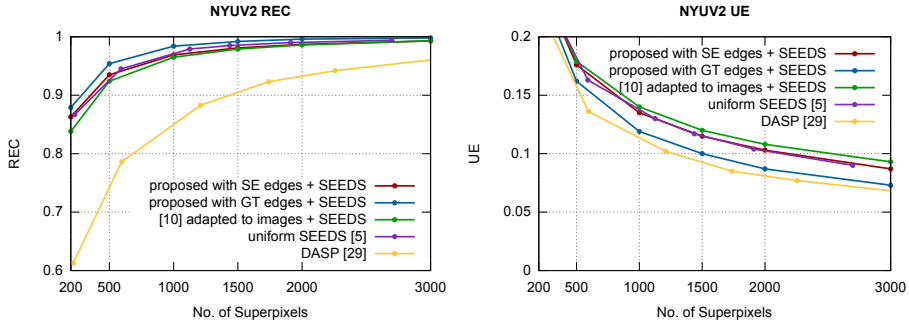

Fig. 6. Boundary recall (REC) and undersegmentation error (UE) on the NYUV2 dataset of uniform SEEDS, SEEDS with saliency based seeding of [10], SEEDS with the proposed edge adaptive seeding based on SE edges and GT edges as well as DASP.

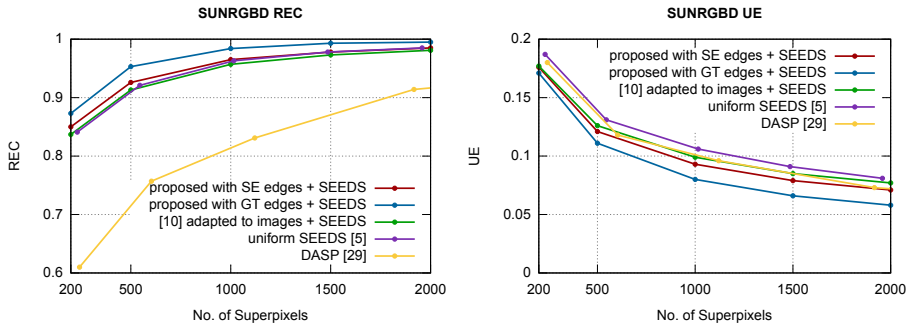

Fig. 7. Boundary recall (REC) and undersegmentation error (UE) on the SUNRGBD dataset of uniform SEEDS, SEEDS with saliency based seeding of [10], SEEDS with the proposed edge adaptive seeding based on SE edges and GT edges as well as DASP.

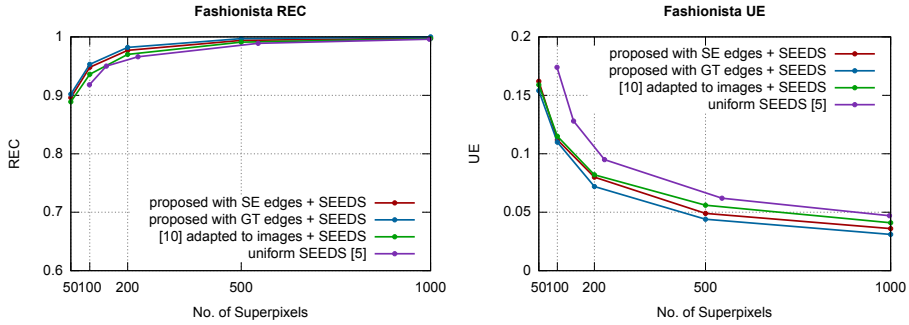

Fig. 8. Boundary recall (REC) and undersegmentation error (UE) on the Fashionista dataset of uniform SEEDS, SEEDS with saliency based seeding of [10], SEEDS with the proposed edge adaptive seeding based on SE edges and GT edges.

4 Qualitative Results using SMURFS

In this section we present qualitative results of the experiments we conducted on SBD [11] and NYUV2 [22] datasets using SMURFS [14]. Fig. 9 presents ground truth, edge density, clusters, standard SMURFS segmentation and, the result of proposed seeding with SMURFS.

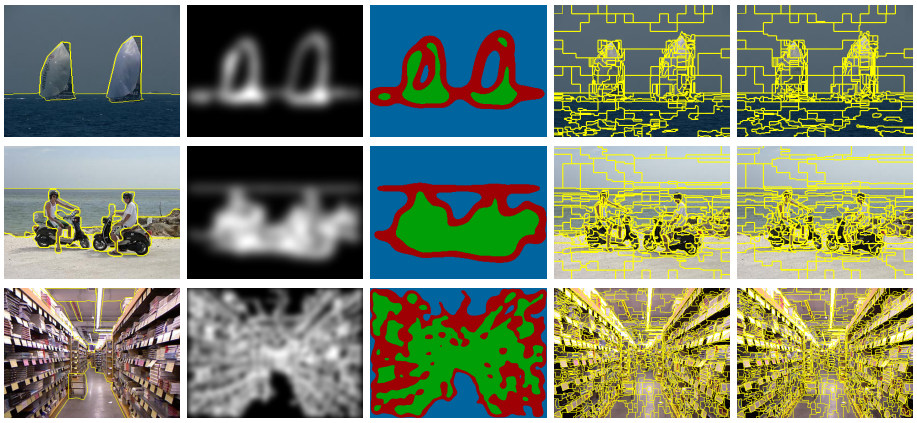

Fig. 9. Qualitative results of the edge adaptive seeding with SMURFS on images from SBD (1st & 2nd row) and NYUV2 (3rd row). From left to right: input image with ground truth, edge density, clusters, standard SMURFS segmentation, result of proposed seeding with SMURFS.

5 Quantitative Results using SMURFS

In this section we present the quantitative results of the experiments we conducted on BSD [2], SBD [11], NYUV2 [22], SUNRGBD [23], and Fashionista [30] datasets using SMURFS [14]. As for the other experiments, we used standard SMURFS, DASP (only on NYUV2 and SUNRGBD) as well as the approach of [10] adapted to images and our edge adaptive seeding with Structured Edges (SE) [6, 7] based priors and ground truth (GT) edges based priors. The results are shown in terms of boundary recall (REC) [16] and undersegmentation error (UE) [17] using the evaluation framework of [24]. Fig. 10 shows the results on BSD, Fig. 11 on SBD, Fig. 12 on NYUV2, Fig. 13 on SUNRGBD and Fig. 14 on Fashionista.

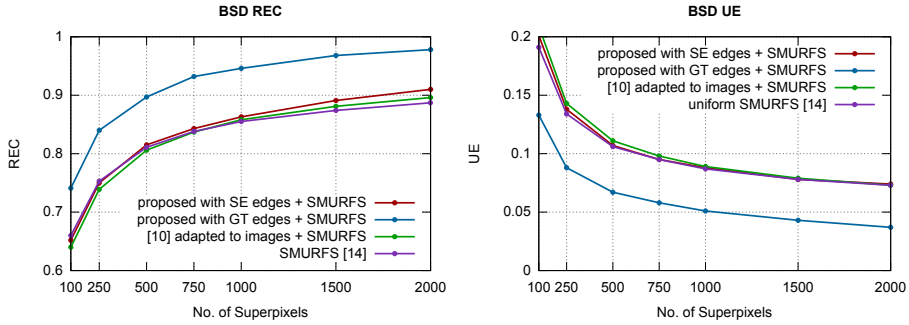

Fig. 10. Boundary recall (REC) and undersegmentation error (UE) on the BSD dataset of standard SMURFS, SMURFS with saliency based seeding of [10], SMURFS with the proposed edge adaptive seeding based on SE edges and GT edges.

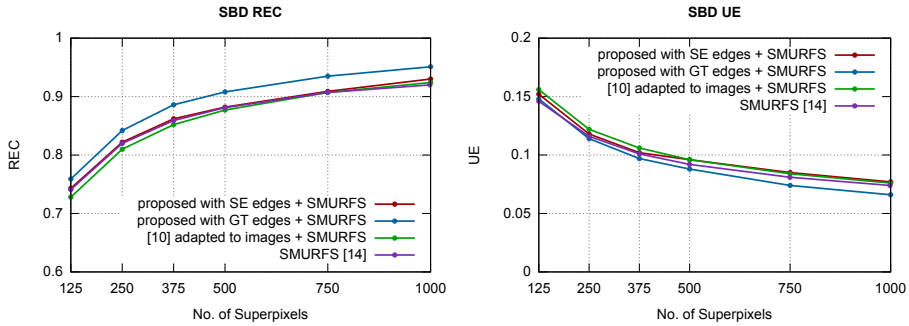

Fig. 11. Boundary recall (REC) and undersegmentation error (UE) on the SBD dataset of standard SMURFS, SMURFS with saliency based seeding of [10], SMURFS with the proposed edge adaptive seeding based on SE edges and GT edges.

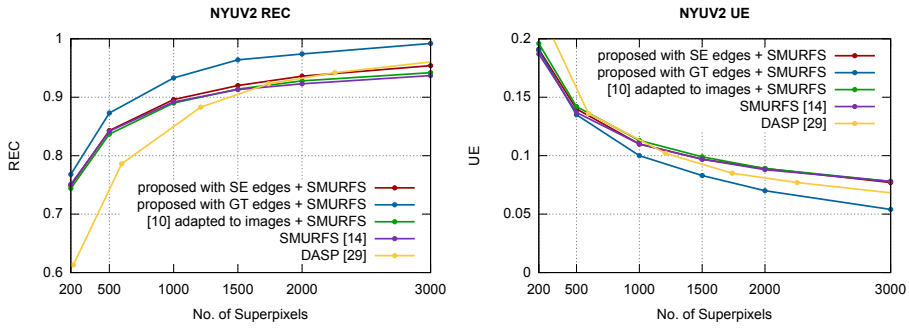

Fig. 12. Boundary recall (REC) and undersegmentation error (UE) on the NYUV2 dataset of standard SMURFS, SMURFS with saliency based seeding of [10], SMURFS with the proposed edge adaptive seeding based on SE edges and GT edges as well as DASP.

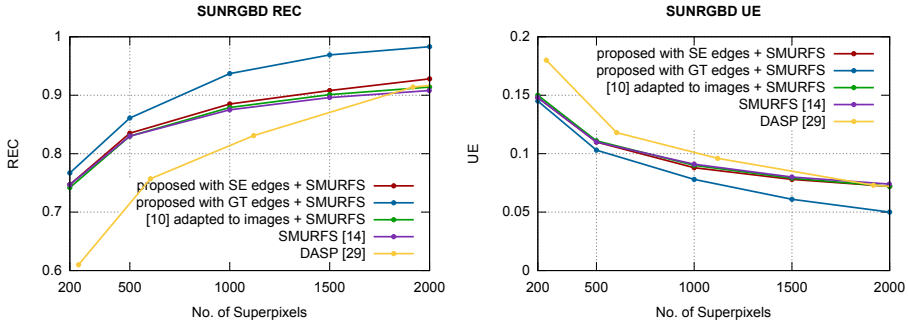

Fig. 13. Boundary recall (REC) and undersegmentation error (UE) on the SUNRGBD dataset of standard SMURFS, SMURFS with saliency based seeding of [10], SMURFS with the proposed edge adaptive seeding based on SE edges and GT edges as well as DASP.

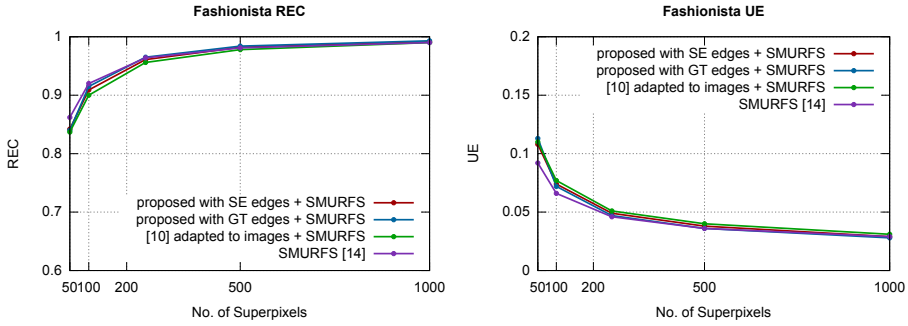

Fig. 14. Boundary recall (REC) and undersegmentation error (UE) on the Fashionista dataset of standard SMURFS, SMURFS with saliency based seeding of [10], SMURFS with the proposed edge adaptive seeding based on SE edges and GT edges.

References

For bibliography see the paper.